Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

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Document Revision History

Rev.	Date	Prepared	Checked	Approved	Description
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List of Abbreviations

AoI	Area of Influence
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
ESCOM	Electricity Supply Corporation of Malawi Limited
ESMP	Environmental and Social Management Plan
FS	Feasibility Study
GBV/SEA	Gender Based Violence/Sexual Exploitation and Abuse
GIS	Geographic Information System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
kV	Kilovolt
NGO	Non-Governmental Organization
OHL	Overhead Line
PAP	Project Affected Persons
PIU	Project Implementation Unit
PM	Project Manager
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
RoW	Right of Way
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SEP	Stakeholder Engagement Plan
S/S	Substation
ToR	Terms of Reference
WB	World Bank
ESS	Environmental and Social Standards
ZEMA	Zambia Environmental Management Agency
ZESCO	Zambia Electricity Supply Corporation Limited

1. INTRODUCTION

1.1 Project Framework

1.1.1 Overview

ZESCO Limited and ESCOM, power utilities in Zambia and Malawi respectively, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 46 km in Zambia. The RoW of the line will be 50 m wide in Zambia and 55 m in Malawi. The project is funded by Swedfund.

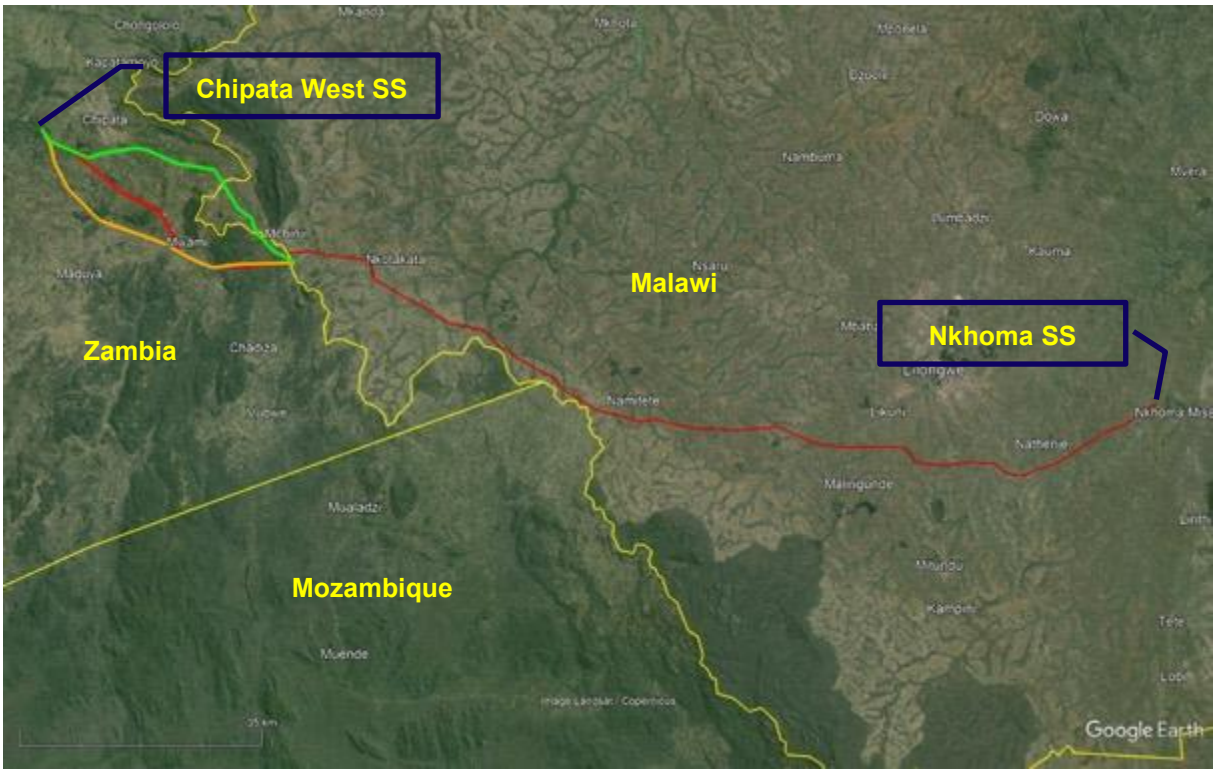

Figure 1: Illustration of the OHL route in Zambia and Malawi

ZESCO will construct the power line on the Zambian side and ESCOM will construct the section of the power line in the Malawian territory. On the Zambian side the power line traverses Chipata and Vubwi districts.

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

For realization of the Malawi - Zambia 400 kV Transmission Interconnection Line (The Project) a complete bankable Feasibility Study (FS) is developed, to include Conceptual Design and Specifications, and Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP).

Stage of the studies already prepared for the Project is different for each of the two countries, as follows:

- For the Malawian component, the FS and ESIA studies have already been prepared.

  The Malawian component of the project has been studied as part of the line from Nkhoma Substation to the border with Zambia in Mchinji, in the framework of the Malawi 400 kV Transmission Backbone Project. A full FS and ESIA have already been prepared – the ESIA has also been approved by the Malawian authorities.

- For the Zambian component, the FS and ESIA studies should be developed.

Because of its magnitude, the project is subject to the Environmental Management Act (EMA) of 2011, which mandates that developers ensure compliance with environmental regulations prior to the commencement of any development activities. Specifically, the Act requires that an Environmental Impact Assessment (EIA) be conducted to identify potential environmental and social impacts, followed by the recommendation of mitigation measures to eliminate or minimize such impacts. In accordance with the EIA regulations, a comprehensive report must then be submitted to the Zambia Environmental Management Agency (ZEMA) for review and approval. Section 3(1) of the EMA stipulates that "A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter."

As part of the EIA process, a scoping exercise must be conducted to gather input from relevant stakeholders to assist in the development of the Terms of Reference (ToR) for the EIA study. According to Part II, Section 8(2) of the EIA Regulations, "To ensure that public views are taken into account during the preparation of the terms of reference, the developer shall organize a public consultation process, involving Government agencies, local authorities, non-governmental and community-based organisations, and interested and affected parties, to help determine the scope of the work to be done in the conduct of the Environmental Impact Assessment (EIA) and in preparation of the Environmental Impact
Statement (EIS)."

A Scoping Report was prepared as part of the ESIA process for the project component in Zambia.

These **Terms of Reference (ToR)** accompany the Scoping Report, are developed based on the findings of the scoping exercise and outline the scope for the EIA study for the Zambian part of the proposed 400kV Malawi – Zambia Interconnector Transmission Line.

1.1.2 Purpose of the ToR

The purpose of these Terms of Reference (ToR) is to clearly define and outline the key environmental, social, and cultural considerations of the project, along with the legal requirements for the ESIA study. The ToR provides a comprehensive framework covering the background, objectives, scope, processes, and tasks that will be undertaken during the ESIA study. Additionally, it highlights the potential impacts of the project to be addressed and outlines the proposed structure of the final ESIA report.

The development of these ToR followed the initial site inspections, the outcomes of public consultations carried out during the scoping exercise, and the discussions and recommendations provided by the team of environmental and social experts on the project. They also integrate local environmental regulations and adhere to international environmental and social safeguard standards.

The primary purpose and objectives of the ToR are summarized as follows:

- **Compliance with Legal Requirements**: To meet the legal obligations under the EIA Regulations, ensuring that a Scoping Report and the ToR are submitted for approval before embarking on the next stages of the EIA process.
- **Adherence to International Best Practices**: To align the project with internationally recognized best practices in environmental management.
- **Defining the Scope of the EIA Study**: To outline the breadth and critical elements of the EIA study.
- **Optimizing Resource Use**: To focus on relevant data collection, avoiding unnecessary information gathering, and maximizing resource efficiency during the study.
- **Regulatory Approval of the EIA Team**: To provide the credentials and expertise of the EIA team for regulatory approval.
- **Guidance for EIA Report Preparation**: To direct the preparation of the EIA report, ensuring that only relevant information is included to maintain the report's validity and utility.
- **Enabling Smooth ESIA Implementation**: To support efficient planning and seamless execution of the ESIA process by the consulting team.
- **Avoiding Disagreements**: To prevent potential conflicts regarding the EIA process, ensuring agreement on the scope of information and consultation needed to complete the process.

These ToR are critical for guiding the EIA process, ensuring compliance, and optimizing the effectiveness of the environmental and social assessments required for the successful implementation of the project.

1.1.3 Project Categorisation

The project was screened in accordance with the Statutory Instrument No. 28, of the EIA Regulations of 1997. According to these requirements, the proposed transmission power line is a Second Schedule project and requires an ESIA study to be undertaken before the commencement of project implementation. The proposed project has potential adverse environmental impacts that need be addressed through mitigation measures which will be recommended in the ESIA report. Accordingly, ZEMA is mandated to evaluate and assess the ESIA report and make a decision to approve or reject the proposed project.

1.1.4 Nature, Scope and Extent of information to be collected and assessed in conducting the EIA for the project

The ESIA investigations will seek to identify the physical, biological, socio-economic, and cultural environment of the project area, identify the potential impacts and recommend mitigation measures. The outputs will include an Environmental Impact Statement (EIS), including an Environmental and Social Management Plan (ESMP), both of which will be verified and updated during project implementation.

1.1.5 Project Location

The Zambian section of the Malawi - Zambia 400kV Transmission Interconnector Project is located between the existing Chipata West 330/132 kV substation and the Border with Malawi in the area of Mchinji. The Overhead Line will cross the Chipata and Vubwi districts in the Eastern Province. The area is located between the coordinates of latitudes 13°39’7.626” South to 13°50’50.673” South and longitudes 32°33’27.619” East to 32°54’18.967” East. The total line distance is approximately 46 km.

The project location is shown in the figure below.

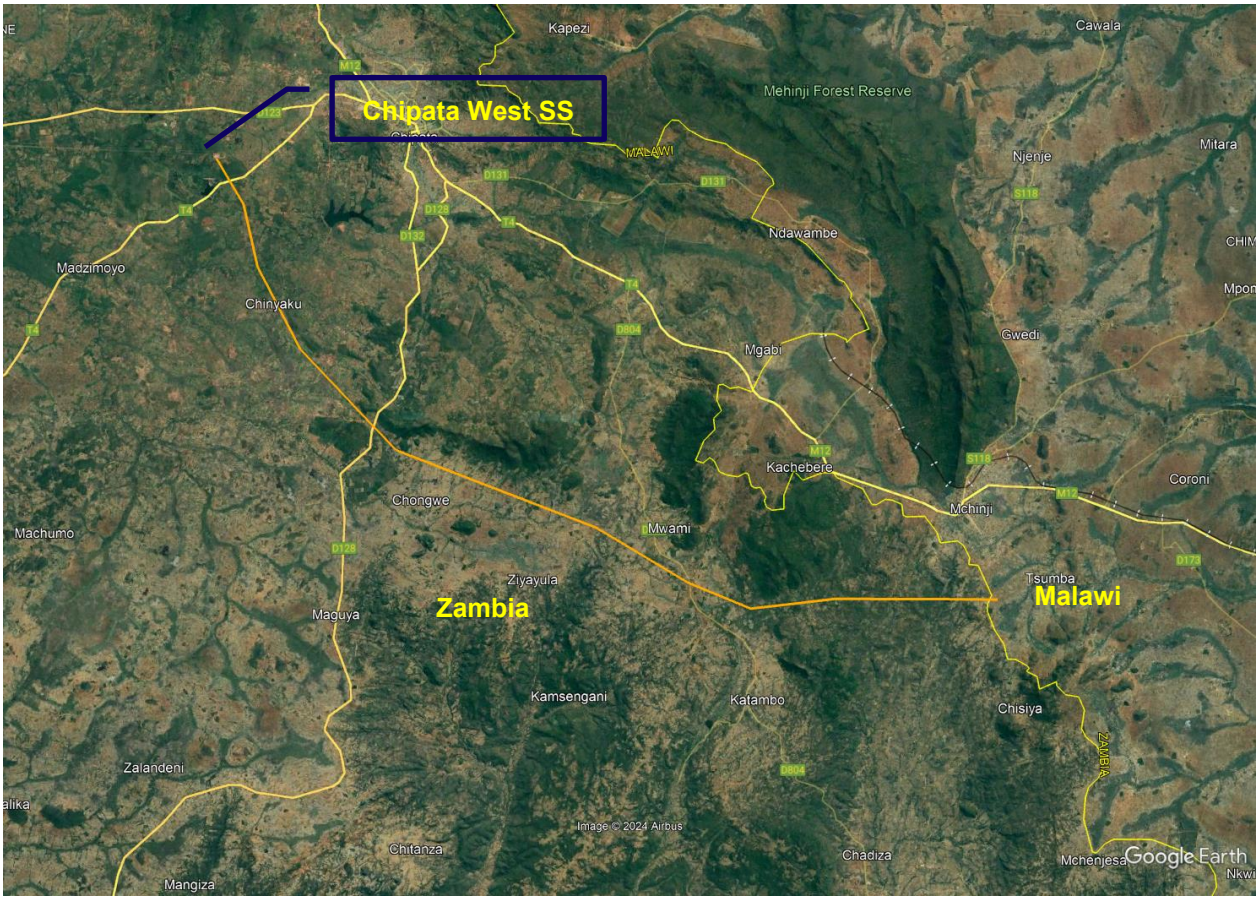

Figure 2: Proposed alignment of the Zambian section of the Malawi-Zambia 400kV Interconnector Project

1.2 Project Background

1.2.1 History of the Project

The Malawi-Zambia 400 kV Interconnector Project is financially supported by Swedfund, which significantly shapes the approach to environmental and social considerations within the project. As Swedfund's funding includes specific Environmental and Social (E&S) standards, the project's scoping and impact assessment process are designed to adhere not only to national guidelines, such as those established by the Zambia Environmental Management Agency (ZEMA), but also to Swedfund's E&S requirements. These requirements emphasize sustainable development and align with international best practices, thereby necessitating adjustments in the traditional structure of ZEMA scoping to meet the heightened standards expected by the financier.

This blended compliance approach ensures that the project remains aligned with national regulations while meeting the stringent E&S safeguards set by Swedfund. These standards influence each phase of the project, from initial scoping and environmental impact assessments to ongoing management practices.

The project is under the auspices of the two electricity utility companies ESCOM of Malawi and ZESCO of Zambia, based on an Inter-Utility Memorandum of Understanding (IUMoU) signed between them, which is in turn based on an Inter-Governmental Memorandum of Understanding (IGMoU) signed between the Governments of Malawi and Zambia.

The project envisages the construction of a 400kV Interconnection Line between eastern Zambia (Chipata West 330/132 kV Substation located west of Chipata, the largest city in eastern Zambia) and central-eastern Malawi (Nkhoma 400/132 kV Substation located south of Lilongwe, the capital and largest city of Malawi).

The ESIA Scoping Report and the present ESIA Terms of Reference (ToR) cover only the Zambian component of the Project.

1.2.2 Project Proponent

The current ESIA study for the project has been commissioned by Southern African Power Pool (SAPP) with support from Swedfund. The project development will be undertaken by ZESCO as the developer (project proponent).

1.2.3 Corporate Profile

The proposed project will be developed by **ZESCO Limited**. ZESCO is a national power utility company that is wholly owned by the Government of the Republic of Zambia. It was formed in 1970 as Zambia Electricity Supply Corporation (ZESCO) after the Zambia Electricity Supply Act was passed in Parliament. This Act brought together the electricity undertakings that were previously managed by the local authorities. In 1994, the name of the company was officially changed from Zambia Electricity Supply Corporation Limited to ZESCO Limited.

Its principal mandate is to generate, transmit and distribute electricity and energy solutions within Zambia and the Sub Saharan region. The Company generates about 80% of Zambia's electricity making it the largest electricity producer in the country. The Corporation owns and operates a number of hydropower stations with a combined power generating capacity of about 2900 Megawatts (MW) and has a strategic intent to increase its power generation mix with a minimum of 1800MW of renewable energy in the next 10 years.

Over its more than 50 years of existence, ZESCO has built several hydropower stations such as Kariba North Bank, Kafue Gorge Upper, Kafue Gorge Lower, Itezhi Tezhi, Victoria Falls and small power stations.

In terms of transmission network, ZESCO owns and operates an extensive and robust transmission network composed of over 11,100 kilometres of high voltage lines across the country and is interconnected to some countries in the Southern African Power Pool such as Zimbabwe, Namibia, Botswana and Tanzania. The Corporation intend to extend its transmission network within the country and to neighbouring countries to facilitate power electricity trading (exports and imports).
In addition, ZESCO has an intensive distribution network in all parts of the country, covering both rural and urban areas. The distribution network is continually under expansion to reach every part of the country, including agricultural farming blocks.

The proposed Zambia - Malawi Power Transmission line is one of the projects being undertaken by ZESCO to increase its connectivity to countries in the Southern African region.

1.2.4 Major Components of the Project

Major components of the project to be undertaken in Zambia include the following:

- Upgrading and extension of existing 330/66-kV substation Chipata West Substation;
- Construction of the 400 kV OHL between Chipata West SS and the border with Malawi, inch includes:
    - Surveying and wayleave acquisition;
    - Wayleave clearance with a width of 50m;
    - Construction of access and maintenance roads along wayleave, where necessary;
    - Excavation and other civil works;
    - Tower erection and stringing;
    - Installation of all relevant pieces of equipment;
    - Commissioning

The project capital cost is estimated at USD 35 million and the works are expected to be undertaken over a period of 24 months from the start date.

2. REGULATORY FRAMEWORK AND CORPORATE REQUIREMENTS

This Chapter provides an overview of the national legislation and regulations as well as the related institutional framework relevant to environment and social assessment, occupational health and safety, and workers' rights of the proposed project. Also discussed are the Swedfund Sustainable Policy as well as EIB's Environmental and Social Standards relevant to the proposed project.

2.1 Environmental Policy Framework

(a) National Environmental Policy 2007

In view of the various environmental challenges the country faces, Zambia launched its National Policy on Environment (NPE) in 2007. The environmental policy document identifies deforestation, land degradation, wildlife depletion, soil erosion, loss of land productivity, inadequate sanitation and air and water pollution as the main environmental challenges the country is facing.

The NPE calls upon all institutions, Non-Governmental Organizations (NGOs), and community based or people's organizations whose activities affect the environment in any way to carry out their activities judiciously to maintain the productivity and integrity of the environment. Further, the NPE recognizes the need for EIA studies in all development projects to eliminate or mitigate adverse environmental impacts and enhance the benefits of the projects.

The National Policy on Environment states that "EIAs will be required as deemed necessary to ensure that public and private sector development options are environmentally sound and sustainable and that any environmental consequences are recognized early and taken into account during project design and implement."

The Zambian National Policy on Environment (NPE) was developed to safeguard the environment and to ensure the sustainable use of natural resources. The policy is premised on the basic principle of "Polluter pays and the need to conserve resources, reduce consumption and recycle and reuse materials to the maximum extent possible" while the main purpose of the policy is "to create an umbrella policy for the welfare of the Nation's environment so that socio-economic development will be achieved effectively without damaging the integrity of the environment or its resources". Specific objectives of the NPE include, but are not limited to:

- Promote the sound protection and management of Zambia's environment and natural resources in their entirety, balancing the needs for social and economic development and environmental integrity to the maximum extent possible while keeping adverse activities to the minimum;
- Accelerate environmentally and economically sustainable growth in order to improve the health, sustainable livelihoods, income and living conditions of the poor majority with more significant equity and self-reliance;
- Ensure that plans for the development and construction of industries have adequate and appropriate waste disposal and pollution control facilities organised to meet international standards;
- Ensure that plans and incentives for voluntary waste disposal are enshrined in the production plans of all industries and

- Promote environmental guidelines and EIA before sites are developed and ensure the application of a monitoring and auditing system for operating industries.

(b) The National Resettlement Policy Guidelines

Regarding land acquisition for electricity infrastructure, the Electricity Act No. 15 of 1995 provides a number of guidelines for the acquisition of land and rights over land. Section 14 of the Electricity Act makes reference to the Lands Acquisition Act Cap 296, Part III (Section 12), that deals with the principles of assessing the amount of compensation for the affected assets. The Act covers compensation for loss structures, cropland and fruit trees. In addition, this Act also stipulates conditions that can lead to compulsory acquisition of land through the office of the Republican President.
However, both the Electricity Act and the Land Acquisition Act do not provide detailed guidance on the resettlement process. Some individual institutions, including ZESCO, have developed their own resettlement guidelines based on the above Acts, the World Bank Environment and Social Framework Policies on Involuntary Resettlement, and international best practice.

(c) The Zambia Land Policy

Land in Zambia is vested in the Republican President, who holds it in trust for and on behalf of the people. The President may, through the Commissioner of Lands, alienate land to citizens or non-citizens. The vision of the National Land Policy is to implement an efficient and effective land administration system that promotes the security of tenure, equitable access and utilisation of land for the sustainable development of the country. However, most of the land in Zambia is traditional land under the jurisdiction chiefs.

(d) The Transport Policy 2019

The policy aims to facilitate sustainable growth and development of the transport sector in order to ensure the provision of efficient, safe, gender and environmentally friendly, quality and adequate services for the benefit of the people of Zambia. Implementation of the project will be to the requirements of the policy. Among the principles of the road policy is that 'transport services and infrastructure shall be provided in a sustainable manner". The general objective of this policy is "to transform Zambia into a regional transport hub with fully integrated transport systems supporting socio-economic development".

The policy specific objectives are to:
- Harmonise all pieces of legislation governing the road sector to minimise overlap of mandates and adherence to core mandates;
- Promote development of road transport services, facilities and infrastructure that meet global safety standards;
- Promote sustainable mobility of both goods and passengers to meet economic and social needs; and
- Develop systems to facilitate non-motorised transport.

(e) The National HIV/AIDS/STI/TB Policy 2002

The Policy is premised on the aspiration of Zambia achieving a Human Immunodeficiency Virus and Acquired Immuno-deficiency Syndrome (HIV/AIDS) free status. It is guided by a couple of underlying principles namely, setting a stage for an appropriate legal framework, which is essential for the overall attainment of the vision, and, most importantly, having a proper national co-ordination and advocacy framework, which is

necessary for the development, implementation and coordination of HIV/AIDS/STI/TB strategies and interventions. The Policy also recognises that HIV/AIDS/STI/TB is a serious public health, social and economic problem affecting the whole country, which needs to be addressed.

(f) The National Forest Policy 2014

The vision of the National Forest Policy of 2014 is to attain sustainable management of all types of the forests to enhance forest products and services utilisation that will contribute to climate change mitigation, income generation, poverty reduction, job creation and protection and maintenance of biodiversity.
The main objectives of this policy are:

- Manage the country forests to maximize productivity and the developmental potential of the forest resources;
- Empower local communities and traditional leaders to ensure adequate protection and management of forests;
- To improve the role of forests in addressing climate change in order to contribute to reducing its impacts through appropriate mitigation and adaptation measures;
- To increase the participation of the private sector in the development of the forest industry to enhance the contribution of the sector to the growth of the economy;
- To enhance the processing and marketing of forest products and services in order to ensure the optimal contribution of the forest sector to the national economy and the forest industry;
- To put in place measures that will promote sustainable harvesting of wood and production of charcoal to reduce deforestation;
- To strengthen research institutional capacity to provide informed decision-making;
- To strengthen and develop human capacity with extension skills and a service delivery mindset to effectively meet stakeholders' needs;
- To develop and broaden the skills and knowledge of personnel involved in forest management and development and support training.

(g) National Policy on Climate Change

This National Policy on Climate Change (NPCC) (2016) was developed to support and facilitate a coordinated response to climate change issues in the country. It will enable Zambia to realign its climate-sensitive sectors of the economy, and its society, to meet development goals through adaptation and mitigation interventions. At the same time, it will contribute to the achievement of the overall objective of the United Nations Framework Convention on Climate Change (UNFCCC) which is “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. Zambia signed and ratified the UNFCCC on June 11, 1992, and May 28, 1993, respectively.

(h) National Water Policy

The policy aims at promoting sustainable water resources development in order to facilitate equitable provision of adequate quantity and quality of water for all competing uses at acceptable cost, and to ensure security of supply under varying conditions. Among the policy measures aimed at achieving long term sustainability of water resources, there is:

- Harvesting and ownership of water resources in the country under state control. One of the identified strategies to achieve this is the revision of weak legislation and development of conventions and

protocols in accordance with the Helsinki Rules which embody the concept of best joint utilization of internationally shared waters.

- Promoting water resources development through an integrated management approach. One strategy to achieve this is the performance of environmental impact assessments prior to implementation of any development project, developing an appropriate institutional and legal framework for effective management of water resources. The policy recognizes the Environmental Protection and Pollution and other pieces of legislation relating to water quality.

Five main categories are identified in discussing possible conflict in the use of water. These are: domestic, industrial, agricultural including irrigation, livestock watering, and freshwater aquaculture, recreational and ecosystem management.

(i) Agricultural Policy

The National Agricultural Policy (2004) states five objectives of the agricultural sector including the assurance of national and household food security, creation of income and employment, maintenance and improvement of the agricultural resource base, contribution to the national balance of payments and to sustainable industrial development. To achieve these objectives, various sector strategies are outlined and include the following:

- Strengthening and monitoring the liberalization of markets and facilitating private sector development;
- Promoting and securing access of agricultural products to both local and international markets;
- Diversification of agricultural production and utilization;
- Strengthening and facilitating the provision of agricultural services;
- Facilitating availability and accessibility of land for agriculture and development of infrastructure in potentially productive areas;
- Development and promotion of appropriate technology;
- Promotion of sustainable, environmentally sound agricultural practices. This includes the promotion of conservation farming, agro-forestry and greater use of irrigation;
- Strengthening emergency preparedness through provision of timely crop forecasts and early warning information, where necessary, while also maintaining strategic food reserves.

(j) National Policy on Wetlands Conservation, September 2001

This Policy was formulated in response to the fragmented sectoral policies and Acts. It aims to provide a holistic programme of action to promote the conservation and prudent use of wetland ecosystems. It acknowledges the importance of wetland ecosystems in Zambia in providing major fisheries, and important habitats for various wildlife species.

(k) The National Gender Policy (NGP) 2014

The NGP is aimed at ensuring the attainment of gender equality in the development process by redressing the existing gender imbalances. It also provides for equal opportunities for women and men to actively participate and contribute to national development. The policy emphasizes issues of poverty, noting that women and children are differentially affected compared to men. Females are singled out as experiencing more poverty than any other social group in the country, while the HIV and AIDS pandemic and violence

against women are exacerbating the situation. The policy addresses gender issues such as poverty, decision making, gender-based violence, HIV and AIDS. Furthermore, Zambia has signed the following international governing documents on gender:

- The Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) in 1984;
- The Beijing Declaration and Platform of Action in 1995;
- The Millennium Development Goals (MDGs) in 2000.

2.2 National Environmental Legislation Framework

The legislative responsibility of administering the EIA process is vested in ZEMA, formerly known as the Environmental Council of Zambia (ECZ). This is in line with the Environmental Management Act No. 12 of 2011, Statutory Instrument No. 28 of 1997 –The EIA Regulations. The Agency is mandated to:

a) Identify types of projects, plans and policies for which environmental impact assessments are necessary and to undertake or request relevant institutions to undertake such assessments for consideration by the agency.
b) Monitor trends in the use of natural resources and their impact on the environment.
c) Request information on the quantity, quality, and management methods of natural resources and environmental conditions from any individual or organization anywhere in Zambia.
d) Consider and advise the government, on all major development projects at initial stage and on the effects of any sociological or economic development on the environment.

In addition to the above, and the Ministry of Green Economy and Environment in consultation with ZEMA, is empowered to make regulations by statutory instrument for any matter that could be prescribed under the Act on the protection of the environment.

Environmental Management Act, Nº. 12 of 2011

The principal legislation governing environmental management in Zambia is the Environmental Management Act (EMA) of 2011. The Act provides for the sustainable management of natural resources, protection of the environment, and the prevention and control of pollution. It establishes and empowers the Zambia Environmental Management Agency to provide for and demand for environmental assessments for projects, and to carry out monitoring and inspections.

Relevance: Of particular significance to the project is Section 29 of the Act, which demands that development projects that have an effect on the environment shall not undertake without a written approval of the Agency and shall be implemented in accordance with any conditions imposed in the approval letter. This has necessitated the preparation of this ESIA to key out the impacts of the project and put in place mitigation measures.

Compliance: The ESIA reports for the Malawi- Zambia 400kV Transmission Interconnector project is being prepared before the commencement construction works.

The Environmental Impact Assessment (EIA) Regulations, SI 28 of 1997

The Environmental Impact Assessment (EIA) Regulations, Statutory Instrument (SI) 28 of 1997, Section 29 (1) of the Act states that 'A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter, and except in accordance with any conditions imposed in that approval". In Zambia, it is a legal requirement under these Regulations that before a developer commences implementing a project, an EIA report must be prepared and submitted to ZEMA for review and approval.

Relevance: According to the First Schedule (Regulation 3(2) of the EIA Regulations, the proposed Project falls within the category which requires an ESIA study to be undertaken and submitted for approval.

Compliance: During the detailed study, all the negative environmental and social impacts likely to result from the project will be identified and mitigated in accordance with these regulations.

The Environment Management (Licensing) Regulations (SI 112 of 2013)

There are several parts in this SI giving regulatory powers to ZEMA to control the discharge of water pollutants, air emission pollutants, pesticides and other toxic substances, waste (both municipal and hazardous) and ozone depleting substances in order to safeguard the general health, safety or welfare of persons, animal life, and plant life.

The portions of the regulations that are of relevance to the project are listed below.

a) Part II: Air and Water Pollution Regulations

Relevance*:* During project implementation, the contractor will be handling fuel, oils and other chemical substances, which have to be managed in accordance with the provisions of this Statutory Instrument to avoid emissions into water resources and the ambient environment.

Compliance: The project shall endeavour to prevent and minimise effluent discharge into the environment. Measures to prevent and minimize emissions to the ambient environment shall include servicing of vehicles to ensure minimal exhaust fumes are emitted, periodic dust suppression using water bowsers and limiting on extent of area for vegetation clearing to limit dust emissions.

b) Part III: Waste Management Regulations

Relevance: Section 12 (1) declares that a person who intends to reclaim, re-use, recover, recycle, transport, dispose of, transit, trade in, export waste or collect and dispose of waste from industrial, commercial, domestic or community activities or own, construct or operate a waste disposal site or facility for the permanent disposal or storage of waste shall apply to the Agency for a waste management licence. Section 13 (1) directs that a holder of a waste management licence shall (e) ensure that generated waste is treated and disposed of in an environmentally sound manner. The project will generate construction waste materials such as rock waste, cement bags, plastics, food debris and faecal waste from the construction camps.

Compliance: The project shall ensure that measures for the management of biodegradable and non-biodegradable waste are in compliant with these Regulations and international best practice principles such as the re-use, recycle and reduce principle, where necessary. The project will seek to engage a licensed waste management contractor to transport and dispose the waste.

c) Part IV: Hazardous Waste Regulations

Relevance: Section 21 recognizes that a holder of a hazardous waste licence who stores hazardous waste shall (b) comply with the requirements for storage of dangerous waste prescribed in the Eighth Schedule. The project will generate used oils, oil filters and batteries from construction equipment which will need to be managed in line with these Regulations.

Compliance: Hazardous waste shall be stored in a well bundled, secure and labelled area. Further, a licensed hazardous waste transporter will be engaged to transport hazardous waste to a licensed disposal facility.

The Public Roads Act, CAP 12 of 2002

The Public Roads Act provides for the establishment of the Road Development Agency responsible for the planning, management, and coordination of the road network in Zambia. Part III of this law prohibits road infringement by stipulating dimensions of road reserves within which no construction of any structures is allowed.

Relevance: The project will use existing access roads, where they exist, and open up new access, where necessary.

Compliance: The developer is required to meet road safety standards in design and implementation of the project. Height clearance at road crossing points as well as the transportation of construction materials and equipment should adhere to the national road safety standards.

The Road Traffic Act No 11 of 2002

The Road Traffic Act No. 11 of 2002 provides for the establishment of the Road Transport and Safety Agency (RTSA) and defines its functions. It also provides for a system of road safety and traffic management in Zambia.

Relevance: The traffic during transportation of construction materials has potential to cause accidents hence traffic control measures must be observed, and access roads must comply with the provisions of the Act.

Compliance: Traffic safety measures shall be implemented during both the construction and operation phases of the project. Road signage and speed restrictions shall be put in place.

The Petroleum Act, CAP 424

This Act, among other things, regulates the conveyance and storage of petroleum, inflammable oils and liquids.

Relevance: During construction, the contractor will transport and store petroleum and inflammable oils and liquids, whose handling is governed by this Act.

Compliance: The ESIA will propose measures to comply with regulations under this law during the transportation of fuel for construction equipment and generators located. The handling of re-fueling activities will require adherence to environmental, health and safety legal requirements.

The Urban and Regional Planning Act, No. 3 of 2015

This piece of legislation establishes procedures for integrated urban and regional planning in a devolved system of governance so as to ensure multi-sector cooperation, coordination and involvement of different levels of ministries, provincial administration, local authorities, traditional leaders and other stakeholders in urban and regional planning. It also seeks to ensure sustainable urban and rural development by promoting environmental, social and economic sustainability in development initiatives and controls at all metropolitan and regional planning levels.

Relevance: The Act provides for the appointment of regional planning authorities, provincial planning authorities and local planning authorities whose main responsibilities are the preparation, approval of layout plans and revocation of development plans. Section 19 (1) affirms that a planning authority shall prepare an integrated development plan for its area. Section 19 (3) states that an integrated development plan shall be the principal planning instrument to guide and inform all planning and development in the area of the local authority and in all planning decisions of a planning authority. Among other objectives, an integrated development plan shall provide for local economic development to alleviate poverty; environmental management; and protection of ecologically sensitive areas, heritage and cultural sites.

Compliance: Route selection for the proposed will take into consideration all planned developments in Chipata and Vubwi districts. The project site layout plans will need to be approved by the Town Councils in consultation with the respective Provincial Planning Authorities before construction commences in accordance with the provisions of this Act.

The Lands Act, No. 27 of 1995

The Lands Act is the statute governing land administration in Zambia. Land in Zambia is vested in the Republican President, who holds it in trust for and on behalf of the people. The President may, through the Commissioner of Lands, alienate land to citizens or non-citizens. However, most of the land in Zambia is traditional land under the jurisdiction chiefs.
Relevance: The power line traverses both traditional land and state land and consent is required from the land owners, including the chiefs.

Compliance: ZESCO will approach all the relevant institutions and private land owners to acquire the land along the power line corridor.

The Local Government Act, No. 2 of 2019

The Act provides for the establishment of Councils in districts, the functions of local authorities and the local government system. Some of these functions relate to pollution control and protection of the environment. The main functions of the Public Health Department of the local authority include solid waste management, food control services, and disease control.

Relevance: The proposed transmission project will pass through Chipata and Vubwi districts. Hence, the developer and the contractors are required to observe all the applicable by-laws related to food safety, disease control, workers living conditions and environmental protection.

Compliance: The project shall recognise the authority of the local authorities and will comply with the specifications and any relevant by laws set up by the affected local authorities.

Occupational Health and Safety Act of 2010

The Act establishes the Occupational Health and Safety Institute and provides for its functions; provides for the establishment of health and safety committees at workplaces and for the health, safety and welfare of persons at work. Most important is the provision regarding the protection of persons, other than persons at work, against risks to health or safety arising from, or in connection with, the activities of persons at work.

Relevance: Section 16(1) declares that an employer shall ensure, so far as is reasonably practicable, the health, safety and welfare of the employees at a workplace by, among other measures;

(a) providing for measures to deal with emergencies and accidents, including adequate first-aid arrangements;

(b) providing at the employer's expense all appropriate protective clothing or equipment to be used in the workplace by employees, who in the course of employment, are likely to be exposed to the risk of bodily injuries, and adequate instructions in the use of such protective clothing or equipment.

Construction activities shall expose workers to occupational health and safety risks due to factors such as operation of equipment, handling of materials and exposure to construction site hazards.

Compliance: The project will develop, as part of the Environmental Management Plan, occupational health and safety procedures to minimise occupational health and safety risks and promote employee welfare at the workplace. The contractor will be obliged to provide his workers with appropriate Personal Protection Equipment (PPEs).

The Public Heath (Infected Areas) (Corona Virus Disease 2019) Regulations, SI Number 22 of 2020

The Public Health (Infected Areas) (Corona Virus Disease 2019) Regulations provides, among many others, the definition of Covid-19, conveyance, infected area, and unsanitary conditions.
Relevance: The project will be employing different types of people from various backgrounds and locations where the disease might have occurred, thereby causing a severe threat of transmitting the disease to other workers.
Compliance: The project will ensure adherence to all the provisions of the statutory instrument in order to provide the health of all the employees on the project site.

The Forests Act, No. 4 of 2015

An Act to provide for the establishment and declaration of National Forests, Local Forests, joint forest management areas, botanical reserves, private forests and community forests; provide for the participation of local communities, local authorities, traditional institutions, non-governmental organizations and other stakeholders in sustainable forest management; provide for the conservation and use of forests and trees for the sustainable management of forests ecosystems and biological diversity; establish the Forest Development Fund; provide for the implementation of the United Nations Framework Convention on Climate Change and Convention on International Trade in Endangered Species of Wild Flora and Fauna.

Relevance: The Act promotes the sustainable management of forest resources for the sustainability, conservation and preservation of ecosystems and biological diversity in forest areas and open areas.

Compliance: The ESIA report shall recommend appropriate measure to promote and enhance the conservation of forest resources and clearing of vegetation shall only be confined to the wayleave. Tree planting shall be encouraged during project implementation.

The Water Resources Management Act, No. 21 of 2011

The Water Resources Management Act No.21 of 2011 establishes the institutional regulatory framework, including the creation of; the Water Resources Management Authority (WARMA), Catchment Councils and Water Users Associations in line with decentralised governance system. The Act provide for the management, development, conservation, protection and preservation of the water resources and its ecosystems and promotes the adaptation to climate change. The WRMA is also responsible for the domestication and implementation of the basic principles and rules of international law relating to the environment and shared water resources as specified in the treaties, conventions and agreements to which Zambia is a State Party.

Relevance: The Act guards against the discharge or disposal of any pollutant into a water resource.

Compliance: The ESIA report will propose measures that will be undertaken to ensure that activities during the construction and operation of the project road do not result in pollution and degradation of water resources in the project area.

The Employment Code Act, No. 15 of 2019

This Act provides legislation relating to the employment of persons. It also spells out the terms of employment (permanent or contractual) and forbids gender discrimination in the recruitment process.

Relevance: The construction and operation phases of the project will involve the employment of skilled and unskilled manpower and their engagement should follow the provisions of this Act.

Compliance: The project shall ensure that individuals who are employed on the project are of the right age, not forced labour, and there will be no gender discrimination.

The Workers Compensation Act, No. 10 of 1999

This Act makes provision for the establishment and administration of a Fund for the compensation of the workers disabled by accidents to, or diseases contracted by, such Workers in the course of their employment, and for the payment of compensation to dependents of Workers who die as a result of such accidents or diseases; for the payment of contributions to such Fund by employers; for the grant of pensions and allowances to certain dependents of Workers who, being in receipt of pensions for such disablement, die from causes not connected with such accidents or diseases.

Relevance: Many employment opportunities will be created and work will involve the use of machinery and equipment that may cause injury to workers during their use or operation.

Compliance: The contractor will make contributions to the Fund on behalf of the workers. In the event of any injury to any person, due compensation shall be provided.

The Public Health Act, No. 22 of 1995

This Act provides for the prevention and suppression of diseases and the general regulation of all matters connected with public health in Zambia. Amongst other things, the Act prohibits anyone from causing a nuisance, where nuisances are given to include amongst others, any collection of water or any cesspit, latrine or urinal found to contain mosquito larvae. In addition, any collection of water, sewage or waste which permits or facilitates the breeding of parasites, insects or other agents which may lead to the infection of people or domestic animals.

Relevance: Temporary camps will be erected during the construction period and adherence to heath regulations is required.

Compliance: Management will ensure that the project site and the construction camps areas are provided with toiles, adequate water supply and other facilitates to keep them in clean and sanitary conditions.

The Factories Act, 1999

The Act regulates the conditions of employment in factories and other places of work as regards the safety, health and welfare of persons employed therein. The Act also provides for the examination and inspection of specific plant and machinery in order to ensure safety. The Factories Inspectorate under the Ministry of Labour and Social Security is the mandated authority under the Act.

Relevance: All places of work as defined under this Act will be deemed a 'factory' where safety, health and general welfare of employees will be required to be upheld.

Compliance: To ensure that the occupational health and safety of employees is upheld during the construction and operational periods, all employees will be trained in health and safety protocols. All employees will be equipped with adequate and appropriate personal protective equipment and the devices, tools and equipment that will be used by the employees will be regularly inspected, maintained and repaired if found to be defective.

The National Heritage Conservation Act No. 23 of 1989 and National Heritage Conservation Commission Amendment Act No. 13 of 1994

The National Heritage Conservation Act establish the National Heritage Conservation Commission (NHCC) and provides for the conservation of ancient, cultural and the natural heritage, relics, and objects of aesthetic, historical, pre–historical, archaeological, or scientific interest. The NHCC is also responsible for enforcing the World Heritage Convention 1992, under which the heritage sites (such as significant waterfalls) are included in the World Heritage list as World Heritage Sites.
Relevance: Construction works on the project may lead to the discovery of ancient heritage or relics which have to be reported to the Commission for identification and conservation
Compliance: During the ESIA study the Consultant shall pay particular attention to establishing the presence of any artefacts or objects of archaeological significance along the project corridor. The Commission will be informed about any findings.

The Roads and Traffic Act No. 2 of 2011

The Act makes provision for the care, maintenance and construction of roads in Zambia, for the control of motor traffic, for the licensing of drivers and motor vehicles, for the compulsory third party insurance of motor vehicles, for the licensing and control of public service vehicles and public services, and for other miscellaneous provisions relating to roads and motor traffic.

***Relevance*:** It is inevitable that during the different phases of the project, a number of vehicles (haulage) will be in operation delivering construction related material, which risk accidents.

***Compliance*:** The Developer and Contractor will ensure that all the vehicles used on the project are licensed, certified to be roadworthy, and insured. All drivers must have the necessary competences and valid licences for the type of vehicles they are driving.

The National Pensions Scheme Act No.7 of 2015

Section 3 of this Act stipulates the formation of the National Pension Scheme Authority. Some of the key responsibilities of NAPSA are registration of employers and employees, collection of contributions, enforcement of compliance, and investment of funds not immediately required for payment of benefits, processing of claims and payment of benefits and education of members.

Relevance: Employment of workers will be guided by the provisions of this Act.

Compliance: All the worker to be employed on the project will be registered and paid up on their contributions to NAPSA.

National Council for Construction Act No. 13 of 2003

An Act to provide for the establishment of the National Council For Construction and to define its functions :to provide for the promotion and development of the construction industry in Zambia; to provide for the registration of contractors; to provide for the affiliation to the Council of professional bodies or organizations whose members are engaged in activities related to the construction Industry; to provide for the establishment of the Construction School; to provide for the training of persons engaged in construction or in activities related to construction; and to provide for matters connected with or incidental to the fore-going.

Relevance: The proposed development will involve construction works and all the contractors will have to be registered with the National Council for Construction.

Compliance: All construction contractors to be engaged on the project shall be registered and be compliant with the National Council for Construction terms and conditions.

The Standards Act No. 4 of 2017

This is an Act to continue the existence of the Zambia Bureau of Standards and re-define its powers and functions; provide for standardization and quality assurance of products and services through the setting of national standards and provision of conformity assessment services for products and services.

Relevance: The development will require that materials (pipes, sand, stone, cement, machinery and other finished materials), food stuff and drinking water be transported to the site meet the prescribed national standards.

Compliance: All raw materials, drinking water and food staff and pipe works procurement, and all designs and layouts will be in compliance with the Zambia Bureau of Standards.

The Zambia Wildlife Act No. 14 of 2015

This Act provides for the establishment, control and management of National Parks, bird and wildlife sanctuaries and for the conservation and enhancement of wildlife eco-systems, biological diversity and objects of aesthetic, pre-historic, historical, geological, archaeological and scientific interest in National Parks; provide for the establishment, control and co-management of Community Partnership Parks for the conservation and restoration of ecological structures for non-consumptive forms of recreation and environmental education; provide for the sustainable use of wildlife and the effective management of the wildlife habitat in Game Management Areas; enhance the benefits of Game Management Areas to local communities and wildlife; involve local communities in the management of Game Management Areas; provide for the development and implementation of management plans; provide for the regulation of game ranching; provide for the licensing of hunting and control of the processing, sale, import and export of wild animals and trophies; provide for the implementation of the Convention on International Trade in Endangered Species of Wild

Fauna and Flora, the Convention on Wetlands of International Importance especially as Waterfowl Habitat, the Convention on Biological Diversity, the Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora and other international instruments to which Zambia is party; repeal the Zambia Wildlife Act, 1998; and provide for matters connected with, or incidental to, the foregoing.

Relevance: There may be wildlife species in the project area. Hence, there provisions of the Act need to be followed for the conservation of wildlife in the project area.

Compliance: Appropriate measures will be recommended in the Environmental Management Plan to boost wildlife conservation in the project area

Mines and Minerals Development Act (MMDA) NO.11 of 2015

The MMDA provides for the administration of the mining industry through the Ministry of Mines and Mineral Development. The Act outlines the different mining permits that can be obtained under this act i.e. small- and large-scale exploration or mine licenses, small or large-scale gemstone licenses, artisanal and mineral processing licenses. The Act also provides for royalties and taxes applicable to the sector.

Relevance: Project implementation will involve establishment of borrow pits and quarrying for aggregate stones by the contractor, which have to comply with the MMDA.
Compliance: The mining of borrow pits and quarrying for aggregate stones by the contractor for construction works have to comply with the MMDA.

The Tourism and Hospitality Act No. 13 of 2015

The Act provides for the sustainable development of the tourism industry through effective tourism planning, management, promotion, and coordination to ensure sustainable tourism; provide effective mechanisms for coordination amongst the Government, private sector, and local communities for the sustainable development of tourism through public- private partnerships and community participation; provide for integration of tourism into national development planning, budgeting and decision-making processes related to infrastructure development, environmental management and protection and empowerment of local communities; strengthen linkages and co o-ordination between tourism development and key subsectors such as arts and culture, heritage, transport, education, energy, forestry, fisheries, wildlife, and water resource management.
Relevance: The construction works may disturb, damage or destroy potential sites for tourism development if maximum care is not taken during line corridor selection.
Compliance: During the ESIA study, measures will be put in place for the preservation of sites with potential for tourism development.

Anti-Gender Based Violence Act (2011)

The Anti-Gender Based Violence Act of 2011 is a major step towards the fight against gender-based violence (GBV) in Zambia. GBV is defined as a hindrance to the attainment of gender equality and the realisation of the social and economic goals of Zambia, as it erodes the confidence of the survivors that they can contribute to development efforts. Gender-based violence (GBV) in Zambia takes the form of physical, mental, social or economic abuse against a person because of that person's gender and includes violence that may result in physical, sexual or psychological harm and suffering to the victim. It may also include threats or coercion, or the arbitrary deprivation of liberty, whether in public or private life.

Relevance: There is the possibility of GBV and sexual abuse to occur among the workers. Hence, this Act is relevant.

Compliance: The project will enforce the provisions of the GBV Act to ensure that issues of GBV are adequately addressed at construction sites among the workers and between the workers and the communities.

Arbitration Act No. 19 of 2000

This Act provides for arbitration in cases where the land owner/occupier does not agree with the amount of compensation being offered. Under section 12 (2) of the Act, the parties to arbitration are free to determine the procedure for appointing the arbitrator or arbitrators. Section 12 (3) (b) states that if the parties are unable to agree on the arbitration, another arbitrator shall be appointed, upon request of a party, by an arbitral institution.

Natural Resources Conservation Act, Cap 315, 1970

The Act relates to the monitoring of natural resource conservation and utilization outside forest reserves and national parks, as well as control of bush fires and powers of Minister to make regulations.

Fisheries Act, 2011

The Act promotes the sustainable development of fisheries and a precautionary approach in fisheries management, conservation, utilisation and development; establish fisheries management areas and fisheries management committees; provide for the regulation of commercial fishing and aquaculture; establish the Fisheries and Aquaculture Development Fund.

Gender Equity and Equality Act, 2015

The Act promotes gender equality and elimination of economic and social discrimination in Zambia. The Minister, through consultations with relevant Ministers, implements special measures on gender equity and equality to meet challenges faced by women living in rural and peri-urban areas. As the Anti-Gender-Based Violence Act, this Act describes the type of discrimination that women face, including GBV, and describes the rights of GBV victims and the procedure for filing complaints.

Electricity Act No.433 of 1995

Provides for the regulation of the generation, transmission, distribution and supply of electricity; and provides guidance on the matters connected with or incidental to the foregoing, and to ensure ZESCO power projects and operations are carried out in line with the provisions of the Electricity Act.

Energy Regulation Act Cap. 436, 1995

The Act creates the Energy Regulation Board (ERB). The role of the ERB, among other functions, is to ensure all energy utilities in the sector are licensed, to monitor levels and structures of competition, and to investigate and remedy consumer complaints.

Rural Electrification Authority Act No 20 Of 2003

The Zambia Rural Electrification Authority (REA) is a statutory body created through Act No.20 of 2003, to spearhead development of electricity infrastructure in rural areas to facilitate access to electricity. REA's objective is to increase access to electricity for most of Zambians. It is also committed to improving the quality, efficiency and performance of the electricity industry in Zambia, through both established and more contemporary modes of power generation.

A summary of legal and institutional outline is illustrated in the table below.

Table 1: Summary of Legal and Institutional Management

Legal Instrument	Main Provisions	Responsible Institutions	Relevance to the Project
Environment and Natural Resources Management			
Environmental Management Act No.12 of 2011	To protect the environment and control pollution, to provide for the health and welfare of persons, animals, plants, and the environment. The Act covers water, air, waste, pesticides and toxic substances, noise, ionizing. radiation, and natural resources, etc.	Zambia Environmental Management Agency, Ministry of Green Economy and Environment	EIA approval decision letter is necessary for project implementation and environmental monitoring to continue throughout the project phases
Natural Resources Conservation Act, Cap. 315 of 1970	Conservation and improvement of natural resources and control of bush fires.	Ministry of Green Economy and Environment	Monitoring of natural resource conservation and utilization aspects
Local Administration (Trade Effluent) Regulations, No. 161 of 1986	Standards for and regulates discharging of effluent into aquatic environment and define permissible effluent limits for industry	Local Councils	Responsible for management of domestic and industrial waste
Town and Country Planning Act, Cap 283 of 1962	Provides for the appointment of planning authorities, the preparation approval and revocation of development plans, and the control of development and subdivision of land	Local Councils	Approvals of construction and area plans
Water Resources Development and Management			
Water Supply and Sanitation			
The Water Supply and Sanitation Act No. 28 of 1997	Framework for providing and regulating water and sanitation services to all areas. Creates the Council (i.e., NWASCO) which administers the Act	Ministry of Local Government & Housing; NWASCO	Regulation of water supply and sanitation services
Forestry Resources Management			

Legal Instrument	Main Provisions	Responsible Institutions	Relevance to the Project
The Forest Act No. 7 of 1999	Control, manage, conserve, and administer National and Local forests; Participation of local communities, traditional institutions, and NGOs; Conservation and sustainable use of forests and trees; and Implementation of International Instruments.	Zambia Forestry Commission (yet to be formulated). Currently run by the Department of Forestry	Coordination and management of the protected forest areas and open forests.
Wildlife Resources Management			
The Zambia Wildlife Act, No. 12 of 1998	To control and manage national parks, GMAs and bird sanctuaries for the purposes of conserving and enhancing wildlife ecosystems.	Department of National Parks and Wildlife	To protect both wildlife and forest resources
Fisheries Resources Management			
Fisheries Act, Cap 200 of 1974	Provides for development of commercial fishing and the registration of fishermen and their boats and the protection of endangered fish species	Ministry of Fisheries and Livestock	Promotion of conservation of fish species in the water bodies.
Mining Activities			
Mines and Minerals Act, No. 31 of 1995	Regulates the law relating to mines and minerals	Ministry of Mines Energy and Water Development	To preserve the area if minerals are found and regulation of mineral resources exploitation.
Agriculture			
Agriculture (Fertilizer and Feed) Act, No. 226 of 1990	Regulates and controls the manufacture, processing and importation and sale of agricultural fertilizers and feed, and establishes minimum standards and purity	Ministry of Agriculture	Soil fertility conservation.
Cultural Aspects			
National Heritage Conservation Act No. 23 of 1989	Protection of heritage sites, archaeological sites, and artifacts.	National Heritage Conservation Commission	Monitoring and management of all identified cultural and archaeological sites in the area
Energy Management			
Energy Regulation Act Cap. 436 of 1995	Regulates prices for electricity, petroleum products and other energy related products	Energy Regulation Board	License for energy generation, transmission and trading required.
Electricity Act No.433 of 1995	Generate, Transmit and Distribute electricity in Zambia	Ministry of Energy, and Energy Regulation Board	It is the governing Act for the operations of the power station, transmission and distribution power lines.
Lands Management			

Legal Instrument	Main Provisions	Responsible Institutions	Relevance to the Project
The Lands Act Cap. 288 of 1995	Controls the alienation of land for various uses by developers.	Ministry of Lands	Governs the acquisition of land to be used for the development of the transmission line

2.3 International Environmental Conventions and Protocols to which Zambia is a Signatory

Zambia has the mandate to ensure that all activities being implemented within the country do not only comply with the local legislation but also fits well with international requirements. Zambia is party to more than thirty International and Regional Conventions and Protocols. The most relevant environmental conventions in relation to the undertaking are:

- Convention dealing with the Protection of the World Cultural and Natural Heritage (1972) and ratified by Zambia in 1982.
- Statutes of the International Union for the Conservation of Nature and Natural Resources (IUCN).
- Convention on International trade in Endangered Species of the wild fauna and flora (CITES), 1993.
- RAMSAR Convention and Bonn Convention.
- Zambia has also ratified the Basel Convention (1994) which regulates transboundary movements of hazardous wastes.

Some of the conventions are discussed below.

(a) African Convention on the Conservation of Nature and Natural Resources, 1968

This convention advocates for the conservation and sustainable management of biodiversity, with a particular focus on critical ecosystems such as lakes and rivers.

Relevance: The project has significant implications for soil preservation, water resources, and the protection of local flora and fauna.

Compliance: The project will implement mitigation measures in line with the convention's principles to prevent project-induced soil erosion and anthropogenic impacts that could lead to the dominance of single species.

(b) The Convention on Biological Diversity, 1992

Originating from the Rio Agenda 21, this convention emphasizes the conservation and protection of biodiversity globally. It establishes principles for biodiversity management strategies, including specific measures to address the threat of invasive species. The convention also integrates principles of equity and intellectual property rights in line with Agenda 21.

Relevance: The project's construction phase involves the clearing of vegetation, which directly impacts the local biodiversity.

Compliance: The project will strictly adhere to the convention's provisions, ensuring that biodiversity in the area is preserved and protected throughout its lifecycle.

(c) United Nations Framework Convention on Climate Change, 1992

The Convention rallies parties to take action to reverse anthropogenic factors responsible for the accelerated climatic variations seen through changing temperatures due to an accelerated build-up of Green House Gases (GHGs) resulting from unsustainable industrialization models or technologies.

Relevance: Evidence of climate change is now common knowledge. The project may contribute to climate change due to increase in the emissions from the machinery, dust generation and tree removal during construction phase.
Compliance: The project will act responsibly starting from the design stage to void carbon dioxide emissions and use best technologies to reduce its emissions and impacts in regard to climate change. Most importantly, the removal of trees will be avoided, and were necessary minimised and trees removed compensated for.

(c) Stockholm Convention on Persistent Organic Pollutants, 2004

Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs). POPs are defined as “chemical substances that persist in the environment, bioaccumulate through the food web, and pose a risk of causing adverse effects to human health and the environment”. Key elements provided for in Articles 1, 3, 5, 6, and 11 of the Convention include the requirement that developed countries provide new and additional financial resources and measures to eliminate production and use of intentionally produced POPs, eliminate unintentionally produced POPs where feasible, and manage and dispose of POPs wastes in an environmentally sound manner.

Relevance: Transformers and other electrical equipment use industrial oil for cooling and lubrication, which may contain POPs.

Compliance: The project will ensure that use of POPs in electrical equipment is not allowed to meets the requirements of this protocol.

(d) **Ramsar Convention**

The general objective of the Ramsar Convention is to curtail the loss of wetlands and to promote prudent use of all wetlands. The convention addresses one of the most important issues in Southern Africa, namely the conservation of water sources and use of the natural and the human environments in an intergenerational equitable manner.

Relevance: - The project may bring about surface and underground water pollution and, therefore the convention will be adhered to.

Compliance: The effluent prone areas will be made of concrete to ensure that all the spillages are contained before contaminating the underground water. The machines will be installed and maintained on concrete bases.

(e) **Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal**

The objective is to control import and export of hazardous wastes. It also aims at ensuring that any trans-boundary movement and disposal of hazardous waste, when allowed, is strictly controlled and takes place in an environmentally sound and responsible manner.

Relevance: - Hazardous wastes may be generated and disposed of during the construction and operation phases of the project.

Compliance: Maximum control measures shall be put in place to ensure that their transportation and disposal is done in accordance with provisions of this Convention.

(f) **Convention on Migratory Species and the African – Eurasian Water Bird Agreement**

Like other migratory species, water birds cross several international borders during their migration, facing a wide range of threats. Without international cooperation, conservation efforts of one country can be meaningless if these birds are not protected in another country.

Relevance: - These species require protection in accordance with this Convention.

Compliance: Maximum measures will be put in place to ensure that workers do not kill any birds around on the project site.

2.4 International Environmental and Social Standards

This section establishes the foundation for conducting the Environmental and Social Impact Assessment (ESIA) for the Malawi-Zambia 400 kV Transmission Interconnector Project. The project is committed to meeting international best practices in environmental and social performance by adhering to standards set by key international stakeholders, including Swedfund and the European Investment Bank (EIB). These standards provide a framework for identifying, assessing, and managing environmental and social impacts and implementing mitigation measures to minimize adverse effects on the environment and communities.

(a) Swedfund's Policy for Sustainable Development

Swedfund, as a development finance institution, is committed to contributing to sustainable development. This involves promoting economic growth, environmental sustainability, and social inclusion in the markets where we operate.

Vision and Mission

- Vision: To contribute to poverty reduction through sustainable investments.
- Mission: To provide risk capital, expertise, and financial support to businesses in developing countries.

Sustainable Investment Principles

- Economic Viability: Ensuring investments are financially sustainable and contribute to long-term economic growth.
- Environmental Responsibility: Minimizing environmental impact by promoting efficient use of resources, reducing emissions, and supporting renewable energy projects.
- Social Inclusion: Upholding human rights, improving working conditions, and fostering gender equality and community development.

Strategic Objectives

- Impact Measurement: Regular assessment of the social, environmental, and economic impacts of investments.
- Transparency and Accountability: Maintaining open communication and reporting on sustainability performance.
- Capacity Building: Strengthening the capabilities of investees to manage sustainability challenges effectively.

Implementation Framework

- Due Diligence: Rigorous screening and evaluation of potential investments for compliance with sustainability criteria.
- Monitoring and Evaluation: Continuous monitoring and periodic evaluation to ensure adherence to sustainability standards and objectives.
- Stakeholder Engagement: Collaborating with stakeholders, including local communities, governments, and other investors, to enhance the sustainability impact.

Environmental and Social Governance (ESG)

- Policy Integration: Embedding ESG considerations into all investment decisions and management processes.
- Risk Management: Identifying and mitigating potential ESG risks associated with investments.
- Compliance: Adhering to international standards and best practices in ESG.

Commitment to International Standards

Aligning with global frameworks such as the United Nations Sustainable Development Goals (SDGs), Paris Agreement, and International Labour Organization (ILO) standards.

Conclusion

Swedfund is dedicated to fostering sustainable development through responsible investments. By integrating economic, environmental, and social considerations into its investment strategy, Swedfund aims to create lasting positive impacts in the communities where it operates.

(b) European Investment Bank Environmental and Social Standards

The EIB Performance Standards set out the underlying principles for sustainable project management, including impact/risk assessment, mitigation strategies, public consultation and performance monitoring. Their relevance to the Project is briefly summarized below:

EIB PERFORMANCE STANDARD 1: Assessment and Management of Environmental and Social Impacts and Risks.
This standard establishes the requirement environmental and social considerations throughout the life of a project through initial baseline studies and identification of risks and impacts, establishment of management programmes that describe mitigation and performance improvement measures and actions to address identified risks and impacts, stakeholder engagement and application of management system to monitor and improve performance.

EIB PERFORMANCE STANDARD No. 2: Pollution Prevention and Abatement
The EIB defines pollution prevention as avoidance of any deterioration in the quality of human health or the environment, and any loss of biodiversity, by avoiding, reducing and, if possible, compensating/remedying significant adverse effects of projects in line with current internationally disseminated technologies and good practice. The standards deals with an integrated approach to prevention and control of emissions into air, water and soil, to waste management, to energy efficiency and to accident prevention for the protection of the environment as a whole and therefore, avoiding the shift of pollution from one environmental medium to another.

EIB PERFORMANCE STANDARD NO. 3: BIODIVERSITY AND ECOSYSTEMS
Sets out a commitment approach to development that protects and conserves biodiversity, including habitats, species and communities, ecosystem diversity, and genes and genomes, all of which have potential social, economic, cultural and scientific importance that is compatible with maintaining the resilience of ecosystems and their functions and processes in order to achieve at least no net loss of biodiversity and ecosystem services.

EIB Performance Standard No. 4 CLIMATE-RELATED STANDARDS
Sets out to promote climate-friendly strategies by promoting climate change mitigation projects in various sectors and promoting the adoption of energy efficient solutions in the projects by mainstreaming climate risk considerations generally into the project cycle and to promote Adaptation projects or projects with adaptation components and measures, in the interests of long term sustainability.

EIB PEFORMANCE STANDARD No. 5: CULTURAL HERITAGE
This standard recognizes the significance of cultural heritage as part of individual and collective identity, its central role in supporting the objectives of sustainable development and the promotion of cultural diversity and aims to protect irreplaceable cultural heritage and to provide guidance for protecting cultural heritage throughout a Project's life cycle.

EIB PERFORMANCE STANDARD NO. 6: INVOLUNTARY RESETTLEMENT
Outlines a policy to avoid or minimize involuntary physical resettlement as a consequence of the project. Where it is unavoidable, it requires suitable measures to mitigate adverse impacts on affected stakeholders, including appropriate compensation for any economic displacement such as loss of subsistence or commercial livelihood.

EIB PERFORMANCE STANDARD No.7: RIGHTS AND INTERESTS OF VULNERABLE GROUPS
The standard highlights the need for some indigenous people (individuals or groups) who may be less resilient to risks and adverse impacts than others. Within the context of EIB operations, individuals and/or groups who are at a higher risk of being unable to anticipate, cope with, resist and recover from project-

related risks and/or adverse impacts are considered vulnerable. Vulnerable individuals or groups may include women, children, the elderly, the poor, ethnic, religious, cultural or linguistic minorities, or indigenous groups may have their land and resources are encroached upon by or significantly degraded by a Project). Their languages, cultures, religions, spiritual beliefs, and institutions may also be under threat.

EIB PERFORMANCE STANDARD 8: LABOUR STANDARDS

Highlights the need for good labour practices and the use of appropriate codes of conduct as important elements to protect the reputation of firms, and further amplifies the need for workers' rights regarding income generation, employment creation, relationship management, commitment to staff, retention and staff benefits. It identifies and outlines the need to provide workers with a safe and healthy working environment. This Performance Standard is guided by international conventions.

EIB PERFORMANCE STANDARD No. 9: OCCUPATIONAL AND PUBLIC HEALTH, SAFETY AND SECURITY

Highlights the need for access to health, education or social protection arising from exposure to hazards, risks and negative impacts in terms of public health and safety. The standard promotes the protection of the health and safety of employees at work throughout the project life cycle by ensuring safe, healthy, hygienic and secure working and accommodation conditions and, effectively, a working environment that respects and safeguards the right to privacy, and when appropriate, to the enjoyment of the highest attainable standard of physical and mental health of workers and their families(e.g. in workers accommodation) which may arise through or be amplified by project-related occurrences such as increased environmental pollution, elevated noise levels the spread of communicable diseases or disproportionate use of violence by private or public security forces. Considerations should also be given to occupational health and safety issues arising in the context of projects.

EIB PERFORMANCE STABDARD No. 10 STAKEHOLDER ENGAGEMENT

Stakeholder Engagement is defined as an inclusive and iterative process that involves, in varying degrees, stakeholder analysis and engagement planning, timely disclosure and dissemination of/access to information, public consultations and stakeholder participation, and a mechanism ensuring access to grievance and remedy. It outlines the process of engagement and stresses the value of public participation in the decision-making process throughout the preparation, implementation and monitoring phases of a project.

Environmental, Health and Safety Guidelines

The EIB EHS Guidelines were designed to broadly define 'good international industry practice' and set specific minimum design and operating standards (such as for emissions, discharge or exposure limits) in regard to the environment, occupational health and safety, community health and safety, and life cycle impacts including during construction, operation and decommissioning.

The detail in these standards is generally derived from globally recognised sources (such as the World Health Organisation) and are basically intended for application where host government's legislation is either not available or is potentially deficient in regards to good international practice. Stipulated performance levels and measures are "generally considered to be achievable in new facilities by existing technology at reasonable costs".

The General EHS Guidelines are designed to apply to all projects and all sectors, but the detailed requirements can be superseded by sector guidelines, where factors such as facility size, technology and associated impacts merit specific attention. The specific industry sector EHS Guidelines that may be applicable to the proposed project include the guidelines on Waste Management Facilities, Mining and Water and Sanitation.

2.5 Corporate Standards and Guidelines

The ESIA Study will take into consideration the following Corporate environmental and social standards developed by ZESCO.

(a) Environmental and Social Impact Assessment, No: BD.15100.SPPR.00002 of 23/05/2016.

The purpose of this Procedure is to provide guidance on how to conduct an effective environmental and social impact assessment study on all ZESCO projects. The Assessment is aimed at prudent identification of positive and negative impacts so as to avoid or mitigate negative impacts, while enhancing the positive ones. This Procedure highlights the various steps taken to assess environmental and social impacts, risks and opportunities of projects. It also provides a planning framework for the following:

a) The possible integration of environmental and social considerations throughout the life cycle of projects (from planning to operation, and even decommissioning);

b) Provides a framework for effective dialogue with stakeholders through engagement, consultation and disclosure of project-related information on matters that directly affect them;

c) Offers a framework for the systematic consideration of the environmental and social effects and the formulation of measures to mitigate the negative and enhance the positive ones; and

d) Identifies mechanisms aimed at implementing management/mitigation measures.

(b) Resettlement and Compensation Action Plan, No: BD.15100.SPPR.00003 of 23/05/2016

The purpose of this Procedure is to provide guidance in the planning and execution of involuntary resettlement associated with ZESCO projects and operations. The Procedure will apply to any project and operation that may result in the loss of assets, the impairment of livelihood, or the physical relocation of an individual, household, or community. This Procedure identifies the socio-economic impacts of projects and operations and provides guidance on the mitigation options. It also provides a planning framework for the following:

a) Compliance with local and international resettlement and compensation management regulations and procedures on how to deal with Project Affected Parties (PAPs);

b) Full and fair compensation of all PAPs where involuntary resettlement is unavoidable; and
c) Consultation and involvement of all parties affected by involuntary resettlement in the resettlement planning process to ensure that the mitigation of adverse effect as well as the benefits of resettlement are appropriate and sustainable. The ultimate goal of a RCAP is to enable those affected or displaced by a project to be fairly and adequately compensated to improve their standard of living—a goal that requires an examination of social, environmental, and economic conditions beyond simple physical inventories.

(c) Environmental and Social Management Plan No: BD.15100.SPPR.00005 of 23/05/2016

The purpose of this Procedure is to provide guidance on how to develop and implement comprehensive

Environmental and Social Management Plans (ESMPs) for all ZESCO projects and operations. It also outlines the duties and responsibilities of the Developer and the Contractor with respect to environmental management and protection during construction and operation phases of Projects. The procedure ensures compliance with local and international environmental and social laws, regulations and guidelines. Further, the Procedure provides a framework for the planning, preparation, implementation, monitoring and review of the ESMP.

2.6 Institutional Framework

The key national institutions and agencies pertinent to this project include:

- Ministry of Infrastructure, Housing, and Urban Development
- Zambia Environmental Management Agency (ZEMA)
- Energy Regulation Board (ERB)
- Local Authorities: Chipata City Council and Vubwi Town Council
- Local Traditional Chiefs along the transmission line corridor
- Department of National Parks and Wildlife
- Department of Forestry
- The Contractor
- Department of Mines and Mineral Development

The roles and responsibilities of each of these statutory bodies, as they relate to this project, are detailed below.

(a) Ministry of Infrastructure Housing and Urban Development

The Ministry of Infrastructure, Housing and Urban Development (MIHUD) is responsible for overall policy formulation and monitoring of the infrastructure developments. The Ministry oversees the construction and civil engineering activities to the extent that they should not adversely affect the environment. The Government Valuation Department (GVD), located in the Ministry of Infrastructure, Housing and Urban Development. GVD is responsible for the preparation of Valuation Reports upon request from a user Ministry or Institution such as ZESCO. The Valuation reports form a basis for the fair compensation of project affected persons that may have their structures affected by the rehabilitation of the project. Further GVD will play a big role in the resolution of disputes relating to the valuation amounts as part of the grievance redress mechanism.

(b) ZESCO

ZESCO will be responsible for the overall management, supervision and execution of the Project through a Project Implementation Unit (PIU) that will be established. ZESCO shall hire a Project Management Consultant (PMC) to design the construction works and supervision of the proposed construction works. ZESCO will procure the Contractor following the EIB's procurement policy for carrying out the construction activities of the Project. The specific role of the PIU shall be to:

- Assist the PIU in drafting the Environmental, Social, Health and Safety requirements in the bidding and contract documents in accordance with the ESMP;

- Supervise the contractor's work to ensure compliance with the environmental, social, health and safety requirements of the bidding documents and ESMP. Provide recommendations for implementation of corrective actions for any non-compliances and suggest improvements for contractor's performance;
- Prepare quarterly progress reports on the implementation of the ESMP for transmission to the financiers throughout the project implementation period; and
- ZESCO will implement the RAP in conjunction with respective district local governments of Chipata and Vubwi.

(c) District Councils and Traditional Leadership

Local Councils and Traditional leadership are responsible for local policy matters, economic development, resolution of local conflicts and the provision of leadership in their respective areas. City and District councils and traditional leaders are key players in the mobilisation of local people's participation in developmental programmes such as the proposed project. Further, the local and traditional authorities may play a role in the recruitment of workers on the project.

(d) Zambia Environmental Management Agency (ZEMA)

ZEMA is empowered under the Environmental Management Act (EMA), No. 12 of 2011 to ensure that major developmental activities in Zambia adhere to the provisions of the Environmental Impact Assessment (EIA) Regulations of 1997. It is a requirement under the EIA regulations that any road rehabilitation/construction project exceeding 10Km should undergo an EIA process before the commencement of civil works. Upon the successful conclusion of the EIA, ZEMA issues a Decision Letter to either approve or disapprove such a project.

(e) The Department of National Parks and Wildlife

The presence of the project contract workers could provide a market of game meat; therefore, the Department will play an important role to mitigate against illegal wild animals' offtake through sensitisations to the workforce on the provisions of the Wildlife Act and prevention of the contractor workers providing a market for illegal game meat.

(f) The Department of Forestry

The project activities will result in the removal of some trees, which will have to be compensated for by planting replacement trees. The Department of Forestry will play a key role in raising of tree nurseries, work with the community and other stakeholders who will be involved in the compensatory tree planting programme.

(g) Mines and Minerals Development Department (MMDD)

The cadastre Office at the Ministry of Mines and minerals Development, under the Department of Mines and Minerals is responsible for issuing mining licences. The project will require industrial minerals inputs like gravel, laterite and stone aggregate for the civil works on the project. These materials have to be sourced locally and mined under licences for borrow material extraction and quarrying operations. The mining licence stipulates the environmental clearance, mining methods and the safe use of explosives and other hazardous substances.

3. PROJECT DESCRIPTION

3.1 Project Components

The proposed transmission line project will have two components:

- Construction of the 400kV transmission line between Chipata West Substation and Zambia – Malawi border at Mwami covering approximately 46km.
- Expansion of Chipata West Substation to accommodate a new busbar arrangement and associated infrastructure.

3.2 Construction

3.2.1 Overhead Transmission Line

The works for the proposed construction of the 400kV transmission line between Chipata West Substation and Mchinji at the Malawian border will include the following activities;

- Carrying out bush (vegetation, trees and anthills) clearing, route survey and profiling, tower spotting, conductor profiling;
- Supplying and erection of all foundations complete with stubs;
- Supplying and erection of suspension towers;
- Supplying and erection of tension towers;
- Supplying and erection of insulators, fittings and hardware;
- Supplying and stringing of conductors, one per phase complete with vibration dampers;
- Supplying and stringing of earth wires and OPGW complete with vibration dampers;
- Supplying and installation of earthling counterpoise wire; and
- Supplying bolts, nuts, washers and other materials as specified in Bill of Quantities, to the extent required to complete the line installation.

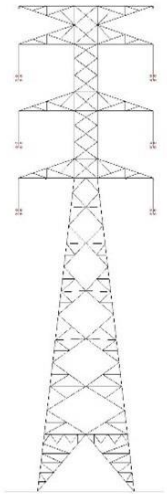

Figure 3: Typical tower configuration for 400 kV OHL

The number, type and location of towers is currently under study.

3.2.2 Substation

Chipata West Substation will be expanded to accommodate a new busbar arrangement and associated infrastructure. The works shall include the following:

- Line Bay and Transformer Bay;
- Transformers and Busbars;
- Auxiliary AC and DC Supply Systems;
- Earthing System;
- Control system;
- Protection System;
- Metering system

Structural Steelwork shall include supports for the isolating switches, circuit breakers, current and voltage transformers, operating cubicles, etc., including foundations bolts and other fixing material; and b) (one) complete set of gantry towers and support structures for the busbars, line bay, bus coupler and transformer bays.

Civil works for the Substation shall include the following:

- Bush clearing, including anthills and all trees, if available;
- Earthwork on the platform;
- Complete soil testing and results for engineering foundations;
- Necessary draining;
- Transformer oil pits, bund walls, fire walls and foundations;
- Support and Gantry foundations, including holding-down bolts;

- Cable ducts and covers;
- Control building, with battery room, Relay and Control Room
- Perimeter fence;
- Stone chippings in the extended substation area;
- Landscaping and replanting of vegetation (trees and grass)

Figure 4: Existing Chipata West Substation

Decommissioning of any of the existing substation infrastructure or equipment is not anticipated during construction.

3.3 Operation and Maintenance

The Project shall be declared operational once all pre-commissioning tests and activities are completed and the line energized. Routine operation and maintenance of the transmission line, the wayleave (vegetation control) and other technical inspections (line patrols), general line performance and normal switchings shall constitute the operational phase of the Malawi – Zambia 400kVtransmission line.

The transmission line, including the substation, shall be operated and maintained by ZESCO, in accordance with standard procedures designed to ensure the integrity of the transmission system. Routine inspections will be conducted on the transmission line to ensure line security and public safety. During operation, routine maintenance of the transmission line will be carried out during annual wayleave maintenance by ground patrol. The vegetation along the wayleave will be controlled to minimize conducting power to the ground and ground clearances are not to be exceeded.

ZESCO currently uses mechanical bush clearing control of vegetation according to the ZESCO wayleave maintenance guidelines.

3.4 Decommissioning

The transmission line and associated infrastructure will be designed, operated, and maintained to ensure long-term safe and efficient service. When components of the power line infrastructure eventually reach the end of their lifecycle, the decommissioning process will aim to address essential environmental considerations and meet all regulatory requirements.

Decommissioning and abandonment plans will be developed in accordance with ZEMA regulations. Key environmental aspects to consider in the decommissioning plan include:

- **Soil and Land Quality**: Potential risks to soil quality, including contamination from materials or components, must be evaluated, with specific attention to ensuring the site is left clean and safe for future use.
- **Vegetation Restoration**: Where necessary, restoration of vegetation will help return the site to a condition similar to its pre-project state, facilitating natural habitat recovery.
- **Waste Management**: Plans for managing decommissioned materials will prioritize re-use and recycling where feasible to minimize waste and environmental impact.
- **Water Resources**: Protection of any nearby water sources will be essential to prevent contamination during the removal of structures and materials.

3.5 Anticipated Wastes from the Project Cycle

The project will be made up of four phases namely preparation, construction, operation and decommissioning phase. Each of the phases comprises a series of activities contributing to overall attainment of the project objectives. The proposed project will produce several by-products (waste), may require careful management to minimize negative impacts.

- **Vegetation Clearance and Habitat Disturbance:** The construction of the transmission line will involve the clearance of vegetation along the right-of-way, which may result in habitat disturbance for local wildlife and loss of biodiversity. This by-product of the project will need to be managed through careful planning and the implementation of mitigation measures, such as reforestation and habitat restoration programs, to minimize environmental impacts.

- **Soil Erosion and Sedimentation:** The earthworks associated with the construction of the transmission line and substations may lead to soil erosion, particularly in areas with steep slopes or loose soils. This could result in increased sedimentation in nearby water bodies, affecting water quality and aquatic ecosystems. Erosion control measures, such as the installation of silt fences and the stabilization of exposed soils, will be necessary to manage this by-product.

- **Construction Waste and Debris:** The construction activities will generate waste materials, including scrap metal, concrete, packaging, and other debris. Proper waste management practices, including recycling and the safe disposal of non-recyclable materials, will be essential to prevent environmental contamination and ensure compliance with environmental regulations.

- **Noise and Dust Generation:** During the construction phase, activities such as excavation,

transportation of materials, and the operation of heavy machinery will generate noise and dust. While these impacts are temporary, they may affect the quality of life for nearby residents and wildlife. Mitigation measures, such as dust suppression techniques and noise barriers, will be implemented to minimize these by-products.

- **Sewerage Waste:** Sewerage waste will be generated in the residential camps and work stations during construction phase and will be managed by the use of toilets. During operation phase all sewage will be discharged through appropriate pit latrines, underground sewer lines into the proposed septic tank and soak away system.

- **Hazardous waste:** During construction, operation and commissioning of the project, hazardous waste generated, which includes material soiled with oil, will be stored in a hazardous waste site and will be dispose in accordance with ZEMA guidelines.

The Project will produce a range of primary products that enhance regional energy infrastructure and security, alongside several by-products that require careful management to mitigate environmental and social impacts. The successful implementation of the project will depend on balancing these outcomes to achieve the intended benefits while minimizing potential negative effects.

4. EIA SCOPE OF WORK

4.1 General Scope

The proposed ESIA study will be carried out in accordance with the ZEMA approved guidelines and requirements scheduled under S.I. 28 of the EIA regulations of 1997, read together with other relevant national and international regulations.

The study area will cover the area along the proposed transmission line route and the immediate surroundings. The study will also include any nearby communities and adjacent features which are likely to be affected by the project construction and operations. Air quality, water quality, biodiversity, socioeconomic and cultural heritage investigations are some of the tasks to be undertaken. The project area is already disturbed by human activities such as farming, settlements and other economic activities. The ESIA will be conducted by a multidisciplinary team of experts who are specialised in different environmental and social fields.

4.2 Spatial Extent of the Boundaries of the study

The EIA study area covers a total of 46km in Chipata and Vubwi districts. In terms of constituencies, the power line will pass through Chipata, Luangeni and Vubwi constituencies. Of special interest to the ESIA study are the settlements, forests, rivers, farms, cultural sites, economic activities and other environmental and social characteristics of the area.

The spatial scope generally varies depending on the type of impact being considered. It includes all areas within which impacts are likely to occur, and takes into account the following considerations:

- The physical extent of the proposed works, defined by the limits of land to be used (temporarily or permanently) by the project.
- The nature of the baseline environment and the manner in which impacts are likely to be propagated beyond the project boundary.

For the purpose of the EIA, the area of influence for the proposed project has been defined as the area in which a direct or indirect impact on the physical, natural, social or cultural environment might occur. For the detailed analysis of the current baseline of the Project, the following areas of influence have been defined:

- For environmental impacts, the immediate area of influence is defined as the area within the 50m wayleave, the surrounding areas and areas where auxiliary project facilities will be located i.e. construction camps, lay-down areas, workshops, storage facilities, access roads, etc. All area which will be affected by project activities, both on-site and off-site, will be considered in the EIA study.
- For socioeconomic impacts, a direct area of influence is within the 50m wayleave. Settlements within 1km from the power line will be considered as well as they will suffer the impacts that may occur from changes to land use, disruption to infrastructure and reduced environmental quality.
- For cultural heritage impacts, the area of influence is delineated by the physical footprint of the proposed installations.

Specific areas of influence for certain receptors is in some cases wider than 50m line corridor. For these cases, specific areas of influence will be defined:

- The discharge areas of rivers directly or indirectly affected by project activities;
- Mobile species that may travel across the site (on migration) or may be associated with a protected area and use other habitat in the wider area (as often occurs with bird species and estuaries) and therefore could be directly or indirectly affected by project activities;
- Major populated areas outside the 50m line corridor, that may be directly or indirectly affected by project activities.

4.3 EIA Work to be Undertaken and Tasks to be Performed

Following the scoping phase, the preparation of the Environmental Impact Assessment (EIA) will proceed with the following steps:

1. **Baseline Data Collection**
    - Conduct comprehensive surveys to gather data on the current environmental, socio-economic, and cultural heritage conditions within the project area. This includes field studies, consultations with local communities, and analysis of existing data sources.
2. **Impact Identification and Assessment**
    - Identify potential environmental, social, and cultural impacts associated with the project activities. Assess the significance and magnitude of these impacts, considering factors such as the extent, duration, and reversibility of the effects.
3. **Mitigation and Enhancement Measures**
    - Develop and propose mitigation measures to avoid, minimize, or compensate for identified adverse impacts. Simultaneously, identify opportunities to enhance positive impacts. These measures will be integrated into the project design and implementation plans.
4. **Stakeholder Consultation**
    - Engage with stakeholders, including local communities, government agencies, and relevant organizations, to gather input and feedback on the potential impacts and proposed mitigation measures. Ensure that the concerns and suggestions of stakeholders are considered in the final ESIA report.
5. **Environmental and Social Management Plan (ESMP) Development**
    - Prepare an ESMP that outlines specific actions, responsibilities, timelines, and monitoring protocols for implementing the identified mitigation and enhancement measures. The ESMP will serve as a guide for managing environmental and social risks throughout the project lifecycle.
6. **Preparation of the Draft ESIA Report**

- Compile the findings from the baseline studies, impact assessments, and stakeholder consultations into a draft ESIA report. The report will include detailed descriptions of the project, potential impacts, proposed mitigation measures, and the ESMP.

7. **Public Disclosure and Review**

   - Present the draft ESIA report to stakeholders and the public for review and feedback. This step ensures transparency and provides an opportunity for stakeholders to voice their opinions and concerns before the finalization of the ESIA report.

8. **Finalization of the ESIA Report**

   - Incorporate feedback from the public review process and finalize the ESIA report. The final report will reflect a comprehensive analysis of potential impacts and include all agreed-upon mitigation and enhancement measures.

9. **Regulatory Approval**

   - Submit the final ESIA report to the Zambia Environmental Management Agency (ZEMA) for review and approval. Compliance with national and international environmental regulations and standards will be ensured throughout this process.

5. EIA METHODOLOGY

5.1 EIA Approach

The approach for the preparation of the EIA is presented in the figure below.

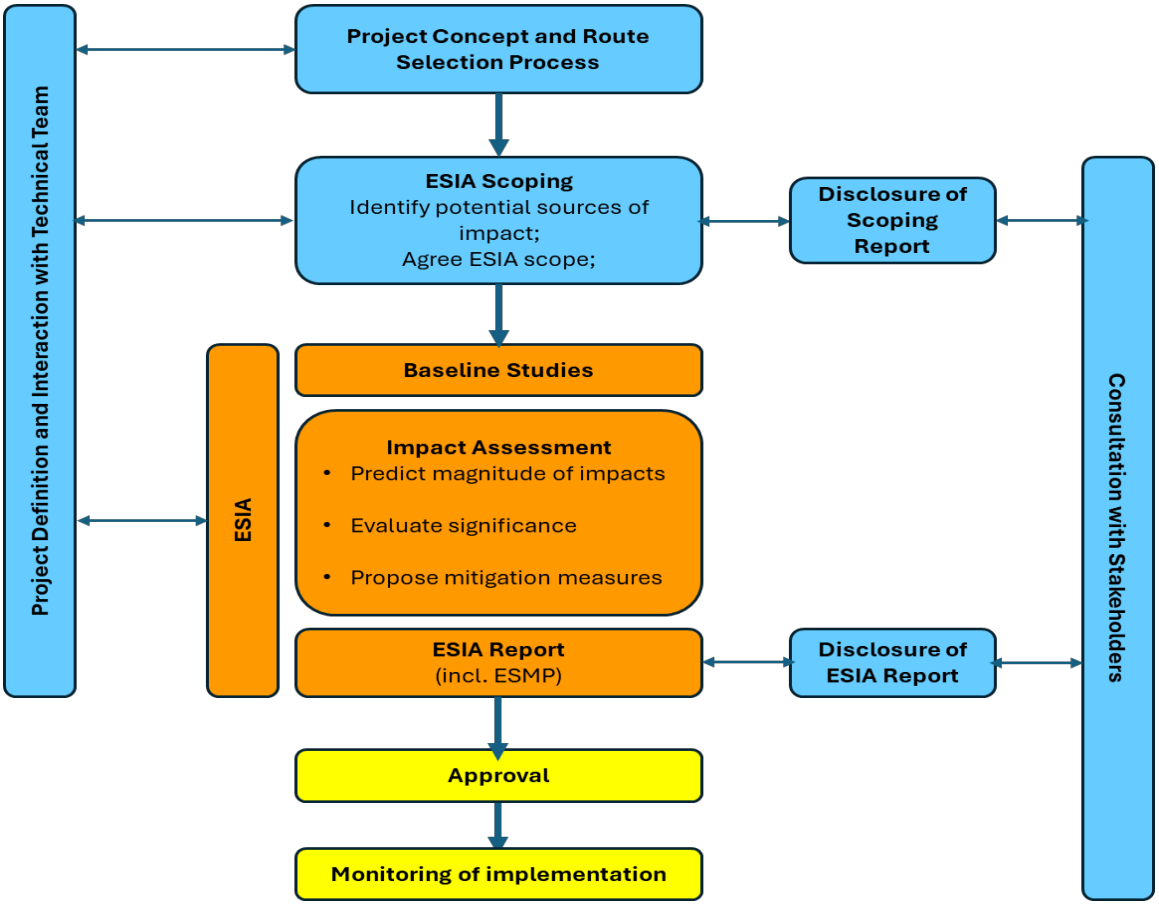

Figure 5: Schematics of the ESIA Process

Following the completion of the ESIA Scoping, the proponent will engage with the preparation of the environmental and socioeconomic baseline, which will provide an accurate picture of the receiving environment for the project. Baseline studies will require a combination of desktop research to identify published information on the environmental aspects of interest, as well as field surveys to complement literature. The methodology of these surveys is described in Section 8.

Key aspect of EIA methodology is the methodology of impact identification and assessment.

5.2 Impact Assessment Methodology

In the assessment of potential impacts arising from the proposed project, a systematic approach is required to ensure that all environmental, socio-economic, and cultural heritage effects are evaluated with precision and clarity.

The impact assessment process relies on a series of defined criteria, each representing a different dimension of the potential impacts. These criteria include the nature, duration, extent, intensity, and probability of the impacts. By systematically evaluating these aspects, we can determine not only the significance of the impacts but also prioritize mitigation measures effectively.

The **nature of predicted impacts** considers whether an impact is neutral, adverse, or beneficial to the environment. The **duration** examines how long the impact will persist, ranging from short-term effects to those that are permanent. The **extent** of the impact assesses the geographical scope, from site-specific to national-level impacts. The **intensity** evaluates the degree to which natural, cultural, or social functions and processes are affected. Lastly, the **probability** of impact considers the likelihood of the impact materializing, ranging from improbable to definite.

Each criterion is assigned a specific rating, which, when combined, provides a comprehensive assessment of the impact's significance. This structured approach ensures that the assessment is both thorough and objective, facilitating informed decision-making that balances project development with environmental and social stewardship.

The following table (Table 2) presents the impact assessment methodology that will be utilized in determining the significance of impacts associated with the project.

Table 2: Impact Assessment Ratings for determining significance

Assessment Criteria		Ratings Used for determining significance
Nature of predicted impacts (N)		
Neutral	No impact on the environment	**0**
Negative	Adverse impact on the environment	**-**
Positive	Beneficial impact on the environment	**+1**
Duration of predicted impact (D)		
Short term	An impact that persists for 0 - 5 years	**1**
Medium term	An impact that persists for between 5 - 15 years.	**2**
Long term	An impact that will cease after the operation life of the project.	**3**
Permanent	No mitigation will occur (Permanent feature)	**4**

Assessment Criteria		Ratings Used for determining significance
Extent of the impact (E)		
Site specific	Impact within the boundaries of the site	**1**
Local	Impact within an area of 5 km of the site	**2**
Regional	Impact within the Eastern Province	**3**
National	Impact on national scale	**4**
Intensity of the impact (I)		
Low	Impact affects the environment in such a way that no natural, cultural and social functions and processes are affected.	**1**
Medium	Where the affected environment is altered but natural, cultural and social functions and processes continue, albeit in a modified way.	**2**
High	Natural, cultural or social functions and processes are altered to the extent that they will temporarily cease.	**3**
Very high	Natural, cultural or social functions and processes are altered to the extent that they will permanently cease.	**4**
Probability of impact (P)		
Improbable	The possibility of the impact to materialise is very low.	**2**
Probable	There is a distinct possibility that the impact will occur.	**4**
Highly probable	It is most likely the impact will occur.	**6**
Definite	The impact will occur regardless of any prevention or corrective actions.	**8**
Impact Assessment Terminology and Ratings to be used in determining significance		
Assessment Terminology		**Ratings Used for determining significance**
Significance of predicted impact (S) = (E + D + I) x P		
High	An impact that is capable of causing sufficient change in the environment and fundamentally affect the status, potential productivity or usage of the environment.	**> 50**

Assessment Criteria		Ratings Used for determining significance
Medium	An impact that is capable of causing change in the environment but does not fundamentally affect the status, potential productivity or usage of the environment.	**25 - 50**
Low	An impact which is either too small to be measured or does not give rise to any material change in the environment.	**< 25**

Impacts of **Medium** or **High significance** will be subject to prevention or mitigation with the aim to result to **Low or insignificant residual impacts**.

5.3 Mitigation Measures

The environmental assessment process will include identification of measures that will be taken by the project to mitigate its impacts. In some instances, mitigation measures will be inherent in the technical design, and in other cases mitigation measures will be identified during the environmental assessment process.

Mitigation measures are **technically and financially feasible** and **cost-effective** means of mitigating significant impacts to levels that are deemed acceptable.

The hierarchy of mitigation options include:

- Avoid at source – remove the source of the impact.
- Abate at source – reduce the source of the impact.
- Attenuate – reduce the impact between the source and the receptor.
- Abate at the receptor – reduce the impact at the receptor.
- Remedy – repair the damage after it has occurred.
- Compensate / Offset – replace in kind or with a different resource of equal value.

Where significant ***residual impacts*** (after mitigation) remain, then further options for mitigation may be considered and impacts re-assessed until they are as low as is technically and financially feasible for the project and deemed to be within acceptable levels.

Cumulative positive or negative impacts resulting from several or from the same source and affecting a specific environmental, social or cultural heritage receptor are taken into consideration during the evaluation of identified impacts. Where appropriate, their combined effect on the receptor is defined. In addition, cumulative impacts that can potentially occur from the combined effects of this project with other presently ongoing or reasonably foreseeable future activities within the project area are also taken into consideration and assessed.

The assessment of cumulative impacts is performed, in general terms, in a qualitative manner based on the existing information of the present or future activities taken into consideration for the judgment of the EIA team.

6. EIA SCHEDULE

The proposed EIA schedule presented below indicates the activities to be undertaken and the target dates.

Table 3: Schedule of EIA Activities

No.	ESIA Activity	Timing	Status
1	Site Investigation to evaluate the alternative project corridors	June 2024	Completed
2	Preparation of Stakeholder Engagement Plan	June 2024	Completed
3	Stakeholder engagement meetings (Scoping stage)	July / August 2024	Completed
4	Scoping Report and ToR for ESIA	November 2024	Completed
5	Field surveys / studies to collect primary data	December 2024	Planned
6	Draft ESIA, ESMP Reports	April 2025	Planned
7	Draft ESIA / ESMP / RAP disclosure meetings	April 2025	Planned
8	Submission of Draft ESIA report to ZEMA	May 2025	Planned

7. EIS REPORTING AND OUTPUTS

7.1 Requirements

The Environmental Impact Statement (EIS) report) shall include the information stipulated in the Environmental Impact Assessment Regulations, 1997, which include but not limited to, the following:

- a description of the project, reasonable alternatives which have been considered;
- a description of the proposed site and the process of analysis of alternative power line routes to select the preferred route;
- a brief description of the site and the surrounding environment including specifying any information necessary to identify and assess the environmental effects of the project;
- a description of the raw material inputs into the project and their potential environmental effects;
- a description of the technology and processes that shall be used;
- a description of the products and by-products of the project;
- the environmental effects of the project, and reasonable alternatives, including the direct, indirect, cumulative, short-term and long-term effects;
- the socio-economic impacts of the project; and
- an impact management plan containing a description of measures proposed for preventing, minimising or compensating for any adverse impact, and enhancing beneficial effects, and measures to monitor effluent into streams or important environmental features which may be affected by the project.

7.2 Proposed EIS Structure

The proposed structure of the EIS is outlined below:

Declaration of Authenticity and List of Experts who prepared the EIS
Executive Summary
Table of Content
List of Tables
List of Figures
Acronyms and Abbreviations
Acknowledgements

1 Introduction
1.1 Background
1.2 Particulars of Shareholders/Directors of project developer
1.3 The developer's physical address and the contact person
1.4 Track Record/Previous Experience of Enterprise Elsewhere
1.5 Project Rationale
1.6 Project Objectives
1.7 Estimated Project Cost
1.8 Proposed Project Implementation Date
1.9 EIA Study Methodology and Reporting

2 Legal and Administrative Framework

2.1 Review of environmental policy, institutional framework and legislation applicable to the project including statutory regulations;

2.2 Regulatory approvals that are required including applicable provincial and local Government requirements (the Water Resources Management Act, the Fisheries Act, etc);

2.3 Review of international conventions and guidelines to be followed in the preparation of the EIA report

3 Project Description

3.1 Project Location

3.2 Project Components

3.2.1 Site preparation phase

3.2.2 Construction phase

3.2.3 Operation phase

3.2.4 Decommissioning and closure phase

3.3 Project Raw Materials

3.4 Project Products and byproducts

3.5 Project Alternatives

4 ESIA Methodology

4.1 Desktop review of existing data (reports, maps, development plants, etc.

4.2 Route selection

4.3 Baseline data collection

4.4 Stakeholder consultation (Scoping)

4.5 Identification and Evaluation of impacts

4.6 Mitigation measures

4.7 Environmental management plans

5 Description of Existing Environmental

5.1 Physical Environment

5.1.1 Geology

5.1.2 Topography

5.1.3 Soils

5.1.4 Climate

5.1.5 Hydrology (surface and underground water resources)

5.1.6 Landscape

5.1.7 Air Quality

5.1.8 Noise

5.1.9 Waste management

5.2 Natural Environment

5.2.1 Fauna (mammals, reptiles, birds, fish, etc.)

5.2.2 Flora

5.2.3 Protected areas

5.3 Socio Economic Environment

5.3.1 Population and settlement patterns

5.3.2 Local economic activities

5.3.3 Land tenure

5.3.4 Landuse

5.3.5 Agriculture

5.3.6 Mining
5.3.7 Tourism
5.3.8 Employment
5.3.9 Health
5.3.10 Education
5.3.11 Transport and Communication
5.3.12 Water and sanitation
5.3.13 Planned developments
5.3.14 Vulnerable groups and gender issues
5.4 Cultural Resource
5.4.1 Graveyards
5.4.2 Archaeological sites
6 Identification of Impacts
6.1 Physical Environment
6.1.1 Geology
6.1.2 Topography
6.1.3 Soils
6.1.4 Climate
6.1.5 Hydrology (surface and underground water resources)
6.1.6 Landscape
6.1.7 Air Quality
6.1.8 Noise
6.1.9 Waste management
6.2 Natural Environment
6.2.1 Fauna (mammals, reptiles, birds, fish, etc.)
6.2.2 Flora
6.2.3 Protected areas
6.3 Socio Economic Environment
6.3.1 Population and settlement patterns
6.3.2 Local economic activities
6.3.3 Land tenure
6.3.4 Landuse
6.3.5 Agriculture
6.3.6 Mining
6.3.7 Tourism
6.3.8 Employment
6.3.9 Health
6.3.10 Education
6.3.11 Transport and Communication
6.3.12 Water and sanitation
6.3.13 Planned developments
6.3.14 Vulnerable groups and gender issues
6.4 Cultural Resources
6.4.1 Graveyards
6.4.2 Archaeological sites
7 Mitigation Measures
7.1 Physical Environment

7.1.1 Geology
7.1.2 Topography
7.1.3 Soils
7.1.4 Climate
7.1.5 Hydrology (surface and underground water resources)
7.1.6 Landscape
7.1.7 Air Quality
7.1.8 Noise
7.1.9 Waste management
7.2 Natural Environment
7.2.1 Fauna (mammals, reptiles, birds, fish, etc.)
7.2.2 Flora
7.2.3 Protected areas
7.3 Socio Economic Environment
7.3.1 Population and settlement patterns
7.3.2 Local economic activities
7.3.3 Land tenure
7.3.4 Land use
7.3.5 Agriculture
7.3.6 Mining
7.3.7 Tourism
7.3.8 Employment
7.3.9 Health
7.3.10 Education
7.3.11 Transport and Communication
7.3.12 Water and sanitation
7.3.13 Planned developments
7.3.14 Vulnerable groups and gender issues
7.4 Cultural Resources
7.4.1 Graveyards
7.4.2 Archaeological sites
8 **Environmental Management and Monitoring Plan** (including Waste Management Plan, Occupational Safety and Management Plan, Decommissioning and Closure Plan, Emergency Preparedness Plan)
9 **Stakeholder Consultation** (including minutes of meeting)
10 **Conclusion**
11 **Declaration of authenticity of report contents**
12 **References**
13 **Appendices**
- A copy of the approved Terms of Reference
- Maps and satellite images
- Certificate of Incorporation
- Minutes of public consultation meetings and notices
- Specialised study Reports

8. SPECIALIST STUDIES

A number of environmental topics, as identified from secondary information, stakeholder meetings and site visits will need to be studied in more detail in order to provide a solid basis for impact assessment and mitigation. The specialist studies to be undertaken include the following.

8.1 Noise Pollution Survey

(a) Objective

The objective of the noise survey is to assess the existing noise pollution levels along the 46 km line route corridor. The survey will be undertaken to generate primary baseline data, which will be supplemented with secondary data, where available.

(b) Target Study Area: The study will cover the entire OHL stretch in Zambia, across Chipata and Vubwi districts, targeting sensitive areas such as settlements, schools, health centers, and wildlife habitats near the construction zone.

(c) Survey Timing and Duration: The survey will be conducted between 06:00hrs and 18:00hrs to capture daytime noise levels for one week.

(d) Site Selection: Between 8 and 10 noise monitoring stations will be set up at regular intervals (every 4-5 km) along the 46 km stretch, especially near sensitive areas like villages, schools, and wildlife habitats.

(e) Noise Measurements: The unit of measurement of sound is decibel. Decibel (dB)A is expressed as the logarithmic scale relative to a reference sound pressure level;

- Measure sound pressure levels (SPL) in decibels (dB), focusing on Leq (equivalent continuous sound level), Lmax (maximum sound level), and Lmin (minimum sound level). This will be in accordance to the ZEMA and International standards.

- Noise levels across different frequency bands (e.g., low, mid, and high frequencies) will be recorded to understand the impact on both humans and wildlife.

(f) Monitoring Methods: The following methods will be used for data collection:

- Mobile monitoring will be conducted by driving along the route at low speed, recording noise levels with portable meters.

- Fixed Monitoring will also be conducted using a mounted R8050 sound level meter.

(g) Equipment and Materials: The following pieces of equipment will be used in the noise survey:

- Sound Level Meters: Class 1 or Class 2 sound level meters, such as the R8050 sound level meter calibrated for precise measurements in the field.

- Tripods: For stabilizing sound meters during stationary monitoring.

- Windshields: To protect microphones from wind interference during outdoor measurements.

- Data Loggers: To automatically log sound level data over time.

- Field Gear: GPS devices, notebooks, and mobile apps for recording data.

(h) Data Analysis

- Noise levels will be analysed in terms of Leq, Lmax, and Lmin for daytime periods based on ZEMA and International Standards.

- To analyse the significance of noise, the measured noise levels shall be compared against ZEMA and International noise standards (e.g., WHO guidelines) for different environments (residential, commercial, wildlife habitats).
- To obtain spatial analysis, GIS tools will be used to map noise levels across the 44 km stretch, highlighting noise hotspots near sensitive areas.

(i) Survey Duration

- Given 8-10 noise monitoring stations, each requiring 12 hours of continuous monitoring per day, the survey will take approximately 10-12 days to complete. This includes travel time between monitoring stations and the setup of sound level meters.

(j) Permits and Ethical Considerations

- Permits: Secure any required permits from environmental or local authorities before conducting the survey.
- Ethical Practices: Ensure minimal disruption to local communities and wildlife habitats during the survey. Inform local communities about monitoring activities.

(k) Reporting

- Noise levels at each monitoring station will be presented in graphical and tabular formats.
- The baseline noise data obtained from the survey will be useful in the development of mitigation measures (e.g., noise barriers, restricted working hours) in areas where noise exceeds acceptable limits to minimize noise disturbance during construction and operation phases of the project.

8.2 Air Quality Survey

(a) Objective

The objective of the air quality survey is to assess air quality along the 46 km stretch of the project in Zambia, focusing on particulate matter, gaseous pollutants and meteorological conditions.

(b) Study Area:

The 46 km project area spans across Chipata and Vubwi districts, characterized by different land uses such as woodlands, hills, agricultural land, and settlements, which may impact local air quality.

(c) Survey Timing and Duration

- Continuous monitoring for a minimum of 1 hour at each sampling location to capture daily fluctuations in pollutant concentrations.
- The survey will be conducted between 06:00hrs and 18:00hrs to capture daytime air quality levels for one week.

(d) **Site Selection:** Establish 10-12 sampling points spaced along the 46 km stretch, with a focus on areas near sensitive habitats, and settlements.

(e) Monitoring Parameters

- Particulate Matter (PM): Measure PM2.5 and PM10 concentrations to assess fine and coarse particulate pollution.

- Gaseous Pollutants: Measure concentrations of gases such as measurement of oxygen (O2), hydrogen sulphide (H2S), carbon monoxide (CO), sulphur dioxide (SO2) and hydrogen cyanide (HCN).
- Meteorological Data: Record wind speed, wind direction, temperature, and humidity at each site to understand pollutant dispersion.

(f) Monitoring Methods

- Particulate Sampling: Use portable real-time air quality monitors (e.g., DustTrak) to measure PM2.5 and PM10 concentrations.
- Gaseous Sampling: Deploy Q Rae 3 for gaseous sampling of oxygen (O2), hydrogen sulphide (H2S), carbon monoxide (CO), sulphur dioxide (SO2) and hydrogen cyanide (HCN).
- Meteorological Data: Use handheld weather stations to measure wind speed, direction, temperature, and humidity.

(g) Data Collection

- Frequency: Collect data continuously for 1 hour at each sampling point.
- Data Logging: Use automatic data loggers for real-time pollutant measurement and manual recordings for meteorological observations.

(h) Equipment and Materials

- Air Quality Monitors: Casella Cel – 712 Micro-dust Class 1 laser product for Dust measurements, DustTrak or equivalent real-time monitors for PM2.5 and PM10.
- Gaseous Sensors: Q Rae 3 for measurement gaseous pollutants. Kane 9206 Quintox Flue gas analyser and Emission tester
- Weather Stations: Portable meteorological devices to measure wind, temperature, and humidity.
- Data Loggers: For continuous recording of air quality data.
- Field Gear: Notebooks, GPS devices, data sheets, and safety equipment (e.g., masks and protective gear for surveyors).

(i) Data Analysis

- Air Quality Index (AQI): Calculate AQI based on the levels of PM, H2S, O_2, NO_2, SO_2, CO, and HCN to assess air quality.
- Comparative Analysis: Compare pollutant concentrations against Zambian and international air quality standards (e.g., WHO guidelines).
- Spatial Distribution: Use GIS tools to map pollutant concentrations along the 44 km stretch.

(j) Survey Duration

Given 10-12 sampling locations along the 46 km stretch, with 1 hour of monitoring at each point, the survey will take approximately 10 days to complete, accounting for equipment setup and travel time between sites.

(k) Reporting

- Data Presentation: Present pollutant concentrations, meteorological conditions, and AQI values for each sampling point.

8.3 Water Quality Survey

(a) Objectives

The objective of the water quality survey is to assess the quality of surface and ground water along the 46 km stretch of the project in Zambia, with a focus on key water bodies and groundwater sources in the project area.

(b) Study Area:

The study area spans across Chipata and Vubwi districts, encompassing various streams, rivers, and bore-holes used by local communities for water supply.

(c) Survey Timing

Sample collection at each site will require approximately 1 hour, including time for setup, measurement, and sample preservation.

(d) Site Selection

- Surface Water: Identify 6-8 sampling sites along key streams and rivers crossing the 46 km stretch of the OHL in Zambia.
- Underground Water: Select 5-6 boreholes or wells within communities near the project site.

(e) Sampling Parameters

- Surface Water: physical, chemical, and biological parameters such as pH, temperature, dissolved oxygen (DO), electrical conductivity (EC), turbidity, total dissolved solids (TDS), nitrates, phos-phates, heavy metals (e.g., lead, mercury), and biological oxygen demand (BOD).
- Underground Water: pH, EC, TDS, hardness, heavy metals, nitrates, and microbial contamination (e.g., E. coli, coliforms).

(f) Sample Collection Protocol

- Surface Water: Collect surface water samples using clean polyethylene bottles at 30 cm depth. Take measurements for pH, temperature, and DO in situ using portable meters. Collect at least 2 litters per site for laboratory analysis.
- Underground Water: Collect water samples from boreholes or wells, allowing water to run for 5-10 minutes before sampling. Measure parameters like pH, EC, and TDS on-site, and collect 2 litters of water for laboratory analysis of heavy metals and microbial quality.

(g) Equipment and Materials

- Surface Water:
    - pH meter
    - DO meter
    - Turbidity meter
    - EC/TDS meter
    - Sampling bottles (polyethylene)
    - Ice cooler and sample preservation equipment (for transporting samples to the laboratory)

- Underground Water:
    - Groundwater sampling kit (bottles, tubing, etc.)
    - Portable water quality meters (pH, EC, TDS)
    - Sterile sampling bottles for microbial analysis
- General: GPS device, data sheets, field notebooks, mobile apps for data logging, personal protective equipment (PPE), and sterilization materials (e.g., alcohol wipes).

(h) Data Analysis

- Surface Water:
    - Analyse in-situ parameters (pH, DO, temperature, turbidity) immediately.
    - Send collected samples to a certified laboratory for analysis of chemical and biological contaminants.
    - Compare results against WHO and Zambian water quality standards.
- Ground Water:
    - Analyse key parameters on-site and send water samples for lab testing (e.g., heavy metals, microbial content).
    - Compare against national and international groundwater quality standards (WHO guidelines).

(i) Fieldwork Duration:

Given 6-8 surface water sampling sites and 5-6 underground water sampling sites, the survey will take approximately 5 days to complete. This includes site access, setup, sample collection, and data recording

(j) Permits and Ethical Considerations

- Permits: Obtain necessary permissions from local authorities and landowners for borehole and surface water access.
- Ethical Practices: Follow water quality sampling protocols to avoid contamination and ensure representative sampling. Respect the privacy and access rights of local communities when sampling from boreholes.

(k) Reporting

- Data Presentation: Present water quality data in tabular and graphical formats, highlighting parameters exceeding safe limits.

8.4 Biodiversity Survey

Miombo woodland is principally the vegetation type found in the project area. The natural vegetation patterns of the region have, however, been extensively disturbed by human activities that include agricultural activities, wood harvesting for fuel (charcoal production), subsistence / shifting agriculture and plantations among other activities.

(a) Objective:
To assess the species composition, diversity, and conservation status of vegetation, bird, mammal, and insect populations along the 46 km project stretch in Zambia, focusing on 15 transects demarcated in Chipata and Vubwi districts, covering areas with primary and secondary vegetation.

(b) Study Area Description
The study area comprises secondary miombo woodlands, riverine vegetation, agricultural lands, and grass-lands running parallel to the interconnector line.

(c) Survey Timing

- Season: The surveys will be conducted during both dry and wet seasons to account for seasonal variations.
- Time of Day:
    - Bird Surveys: Early morning (6:00 hrs. to 10:00 hrs.) and late afternoon (15:00hrs to 18:00hrs).
    - Mammal Surveys: Early morning and late afternoon.
    - Vegetation Surveys: During daylight, preferably cooler hours (early morning and late afternoon).
    - Insect Surveys: Early morning, late afternoon, and night (for nocturnal insects).

(d) Survey Methods

- Vegetation Survey
    - Transect Layout: 15 transects, 500 meters long, spaced at 3 km intervals.
    - Quadrat Sampling: Quadrats will be placed every 100 meters along the transect (1m x 1m for herbaceous layers; 10m x 10m for woody vegetation).
    - Data Collection: Species composition, abundance, density, and vegetation structure (ground cover, shrub layer, canopy).
- **Bird Survey**
    - Point Counts: Point counts will be set every 200 meters along transects. Observe for 10 minutes, recording all birds seen and heard within a 50-meter radius.
    - Transect Walks: Record birds seen or heard outside of point counts.
    - Data Collection: Species identification, abundance, and behaviour.
- **Mammal Survey**
    - Direct Observation: Conduct slow walks, recording mammals and signs of presence (scat, tracks, feeding).
    - Data Collection: Species identification, abundance, habitat use.
- **Insect Survey**
    - Sweep Netting: Conduct net sweeps every 100 meters along transects for 5 minutes.

- Pitfall Traps: Set pitfall traps every 100 meters and leave for 24 hours.
- Visual Encounter Surveys: Walk each transect, observing larger insect species (e.g., butterflies, dragonflies).
- Data Collection: Species identification, abundance, and habitat association.

(e) Data Analysis

- Simpson's Diversity Index[1] for All Species Groups

(f) Equipment and Materials

- Vegetation: Measuring tapes, DBH tapes, GPS device, field guides, quadrat frames.
- Birds: Binoculars, GPS device, field guides, data sheets/mobile apps.
- Mammals: GPS device, field guides, camera traps, plaster casts (optional).
- Insects: Sweep nets, pitfall traps, collection jars, forceps, insect preservation solution, magnifying lens, identification keys, field guides, GPS device.
- General: Notebooks, mobile data collection apps, safety supplies (first aid kits, insect repellents, radios).

(g) Safety and Logistics

- Team Size: 3-5 surveyors per team to ensure efficiency and safety.
- Travel Time: Account for travel between transects and ensure vehicles are in good condition.
- Safety Precautions: Team members should have knowledge in first aid and carry essential supplies (water, radios, first aid kits).

(h) Estimated Survey Duration

- The combined survey across 15 transects will take 30 days, covering approximately 0.5 transects per day, depending on terrain, weather, and team capacity.

(i) Reporting

- Data Consolidation: Compile survey data for vegetation, birds, mammals, and insects.
- Maps: Create GIS maps showing transect locations and key findings (e.g., species of concern).

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[1] $D = 1 - \sum(ni/N)^2$

Where:

- **D** is the Simpson's Diversity Index.
- **ni** is the number of individuals of a particular species.
- **N** is the total number of individuals across all species.

A lower value of D indicates higher diversity, and this measure will be applied to data from all taxonomic groups (plants, birds, insects, and mammals). Comparative analyses will also be conducted between different habitat types and transects.

- The survey will also Identify areas of high biodiversity along the line corridor, and identify and discuss the importance of any species of special concern, including sensitive, endemic and protected species on the IUCN red list.
- It will describe the conservation status of the identified flora and fauna.
- Map sensitive plant communities and/or habitats where disturbance should be avoided or minimized

8.5 Socio-economic Survey

(a) Objective

The objective of the Socio-economic survey is to identify and document the social, economic and demographic characteristics of the population (community along the 46 km stretch of the proposed power line corridor in Zambia.

(b) Key Focus Areas of the Survey

- Demographic factors: number of people and households, location, population density, age, family composition, education levels, etc.
- Socio-economic Setup: sources of livelihood, income levels, asset ownership, land tenure, land use, access to productive inputs and markets, and access to employment opportunities, access to natural resources, migration, incidence, depth and severity of poverty.
- Social organization: social and governance structures, organization and capacity at the household and community levels, access to services and information. Availability of community-based organisations and NGOs, development agencies, and control over resources as well as securities issues.
- Access to social services such as education, health, water and sanitation, communication, information, agricultural extension services, leisure and recreation, etc.
- Health issues: Common diseases, prevalence of infant mortality, HIV and other infectious diseases, environmental factors affecting health (dust, noise) and general health among the local communities.
- Gender and Vulnerability: identify gender roles and relations, gender-based differences in access to social services, prevalence of Gender Based Violence (GBV) and Sexual Harassment and Exploitation (SHE), Anti-GBV NGOs active in the project area, identify the vulnerable groups in the project area and develop appropriate mitigation measures to address their plight.

(c) Survey Team Composition

- Socio-economic Expert
- Gender / GBV Expert
- 6 Enumerators

(d) Baseline Information

The baseline will be collected through:

- Thematic Maps: To identify population settlements, land use, infrastructure, and natural resources in the power line wayleave footprint.
- Socio-Economic Surveys: Data on all affected groups, including seasonal, migrant, and host populations, will be gathered to design income restoration programs and establish baseline monitoring indicators.

- Consultations: Engage affected populations for feedback on mitigation and development opportunities.
- Key Informants: Engage key stakeholders including:
    - Relevant Government Departments
    - Local authorities (Chipata and Vubwi).
    - Non-Governmental and Civil Society Organisations
    - Women groups
    - Traditional authorities (Chiefs, Headmen/women).

(e) Data Collection Methods

- Secondary Data: Review government reports, journals, and policy documents.
- Primary Data: Gather data through surveys, structured questionnaires, semi-structured interviews, and focus group discussions. Field observations will document cultural attachments and land use patterns.
- Database Creation: Compile a database of all affected household, demographic and social characteristics, assets, and other information relevant for planning and impact management.

(f) Equipment and Materials

- GPS Devices: To record accurate locations of affected household assets.
- Digital Cameras: For photographic documentation of affected assets and other information.
- Recording Devices: To capture interviews and consultations.
- Notebooks and Field Forms: For manual data collection.
- Field Gear: Safety gear, water, and tools for field navigation.
- Maps, GPS Software and digital applications: To assist with spatial analysis and data integration.

(g) Reporting

- Data Compilation: Consolidate all socio-economic data into a final report.

(h) Duration

- Survey Duration: 10 days to cover the 46 km stretch, depending on the scope of work and number of experts involved.
- Analysis and Reporting: Additional 15 days for analysis, database creation, and reporting.

8.6 Archaeology and Cultural Heritage Survey

Although there are no known archaeological or cultural heritage sites reported along the proposed line route, a walk-through archaeological and cultural heritage survey will be undertaken to check if there are heritage resources along power line corridor.

(a) Objective:

To identify, document, and assess the significance of cultural and heritage resources such as archaeological sites, shrines, and graves along the 46 km stretch of the project in Zambia.

(b) Survey Team Composition:

- 2 specialists in cultural and heritage resources.
- 3 local field assistants.
- 1 local councillor for logistical support and stakeholder engagement.

(c) Survey Methods

- Desktop Research
    - Literature Review: Gather data from reports, archives, and secondary sources, including past studies on cultural and heritage impacts.
    - Legislation Review: Examine national and international protocols for managing and protecting heritage resources (National Heritage Conservation Commission (NHCC), Zambia).
- Stakeholder Engagement

  Key Informants: Engage key stakeholders including:
    - Council Secretaries (Chipata, Vubwi).
    - District Commissioners.
    - Traditional authorities (Chiefs, Headmen/women).
    - NHCC (East-Central Region).

(d) Field Surveys

- Transect Walks: Survey all beaconed areas in the power line footprint, identifying visible cultural and heritage sites.
- Site Documentation: For each site:
    - Record GPS coordinates.
    - Capture site photographs.
    - Describe physical features and historical significance.
    - Assess the state of the site.
- Community Guidance: Collaborate with local custodians for information on less visible or sacred sites.

(e) Data Collection and Recording

- Primary Data: Collected from stakeholder consultations and direct field observations.
- Secondary Data: Gathered from archives and reports.
- Mapping: GPS points for each heritage site will be mapped using handheld GPS devices.

(f) Equipment and Materials

- GPS Devices: To record accurate locations of heritage sites.
- Digital Cameras: For photographic documentation of cultural sites.
- Recording Devices: To capture interviews and consultations.
- Notebooks and Field Forms: For manual data collection.
- Field Gear: Safety gear, water, and tools for field navigation.
- Maps and GPS Software: To assist with spatial analysis and data integration.

(g) Reporting and Recommendations

- Data Analysis: Assess the cultural significance based on NHCC's levels of significance (local, regional, national).

(h) Duration

- Survey Duration: 10 days to cover the 46 km stretch, depending on terrain and stakeholder availability.
- Analysis and Reporting: Additional 7-10 days for analysis and report writing.

9. PROPOSED EIA PROJECT TEAM

The preparation of the EIS for the proposed project in Chipata and Vubwi Districts will be undertaken by a multidisciplinary team of experts presented in the table below. Curriculum Vitae for each of the proposed team members are presented in the Annex.

Table 4: List of Experts involved in EIS preparation

No.	Name	Qualification	Position	Role
1.	Robam Musonda	• MA in Population Studies, University of Ghana – 1993. • BA in Development Studies, University of Zambia, 1991. • Postgraduate Certificate in Integrated Rural Regional Development Planning, Development Study Centre, Rehovot, Israel, 1996. • Certificates in Environmental and Social Management in Projects, International Centre for Hydropower, Trondheim, Norway, 2005 and 2006.	EIA Coordinator	Coordinating all EIA activities, supervising the work of the experts, coordinating the preparation of the EIS
2.	Edwin Matokwani	• MSc in Conservation Biology, University of Kent UK- 1996 • MBA (General) Management College of Southern Africa-2004 • Management development-University of Cape Town • Environmental Impact Assessment for Power Utilities-ESKOM South Africa • Environmental Management System Development (SWED POWER, SWEDEN) •	Ecologist / Avifauna Expert	Identification and assessment of ecological impacts, including avifauna impacts.
3.	Godfrey Chileshe	• Master of Public Health • Bachelor of Social Work • Diploma Management Administration • PhD Public Health • Certificate Public Health	Gender GBV/SHE	Gender and GBV/SHE and vulnerability assessment

No.	Name	Qualification	Position	Role
4.	Stella Sakala	• Master of Social Work in Community Development, DMI St. Eugene University, Zambia Mar 2018 to July 2020 • Bachelor of Business Administration, Cavendish University, Zambia Jan 2008-July 2010 • Diploma in Land Acquisition, Resettlement and Social Sustainability, Groningen University Groningen, May 31 to 18 June, 2024 • Diploma – Social Work, Cavendish University, Zambia, 2010	Socioeconomic Expert	Identification and assessment of socioeconomic impacts.
5.	Benson Kabungo	• Degree in Geo-informatic Science (on going) • Diploma in forestry • Diploma in Geoinformatics and Remote sensing	GIS Specialist	Geospatial data collation, cmpiling, analysis and map prodution
6.	Charity Moonga	• Masters in Development Studies, Zambian Open University, 2022 • Degree in Development Studies, Zambian Open University, 2016 • Diploma in Journalism and Public Relations, Evelyn Hone College, 1997, • Certificate in Reporting Business in the Digital Age, Reuters Foundation – London, 2002	Communication Specialist	Coordinating stakeholder engagement communication and meetings.
7.	David Chikumbi	• PhD student (current), Development and Public Management, Stellenbosch University, Stellenbosch, South Africa, (on-going). • MPhil, Archaeological Heritage Management and Museums, University of Cambridge, Cambridge, England, 1992. • B.A. ED, History, University of Zambia, Lusaka, Zambia 1988	Archaeological Expert	Archaeological and cultural heritage assessment.

10. DECLARATION OF AUTHENTICITY OF REPORT

I, …… the undersigned, declare that the ESIA Terms of Reference described herein provides information describing the project area and scoping issues as raised by stake-holders and interested and affected parties during the scoping exercise and that the proposed terms of reference, derived from this report, satisfy the framework needed for conducting Environmental Impact Assessment studies for the proposed construction of the Zambian section of the Malawi-Zambia 400kV Transmission Line Interconnector.

For and on behalf of **ZESCO Limited**.

……..

Name:……..

Position:……..

ZESCO Limited

11. REFERENCES

Acts and Regulations

1. Government of the Republic of Zambia. (1989). *National Heritage Conservation Act, No. 23 of 1989* and *National Heritage Conservation Commission Amendment Act, No. 13 of 1994*. Government Printers, Lusaka, Zambia.
2. Government of the Republic of Zambia. (1995). *The Public Health Act, No. 22 of 1995*. Government Printers, Lusaka, Zambia.
3. Government of the Republic of Zambia. (1995). *The Lands Act, No. 27 of 1995*. Government Printers, Lusaka, Zambia.
4. Government of the Republic of Zambia. (1997). *The Environmental Impact Assessment Regulations, Statutory Instrument No. 28 of 1997*. Government Printers, Lusaka, Zambia.
5. Government of the Republic of Zambia. (1999). *The Factories Act, 1999*. Government Printers, Lusaka, Zambia.
6. Government of the Republic of Zambia. (1999). *The Workers Compensation Act, No. 10 of 1999*. Government Printers, Lusaka, Zambia.
7. Government of the Republic of Zambia. (2002). *The Public Roads Act, CAP 12 of 2002*. Government Printers, Lusaka, Zambia.
8. Government of the Republic of Zambia. (2002). *The Road Traffic Act, No. 11 of 2002*. Government Printers, Lusaka, Zambia.
9. Government of the Republic of Zambia. (2003). *National Council for Construction Act, No. 13 of 2003*. Government Printers, Lusaka, Zambia.
10. Government of the Republic of Zambia. (2010). *The Occupational Health and Safety Act, No. 36 of 2010*. Government Printers, Lusaka, Zambia.
11. Government of the Republic of Zambia. (2011). *Environmental Management Act, No. 12 of 2011*. Government Printers, Lusaka, Zambia.
12. Government of the Republic of Zambia. (2011). *The Roads and Traffic Act, No. 2 of 2011*. Government Printers, Lusaka, Zambia.
13. Government of the Republic of Zambia. (2011). *The Water Resources Management Act, No. 21 of 2011*. Government Printers, Lusaka, Zambia.
14. Government of the Republic of Zambia. (2011). *Anti-Gender Based Violence Act, 2011*. Government Printers, Lusaka, Zambia.
15. Government of the Republic of Zambia. (2013). *The Environmental Management (Licensing) Regulations, Statutory Instrument No. 112 of 2013*. Government Printers, Lusaka, Zambia.
16. Government of the Republic of Zambia. (2015). *The Urban and Regional Planning Act, No. 3 of 2015*. Government Printers, Lusaka, Zambia.
17. Government of the Republic of Zambia. (2015). *The Standards Act, No. 4 of 2015*. Government Printers, Lusaka, Zambia.
18. Government of the Republic of Zambia. (2015). *The Forests Act, No. 4 of 2015*. Government Printers, Lusaka, Zambia.
19. Government of the Republic of Zambia. (2015). *The Mines and Minerals Development Act, No. 11 of 2015*. Government Printers, Lusaka, Zambia.
20. Government of the Republic of Zambia. (2015). *The Tourism and Hospitality Act, No. 13 of 2015*. Government Printers, Lusaka, Zambia.
21. Government of the Republic of Zambia. (2015). *The Zambia Wildlife Act, No. 14 of 2015*. Government Printers, Lusaka, Zambia.
22. Government of the Republic of Zambia. (2015). *The National Pensions Scheme Act, No. 7 of 2015*. Government Printers, Lusaka, Zambia.
23. Government of the Republic of Zambia. (2019). *The Local Government Act, No. 2 of 2019*. Government Printers, Lusaka, Zambia.

24. Government of the Republic of Zambia. (2020). *The Public Health (Infected Areas) (Corona Virus Disease 2019) Regulations, Statutory Instrument No. 22 of 2020*. Government Printers, Lusaka, Zambia.
25. Government of the Republic of Zambia. (2019). *The Employment Code Act, No. 15 of 2019*. Government Printers, Lusaka, Zambia.

Books, Reports, and Articles

26. Banda, I. (2015). *Chipata and Chanida Water Supply and Sanitation: Feasibility Study*. British Government Department for International Development.
27. Chipata City Council. (2021). *Joint Integrated Development Plan 2021-2030*.
28. Mileji, C. M., & Mulenga, M. N. (2020). *Factoring Seismic Hazard in Structural Design of Infrastructure in Zambia*. International Journal of Engineering Research and Development.
29. Red Cross Climate Centre. (2021). *Climate Profiles of Countries in Southern Africa: Zambia*.
30. Vubwi District Council. (2020). *Integrated Development Plan 2020-2030*.

Online Sources

31. *Geography of Eastern Province, Zambia*. (Accessed 17/08/2024). Available at: http://en.wikipedia.org
32. *Geology of Eastern Province, Zambia*. (Accessed 17/08/2024). Available at: http://openjicareport.jica.go.jp
33. *Ngoni People*. (Accessed 17/08/2024). Available at: http://en.wikipedia.org
34. *Chewa People*. (Accessed 17/08/2024). Available at: http://en.wikipedia.org

International Environmental Conventions and Protocols to which Zambia is a Signatory

- African Convention on the Conservation of Nature and Natural Resources, 1968
- United Nations Framework Convention on Climate Change, 1992
- The Convention on Biological Diversity, 1992
- Stockholm Convention on Persistent Organic Pollutants, 2004

International Environmental and Social Standards

- World Bank Environmental and Social Safeguard Policies
- Swedfund's Policy for Sustainable Development
- European Investment Bank Environmental and Social Standards

ANNEX: CVs of EIA Experts

1. Robam Musonda, Socio-economic Specialist and ESIA / RAP Country Coordinator

Position Title and No.	**Socio-economic Expert and ESIA / RAP Country Coordinator**
Name of Expert:	**Robam MUSONDA**
Date of Birth:	4th June, 1964
Country of Citizenship/Residence	Zambian

Education:

- Master of Arts in Population Studies, University of Ghana, Accra, 1993.
- Bachelor of Arts in Development Studies, University of Zambia, Lusaka, 1990.
- Postgraduate Certificate in Integrated Rural Regional Development Planning, Development Study Centre, Rehovot, Israel, 1996.

Other Training:

- Certificate in Common Audit Process and Techniques for Safety, Health, Environment and Quality, Kafue Gorge Regional Training Centre, Zambia, 2015.
- Training in selected ISO Standards (ISO 14001 – Environmental Management, ISO 9001 – Quality Management, and ISO 45001 – Occupational Health and Safety), Kafue Gorge Regional Training Centre, Zambia, 2015.
- Certificate in Managing Sustainable Development, Maastricht School of Management, The Netherlands, 2009.
- Certificate in Hydropower and Environment, International Centre for Hydropower, Trondheim, Norway, 2006.
- Certificate in the Process of Social Impact Assessment, International Centre for Hydropower, Trondheim, Norway, 2005.
- Training Workshop in Environmental Auditing and Reporting, CAPCAN Training, Pretoria, South Africa, 2004
- Training in Environmental Management, Copperbelt University, 1999
- Training in Environmental Management Systems, Environmental Impact Assessments, Social Impact Assessment. SIDA funded Capacity Building Project for ZESCO, Swedpower, Sweden, 1998.

Key Qualifications:

Robam Musonda is a Socio-economic expert who holds a Bachelor of Arts degree in Development Studies and a Master's degree in Population Studies. Having worked in the environmental and social field for over 20 years, Robam Musonda has valuable experience in handling social issues in projects ranging from conducting socio-economic impact assessments, identification of project affected people, managing resettlement and compensation, stakeholder engagement and grievance redress management. The academic and professional training acquired over time enables Mr. Musonda to understand and appreciate the socio-economic and cultural intricacies in project management.

He has also attended several courses in environmental management and this has given him a good appreciation of environmental issues in projects and management of environmental issues ranging from conducting environmental and socio-economic impact assessments, developing Environmental and Social Management Plans and environmental management procedures and guidelines for various environmental and social aspects.

He is able to interpret and apply Zambian and international environmental and social legislation, including requirements of voluntary settlement, health, safety and gender. He has good knowledge of the provisions of the environmental, social and labour safeguards of the World Bank, International Finance Corporation (IFC), European Investment Bank, Swedfund's Policy for Sustainable Development, International Labour Organisation (ILO) and other international standards. He has vast experience in environmental and social compliance monitoring on project sites covering issues such as environmental, social, health, labour conditions, safety and grievance mechanisms.

Area of Expertise:

- Conducting Socio-economic Impact Assessment and developing Environmental and Social Management Plans;

- Conducting Socio-economic surveys;
- Developing Resettlement and Compensation Action Plans (RCAP) and managing the RCAP implementation process;
- Conducting Stakeholder Engagement;
- Developing Grievance Redress Mechanisms;
- Gender and vulnerability studies;
- Environmental Management System
- Environmental and Social Auditing, and reporting
- Climate Change Adaptation and Resilience

Countries of Work Experience: Zambia.
Year of Experience: 32 years

Employment record:

Period	**Employing organization and your title/position. Contact info for references**	**Country**	**Summary of activities performed relevant to the Assignment**
2019 to Date	Freelance Socio-economic Consultant For Reference: Dr. Elenestina Mwelwa, Senior Consultant, Phone: +260 955849340 Email: emmwelwa@hotmail.com	Zambia	- Conducting Socio-economic Impact Assessment; - Conducting Socio-economic surveys; - Developing Resettlement and Compensation Action Plans (RCAP) and managing the RCAP implementation process; - Conducting Stakeholder Engagement; - Developing Grievance Redress Mechanisms; - Gender and vulnerability studies; - Environmental Management System; - Environmental and Social Auditing and reporting;
2014 - 2019	ZESCO Limited **Principal Environmental Compliance Officer**: Safety, Health, Environment and Quality (SHEQ) Department For Reference: Mr. Bright M. Sepiso, Senior Manager – SHEQ Phone: +260 977792463	Zambia	Duties and responsibilities included: - Environmental and social aspects and impacts Identification; - development of environmental and social management procedures to address the identified aspects and impacts; - facilitating awareness training on the developed environmental procedures; - environmental and social compliance auditing and reporting; - Facilitating the acquisition of relevant environmental permits (licenses).
1997 - 2014	ZESCO Limited **Principal Social Scientist,** Environmental and Social Affairs Unit	Zambia	Duties and responsibilities included: - Conducting socio-economic impact assessments for ZESCO projects as part of the Environmental and Social Impact Assessment (ESIA) process;

	For Reference: Dr. Elenestina Mwelwa, Senior Manager – Environment and Social Affairs Unit Phone: +260 955849340 Email: emmwelwa@hotmail.com		- Developing Resettlement and Compensation Action Plans (RCAP) for affected people and spearhead the implementation of the RCAP for ZESCO projects; - Conduct gender and vulnerability assessment studies as part of the RCAP process; - Developing and implementing Stakeholder Engagement Plans for projects; - Conducting public stakeholder meetings in project area. - Enironmental and social monitoring, and reporting of project sites during project implementaion (construction). - Organizing environmental awareness seminars for ZESCO staff;
1991 - 1997	National Commission for Development Planning (Provincial Planning Unit – Lusaka Province) **Economist** For reference: Mr. Sabina M. Chifwepa, Chief Regional Planner – Lusaka Province Phone: +260 977578018	Zambia	Duties and responsibilities included: - Preparing short and medium term developments plans; - Preparing annual budgets and economic reports for the Province; - Monitoring, Evaluating and reporting of development projects in various sectors in the Province; - Coordinating the development activities of Government ministries, district councils, Non-governmental Organizations and donor agencies operating in the Province.

Membership in Professional Associations and Publications:
Member of the Impact Assessment Association of Zambia (IAAZ), which is affiliated to the International Association of Impact Assessment (IAIA).

Language Skills

Language	***Speaking***	***Reading***	***Writing***
English	Excellent	Excellent	Excellent
Bemba	Excellent	Excellent	Excellent
Nyanja	Good	Good	Good
Tonga	Fair	Fair	Poor

Experience in Projects:

Detailed Tasks Assigned on Consultant's Team of Experts:	**Reference to Prior Work/Assignments that Best Illustrates Capability to Handle the Assigned Tasks**

- Conducting the Environmental and Socio-economic Impacts Assessment (ESIA); - Resettlement and Compensation Action Plan (RCAP); - Developing Stakeholder Engagement Plan; - Gender and vulnerability studies - Develop a Grievance Redress Mechanism; - Conduct stakeholder engagement meetings in the project area.	**MALAWI – ZAMBIA 400KV INTERCONNECTOR POWER LINE PROJECT** **Year:** 2024 **Location**: Chipata and Vubwi districts, Zambia **Client:** Southern African Power Pool (SAPP) and ZESCO Limited, Zambia **Main project features**: Conduct an Environmental and Social Impact Assessment for the Project and develop the Resettlement Action Plan. **Position held:** ESIA/RAP Country Coordinator and Socio-economic Expert, working with GOPA – Intec of Germany. **Activities to be performed:** Conducting the Environmental and Social Impact Assessment, stakeholder engagement and developed the RCAP in accordance with the national environmental regulations and the European Investment Bank Environmental and Social Standards and Swedfund's Policy for Sustainable Development.
- Conducted the Socio-economic Impacts Assessment; - Prepared the Resettlement and Compensation Action Plan (RCAP) for project affected persons; - Develop Stakeholder Engagement Plan and Conducted Stakeholder Engagement meetings - Conducted Gender and vulnerability studies as part of the ESIA process.	**DEVELOPMENT OF THE PROPOSED 13MW CHANGA HYDROPOWER PROJECT** **Year:** 2020 **Location**: Serenje District, Zambia **Client:** Copperbelt Energy Company (CEC), Zambia **Main project features**: Conduct an Environmental and Social Impact Assessment for the proposed 13MW Changa Hydropower Project. **Position held:** Lead Socio-economic Expert **Activities to be performed:** Conducted the Social Impact Assessment, Prepared the Resettlement and Compensation Action Plan (RCAP), Stakeholder Engagement Plan, conducted stakeholder engagement meetings.
- Conducted the Socio-economic Impacts Assessment; - identified the project affected people and prepared the RCAP; - Conducted Stakeholder Engagement meetings	**DEVELOPMENT OF THE PROPOSED 40MW KABOMPO HYDROPOWER PROJECT** **Year:** 2020 **Location**: Mwinilunga District, Zambia **Client:** Copperbelt Energy Company (CEC), Zambia **Main project features**: Update the Environmental and Social Impact Assessment for the proposed 13MW Kabompo Hydropower Project. **Position held:** Lead Socio-economic Expert **Activities to be performed:** Updated the Social Impact Assessment, conducted stakeholder engagement meetings and updated the RCAP.
- Conduct social impact assessment as part of the Environmental and Social Impact Assessment (ESIA) study and prepare a report; - Developing Resettlement and Compensation Action Plans (RCAP) for affected people and spearhead the implementation of the RCAP.	**PENSULO - KASAMA 330 kV TRANSMISSION LINE DEVELOPMENT** **Year:** 2013 - 2014 **Location:** Zambia **Client: ZESCO Limited** **Main project features**: Acquisition of right of way (wayleave) and construction of the 400km long Pensulo – Kasama 330kV Transmission Power line. **Position held:** Lead Socio-economic Expert

	Activities to be performed: Conducted the Social Impacts Assessment and coordinated the associated resettlement activities of the project in line with the RCAP.
- Conduct social impact assessment as part of the ESIA study and prepare a report; - Developing RCAP for affected people and spearhead the implementation of the RCAP for people affected by the project; - Conduct gender and vulnerability studies; - Developing and implementing Stakeholder Engagement Plan; - Participated in the design and implementation of corporate social responsibility sub-projects (clinic, school and road)	**KAFUE GORGE LOWER HYDROELECTRIC PROJECT** **Year:** 2011 - 2013 **Location:** Zambia **Client: ZESCO Limited** **Main project features**: Development of the 750MW power station in the Kafue Gorge. **Position held:** Lead Social Expert **Activities to be performed:** Conducted social impact assessment and prepare a report; developed RCAP and spearhead its implementation; conducted gender and vulnerability studies; developed and implemented Stakeholder Engagement Plan; Participated in the design and implementation of corporate social responsibility sub-projects (clinic, school and road).
- Developing and implementing Stakeholder Engagement Plans for the project: - Developing and implementing health and safety awareness programme for project workers and the community; - Environmental, social, health and safety monitoring and reporting.	**ITEZHI TEZHI HYDROELECTRIC** **Year:** 2012 **Location:** Zambia **Client: ZESCO Limited** **Main project features**: Development of a 120MW hydropower station to use water from the existing Itezhi Tezhi dam in Itezhi Tezhi District. **Position held:** Lead Social Expert **Activities to be performed:** Coordinated the development of the Stakeholder Engagement Plan and its implementation; occupational health and safety awareness training; conducted environmental, social, health and safety monitoring and reporting during construction.
- Developing Resettlement and Compensation Action Plans (RCAP) and spearhead its implementation; - Conduct gender and vulnerability assessment studies as part of the RCAP process; - Participated in the identification, design and implementation of corporate social responsibility	LUNZUA HYDROELECTRIC PROJECT **Year:** 2010 - 2014 **Location:** Zambia **Client:** ZESCO Limited **Main project features**: Development of a 14MW power station on Lunzua River in Mbala District downstream of the existing 0.75MW power station. **Position held:** Lead Social Expert **Activities to be performed:** Coordinated the development and implementation of the Resettlement Action Plan.

sub-projects (clinic, school and chief's palace).	
- Conduct social impact assessment as part of the ESIA study and prepare a report; - Developing RCAP for affected people and its implementation.	**Kariba North Bank Extension 330 kV TRANSMISSION LINE DEVELOPMENT** **Year:** 2010 - 2013 **Location:** Zambia **Client: ZESCO Limited** **Main project features**: Acquisition of right of way (wayleave) and construction of the 330kV transmission power line Kariba North Bank to Kafue. **Position held:** Lead Socio-economic Expert **Activities to be performed:** Conducted the Social Impacts Assessment and developed the Resettlement and Compensation Plan
- Conduct social impact assessment as part of the ESIA study and prepare a report; - Developing RCAP and spearhead its implementation; - Conduct gender and vulnerability assessment studies as part of the RCAP process;	**LUANO – KANSANSHI 330 kV TRANSMISSION LINE DEVELOPMENT** **Year:** 2003 - 2004 **Location:** Zambia **Client: ZESCO Limited** **Main project features**: Acquisition of right of way (wayleave) and construction of the 330kV transmission power line from Luano Substation in Chingola to Kansanshi Mine in Solwezi. **Position held:** Lead Socio-economic Expert **Activities to be performed:** Conducted the Social Impacts Assessment; developed Resettlement and Compensation Plan and conducted environmental, social, health and safety monitoring and reporting during construction.
- Conduct social impact assessment as part of the ESIA study and prepare a report; - Developing RCAP for affected people and spearhead its implementation for people affected by the project.	**KARIBA - SIAVONGA 33 kV DISTRIBUTION LINE DEVELOPMENT** **Year:** 1999 - 2000 **Location:** Zambia **Client: ZESCO Limited** **Main project features**: Acquisition of right of way (wayleave) and construction of the 33kV distribution power line from Kariba in Zimbabwe to Siavonga in Zambia. **Position held:** Lead Socio-economic Expert **Activities to be performed:** Conducted the Social Impacts Assessment and Resettlement and Compensation Plan
- Conduct social impact assessment for the breach of Tailings Dam No. 33 at Mopane Copper Mine; - Assess the impacts on health and livelihoods.	**T33 BREACH ENVIRONMNETAL AND SOCIAL ASSESSMENT AT MOPANE COPPER MINE** **Year:** 1999 **Location:** Kitwe**,** Zambia **Client: ZCCM – Investments Holding** **Main project features**: Conducting an environmental and social impact assessment of the Breach of Tailing Dam No 33 at Mopane Copper Mine in Kitwe, Zambia **Position held:** Lead Socio-economic Expert **Activities to be performed:** Conducted the Social Impacts Assessment, including the effects on health and livelihoods and prepared a report.

Expert's contact information:
E-mail: robam.musonda64@gmail.com
Telephone: +260 977783184 or +260 955783184

ROBAM MUSONDA		20/08/2024
Name of Expert	Signature	Date

2. **Edwin Matokwani, Ecology Expert**

Title on the Project	Ecologist / Avi-fauna
Name	Edwin **Matokwani**
Date of Birth	23rd March 1963
Country of Citizenship/Residence	Zambia

Education

Highest Qualification
MSc Conservation Biology: University of Kent at Canterbury UK
MBA General: Management College of Southern Africa South Africa
Short Courses
Management Development (Graduate School of Business, University of Cape Town) Environmental Leaders Forum (Columbia University USA)
Change Management (East and Southern African Management Institute)
Corporate Governance (Institute of Directors)
Environmental Impact Assessment for Power Utilities (Eskom, South Africa)
Working with the Press (University of Kent, U.K)
Environmental Management System Development (SWED POWER, SWEDEN)
Strategic Management (East and Southern African Management Institute)
EIA and Social Safeguards Certification course (Zambia Institute of Environmental Management-ZIEM)

Employment Record

Period	**Employing Organization and position. Contact Information**	**Country**	**Summary Of Activities**
September 2017 to date	Francolin Milling, Green Earth Solutions, Maluwa Foundation and Tortilis Consult Ltd. Group CEO/Chairman. Plot# 15761 Shimabala. Phone 0978214322	Zambia	Giving strategic direction for Francolin Milling, Green Earth Solutions, Maluwa Foundation operations. Tortilis Consult Ltd conducted some environmental investigations on suitability of small hydropower sites for Frontier Energy Ltd. Conducted EIAs and Biodiversity Surveys at three small hydropower sites in Southern Province, namely WECO, WEBA and MUZI. Currently working as an expert for fauna, flora and avi-fauna in the ESIA for the 400kV Malawi - Zambia interconnector for GOPA Intec project. Certified EIA practitioner.
September 2014 to August 2017	Transmission Eltel Zambia Limited. General Manager/Environment Health and Safety. (Engaged in the connection of the rest of North Western Province	Zambia	Increased management's effectiveness communicating values, strategies, and objectives, planning, monitoring, developing incentives; developing a climate for offering information and opinions; providing educational opportunities. Built company image by collaborating with customers, government, community organizations, and employees; enforcing ethical business practices.

	to the National Electricity Grid Project).		Developed an Environmental and Social Management System (ESMS) that entailed methodological approach to managing environmental and social risks and impacts in a structured way on an ongoing basis of all construction projects based on IFC standards. Ensured that the requirements of the ESMS, commitments in the ESIA, and the requirements of all licenses and permits were implemented on a day-to-day basis. Developed Occupational Health and Safety Management system and work procedures for all employees engaged in construction projects and continuously improved the OHS management system. Served as general coordinator and document manager of all ESMS aspects as well as coordinated and identified potential impacts based on the ZESCO Environmental and Social Management Plan (ESMP)
2011 to 2012	Zambia Wildlife Authority. Director General. Chilanga	Zambia	Chief Executive Officer of the organization Responsible for the wildlife estate of the country. Ensured the Authority fulfilled its mandate in accordance to the Wildlife Act # 12 of 1998. Provided the Authorities' strategic guidance in its operations. Coordinated all projects being undertaken by all cooperating partners and ensured their success. Solicited support for the Authority from NGOs and Donors to supplement its available resources Planed and execute the Authority's daily activities through its directorates and reported progress to the Board of Directors. Advised the Minister and the Board on all matters that required their attention.
2007 to 2011	Zambia Wildlife Authority. Director of Conservation Management	Zambia	The Zambia Wildlife estate was divided into four regions, each headed by Regional Managers who were answerable to my office. Responsible for all national park management activities in the country. Responsible for wildlife management and tourism infrastructure development in all national parks and game management areas. Responsible for strategic planning of all operations in the country Responsible for all Wildlife law enforcement activities in the country Responsible for safari hunting in the country. Responsible for resident hunting in the country. Responsible for Community Based Natural Resources Management.

2001 to 2007	Zambia Wildlife Authority. Regional Manager for Eastern Region	Zambia	Responsible for four national parks namely South Luangwa, Lukusuzi, Luambe and Nyika and the surrounding Game Management Areas situated in Eastern Region and managed by Area Wardens. Responsible for overall day-to-day administration of the Region. Responsible for safekeeping and maintenance of all Authority assets. Responsible for the Norwegian project at South Luangwa Area Management Unit (SLAMU) which was based on Integrated Resource Development – The Ecosystem Approach. The approach was based on the following rationale: I. Sustainable development paths require that healthy ecosystems are maintained. II. User options are socially desirable and economically viable. III. Management is technologically feasible and supported by sufficient institutional capacity. IV. Institutional competence and capacity is adequate and sufficient at several levels. V. Decisions are politically legitimate i.e. that management and activities are supported by appropriate legislation and regulations.
1998 to 1999	Zambia Electricity Supply Corporation (ZESCO). Environmental Scientist.	Zambia	Responsible for other scientists in the Environment and Social Affairs Unit. With other scientists conducted Environmental Project Briefs (EPBs) or Environmental Impact Assessments (EIAs) for all projects undertaken by ZESCO. Responsible for conducting Environmental Audits for some existing ZESCO installations. With other scientists carried out awareness campaigns on environmental issues among ZESCO employees. With other scientists worked out a management regime for managing transformer oils contaminated with PCBs. Co-ordinated all environmental issues at ZESCO. Carried out awareness campaigns among the urban and local communities for all ZESCO projects that had a bearing on the environment.

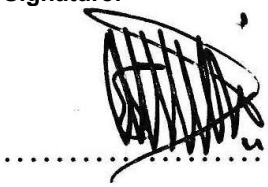
Membership in Professional Associations and Publications:

1. Member of the Society for Conservation Biology
   Publications
1. Community Markets for Conservation (COMACO) links biodiversity conservation with sustainable improvements in livelihoods and food production.
2. Products that can be marketed by the Community Trading Center of Mfuwe.
3. Environmental Auditing for the University of Kent at Canterbury
   Language Proficiency: English, Lozi, Nyanja, Bemba and Tonga

References

Dr. Dale Lewis WCS Country Director and founder of Community Markets for Conservation (COMACO) Zambia. Phone: +260962646669 Email: dlewis@itswild.org, wcszam@coppernet.zm	**Dr. Henry Mwima** Phone: +260979486218 Email: henry.mwima@yahoo.com

Signature:



Date: 19/07/2024

3.Godfrey Chileshe, Gender and GBV / SHE Expert

Position	**Gender and GBV / SHE Expert**
Name	Godfrey Chileshe
Date of Birth	5th May 1961
Nationality	Zambian
Address	Farm No. 6072/M, Furngove, Mungwi Road, Chilanga
Phone	0977998803/
Email Address	godfrey_chileshe@yahoo.com /godfreychileshe427@gmailcom

Education

2020 PhD, Public Health
2018: Diploma Teaching Methodology
2014: Master of Public Health, Chreso University
1989: Bachelor of Social Work, University of Zambia

Membership of Professional Associations
Water and Sanitation Council of Zambia (WASAZA)

Other Trainings
1981: Cert, Environmental Health and Hygiene, Levy Mwanawasa Medical University
2015 Neglected Tropical Diseases, Heldelberg University, Germany
2009: Participatory Methodologies, PLAN International
1990: Cert, Hospital Management for Hospital Administrators, NIPA
April 2017 Decision Making in Public Health, Chreso University in collaboration with Institute of Public Health, Heidelberg University, Germany.
2019: HIV/AIDS Training
2019: Health and Safety in Work Place
Nov, 2017Neglected Tropical Diseases in the Global Health Agenda, in collaboration Institute of Public Health Heidelberg, University Germany
2014: Project, planning, budgeting and management, Kariba Inns, Siavonga
2013: Monitoring and Evaluation ISTT, NRDC
July, 2011: Project Planning, Monitoring and Evaluation, CARE International, Kabwe
2009 Budget planning and Tracking, Kariba Inns, Siavonga

Country Work Experience
Zambia

Languages (indicate skill in which you can work)

Language	Writing	Speaking	Reading
Bemba	**Excellent**	**Excellent**	**Excellent**
English	**Excellent**	**Excellent**	**Excellent**
Njanja	**Good**	**Excellent**	**Good**
Tonga	**-**	**Fair**	**Fair**

Lala/ swaka /lamba	**Good**	**Very good**	**Very Good**

EMPLOYMENT RECORD

From: 2017 to 2018
Employer: Chreso University
Positing Held: Dean of Students
Responsibilities:
Central Office with overall responsibility for student governance and personnel services, disciplinary control, management of student registration and records, policy development, coordination of planned activities, supervision of members of staff, financial

- Manage and supervise a school's admissions office along with any programs related to that office
- Act as a liaison between student departments and institution administrators
- Develop and implement department working procedures, budgets, policies and goals
- Assess student body needs and respond to any questions or concerns from the student body in an effective and timely manner
- Provide proactive leadership and structure to ensure school development
- Provide student support on issues related to student services, institution policies and department processes
- Conduct consistent department evaluations to determine how efficient it is running and, if necessary, recommend ideas of improvement
- Prepare and present annual statistical reports

From: 2014 to 2016
Employer: Chreso University
Position Held: Head of Department Public Health
Responsibilities

- Lecture at Undergraduate level in areas allocated
- Supervise and monitor undergraduate field attachments and educational tours and Research
- Contribute to the development planning and implementation of curriculum
- Assist in the development of leaning materials, prepare schemes of work and maintenance of records to monitor student progress, achievements and attendance
- Facilitate departmental and faculty seminars aimed at sharing research outcomes
- Manage the administration of the Departmental programmes of study and other academic activities
- Prepare and mark examinations and other assessments (tests, assignments, presentations etc

From 2007 -2013
Employer: CARE International- Zambia
Position Held: Programme manage
Responsibilities:

- Overall management and oversight of the implementation of the water supply and sanitation improvement project in Mpika, Mbala, Kasama and Mpulungu Districts.
- Coordinating, planning budgeting and implementation of WASH activities in selected communities in collaboration with Water Utility Company and Local Authorities
- Provide operational and methodological support to social and gender analysis in water and sanitation programs to Local Authorities.
- Establishing networks with organisations within the sector,

- Facilitating access to timely information to partners communities and beneficiaries for improved decision-making
- Providing guidance and operational support and advice to implementation partners,
- Facilitating the development of local community managerial skills and knowledge, maintaining networks with organisations within the sector,
- Facilitating timely and high quality information to partners and beneficiaries for improved decision-making, including convening monthly, annual partnership review meetings. The role also involved management of a team of 3 technical staff and 5 social analysts providing advice,
- Operational support and methodological support to social and gender analysis in water and sanitation programs to Local Authorities.
- Build capacity of community based structures to manage and implement hygiene and sanitation projects

From: **2003 to 2006**
Employer: **GRZ/ABSA/ ZESCO – Gwembe Tonga Development Project (GTDP)**
Position: **Rural Sociologist**
Responsibilities

- Mobilizing community members and local institution formation and strengthening,
- Facilitating technical support to partner organizations and staff,
- Facilitating community participation and ownership of projects,
- conduct training on HIV/AIDS and Gender inclusion in project management and implementation
- Capacity building support to local based Organizations using a variety of strategies including mentoring, coaching and process facilitation,
- Conducting regular project monitoring and evaluation documenting lessons learnt, writing proposals, budget tracking and development of partnerships with appropriate local organizations.

From: **1999 to 2002**
Employer: **PLAN international – Zambia**
Position held: **Project Manager**
Responsibilities

- Management, supervision and implementation of all social programmes in PLAN international selected communities in Mazabuka. This role involved social assessments and poverty analysis development of operational implementation plans, development of budgets,
- Mobilising community and technical support and advice during project implementation.
- Conducting Participatory monitoring and knowledge building of local leadership structures, institutional change and governance,
- Capacity development of local Community based facilitators such as Community health Workers (CHWs).
- Provide field management training on Participatory Poverty Assessments,
- Initiate and facilitate work on improvements and construction of social infrastructure, (schools, water and sanitation) health and hygiene promotion,
- Initiate programmes to support Orphans and Vulnerable Children and Households with Orphans and Vulnerable children.

From: **1995 to 1998**
Employer **Ministry of Agriculture /European Union**
Position Held: **Rural Self Help Group Advisor**
Responsibilities

- Mobilise small scale and resource poor Farmers in targeted areas and facilitate the formation of indigenous Farmer Groups to participate in cooperative schemes for better representation,
- Facilitate beneficiary Training needs assessment (TNA) and implement, participatory training for beneficiaries to gain knowledge on participatory project identification, planning, management, and monitoring awareness rising,
- Coordinate with the Ministry of Agriculture conduct awareness training for smallholder farmers on the changes in the agricultural policy environment and implications for marketing and input supply,
- build Sustainable Linkages with External Partners and Facilitate and
- Facilitate and develop sustainable linkages of Farmer groups with existing Agricultural support networks (credit, input supply and markets).
- Conduct project monitoring and Prepare reports as required

From: 1992 to 1994
Position Held: Senior General Secretary
Employer: Young Men Christian Association (YMCA)

Responsibilities

- Responsible for the supervision of all Youth activities including character development, Life Skills, and Sports, Fitness & Recreation and job linkages,
- Inspire and enable all young people to reach their full potential as caring, productive and responsible citizens. Main duties included promotion of HIV/AIDS testing and Counselling, coordinate & implement spontaneous recreational activities,
- Provide direction for volunteers in order to stimulate participation in programs; Identify, plan and conduct analytical work that assesses development benefits to local communities,
- Taking into account gender and poverty-sensitive aspects, coordinate with Ministries of Youth, Labour, Education, Health for consistency of approach, to Youth development, exchange of experiences and continuous improvement of practices and integration of Youth development to the management of projects.

From: 1989 to 1991
Position held: Hospital Administrator (LITETA, LEWANIKA, and THOMSON)
Employer Ministry of Health

Responsibilities

Overall management and coordination of all administrative logistical, secretarial, catering, transport and all support services in the hospital.

Support the Medical team in providing non-medical requirements, Coordinate the catering department, plan hospital menu and facilitate the procurement of nutritious food items for the patients, ensure that all buildings and walls of

KEY EXPERIENCE

- Over 25 years implementing social projects focus on improving the quality of life of vulnerable people and communities, Experiences conducting ESIAs, Stakeholder Engagement and citizen participation, establishment of Grievance Redress Mechanisms, GBV RAPs, monitoring and Auditing Environmental and Social Management Plans (ESMPs). Additional experience on Public Health issues, local services development in tackling inequality and poverty. Appreciable experience working with people in diverse settings, involving collaboration with multiple partners (government, Private sector, NGOs, CBOs, etc)

WORK UNDERTAKEN THAT BEST ILLUSTRATES CAPABILITY TO HANDLE THE TASKS ASSIGNED

Period	Employing organization and your title/position. Contact information for references	Country	Summary of activities performed relevant to the assignment
Dec, 2024 on going	**Employing Organization**: Road Development Agency (RDA) Position held: Social Safeguard Expert For References: Mr Jacob Chishiba Kaizen Consultancy International Plot 10C Middle way, Kabulonga, P.O. Box 33526, Lusaka, Zambia Email: kaizen0601@gmail.com Mobile: +(260)-977-758-591	**Zambia**	**Preparing /updating of the Environmental and Social Impact Assessment (ESIA) and Preparation /Updating of the Environmental and Social Impact Assessment and Resettlement Action Plan Reports (RAP) for the rehabilitation of 238.3Km Serenje-Mpika road (North South Corridor).** Activities carried out include: • Identification and carrying out an analysis of stakeholders, • Conduct exhaustive Public consultations in their vicinity with the attention to affected and vulnerable groups residing all along the main road alignments and other pertinent ancillary activities that includes quarry sites, borrow pits, crusher sites, campsites, bitumen storage areas, etc • Systematically evaluate the project alternatives in terms of the potential environmental and social impacts with regard to the project location, • Assess the potential risks and impacts to tangible and intangible cultural heritage resources in the project area including undertaking an inventory of community assets such as cemeteries/ graveyards, sports area, areas of livestock grazing/ crossings, general communal-use areas and identify chance find procedures. • Review the country's applicable policy framework, national laws, and regulations, and institutional capabilities (including implementation) applicable to the project under international treaties and agreements relating to the environment and social issues • Propose grievance redress mechanism to be established and implemented throughout the project
Oct, 2019-2023	**Employing Organization**: Mariswe/ Allione	Zambia	**Monitoring of the Output Based Performance of Rural Roads Contract in Eastern Province of Nyimba, Petauke, Sinda and Katete District**

	Title/Position: Environmental & Social Safeguard Expert For References Jaco Hyl Mariswe (PTY) Limited Mariswe House, Eton Office Park, Harrison Avenue, 2191, Private Bag X66, Bryanston, South Africa		Godfrey was hired as a Social Safeguard Specialist to monitor the implementation of the ESMP of the rural roads Rehabilitation project in Nyimba, Petauke, Sinda and Katete Districts in Eastern Province Services provided are tabulated below: a) Monitor and report on the overall compliance of project investments with environmental safeguards in accordance with the principles, procedures and processes laid down in the environmental safeguards frame work and ensure compliance of operations with the Bank's and GRZ environmental and social safeguards b) Provide technical guidance to contractors on the preparation of necessary documentation, including but not limited to Environmental and Social Impact Assessments, **Resettlement Action Plans**, Environmental and Social Management Plans, and Social and Environmental Management Systems. • Advise the Contractor's Environmental, Social Safeguard and Community Liaison Specialists (ESSCLS) about any nonconformance in respect of this C-ESMP and shall advise the ESSCLS of the actions that will be taken to rectify the non-conformance. • Ensure that the necessary environmental authorizations and permits have been obtained. • Review and approve the Contractor"s method statements. • Order the removal of person(s) and/or equipment not complying with the C-ESMP specifications. • Monitor and review the on-site environmental management and implementation of this CESMP by the Contractor. • Enforce all the recommendations of the EIA and C-ESMP • Visit the Program sites as and when necessary to undertake field inspections and/or critical evaluation of actions needed

			to assure the safety of project field activities • Prepare Monitoring Forms in conjunction with the ESSCLM for environmental parameters such as Air and Dust
July 2023	**Employing organization**: SMEC International Title/position held: Environmental, Social Safeguards and Gender Expert Title/Position Held: Social and Gender Expert For Reference: Tina Lungu Plot 35205, Alick Nkhata Road, Mass Media Lusaka Phone 076202887-	**Zambia**	**Feasibility Studies and Detailed Designs for Integrated and Sustainable Urban Sanitation in Lusaka City.** Was hired as a Senior Gender and Social Expert to carry out a Gender assessment and social economic survey of sanitation in Lusaka Services provided included the following: • Conduct a Gender Sensitivity Survey of Households in the project area • In line with the Conduct an assessment to determine social inclusion gender in water supply and sanitation projects • Facilitate and create the conditions necessary to increase the participation of women, youth and other vulnerable groups in the preparatory studies and consultative processes. • Assess gender and social context in the project priority areas in line with water and sanitation services. • Analyse how the social economic context influence access to, control, benefits, constraints to services etc. • Assess the communities' activity profiles and differences between men and women in the project impact areas in line with water and sanitation. • Ensure gender and diversity mainstreaming in operations, programs, projects and community power structures in the project affected priority areas. • Collect sex disaggregated data with regards who has access to, control, benefits and use of sanitary facilities in the selected project priority areas. • Identify the needs for capacity and training of men, women the selected wards and other community structures. • Assess gender stereotypes which perpetuate disadvantages for women/men with re-

			gards to participation in the project identification, design and implementation of water and sanitation facilities.
Aug-Oct 2023	ASIAN Consultancy Engineering (ACE) Tiltle/ Position held: Environmental Gender and Social Inclusion Expert For Reference: Sandeep Yadav Asian Consult Engineering (ACE) M+91-11- 4163-5644 NEW DELHI	**Zambia**	**Gender Sensitivity Climate risk Vulnerability and Institutional Capacity Assessment in the Copperbelt Northwestern and parts of Central Provinces.** Godfrey was engaged to carry out the following • Conduct Gender responsive Household survey and undertake a situational analysis • Conduct field consultations with local stakeholders and community groups on existing vulnerabilities and coping strategies in order to identify the most vulnerable Districts and Wards across the target areas;Gender desegregated climate risk assessment of the selected provinces and develop a climate risk vulnerability profile forecasted for each Target district and ward • Identify on-going opportunities for disaster risk reduction and climate change adaptation that the government and district planning structures could scale up to strengthen climate resilience and disaster preparedness in the target areas; • Undertake a situation analysis in target areas on past and current climatic hazards, their impacts and initiatives to address these and document the livelihoods and ecosystems trends in line with identified climate hazards; • Capacity assessment will be undertaken to determine the level of preparedness of governance structures in the target project areas. This will include identification of knowledge, skills and information gaps related to climate change and make recommendations for addressing these gaps during full scale project implementation xi. Documenting the changing patterns of livelihoods, ecosystems and climate including trends of the hazards identified in (10) above; xii. Develop a climate risk and vulnerability profile forecasted for each target

			district and Ward to inform future development plans and investments;
Nov 2023	Japanese International Corporation Agency (JICA) Title/Position Held: Environmental & Social Expert For References: Makine Kusano PACET Corp, Tokyo, +81-3-5365-2741 JAPAN	**Zambia**	**Environmental and a Social Impact Assessment and Environmental Assessment (SEA) for the formulation of a Comprehensive Regional Plan for Greater Lusaka.** I was engaged in line with JICA procedures to conduct an Environmental and Social Impact Assessment for the formulation of the Comprehensive Regional Pan for Greater Lusaka Services provide included: (a). To review the contents of the existing policies/ plans/ programs and examine the issues on environmental and social aspects of development planning (b). To conduct scoping (clarify crucially important items on environmental and social impacts and its evaluation methods to be taken into account in the decision making such as policy, plan, and program levels) (c). To identify baseline data on existing environmental and social conditions of the target area (e.g. land use, environmental pollution, natural environment, socio-economic situation, socio-cultural environment, lifestyle of indigenous peoples and communities) (d). To identify legal framework and institutions of Zambia on environmental and social considerations, including: (e). To evaluate likely impacts and compare alternatives at policy, plan and program level. Option including “without project option” or “Business As Usual” from technical, financial and impacts of environmental and social points of view, and select the optimal plan (f). Conduct a scoping (g). Identify the baseline data on existing environmental and social conditions of the area. (h). To assess the likely Environmental and Social impacts of alternatives

			based on results of the scoping activity (l)Identify measures to mitigate the impacts of the plan (ie measures to avoid, minimize or compensate the negative impacts
2019-2020	Employer: Ministry of Agriculture and Livestock/ Aquaculture Enterprise Development Project (ZAED) Position Held: Environmental &Social Expert For References Jacob Jacob Chishiba Kaizen Consultancy Intermatinal Plot 10C Middle way, Kabulonga, P.O. Box 33526, Lusaka, Zambia Email: kaizen0601@gmail.com Mobile: +(260)-977-758-591	**Zambia**	**Environmental and Social Impact Study for the Aquaculture Enterprise Development Project under the Ministry of Agriculture and Livestock (Gwembe, Mungwi, Rufunsa, Kafue, Kasempa and Samfya Districts)** Godfrey was engaged as a social expert to conduct Social Impact assessment and identify negative social impacts of the proposed Aquaculture projects in in 6 Districts Activities undertaken included the following: • Conduct an Environmental and Social Impact Assessment to identify positive and negative effects and mitigation measures of negative impacts • Identify the presence of vulnerable people (Female-headed households, Orphans, unemployed persons, Disabled people, more than 65 years aged peoples, etc.,) residing in the project area and compile information on their specific demographics, socio-cultural features, livelihood and employment patterns and use of natural resources. • Discuss social cohesion and leadership institutions. Provide gender-specific information in the area • Identify the risk of Gender Based Violence (GBV)/Sexual Exploitation and Abuse (SEA) in the project area • Identify measures of enhancing the positive impacts • Evaluate the impacts and rank them in order of importance • Compare all alternatives on the basis of economic, socio-cultural and environmental gains and costs
2015	Batoka Gorge Hydro Electric Power Scheme (BHES) Position Held: Stakeholder Engagement, Environmental, Resettlement and Social Economic Expert		**Environmental and Social Impacts Assessment of Batoka Gorge Hydro Electric Power Scheme (BHES)**

	For References Ms Nadal Environmental Resource Management **Postnet Suite 624 P Bag X 29** ERM Tel No(s): 011 7984300 Address: South Africa		Godfrey was hired as a Stakeholder Engagement, Resettlement and Social Economic Expert to conduct a ESIA on the proposed to develop Batoka Gorge Power located on the Zambezi Basin between Victora falls and Kariba Dam to meet the growing demand for energy in both countries Services provided included the following: • Undertake Public Consultation to ensure that all interested and affected stakeholders are involved in the ESIA process and their views incorporated into the ESIA report • Carry out detailed socio-economic assessment, including a description of the population/demographics of the area of impact, and livelihood and income strategies • Conduct Environmental and Social sensitivity studies and determine the scale and the nature and magnitude of its potential environmental impacts • Provide an analysis of potential risks associated with development of the Batoka Gorge HES and based on this assessment, this phase will identify options and define recommended measures to be taken to eliminate, reduce, mitigate or manage associated risks and develop any opportunities for environmental and social enhancement. • Description of the primary social services in the area of impact, including quality of services delivery – especially water, sanitation and waste management, health services, and schools; • gender and livelihoods assessment description of the community structures: official leadership structures and other institutions that are important to the community; • description of the main NGOs active in the area and their activities; • identification of all resettlement requirements; and, • Carryout a public health and safety, assessment particularly in relation to waterborne diseases, with regard to dam construction and operation.

			• Propose an Environmental Management Plan specifying the predicted impacts, mitigation measures/enhancement measures and schedule of these measures
2015	Zambia Sugar Company Position Held: Environmental & Social Expert For References Jacob Chishiba Kaizen Consultancy International Plot 10C Middle way, Kabulonga, P.O. Box 33526, Lusaka, Zambia Email: kaizen0601@gmail.com Mobile: +(260)-977-758-591	**Zambia**	**Environmental and Social Management Plan For The Proposed Ethanol Distillery And Waste Water Treatment Plan.** Godfrey was engaged to carry out assessment of the ESIA for the proposed Ethanol Plant and the associated environmental and social safeguards, as well as the preparation of final report Services provide included: • Identification of probable biophysical, socio-economic and health and sanitation impacts that the project will have on aspects of the physical (receiving) and social environment, and analysis and determination of the significance of these impacts • collection and review of relevant background information and GAP analysis • verification of legal ownership of affected properties socio-economic survey • Identification of probable biophysical, socio-economic and health impacts that the project will have on aspects of the physical (receiving) and social environment, and analysis and determination of the significance of these impacts • Detailed environmental analysis of the project and comparison of project alternatives including with and without project scenarios • Preparation of separate Environmental and Social Impact Assessment (ESIA) reports and Resettlement Plans (RP) for each project.

Expert's contact information: (e-mail: godfrey_chileshe@yahoo.com, Phone : 0977998803

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available, as and when necessary, to undertake the assignment in case of an award. I understand that any misstatement or misrepresentation described herein may lead to my disqualification or dismissal by the Client, and/or sanctions by the Bank.

Godfrey Chileshe _		15th January 2024
Name of Expert	Signature	date

Name of authorized representative of the consultant	signature	date (yr, month)

4. Donald Chikumbi, Archaeological and Heritage) Expert

Position Title and No.	Cultural Resources (Archaeological and Heritage) Expert
Name of Expert	Donald Chilengwe Chikumbi
Date of Birth	23rd November, 1965
Citizenship	Zambian

Resume

Donald is a Zambian national with a Masters Degree in Archaeological and Heritage Management from the University of Cambridge, England. He moved up through the ranks of the Zambian National Heritage Conservation Commission from an intern in 1989 to Executive Director of this National Institution in 2004 – 2009.

Donald has performed consulting work for Environmental and Socio-Economic Impact Assessments for a number of public and private sector projects in the Energy, Mining, Nature Conservation, Tourism and Transport sectors in Zambia over the past 25 years. His roles have been assessing the impacts of developments on cultural heritage and archaeological sites of importance, as well as socio-economic impact assessments of Affected and Interested Parties. Donald has written, published and presented a number of academic papers on Archaeology and Cultural Heritage at conferences in Southern Africa, United States of America and Europe. Donald is now lecturing Cultural Heritage and Indigenous Knowledge Systems, Environment Governance and Equity, and Environmental Sustainable Development in the department of Governance in the School of Humanities and Social Sciences of The Copperbelt University, ZAMBIA.

Currently, he is a PhD student in Development and Management Studies at the University of Stellenbosch in Cape Town.

Education

- PhD student (current), Development and Public Management, Stellenbosch University, Stellenbosch-Cape Town, RSA.
- MPhil, Archaeological Heritage Management and Museums, University of Cambridge, Cambridge, England 1992.
- B.A. ED, History, University of Zambia, Lusaka, Zambia 1988

Other Training

- Certificate in Compliance, Integrity & Anti-Corruption, GOPA Consulting Group, 2024
- Certificate in Collaborative Environmental Governance, Stellenbosch University, 2017
- Certificate in Wildlife Conservation, Southern Africa Wildlife College (SAWC), 2017
- Certificate in Wildlife Economies and Governance, Stellenbosch University, 2015

Employment Record

Period	**Employment organization and title/position. Contact information for research**	**Country**	**Summary of activities performed relevant to the assignment**
2011 – Present	Lecturer in Governance Studies, School of Humanities and Social Sciences. The Copperbelt University	Zambia	Lecturing in Cultural Heritage and Indigenous Knowledge Systems, Environment Governance, Equity and Sustainable Development
2004 – 2009	Director General (CEO). National Heritage Conservation Commission. NHCC HQs Lusaka	Zambia	National Heritage Policy formulation, Planning, Coordination, Implementation and Fund raising

1997 -2004	Regional Director (South-West). National Heritage Conservation Commission. NHCC HQs Lusaka	Zambia	Coordinating and implementing Heritage programs and activities in the region
1994 -1997	Assistant Director Cultural Heritage Department National Heritage Conservation Commission NHCC HQs Lusaka	Zambia	Coordination of national Cultural related resources research and conservation programmes and activities
1992 – 1994	Senior Archaeologist National Heritage Conservation Commission NHCC HQs Lusaka	Zambia	Carrying out archaeological field site identifications and excavations
1989 – 1991	Archaeologist National Heritage Conservation Commission NHCC HQs Lusaka	Zambia	Carrying out desk-top and field site inventories
1988 – 1989	Secondary School Teacher Ministry of Education Lusaka	Zambia	Teaching History at Secondary School level

Membership in Professional Associations and Publications

Member of ICOMOS (International Council on Monuments and Sites)
Member of SAFA (Society of Africanist Archaeologist)
Members of SA3 (Southern African Association of Archaeologists)
Member of ICOM (International Council of Museums)
Member of the Pan African Association of Prehistory and Related Studies
Member of Conservation Society of Zambia
Member of the Zambia Environmental and Social Impact Assessors of Zambia

PUBLICATIONS

Proceedings of the Biennial SAFA Conference 1992, PAST (Periodical for the Prehistoric Society, London).
"Land use projects threaten Archaeological Heritage" Zambia Daily Mail, 20th October 1993.
Reporting of Archaeological Heritage, Archaeological Zambiana 22.
Mwela Rock Art, Zambia Heritage News 5
Images of Livingstone, Zambia Heritage News 6
Site Preservation for Tourists, Zambia Heritage News 7
Excavate Professionals, Zambia Heritage News 7
Bloemfontein Indaba: Archaeologists put face to history, Zambia Heritage News 8
The Past Revisited: First Records, Zambia Heritage News 9
Tracing Slaves from Zambia, The Post, Sunday 3rd February 2008
A Decade of Cultural Co operation, Aquila Printers, Lusaka 2009
(Co-Author, 2016). Social Conflict in the Context of the Development of New Mining Concessions in Zambia, *Journal of Southern African Peace and Security Studies*, Vol. 4 No. 2. 41 – 62
(Co-Author, 2021). Site-Assessment of Governance and Equity of Protected and other Conserved Areas (PCAs): A case of Mulobezi Game Management Area, Zambia, *Conservation Letters* (In Press).

Language Skills

	Write	Speak	Read
English	Excellent	Excellent	Excellent
Bemba	Mother Tongue		
Chichewa	Fair	Good	Good
Lamba	Fair	Fair	Fair

ADEQUACY FOR THE ASSIGNMENT

Detailed Tasks Assigned on Consultant's Team of Experts	**References to prior work/Assignment that best illustrates capability to Handle the Assigned Tasks**
Environmental and Social Impact Assessment (Full SESA) Environment and Ecology Socio-Economic Archaeological, Cultural and Heritage Issues	Name of Assignment. Environmental and Social Impact Assessment of Nazilongo Dam Year: April/May 2024 Location: Zambia (Kalomo) Client: Graham. W. Mulders (Alexwill Farm) Position Held: Environmental Coordinator Main Features: Identifying ecological, biological, socio-economic, and cultural resources lying in the proposed dam footprint. Activities Performed: identifying, documenting and mapping of all environmental parameters (ecological, biological, socio-economic and archaeological and heritage issues lying in the footprint of the proposed dam producing Terms of Reference (ToRS) and production of Environmental Impact Statement (EIS)report for the client.
Cultural Resources Survey (graves and graveyards inventory, assessment and mapping) of the Proposed Upper Lunsemfwa Dam	**Name of Assignment.** Socio Cultural Assessment of Proposed Upper Lunsemfwa Dam **Year:** June/July 2023 **Location**: Zambia (Mkushi) **Client:** Upper Lunsemfwa Development Ltd **Position Held**: Cultural Resources Specialist **Main Features**: Identifying cultural resources lying in the proposed dam footprint. **Activities Performed**: identifying, documenting and mapping of cultural resources lying in the footprint of the proposed dam and production of report for the client.
Clarifying Grave Compensation Grievance for Kalumbila Mine	**Name of Assignment Project** Clarifying Grave Compensation Grievance Year: 2020 Location: Zambia (Kalumbila) Client: Trident Foundation, Kalumbila Minerals Limited Main Features: highlight expected engagement process and responsibilities of investor as it relates to graves during resettlement; conclude on the grave compensations implemented by KML in light of the GRZ legislation and provisions therein and prepare a short project completion report highlighting the engagement with aggrieved resettled families and make recommendations. Position Held: Lead Expert and Facilitator

	Activities Performed: Responsible for clarifying the grave compensation, legislation, process, responsibilities of investor, laying to rest the grievance and produced a report for the client.
1. Exhumation of skeletal remains 2. Relocation of skeletal remains	**Name of Assignment** Relocation of human skeletal remains lying in the mining footprints Year**:**2015 Location**:** Zambia Solwezi West Client**:** FQM, Kalumbila Mine Position Held**:** Cultural resources expert/Relocation supervisor. Main Features**:** Engaging legal custodians of the affected graves, identifying new locations for relocation, engaging undertaker. Activities Performed**:** Responsible for supervision of exhumation and relocation of skeletal remains lying in the mining footprints. Responsible for determination of compensatory fees for the legal custodians.
1. Socio-Cultural engagements of communities 2. Identifying suitable sites

	Year**:** 2012 Location**:** Zambia, Solwezi-West Client: CEC Position Held**:** Cultural Resources Expert Main Features**:** Ecological, Socio, Economic Impact Assessment of the affected Communities Activities Performed: Responsible for community engagements, cultural resources assessment and determining compensatory fees for affected farmers.
1. Cultural Impacts 2. Funerary Rituals 3. Mapping	**Name of Assignment** Detailed Cultural Heritage and Archaeological Study Kalumbila Minerals Limited, Trident Project, Solwezi. Year**:** 2011 Location**:** Zambia (Kalumbila) Trident Project Client**:**FQM Position Held**:**Community Liaison/Cultural Resources Expert Main Features**:** Engaging legal custodian and mapping (GPS) graveyards in the mine foot prints Activities Performed**:** Responsible for identifying, organizing and holding of meeting with legal custodians of the deceased; mapping of the graveyards and producing of maps of the graveyards in the mining footprints
1. Cultural Resources Impacts	**Name of Assignment** Construction of Above Ground Fuel Storage Tank, Kalumbila Minerals Ltd Trident Project, Solwezi. **Year:**2011 **Location:** Zambia, Kalumbila Minerals Ltd Trident Project, Solwezi **Client:**Titan, Kitwe **Position Held:**Lead Environmentalist **Main Features: Cultural,** Ecological, Hydrological and Socio-Economic Impact Assessment **Activities Performed:** Responsible for coordinating various environmental impacts; identifying cultural resources and responsible for producing the Environmental Impact Assessment Brief (EPB).
1. Infrastructure suitability 2. Wildlife ecological suitability 3. Hydrological Impacts 4. Socio-Economic Impacts 5. Cultural Resources Impacts 6. Marketing	**Name of Assignment** Full ESIA of Proposed Bweenga Game Ranch, Batoka Gorge **Year:**2011 **Location:** Zambia, Batoka Gorge, Mukuni Chiefdom **Client:**Good Earth Power, Sultanate of Oman **Position Held:** Lead Environmentalist and Cultural Resources Expert **Main Features:**Wildlife ecological suitability, socio-Economic, cultural resources, hydrological, infrastructure impacts assessments. **Activities Performed:** cultural resources impacts and coordination of the various components of the ESIA. Responsible for the production of ESIA report and marketing document.
	Name of Assignment

1. Cultural Resources Impacts	Retrospect ESIA for Tongabezi Lodge, and Sindabezi Island and Environmental Project Brief for Devil's Island. **Year:**2011 **Location:**Zambia, Zambezi River and the Victoria Falls **Client:**Tongabezi Trust Ltd **Position Held:** Lead Environmentalist **Main Features:** Ecological, Cultural, Hydrological, Infrastructure, Socio-Economic and Tourism Impacts assessments. **Activities Performed:** Responsible for coordinating various environmental, socio-economic and tourism impacts assessments. Responsible for cultural impact and responsible for producing ESIA and EPB reports
1. Cultural Resources Impacts 2. Archaeological sites mapping and rescue	**Name of Assignment** Cultural Heritage and Archaeological Specialist Report **Year:** 2010 **Location:** Zambia, Kalumbila Trident Project **Client:**CES RSA FQM Zambia **Position Held:** Cultural Resources Expert **Main Features:** Surveying, identifying archaeological sites and other cultural resources (traditional, old settlements, etc.) **Activities Performed:** Responsible for locating archaeological sites, traditional, old settlements and mapping. Responsible for producing the cultural heritage report as part of the Trident Project ESIA.
1. Ancient Heritage Impacts 2. Archaeological sites 3. Traditional site/rituals impacts 4. Settlements and infrastructure	**Name of Assignment** Archaeological and Cultural Heritage Resources Specialist Study of the Proposed Kazungula Bridge Project, Botswana and Zambia. Year: 2009 Location**:** Zambia/Botswana Border Kazungula Client: Loci Environmental Consulting, Gaborone, Botswana Position Held**:** Cultural Resources Expert Main Features**:** Cultural resources (archaeological, traditional, old settlements, graveyards, old buildings and other infrastructures Activities Performed**:** Responsible for identifying various cultural heritage and infrastructure impacts; responsible for mapping sites and infrastructure; responsible for producing the archaeological and cultural heritage report of the proposed Kazungula Bridge (Zambian side).
1. Cultural Resources Impacts	**Name of Assignment** Specialist Study on Archaeology and Cultural issues of The proposed Konkola North Copper Mine, Chililabombwe. Year**:** 2007 Location**:** Zambia,Chililabombwe Client**:** SRK, RSA Position Held**:** Cultural Resources Expert Main Features**:** Cultural Resources Assessment

	Activities Performed: Responsible for organizing and holding meeting with various stakeholders; responsible for identifying and mapping cultural resources in the proposed mine footprint; responsible for producing the archaeological and cultural resources report
1. Assessing Cultural Values of the Landscape	**Name of Assignment** Specialist Evaluation of Cultural Values of the proposed Nomination of the Richtersveld Cultural and Botanical Landscape, Namakhoi, Northern Cape, South Africa. Year**:** 2006 Location**:** RSA Namakhoi, (Northern Cape) Client**:** ICOMOS, PARIS Position Held**:** Cultural Resources Specialist Main Features**:** Assessing the cultural value of the proposed World Heritage Site Activities Performed**:** Responsible for assessing and analyzing the cultural values(site and practices) of the Richterveld Botanical and Cultural Landscape; responsible for producing the cultural value report for consideration by the World Heritage Committee
1. Cultural Resources Impacts	**Name of Assignment** Specialist Study on Archaeology and Cultural issues of the proposed Mwambashi Copper Project, Kalulushi. Year**:** 2006 Location**:** Zambia (Kalulushi) Client**:** SRK , RSA Position Held**:** Cultural Resource Expert Main Features**:** Cultural Resources Assessment Activities Performed**:** Responsible for organizing and holding meeting with various stakeholders; responsible for identifying and mapping cultural resources in the proposed mine footprint; responsible for producing the archaeological and cultural resources report
1. Archaeological Sites Impacts 2. Cultural Resources(Traditional and Ritual sites) Impacts	**Name of Assignment** Specialist study on Archaeology and Cultural issues of the proposed development of Kweli Safari Lodge and Camp site on plot 9920, off Mukuni Road, Livingstone. Year**:** 2003 Location**:** Zambia (Livingstone) Client**:** KWELI SAFARIS Position Held**:** Environmental Lead Assessor and Cultural Resources Expert Main Features**:** Archaeological and cultural resources impact assessments Activities Performed: Responsible for for identifying and mapping cultural resources in the proposed Lodge footprint; responsible for producing the archaeological and cultural resources report
1. Cultural Resources Impacts	**Name of Assignment** Specialist study on Archaeology, Cultural and Socio-Economic proposed Lodge development at Fairy Land Livingstone. Year**:** 2000

	Location: Zambia (Livingstone) Client**:** STAR OF AFRICA, RSA Position Held**:** Cultural Resources Expert Main Features**:** Cultural Resources(Archeological, Old buildings and infrastructure, Traditional) Impacts Assessments Activities Performed**:** Responsible for cultural resources surveys, mapping and inventory; produced a cultural resources report.
1. Cultural Resources Impacts 2. Political Economy and Traditional History	**Name of Assignment** Specialist study on Archaeology and Cultural, Political History issues of the proposed Sun International Hotel Development at Victoria Falls Year: 1998 Location: Zambia (Livingstone) Client: CSIR, RSA Position Held: Historian and Cultural Resources Expert Main Features: Cultural resources (archaeology, traditional, ceremonies) impacts assessments and the political economy and traditional history of the sub-region Activities Performed: Responsible for identifying and mapping of cultural resources (archaeological, ritual, ceremonies) and writing of the political economy and traditional history report
1. Cultural Resources Assessment	**Name of Assignment** Environmental Assessment for Cultural Resources Study in the Mosi-oa-Tunya National Park. Yea**r:** 1997 Location**:** Zambia (Livingstone) Client**:** National Parks and Wildlife Department, Chilanga Position Held **:** Cultural Resources Expert Main Features**:** Cultural Resources(Archeological, Old buildings and infrastructure, Traditional) Impacts Assessments Activities Performed Responsible for cultural resources surveys, mapping and inventory; produced a cultural resources report
1. Cultural Resources Inventory	**Name of Assignment** Strategic Environmental Assessment for Cultural Resources in the Victoria Falls Area (Archaeological, Traditional, Architectural and Other monuments), Zambia. Strategic Environmental Assessment Report, Year**:** 1995 Location**:** Zambia, (Livingstone and Kalomo) Client**:** IUCN, ROSA, HARARE Position Held**:** Cultural Resources Specialist Main Features**:** Cultural Resources (Archaeological, Traditional, Architectural and Other monuments) inventory Activities Performed Responsible for cultural resources surveys, mapping and inventory; produced a cultural resources report for Strategic Environmental Report

1. Cultural Resources Inventory	**Name of Assignment** Feasibility study of the Kafue Gorge Lower Hydro- Electric Project: An assessment of paleontological and archaeological impacts of the proposed hydro-Power project. Year**:** 1994 Location**:** Zambia, (Kafue, Namalundu Gorge) Client**:** ZESCO, Ltd Position Held**:** Cultural Resources Specialist Main Features**:** Cultural Resources (Archaeological, Traditional, Architectural and Other monuments) inventory Activities Performed Responsible for cultural resources surveys, mapping and inventory; produced a cultural resources report for Strategic Environmental Report

Certification:
I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the assignment in case

Mr. Donald Chilengwe Chikumbi		29.05.2024
Name of Expert	Signature	Date

5. Benson Kabungo, GIS Expert

Position Title and No.	GIS & REMOTE SENSING SPECIALIST
Name of Expert:	Benson Morgan Kabungo
Date of Birth:	27th July 1970
Country of Citizenship/Residence	Zambia,

Education:
Degree in Geo-informatic Science, University of Nairobi, (2022 – 2026), Kenya (Currently enrolled).

Degree in Environmental Education, Zambia Forestry College, (2018 to 2022) Mwekera, Zambia.

Diploma in Forestry, Zambia Forestry College, (2014 to 2016) Mwekera, Zambia.

GEOINFORMATICS Diploma in Earth Observation Science, GEO Data Design Centre, Johannesburg, South Africa, (2011 to 2013)

GSCE G12 Certificate, Isoka Boys Sec Sch (1984 - 1987 Year), Isoka, Zambia

Employment record relevant to the assignment: {Starting with present position, list in reverse order. Please provide dates, name of employing organization, titles of positions held, types of activities performed and location of the assignment, and contact information of previous clients and employing organization(s) who can be contacted for references. Past employment that is not relevant to the assignment does not need to be included.}

Period	**Employing Organization And Position. Contact Information**	**Country**	**Summary Of Activities Performed Relevant to The Assignment**
November 2019 to April 2020	Environmentalist Forestry & GIS /RS Specialist – **Tortilis Consult Limited**	Zambia	Land-use management, mapping and surveying, urban planning, incar navigation systems, public health, agriculture, meteorology and climate change, ecology and conservation Natural resource management and sustainable utilization, Forestry and wildlife management, management of sensitive ecosystems, land and wildlife ecology, remote sensing and geographic information systems (GIS) techniques, survey statistics, land cover and environmental mapping, Aspects of spatial analysis and modelling, monitoring and evaluation of projects and programs, land use planning and land evaluation and entomology, including economics. Beekeeping
01-01-2016 date	DNPW GIS Specialist	Zambia	Conduct project-oriented fieldwork aimed at data capture and validation that adds value to the effective wildlife man-

			agement. Ensure usage of appropriate GIS tools / equipment in the field that are used for accurate data capturing and processing, with high output capabilities

Membership in Professional Associations and Publications: Zambia Geospatial Technology (ZAGIT)

Language Skills (indicate only languages in which you can work): English, Bemba, Tonga and Chinyanja

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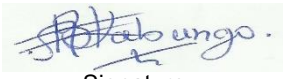
Language Proficiency: Fluent in English, Bemba, and Nyanja

Expert's Contact Information: email kabungobk@gmail.com Phone: +26**0 975593263**

Certification:
I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the assignment in case of an honor. I understand that any misstatement or misrepresentation described herein may lead to my rejection by ZEMA.

Benson M. Kabungo	20th July, 2024	
Name of Expert	Date	Signature

6.Stella Sellivana Sakala, Socioeconomic and Resettlement Expert

Family name:	Sakala
First names:	Stella Sellivana
Date of birth:	6 September,1966
Nationality:	Zambian
Civil Status	Divorced

Contact:stellasakala04@gmail.com
Mobile: +260 977 600 480

Education

Institution (Date from - Date to)	**Degree(s) or Diploma(s) obtained**
Groningen University Groningen, May 31 to 18 June, 2024	**Diploma in Land Acquisition, Resettlement and Social Sustainability**
DMI St. Eugene University, Zambia Mar 2018 to July 2020	Master of Social Work in Community Development
Galilee International Management Institute. Israel Nov 2016	Diploma in Environmental Management
Cavendish University, Zambia Jan 2008-July 2010	Bachelor of Business Administration
Zambia Institute of Diplomacy &International Studies Nov –Dec 2010	Certificate Diplomatic Practice, Protocol & Public Relations
University of Zambia Mar 2006 to August 2008	Diploma – Social Work
University of Zambia Mar 1999 - 2000	Certificate – Marketing Management

Short Courses

1	WB Safeguard Policies Workshop, World Bank, 2020
2	Monitoring, Surveillance and Evaluation, WSP, Canada, 2016
3	Resettlement and Compensation Planning, KfW France/2021
4	Contractual and Legal Framework for Hydropower Development, International Centre for Hydropower, Norway, 2014
6	Gender Mainstreaming, World Bank/European Investment Bank, 2018
7	Environmental and Social Safeguard Training, World Bank, 2019
8	Social and Gender Inclusion, World Bank, 2020
9	Social and Gender Inclusion, International Resource Plan for Power Sector in Zambia, 2021
10	Environmental & Social Safeguards training, KfW, 2020,

11	Resettlement , Monitoring & Evaluation, WPC, Canada, 2016,
12	Stakeholder Engagement, WPC, Canada, 2016,
13	Entrepreneurships, Innovation and Networking, India, 2014

Language skills: (Indicate competence on a scale 1 to 5; 1 - excellent; 5 - basic)

Language	Reading	Speaking	Writing
English	1	1	1

Membership of professional bodies:	Past Secretary General, Impact Assessment Association of Zambia/Member
Other skills: (computer literacy, etc.)	Computer literate, Driver, Counsellor
Present position:	Private Consultant
Experience:	20 years

Selected professional experience record:

Date	Company & Ref. person	Position	Description
2021	Western Power Company Technical Director Andy Fleming +260 974 869 970 Andy.fleming@western-power.org	Resettlement Expert	› Carryout Stakeholder engagement › Carry out Land acquisition, Grievance Redress Mechanism, compensation and resettlement. › Preparation and implementing Resettlement and Compensation Plan Community and stakeholder engagement
2020	ZESCO Ltd, Dr. Elenestina Mwelwa, Former Senior Manager Risk Dept. +260 968 849 340	Draft Gender Policy for Zambia Social & Gender Specialist	Key informant from the Project perspective on social and gender issues
2014	Senior Manager – Transmission (South)	International Resource Plan Social and Gender Specialist	Key informant on Resettlement, Social & Gender issues of projects
2014	ZESCO Ltd, Dr. Elenestina Mwelwa,	Zambia-Tanzania-Kenya 400Kv Interconnector	› Carry out Land acquisition. › Resettlement and Compensation implementation › Preparation of the Land Acquisition Policies

	Former Senior Manager Entreprise Risk Management Dept. +260 968 849 340	Counterpart staff in Resettlement and Compensation	› Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems. › Performing historical research to determine the extent and causes of environmental and social changes on ZESCO projects. › Reviewing and managing environmental and social risk diligence reports. › Creating data on environmental and social management systems for reporting and analysis. › Implementing Grievance Redress Mechanism › Carrying out community consultation and awareness duties and vulnerability assessment › Planning Communications strategies for the Projects › Promote and raise awareness of the business impact of emerging environmental and social issues, whether legislative or best practice, on corporate, ethical and social responsibility. › Keeping abreast with best practices in environmental and social risk management approaches, equator principles, carbon principles and other relevant initiates for power utilities.
2011	ZESCO Ltd, Dr. Elenestina Mwelwa, Former Senior Manager Entreprise Risk Management Dept. +260 968 849 340	Zambia-Mozambique 330Kv Interconnector Resettlement & Compensation Specialist	› Preparation of the Company's Resettlement and Compensation Policy › Carry out Land acquisition and resettlement and Compensation implementation. › Preparation of the Land Acquisition Policies › Preparation and implementing Resettlement and Compensation Plan on ZESCO projects. › Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems. › Performing historical research to determine the extent and causes of environmental and social changes on ZESCO projects. › Reviewing and managing environmental and social risk diligence reports.

2010	ZESCO Ltd, Dr. Elenestina Mwelwa, Former Senior Manager Entreprise Risk Management Dept. +260 968 849 340	Mumbwa-Kalumbila 330kV Transmission Line Project Resettlement & Compensation Specialist	› Preparation of the Project's Resettlement and Compensation Plan › Carry out Land acquisition and resettlement and Compensation implementation. › Preparation of the Land Acquisition Policies › Preparation and implementing Resettlement and Compensation Plan on ZESCO projects. › Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems. › Performing historical research to determine the extent and causes of environmental and social changes on the projects. › Reviewing and managing environmental and social risk diligence reports. › Creating data on environmental and social management systems for reporting and analysis. › Community relations and grievance Redress › Carrying out community consultation and awareness duties on project. › Promote and raise awareness of the business impact of emerging environmental and social issues, whether legislative or best practice, on corporate, ethical, and social responsibility. › Keeping abreast with best practices in environmental and social risk management approaches
2012	ZESCO Ltd, Dr. Elenestina Mwelwa, Former Senior Manager Entreprise Risk Management Dept. +260 968 849 340	Kariba Lakeshore 132kv Transmission Line Project Resettlement & Compensation Specialist	› Preparation of the Projects Resettlement and Compensation Policy › Carry out Land acquisition and resettlement and Compensation implementation. › Preparation of the Land Acquisition › Preparation and implementing Resettlement and Compensation Plan on the project. › Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems. › Performing historical research to determine the extent and causes of environmental and social changes on the projects.

2012	ZESCO Ltd, Dr. Elenestina Mwelwa, Senior Manager Entreprise Risk Management Dept +260 968 849 340	Chipata-Lundazi-Chama 132kV Transmission Project Resettlement & Compensation Specialist	›Preparation and implementation of Resettlement and Compensation Plan › Carry out Land acquisition › Preparation of the Land Acquisition Plan › Preparation and implementing Resettlement and Compensation Plan › Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems › Performing historical research to determine the extent and causes of environmental and social changes on ZESCO projects. › Reviewing and managing environmental and social risk diligence reports. › Creating data on environmental and social management systems for reporting and analysis › Community relations and grievance Redress › Carrying out community consultation and awareness duties on projects › Carrying out gender and vulnerability assessments › Planning Communications strategies for Zesco Projects › Promote and raise awareness of the business impact of emerging environmental and social issues, whether legislative or best practice, on corporate, ethical and social responsibility. › Keeping abreast with best practices in environmental and social risk management approaches, equator principles, carbon principles and other relevant initiates for power utilities
2014	ZESCO Ltd, Dr. Elenestina Mwelwa, Senior Manager Entreprise Risk Management Dept +260 968 849 340	Electricity Supply Access Project kV132 Resettlement & Compensation Specialist	› Preparation of the Companys Resettlement and Compensation Policy › Carry out Land acquisition and resettlement and Compensation implementation › Preparation of the Land Acquisition Policies › Preparation and implementing Resettlement and Compensation Plan on ZESCO projects. › Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems › Performing historical research to determine the extent and causes of environmental and social changes on ZESCO projects. › Reviewing and managing environmental and social risk diligence reports. › Community relations and grievance Redress › Carrying out community consultation and awareness duties on projects. › Carrying out gender and vulnerability assessments.

			› Planning Communications strategies for Zesco Projects › Promote and raise awareness of the business impact of emerging environmental and social issues, whether legislative or best practice, on corporate, ethical and social responsibility › Keeping abreast with best practices in environmental and social risk management approaches, equator principles
2016	ZESCO Ltd Former Divisional Manager – South Alex Mbumba +260 979 865 306	Sustainable Electricity Supply South-ern Di-vision - Project Coordina-tor/Lead Resettlement Specialist	›Carry out Scoping Meetings and survey; both environmental and social ›Identification of Project Affected persons. ›Plan communication strategy for the project ›Implementation of the Grievance Redress Mechanism ›Conduct disclosure exercise to Project Affected Persons ›Carryout compensation exercise ›Conduct Pre and Post Relocation Monitoring.
2016	ZESCO Ltd, Former Senior Manager Enterprise Risk Management Dept. +260 968 849 340	Tree Planting Programme Project Coordi-nator	Source, plant and monitor tree seedling. Manage the empowerment of communities involved in tree management. Raise awareness on climate change, its effects and adaptation measures
	ZESCO Ltd, Former Senior Manager Enterprise Risk Management Dept. +260 968 849 340	Kariba Dam Rehabilitation Project Reviewer – Consultant's ESIA documents	Review the consultants EIA, RCAP and ESMP for the project

	ZESCO Ltd, Former Senior Manager Enterprise Risk Management Dept. +260 968 849 340	Sesheke-Shangombo-Mongu 330Kv Transmission Line Project Coordinator/Leader Resettlement Specialist	› Preparation and implementation of Resettlement and Compensation Plan › Carry out Land acquisition. › Preparation of the Land Acquisition Plan › Preparation and implementing Resettlement and Compensation Plan › Carrying out data collection and interpretation, using the information to create solutions to environmental and social problems. › Performing historical research to determine the extent and causes of environmental and social changes on ZESCO projects. › Creating data on environmental and social management systems for reporting and analysis. › Community relations and grievance Redress › Carrying out community consultation and awareness duties on projects. › Carrying out gender and vulnerability assessments. › Planning Communications strategies for Zesco Projects › Promote and raise awareness of the business impact of emerging environmental and social issues, whether legislative or best practice, on corporate, ethical, and social responsibility. › Keeping abreast with best practices in environmental and social risk management approaches, equator principles, carbon principles and other relevant initiates for power utilities

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and experience.

Stella Sellivana Sakala
Name

Signature

Date 19 July, 2024

7..Charity Moonga, Communication Specialist

Role:	**Communication and Public Relations Consultant**
Family name:	Moonga
First names:	Charity
Date of birth:	17/01/1977
Nationality:	Zambian
Civil Status	Married

Education

Institution (Date from - Date to)	Degree(s) or Diploma(s) obtained
Zambian Open University – 2022 to date	Masters in Development Studies
Zambian Open University – 2013 to 2016	Degree in Development Studies
Evelyn Hone College - 1995 to 1997	Diploma in Journalism and Public Relations
Reuters Foundation – London	Certificate - Reporting Business in the Digital Age

Language skills:

Language	Reading	Speaking	Writing
English	Very good	Very good	Very good
Nyanja	Very good	Very good	Very good
Bemba	Very good	Very good	Very good
Tonga	Very good	Very good	Very good

Membership of professional bodies:	- Member of the Zambia Public Relations Association - Press Association of Zambia - Zambia Women in Media - Africa Women in Media - Population Reference Bureau – Women's Edition Africa 2017
Other skills:	• **10+ years of Communication & Journalism Experience:** Extensive background in broadcast, print, and social media across various industries. • **Oral and Written Skills:** Exceptional proficiency in verbal and written communication. • **Language Fluency:** Fluent in major local languages in the country and region, facilitating effective communication. • **Project Communication Management:** Skilled in managing project communication activities and monitoring performance through trackers. • **Effective Communication:** Proven ability to communicate effectively with diverse stakeholders.
	• **Campaign Support:** Experience supporting local, national, regional, and international campaigns.

	• **Independent Work:** Capable of working independently with minimal supervision and meeting deadlines. • **Detail-Oriented Writing:** Expertise in writing detailed editorial content and reports. • **Social Media Savvy:** Familiar with Facebook, YouTube, LinkedIn, Twitter, and other social networking sites. • **International Collaboration:** Experience providing communication support to international agencies (CDC, USAID, Sida) and other donors, implementing partners, and government programs. • **Fast-Paced Environment:** Thrives in dynamic and fast-paced journalism settings. • **Educational Background:** Bachelor's degree in Development Studies, Communications, Journalism. • **Communication Tools/Platforms:** Proficient with SharePoint, Zoom, Skype for Business. • **Website Management:** Competent in managing and updating website content. • **Graphic Design:** Skilled in creating Information, Education, and Communication (IEC) materials. • **Photography & Videography:** Excellent skills in photography and video production. • **Software Proficiency:** Advanced user of Excel, PowerPoint, and Microsoft Office 365.

Key qualifications and Experience

- Reviews existing documentation and contributed to the preparation of the Inception Report in collaboration with the Country Coordinator, Project Manager, and Lead Social Development Planner (LSDP).
- Organizes and conducted initial site visits to inform stakeholders about the project and gather feedback on environmental and socioeconomic constraints.
- Contributes to preparing the Site Investigation Report for Zambia (Deliverable D2) based on site visit findings.
- Develops a Stakeholder Engagement Plan (SEP) for Zambia, identifying and consulting relevant stakeholders, ensuring compliance with Zambian and international standards.
- Conducts initial and ongoing stakeholder engagement activities during Scoping, ESIA, and RAP preparation phases.
- Facilitates stakeholder engagement processes, including organizing and conducting public consultation meetings, recording minutes, and producing public consultation protocols.
- Coordinates and facilitates Public Consultation meetings to present project information, gather feedback, and ensure meaningful stakeholder participation.
- Manages public consultations for RAP preparation, including community consultations prior to socioeconomic and census surveys, and informing stakeholders about the RAP process, compensation, and grievance redress mechanisms (GRM).
- Reportes on stakeholder engagement activities throughout the SEP and RAP processes, ensuring transparent and inclusive engagement with all Project Affected Persons (PAPs) and other stakeholders.
- Ensures stakeholder engagement was gender-responsive and inclusive, addressing potential barriers and needs of vulnerable and marginalized groups.
- Contributes to the formal training of ZESCO staff in Environmental, Social, Health, and Safety (ESHS) safeguards, focusing on consultation requirements under ESIA and RAP.

Communication Specialist: Centers for Disease Control funded – IDeAS Project

- Developed, costed, and implemented annual communication strategies/plans for the CDC-funded IDeAS One Project in Zambia, implemented by BroadReach Consulting International until 2021.
- Documented challenges and lessons learned for future campaigns.
- Prepared and organized project events and meetings.
- Documented project success stories for presentation and dissemination to stakeholders.
- Collaborated with CDC/Ministry of Health to produce IEC materials (brochures, flyers, banners, posters).
- Provided branding and marking services for the project.
- Monitored project activities and identified champions for the SmartCare product nationwide.
- Organized internal and external project and field visits with donors and media presence.
- Organized project conferences and workshops.
- Developed and produced editorial content, press releases, speeches, factsheets, and news briefs.
- Developed and documented project reports.
- Managed and grew the project's social media channels.
- Produced audio-visual materials, narratives, and recordings for project communication trainings.
- Arranged video conferencing, participant management, and livestreaming of project events.
- Updated the project website and Facebook page.
- Maintained and developed relationships with key journalists, updated media lists, and distributed press releases.
- Collaborated with BroadReach International Communications Manager to maintain the intranet platform and provide weekly updates.
- Collaborated with the administration team on vendor engagement.
- Drew up meeting agendas and produced meeting minutes for dissemination to stakeholders.

National Consultant, Bodhi Analysis

- Identified research respondents for various humanitarian and development projects.
- Trained and managed field enumerators to ensure accurate and reliable data collection.
- Oversaw and organized the data collection process, including:
    - o Implementing surveys o Facilitating Focus Group Discussions (FGDs) o Undertaking Key Informant Interviews (KIIs)
- Compiled and translated data for analysis, ensuring clarity and precision.
- Liaised with senior researchers and clients to provide updates and insights on project progress and findings.
- Demonstrated proactive and organized approach to research, ensuring sound and objective analysis.
- Committed to delivering high-quality research outcomes, contributing to informed decision-making in humanitarian and development contexts.

Technical Committee Media Outreach Officer

- Developed and delivered a campaign for the Technical Committee on Drafting the Zambian Constitution.
- Coordinated and conducted consultative indabas at local, district, provincial, and national levels, involving government ministers, MPs, and EU delegates.
- Developed a list of media organizations nationwide with contact details and coverage areas.
- Participated in strategic planning for the Technical Committee.
- Budgeted, managed, coordinated, and implemented radio and TV discussion programs.
- Handled media buying and space booking for advertisements.
- Facilitated stakeholder and media advisory meetings for commissioners.
- Conducted focus group discussions and interviews nationwide.
- Developed a stakeholder list with contact details and positions.
- Identified and booked venues and rented equipment for meetings.
- Created campaign toolkits (IEC materials) to encourage national support for the constitution.
- Coordinated with donors, civil society, private and public sectors, government ministers, church, media, and individuals to support the constitution-making process.
- Managed information flow between the public and the Technical Committee.
- Trained media on creating awareness of the constitution-making process.
- Coordinated press briefings and conferences.
- Designed promotional materials and campaigns for the constitution-making process.

- Monitored and reported on media coverage of the commission's work.
- Managed catering and related services for meetings.
- Arranged travel, transfer, and accommodation for commissioners and staff.
- Ensured translation of the Draft Constitution into seven major Zambian languages.

Chief Reporter: Times of Zambia

- Supervised and managed a team of reporters, assigning responsibilities and ensuring timely delivery of news stories.
- Edited news stories for accuracy, clarity, and adherence to journalistic standards.
- Trained new and junior reporters, providing guidance on best practices in journalism.
- Served as a weekly columnist for the "Gender is My Agenda" column, addressing gender issues and published every Monday.
- Coordinated with various departments to ensure comprehensive coverage of events and stories.
- Conducted interviews and wrote in-depth articles on a wide range of topics.
- Maintained high standards of journalistic integrity and ethics in all reporting activities.
- Developed and maintained relationships with key sources and stakeholders to gather relevant news and information.
- Provided editorial support and mentorship to colleagues, fostering a collaborative and professional newsroom environment.

Specific experience in the region of the Lot:

Country	Date: from - to
Africa - Population Reference Bureau – Women's Edition Project	2017 to 2018
Africa - Africa Women in Media Project (Prizes sponsored by the EU/AU)	2020 to 2021
Integrated Decision and Analytics Support Project	2018 to 2021
Zambia - Chief Reporter (News Desk, Business Desk, Gender Desk/Weekly Gender Columnist) Times of Zambia (Part time and Full time)	2002 todate
Canada Women Deliver Conference Participant	2019

Professional experience:

Date	Location	Company & Ref. person	Position	Description
2023	Zambia	Bodhi Consulting	National Consultant	- Identified research respondents for various humanitarian and development projects. - Trained and managed field enumerators to ensure accurate and reliable data
2022- 2023	Zambia	Mafisa Livestock Agricultural Project	Communication Officer	- Supporting internal and external communication under the Mafisa agricultural project, targeting farmers in Southern and Western provinces to improve rangeland management and improve animal health outcomes as well as improved non livestock agriculture as well as livelihoods.
2021 - 2022	Zambia	Clinton Health Access Initiative	Documentation and Dissemination Specialist	- Developed and produced brochures, flyers, posters, photos, infographics and videos for use in Newsletters, Social Media, Bulletins and other community events and field visits - Documented Project success stories for dissemination among implementing partners, donors, government agencies communities as well as internally - Produced Project updates, reports and newsletters - Organised Field visits and documented and disseminated updates and success stories - Produced Project digital content for sharing on various social media platforms and the website
2018 - 2021	Zambia	IDeAS Project – Ms. Mandy Dube	Communication Specialist	- Monthly SmartCare Bulletins - Communication Strategy developed and Implemented - Branding and marking guidelines produced - SmartCare IEC materials such as brochures, flyers, posters and factsheets, among others, developed and distributed throughout the country - SmartCare Champions identified and trained for change management - Monthly Bulletins developed and disseminated to Project partners and other key stakeholders
2018 to 2021	Zambia	IDeAS Project Mr. Christopher Mbinji		- SmartCare Website - Project Website and facebook pages developed to improve the project visibility and awareness creation through content

2018 to 2021	Zambia	IDeAS Project Mr Christopher Mbinji		- IDeAS Staff Newsletters - Developed content and produced the IDeAS all staff monthly newsletter to enhance internal communication towards the achievement of Project goals
2016	Zambia	Times of Zambia – Stephen Kapambwe	Chief Reporter	- Weekly Gender Columns - Weekly columns highlighting development issues affecting women, girls and men
2018 to 2021	Zambia	Ministry of Health – Mr Stanslous Ngosa	Column Contributor	- Ministry of Health – You and Your Health Publications - Weekly column highlighting Ministry of Health issues\ - SmartCare IEC materials developed and disseminated
2002 todate	Zambia	Times of Zambia – Stephen Kapambwe	Journalist	- General Feature Articles (Part time and Full time) - Feature articles addressing various developmental issues and published randomly in the Times of Zambia
December 2020	Africa Continental Program me	Africa Women in Media (AWIM) - Joy Adigwe	AWIM Media Member	- European Union/African Union and Africa Women in Media winning article on Sustainable Development and Jobs Publication - Produced the African continent winning article under the category of Sustainable Development and Jobs creation in Africa
2017 – 2018	Uganda/ Brussels/ Rwanda	Population Reference Bureau – USA Deborah Merce	Nominee	- Gathering content and producing stories on Reproductive Health and Rights for Women and Girls in the African region
2017 todate	Kenya/Z am-bia	Rasha Kelej	Nominee	- Gathering content and producing articles on “Merck - More than a Mother Project.”

2002 to date	Zambia, South Africa, Zimbabwe, Malawi, Kenya, Namibia, Botswana, Ethiopia, Brussels, Canada, Nigeria, Ethiopia	Zambian Government	Journalist	- Gathering content and producing articles during coverage of ordinary and Presidential assignments
2011 to 2013	Lusaka	Technical Committee on Drafting the Zambian Constitution	Media Outreach Specialist	- Successfully developed and delivered a campaign for the Technical Committee on Drafting the Zambian Constitution. - Coordinated and conducted consultative local, district, provincial and national constitution indabas and produced reports - Developed a list of all media organisations throughout the country with their contact details as well as their coverage area - Participated in the strategic planning process for the Technical Committee - Budgeted, managed, coordinated and implemented radio and television discussion programmes - Facilitated stakeholder meetings, media advisory meetings for commissioners - Conducted focus group discussions and interviews with stakeholders from across all areas of the country - Developed a stakeholder list, which included their contact details and positions held - Identified and booked venues for the meetings and rented vehicles and other equipment for use

				- Created campaign toolkits which included Information, Education and Communication (IEC) materials . - Coordinated the flow of information between the public and the technical committee - Coordinated the campaign and trained the media on creating awareness of the Constitutional making process to maximise the impact of the efforts of the commission. - Drafted Speeches and coordinated Press Briefings and Press Conferences - Monitored and reported on media coverage of the institution on a daily basis highlighting the frequency of the stories and the achievements and impact of the work of the commission towards a people driven constitution. - Managed the catering and related services bookings for the meetings and where need be, was in charge of manning the communication booth or stand - Responsible for travel, transfer and accommodation arrangements for commissioners and ordinary staff within and outside the country - Ensured the translation of the Draft Constitution from English into Seven major languages in Zambia

AWARDS/CERTIFICATES

- ✓ Best Rural Electrification Reporting Award 1st Position – REA Awards 2016
- ✓ Best Rural Electrification Reporting 2nd Position Print – REA Awards 2016
- ✓ Best Gender Reporting Award 2016 – MISA Zambia Awards
- ✓ Best Labour Relations Reporting Award 2017 – MISA Zambia Awards
- ✓ Best Capital Marketing Reporting Award 2017 – MISA Zambia Awards
- ✓ Women's Edition Africa Nominee 2017 – Population Reference Bureau - USA
- ✓ Best Sexual Reproductive Health Reporting Award 2017 – MISA Zambia Awards
- ✓ Best Responsible Drinking Reporting Award 2017 - Zambian Breweries Awards
- ✓ Best Rural Electrification Reporting Award Print Media – 2017 – REA Awards
- ✓ Best Agriculture and Local Sourcing Reporting Award – 2018 – MISA Zambia
- ✓ Best Pensions and Social Security Reporting Award – 2018 – MISA Zambia
- ✓ European Union/ African Union sponsored Africa Women in Media 2020 Award Winner –
- ✓ Sustainable Development and Jobs Creation

REFEREES

NAME: Mr. Robam Musonda
TITLE: Country Coordinator
GOPA - Intec
MOBILE:0977783184
EMAIL:robam.musonda64@gmail.com

NAME: Mr. Modern Mayembe
TITLE: Media Director
Ministry of Information and Broadcasting
MOBILE: 0977429250
EMAIL: mmayembe@yahoo.com

NAME: Mr. Enoch Ngoma
TITLE: Communication Manager
Jesuit Center for Theological Reflection
MOBILE:0977883129
EMAIL: knoxngoma@yahoo.com

Contact information: +260-977780059

Certification:
I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience, and I am available to undertake the required assignment.

Charity Moonga		22 July 2024
Name of Expert	Signature	Date

ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY
RESPONSE LETTER

06 Feb, 2025

{serial_no}

ZEMA/FAC/105/12/5/Z/13

The Managing Director,
ZESCO Limited,
Stand No.6949,
Great East Road,
LUSAKA.

Contact No: +260211361111
Email: www.zesco.co.zm

Dear Sir/Madam,

RE: APPROVED TERMS OF REFERENCE AND SCOPING REPORTS FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI – ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT BY ZESCO LIMITED

The above matter refers.

Zambia Environmental Management Agency (ZEMA) has reviewed the Terms of Reference (ToRs) and Scoping Report for the Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi – Zambia 400 kV Transmission Interconnector Project. We would like to inform you that the said ToRs and Scoping Report are acceptable.
The approved ToRs and EIA team members are as follows:

I. EIA Team Members

I. EIA Team Members

No	**Name**	**Qualification**	**Roles**	**Position on the Team**
1.	Robam Musonda	• MA in Population Studies, University of Ghana – 1993. • BA in Development Studies, University of Zambia, 1991. • Postgraduate Certificate in Integrated Rural Regional Development Planning, Development Study Centre, Rehovot, Israel, 1996. • Certificates in Environmental and Social Management in Projects, International Centre for Hydropower, Trondheim, Norway, 2005 and 2006 Management Systems for Manager	Coordinating all EIA activities, supervising the work of the experts, coordinating the preparation of the EIS	EIA Coordinator
2.	Edwin Matokwani	• MSc in Conservation Biology, University of Kent UK- 1996 • MBA (General) Management College of Southern Africa 2004 • Management development University of Cape Town • Environmental Impact Assessment for Power Utilities-ESKOM South Africa • Environmental Management System Development (SWED POWER, SWEDEN)	Identification and assessment of ecological impacts, including avifauna impacts.	Ecologist / Avifauna Expert
3.	Godfrey Chileshe	• Master of Public Health • Bachelor of Social Work • Diploma Management Administration • PhD Public Health • Certificate Public Health	Gender and GBV/SHE and vulnerability assessment	Gender GBV/SHE
4.	Stella Sakala	• Master of Social Work in Community Development, DMI St. Eugene University, Zambia Mar 2018 to July 2020 • Bachelor of Business Administration, Cavendish University, Zambia Jan 2008 -July 2010 • Diploma in Land Acquisition, Resettlement and Social Sustainability, Groningen May 31 to 18 June, 2024 • Diploma – Social Work, Cavendish University, Zambia, 2010	Identification and assessment of socioeconomic impacts.	Socioeconomic Expert
5.	Benson Kabungo	• Degree in Geo-informatic Science (on going) • Diploma in forestry • Diploma in Geoinformatics and Remote sensing	Geospatial data collation, compiling, analysis and map production.	GIS Specialist
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II. Approved Terms of Reference

The approved TORs include the following specialist studies:

- Socio-economic Study;
- Climate and Air Quality Study;
- Noise and vibration assessment;
- Land Use and Soil Study;
- Geology and Topography;
- Biodiversity (terrestrial, aquatic flora, fauna and avi-fauna);
- Hydrology – Ground and surface water, and;
- Archaeological and cultural heritage study.

You are advised to engage the Resettlement Department from the onset the project.

Please do not hesitate to contact the undersigned should there be any issue herein that may require clarification.
Yours faithfully,

Mr. Godfrey Mwiinga
Director General
ZAMBIA ENVIRONMENTAL MANAGEMENT AGENCY

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

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Document Revision History

Rev.	Date	Prepared	Checked	Approved	Description
01	30.09.2024	Robam Musonda	Gvantsa Janikashvili	Kostas Batos	Issue for review
02	16.10.2024	Robam Musonda	Gvantsa Janikashvili	Kostas Batos	Issue for approval
03	01.11.2024	Robam Musonda	Gvantsa Janikashvili	Kostas Batos	Issue for approval
04	14.11.2024	Robam Musonda	Gvantsa Janikashvili	Kostas Batos	Issue for approval
05	10.12.2024	Robam Musonda	Gvantsa Janikashvili	Kostas Batos	Issue for disclosure

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List of Abbreviations

AoI	Area of Influence
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
ESCOM	Electricity Supply Corporation of Malawi Limited
ESMP	Environmental and Social Management Plan
FS	Feasibility Study
GBV/SEA	Gender Based Violence/Sexual Exploitation and Abuse
GIS	Geographic Information System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
kV	Kilovolt
NGO	Non-Governmental Organization
OHL	Overhead Line
PAP	Project Affected Persons
PIU	Project Implementation Unit
PM	Project Manager
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
RoW	Right of Way
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SEP	Stakeholder Engagement Plan
S/S	Substation
ToR	Terms of Reference
WB	World Bank
ESS	Environmental and Social Standards
ZEMA	Zambia Environmental Management Agency
ZESCO	Zambia Electricity Supply Corporation Limited

1. INTRODUCTION

1.1 Project Overview

ZESCO Limited and ESCOM, power utilities in Zambia and Malawi respectively, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 46 km in Zambia. The RoW of the line will be 50 m wide in Zambia and 55 m in Malawi. The project is funded by Swedfund.

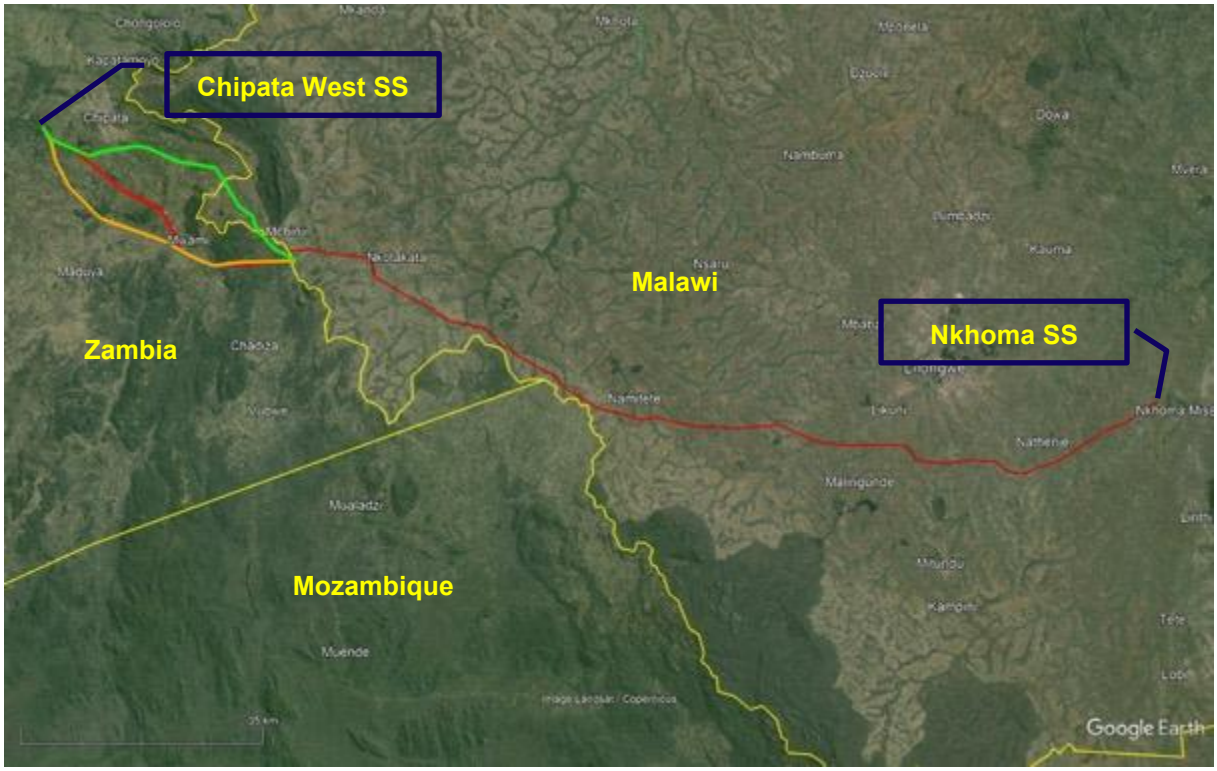

Figure 1: Illustration of the OHL route in Zambia and Malawi

ZESCO will construct the power line on the Zambian side and ESCOM will construct the section of the power line in the Malawian territory. On the Zambian side the power line traverses Chipata and Vubwi districts.

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

For realization of the Malawi - Zambia 400 kV Transmission Interconnection Line (The Project) a complete bankable Feasibility Study (FS) is developed, to include Conceptual Design and Specifications, and Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP).

Stage of the studies already prepared for the Project is different for each of the two countries, as follows:

- For the Malawian component, the FS and ESIA studies have already been prepared.

  The Malawian component of the project has been studied as part of the line from Nkhoma Substation to the border with Zambia in Mchinji, in the framework of the Malawi 400 kV Transmission

Backbone Project. A full FS and ESIA have already been prepared – the ESIA has also been approved by the Malawian authorities.

- For the Zambian component, the FS and ESIA studies should be developed.

Because of its magnitude, the project is subject to the Environmental Management Act (EMA) of 2011, which mandates that developers ensure compliance with environmental regulations prior to the commencement of any development activities. Specifically, the Act requires that an Environmental Impact Assessment (EIA) be conducted to identify potential environmental and social impacts, followed by the recommendation of mitigation measures to eliminate or minimize such impacts. In accordance with the EIA regulations, a comprehensive report must then be submitted to the Zambia Environmental Management Agency (ZEMA) for review and approval. Section 3(1) of the EMA stipulates that "A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter."

As part of the EIA process, a scoping exercise must be conducted to gather input from relevant stakeholders to assist in the development of the Terms of Reference (ToR) for the EIA study. According to Part II, Section 8(2) of the EIA Regulations, "To ensure that public views are taken into account during the preparation of the terms of reference, the developer shall organize a public consultation process, involving Government agencies, local authorities, non-governmental and community-based organisations, and interested and affected parties, to help determine the scope of the work to be done in the conduct of the Environmental Impact Assessment (EIA) and in preparation of the Environmental Impact Statement (EIS)."

This Scoping Report was prepared as part of the ESIA process for the project component in Zambia. The purpose of the scoping exercise was to engage project stakeholders, get their view about the project and the environment in which the project will be undertaken and recommendations. The views from stakeholders will be taken into consideration in the development of the Terms of Reference (ToRs for the ESIA study in accordance with national environmental regulations.

1.2 Project's Environmental and Social Impact Assessment (ESIA) Process

As a first step of the ESIA procedure in Zambia, ZEMA takes a screening decision based on a project brief. While for some projects, the project brief provides the necessary information, for others a full ESIA is required. For those projects a scoping stage follows where the Terms of References for the ESIA report are determined. The subsequent impact assessment stage results in the ESIA report which is reviewed internally and externally. Thereafter, ZEMA takes a decision on the issuance of an environmental authorization for the project. Compliance monitoring follows.

The main documents that are outputs of the ESIA procedure are thus: Environmental Project Brief (Screening), Terms of Reference (Scoping), ESIA report, Environmental Authorization license.

1.2.1 Screening

Screening is required and it is undertaken by ZEMA. The proponent is required to submit an Environmental Project Brief (EPB) based on the list of projects provided under Schedule One and Two contained in the EIA regulations of 1997[1]. Submission is upon payment of review fees prescribed in schedule 5 of

[1] For this project, the EPB was submitted in May 2024

the EIA regulation. Upon receiving the EPB, ZEMA requests comments from an authorising agency (the competent authority such as government ministry, local authority under which the project falls). Based on the comments made by the authorising agency, ZEMA either gives an environmental clearance or makes a request for a full ESIA. If the project is approved (environmental clearance issued), ZEMA communicates its decision to the approving authority. If a full ESIA is required, the decision to submit the full ESIA is relayed in writing to the proponent.

Timeline Screening: Within 40 days of receiving the project brief, ZEMA is required to communicate the screening decision.

1.2.2 Scoping

Scoping is a mandatory requirement. Scoping involves the development of a Terms of Reference. The proponent is required to organize a public consultation process and involve government agencies, local authorities, non-governmental organisations, and community-based organisations as well as other interested and affected parties to help determine the scope of ESIA. It is a requirement to consider issues contained in the third schedule of the EIA regulation (1997). The draft ToR prepared is reviewed by ZEMA for acceptability. If unacceptable, the developer with the help of ZEMA prepares the final ToR for use in the ESIA drafting and review.

Contents of the scoping document

A general list of issues to be considered in the ToR is given under the third schedule of the EIA regulation of 1997. These include:
(a) Ecological considerations (biodiversity and sustainability).
(b) socio-ecological and cultural considerations.
(c) landscape.
(d) water; and
(e) air quality.

Timeline scoping: 5 days from submission of Scoping Report and ToRs.

1.2.3 Assessment

Assessment process

Once the ToR have been approved, the assessment process begins with the approval, by ZEMA, of the names and qualification of persons entrusted to do the impact study. The approved team undertakes a baseline study after which impacts are identified and ranked in order of importance. The team then seeks the views of the public and considers them, identifies mitigation measures, and prepares the EIA Report.

Contents of the EIA report

In addition to an executive summary, stating the main findings and recommendations (signed by every individual person involved in its preparation), an E(S)IA is required to contain a description of:

(a) the project.
(b) the proposed site and reasons for rejecting alternative sites.
(c) the raw material inputs and their potential environmental effects.
(d) the technology and processes to be used.
(e) the products and by-products of the project.
(f) the environmental effects of project, and reasonable alternatives, including the direct, indirect cumulative, short-term, and long-term effects.

(g) the socioeconomic impacts of the project such as resettlement of the affected people.
(h) an impact management plan; and
(i) an indication of whether the environment of any neighbouring state is likely to be affected.

Accreditation of consultants
There is no formal registration or certification system for environmental assessment practitioners in Zambia. However, the names of the consultants have to be included in the Terms of Reference for the EIA and submitted to ZEMA for approval. There are no legal requirements for environmental consultants to be independent of the proponent.

1.2.4 Review

Review process
Review is both internal by a ZEMA committee and external in which case comments on the ESIA report are sought from stakeholders including relevant ministries, local government units, parastatals, NGOs, CBOs, interested and affected parties.

Review begins when the proponent submits the completed EIA report to ZEMA. ZEMA then transmits a single copy of the report to the authorizing agency for comments. Additionally, the ZEMA distributes copies of the report to other stakeholders for their comments. Media such as newspapers and radio may be used to inform these stakeholders of the possibilities of accessing and making comments on the EIA report. ZEMA considers the EIS and all comments in taking a final decision. Based on this information ZEMA may decide to hold a public hearing. ZEMA also uses EIA sector guidelines as review criteria.

Review expertise
External parties from various disciplines as determined by ZEMA check the EIA report. The law provides for opportunities for participation of the affected public and other stakeholders during public hearing. During such meetings, ZEMA may request the presence of a relevant external person (such as experts) to make comments or clarify some contentious aspects. However, the extent of impartiality is not clear.

Timeline Review: 65 days

1.2.5 Decision Making

Integration of EIA into decision-making
Based on the EIS, the public hearing report (if applicable) and the review process, ZEMA decides if an Environmental Authorization is granted for a project. An Environmental Authorization has to be obtained from ZEMA before a developer can commence with activities that are mentioned in Schedule One and Two of the EIA regulations of 1997. No license for the execution of a project that is subject to EIA can be granted unless ZEMA has approved it.

ZEMA can attach conditions to the Appendix of any authorization license, permit, or permission issued to the developer based on the impact management plan as described in the EIS. The conditions must contain a work program with a schedule for the implementation of the conditions.

Decision justification
Decisions are justified and given in form of a decision letter. The conditions for approval or rejection are also included in the writing. The law provides for decision of the ZEMA to be justified and communicated to all parties concerned including the affected public in writing.

Timeline decision-making: 30 days if there is public hearing and if not, 20 days.

Possibilities for appeal
Any person who is not satisfied with ZEMA's decision regarding the Environmental Authorization can make an appeal. Appeals can be made to the minister. Appeals against the decision of the minister can be made to the high court.

1.2.6 Stakeholder engagement

Public participation requirements for ESIA process stages
There are provisions for public participation under the EIA regulation of 1997. The public can participate during scoping, EIA report preparation, and in reviewing the contents of the EIA report. It is not formally required in the screening phase when the project brief is reviewed. However, it is still advised for larger and/or contentious projects.

Moreover, the EMA of 2011 provides for a public review of documents and for public hearings on any document under public review.

The EIA regulations of 1997 determine that the proponent shall take all measures necessary to seek the opinion of the affected people before the EIS is submitted.

During the review process, ZEMA may organise or require the proponent to organise public hearings in the locality of the proposed area if there are unresolved contentious issues. Any person may attend a public hearing and make presentations. ZEMA determines the procedures for the presentations at the public hearings. ZEMA appoints a chair of the public hearing who has to write a report on of its outcome and submit it to ZEMA afterwards.

Comments are made in written form. Comments during the EIA report review stage can be sent to ZEMA directly while those in public hearings are recorded by an appointed person of ZEMA who at the end of the public hearing prepares a report for ZEMA.

The EIS has to contain minutes of all public meeting that were held, a list of registered interested and affected parties and the main issues that have been raised during consultation. It has to be mentioned where each main concern has been addressed in the EIS. Moreover, under the EIA regulations of 1997, the comments made by interested and affected parties and the public hearing report (if applicable) shall serve as basic information for the decision on the EIS approval.

Timeline for public comments: The public has 20 days to comment on the EIS.

Access to information
According to the EIA guidelines of 1997 any project brief, environmental impact statement, terms of reference, public comments, report of the person presiding at a public hearing, decision letter or any other information submitted to ZEMA are public documents. The documents are registered under ZEMA who upon request may avail this information to the public.

Moreover, the EMA determines that applications for licences and a list of the licences shall be kept at the environmental information registry, which is accessible for the public.

Information for ToR is disseminated in an EIA forum convened by the proponent. During draft EIA report review, the proponent is required to publicize the intended project in the mass media, in comprehensible language, and hold meetings with the affected communities to present information and obtain views. Additionally, ZEMA after receiving the final EIA report is required to place copies of it in public buildings near the proposed project.

If a public hearing is required, a notice thereof shall be published three times a week for two consecutive weeks in the national newspaper. This has to be done at least 15 days prior to the public hearing.

Figure 2 graphically presents the ESIA process. The scoping phase and ESIA activities are briefly described in Table 1 below.

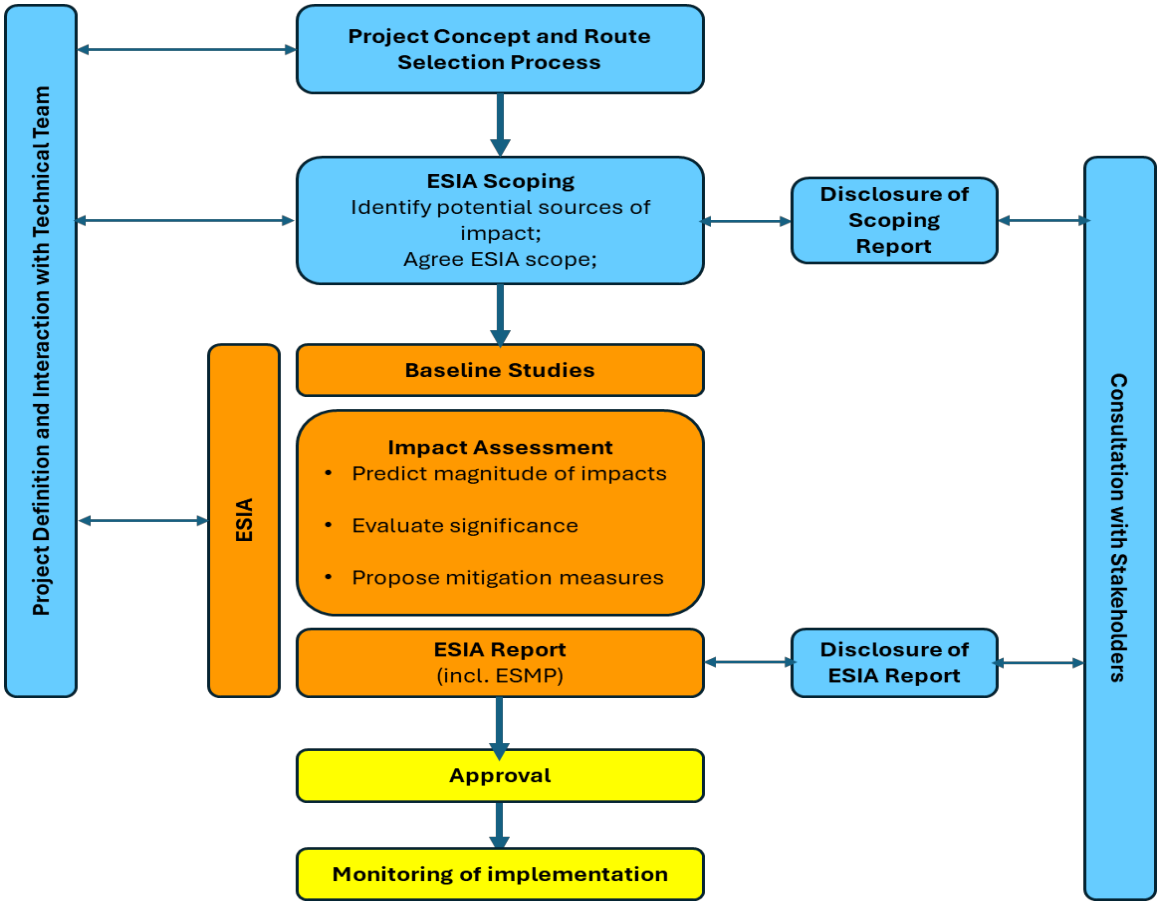

Figure 2: Schematics of the ESIA Process

Source: Intec (2020)

Table 1: Summary of the ESIA process

Step	Description
Screening	Screening is performed to determine if the project requires a detailed ESIA. A Concept Note has been submitted to ZEMA for this purpose.
Constraints Mapping and Alternatives Assessment	Assessment of alternatives with the aim to identify the project alternative with the least environmental and social impacts.
Scoping	Scoping identifies the key issues to be addressed in the ESIA. Scoping, as presented in this report, will ensure that the process is focused on the potentially significant environmental and social impacts which may arise from the project. Ultimately scoping defines the scope of work of the ESIA, including stakeholder engagement.

Step	Description
Baseline Studies	For the key issues identified in scoping, available information on the existing environmental and social conditions (also referred to as baseline conditions) will be gathered. Secondary sources of information will be complemented by field studies and surveys where necessary. The future development of the baseline conditions in the absence of the project will also be considered.
Impact assessment and mitigation measures	This stage is focused on predicting environmental and social changes from the baseline as a result of the project's activities (considering the entire lifecycle of the project). Each impact will be evaluated to determine its significance for the environment and society. Where necessary measures will be proposed to mitigate significant impacts.
Environmental and social management plans	The various mitigation measures will be presented in an Environmental and Social Management Plan (ESMP), describing how measures will be implemented throughout the different project phases. The ESMP will detail the resources and responsibilities for implementation, the timing and monitoring and audit plans to ensure all the mitigation commitments are met. It will also identify any requirements for training and other capacity building
Stakeholder Engagement and Consultation	During ESIA preparation, The Consultant will seek the views of interested parties so that these can be considered in the assessment and reflected in the proposals for mitigation. Once complete, the ESIA Report will be subject to public disclosure and consultation. Comments will be considered in revising the final ESIA Report and ESMP.

1.3 Approach to Scoping

This Scoping Report and the stakeholder engagement activities related to scoping have been planned to ensure full compliance with National legislation, Swedfund standards and EIB Performance Requirements. As such, scoping and scoping validation are performed with the aim to:

1. Preliminarily identify and assess environmental and social impacts and issues, both adverse and beneficial, associated with the project.
2. Identify measures to avoid, or where avoidance is not possible, minimize, mitigate, or offset/compensate for adverse impacts on workers, affected communities, and the environment.
3. Identify and, where feasible, adopt opportunities to improve environmental and social performance.
4. Identify people or communities that are or could be affected by the project, as well as other interested parties.
5. Ensure that such stakeholders are appropriately engaged on environmental and social issues that could potentially affect them through a process of information disclosure and meaningful consultation.
6. Maintain a constructive relationship with stakeholders on an ongoing basis through meaningful engagement during the different phases of the project (e.g., scoping, ESIA and project implementation)

Scoping for this project is being approached as a communication, disclosure, and consultation process, in which the project proponent and different stakeholders exchange information with the aim of mutual understanding and setting up of the ESIA process and subsequent steps as outlined above.

2. PROJECT BACKGROUND

2.1 History of the Project

The Malawi-Zambia 400 kV Interconnector Project is financially supported by Swedfund, which significantly shapes the approach to environmental and social considerations within the project. As Swedfund's funding includes specific Environmental and Social (E&S) standards, the project's scoping and impact assessment process are designed to adhere not only to national guidelines, such as those established by the Zambia Environmental Management Agency (ZEMA), but also to Swedfund's E&S requirements. These requirements emphasize sustainable development and align with international best practices, thereby necessitating adjustments in the traditional structure of ZEMA scoping to meet the heightened standards expected by the financier.

This blended compliance approach ensures that the project remains aligned with national regulations while meeting the stringent E&S safeguards set by Swedfund. These standards influence each phase of the project, from initial scoping and environmental impact assessments to ongoing management practices.

The project is under the auspices of the two electricity utility companies ESCOM of Malawi and ZESCO of Zambia, based on an Inter-Utility Memorandum of Understanding (IUMoU) signed between them, which is in turn based on an Inter-Governmental Memorandum of Understanding (IGMoU) signed between the Governments of Malawi and Zambia.

The Malawi - Zambia 400kV Transmission Interconnector Project (The Project) has been proposed, to connect the newly constructed Nkhoma 400/132 kV Substation in Lilongwe, Malawi, to the existing Chipata West 330/132 kV Substation in Chipata, Zambia, through a 400kV line transmission line.

The project envisages the construction of a 400kV Interconnection Line between eastern Zambia (Chipata West 330/132 kV Substation located west of Chipata, the largest city in eastern Zambia) and central-eastern Malawi (Nkhoma 400/132 kV Substation located south of Lilongwe, the capital and largest city of Malawi).

This ESIA Scoping Report covers only the Zambian component of the Project. The Scoping process is undertaken to establish the Terms of Reference (ToR) for the ESIA, ensuring compliance with Zambian EIA regulations as well as international ESIA standards (including Swedfund and EIB standards).

2.2 Project Proponent

The current ESIA/RAP and feasibility studies for the project have been commissioned by Southern African Power Pool (SAPP) with support from Swedfund. The project development will be undertaken by ZESCO as the developer (project proponent).

2.3 Project Justification

The Southern African Development Community (SADC) was established in 1992 to foster socio-economic integration, political stability, and security cooperation. Spanning nearly 9.09 million square kilometers, the SADC region is home to over 280 million people across 16-member countries.

A critical challenge in Southern Africa is inadequate electricity access, which hampers efforts to end extreme poverty and boost shared prosperity. The Region's electricity access rate is around 28 percent,

below the continental average of 31 percent, and would drop to 17 percent—the lowest among African sub-regions—if South Africa were excluded. Countries like Madagascar, Zambia, Lesotho, Tanzania, the Democratic Republic of Congo (DRC), and Malawi have less than 20 percent of their populations with electricity access, with DRC and Malawi reporting rates below 10 percent. Expanding electricity access is essential for poverty reduction and is central to national development plans in these Countries. For instance, Malawi aims to achieve an electricity access rate of 30 percent by 2020 to support its goal of reaching middle-income status, while Zambia targets expanding access to 66 percent by 2030.

Increased electricity access requires a substantial boost in power supply. Therefore, enhancing energy access and availability is key to SADC's developmental agenda. This necessity has driven the plan for the Malawi-Zambia Interconnector, which aims to improve the Region's energy sector, by enhancing grid interconnectivity and increasing power supply.

The Project will be managed by the respective national power utilities, ZESCO Limited in Zambia and ESCOM in Malawi, reinforcing regional cooperation and integration. This Interconnector will not only facilitate electricity trading between Malawi and Zambia but also support broader regional integration and stability. It will help address the critical power shortages in Southern Africa, fostering economic growth, improving living standards, and reducing environmental impacts through a more reliable and interconnected power grid.

2.4 Description of Project Area

The project area for the Malawi-Zambia 400kV Transmission Interconnector is geographically situated within the Chipata and Vubwi districts of Zambia. The area is located between the coordinates of latitudes 13°39'7.626" South to 13°50'50.673" South and longitudes 32°33'27.619" East to 32°54'18.967" East. This area is characterized by its unique topography and rural agricultural landscape, which plays a significant role in the local economy and way of life.

The topography of the project area is relatively uniform, with gently rolling flatlands that are interspersed with occasional hills. These flatlands are primarily utilized for small-scale, family-run farms, which dominate the local landscape. These farms are a vital component of the local economy, providing livelihoods for a significant portion of the population. The agricultural activities in this region are typically subsistence-based, focusing on crops such as maize, groundnuts, and various vegetables, which are grown for both local consumption and sale in nearby markets.

The landscape is also marked by the presence of small streams and seasonal rivers that traverse the area. These water bodies are crucial for the agricultural activities, providing necessary irrigation for crops, particularly during the dry season. However, the streams are often seasonal, with water levels fluctuating significantly between the wet and dry seasons. The hills that partially surround the farmland contribute to the area's natural drainage system, influencing both the flow and availability of water in the region.

The natural vegetation in the project area consists largely of miombo woodlands, a type of savanna woodland common in the region. These woodlands are characterized by a mix of deciduous trees and shrubs, which provide important ecosystem services, including fuelwood, non-timber forest products, and habitat for local wildlife. However, much of the original vegetation has been cleared for agricultural purposes, leading to a landscape that is a mosaic of cultivated fields and patches of natural vegetation.

The human settlement pattern in the Chipata and Vubwi districts is typically rural, with scattered homesteads and small villages dotting the landscape. These settlements are often closely associated with the agricultural plots they depend on, leading to a dispersed population density. The local communities are primarily engaged in farming, with some involvement in small-scale trading and other informal economic activities.

In terms of infrastructure, the area has basic road networks that connect the villages and farms to larger towns and markets. However, these roads are often unpaved and can become difficult to navigate during the rainy season. Access to services such as electricity, clean water, and healthcare is limited in many parts of the project area, reflecting the broader challenges of rural development in the region.

The project area is also culturally rich, with a population that includes various ethnic groups, each with its own traditions, languages, and social practices. These communities have a deep connection to the land, and their cultural practices are often closely tied to the agricultural calendar and the natural environment.

Overall, the Chipata and Vubwi districts offer a landscape that is both agriculturally productive and environmentally significant. The implementation of the Malawi-Zambia 400kV Transmission Interconnector in this area will need to consider these geographical, ecological, and socio-economic characteristics to ensure that the project is conducted in a way that supports sustainable development and respects the needs and rights of the local communities.

The proposed power line passes through Chipata and Vubwi Districts of Eastern Province and covers a distance of 46.3km until the border with Malawi, with a wayleave size of 50m.

The main project locations for the full project are shown in the map in Figure 3 below.

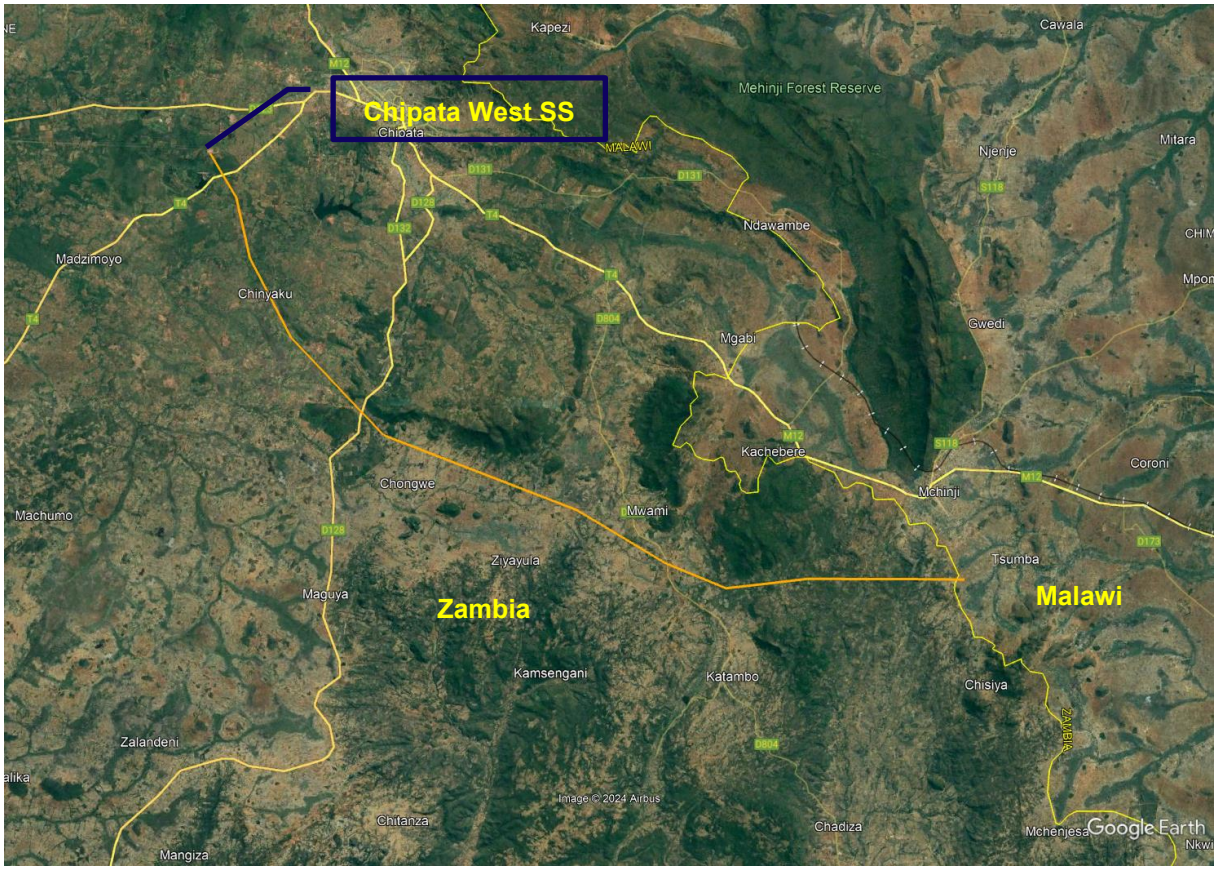

Figure 3: Proposed alignment of the Malawi-Zambia 400kV Interconnector Project

2.5 Relevant Policy, Legislative and Planning Framework

This Chapter provides an overview of the national legislation and regulations as well as the related institutional framework relevant to environment and social assessment, occupational health and safety, and workers' rights of the proposed project. Also discussed are the Swedfund Sustainable Policy as well as EIB's Environmental and Social Standards relevant to the proposed project.

A number of policy instruments and legislations are applicable and relevant to the proposed project and it is incumbent upon the developer to comply fully with the provisions of all applicable legislation. Legislation which is principal to the project and which plays a part in the way the project is planned, implemented and operated, is identified in this section to highlight areas of interest and to assist in understanding why specific options are preferred over others

2.5.1 Environmental Policy Framework

(a) National Environmental Policy 2007

In view of the various environmental challenges the country faces, Zambia launched its National Policy on Environment (NPE) in 2007. The environmental policy document identifies deforestation, land degradation, wildlife depletion, soil erosion, loss of land productivity, inadequate sanitation and air and water pollution as the main environmental challenges the country is facing.

The NPE calls upon all institutions, Non-Governmental Organizations (NGOs), and community based or people's organizations whose activities affect the environment in any way to carry out their activities judiciously to maintain the productivity and integrity of the environment. Further, the NPE recognizes the need for EIA studies in all development projects to eliminate or mitigate adverse environmental impacts and enhance the benefits of the projects.

The National Policy on Environment states that "EIAs will be required as deemed necessary to ensure that public and private sector development options are environmentally sound and sustainable and that any environmental consequences are recognized early and taken into account during project design and implement."

The Zambian National Policy on Environment (NPE) was developed to safeguard the environment and to ensure the sustainable use of natural resources. The policy is premised on the basic principle of "Polluter pays and the need to conserve resources, reduce consumption and recycle and reuse materials to the maximum extent possible" while the main purpose of the policy is "to create an umbrella policy for the welfare of the Nation's environment so that socio-economic development will be achieved effectively without damaging the integrity of the environment or its resources". Specific objectives of the NPE include, but are not limited to:

- Promote the sound protection and management of Zambia's environment and natural resources in their entirety, balancing the needs for social and economic development and environmental integrity to the maximum extent possible while keeping adverse activities to the minimum;
- Accelerate environmentally and economically sustainable growth in order to improve the health, sustainable livelihoods, income and living conditions of the poor majority with more significant equity and self-reliance;
- Ensure that plans for the development and construction of industries have adequate and appropriate waste disposal and pollution control facilities organised to meet international standards;
- Ensure that plans and incentives for voluntary waste disposal are enshrined in the production plans of all industries and

- Promote environmental guidelines and EIA before sites are developed and ensure the application of a monitoring and auditing system for operating industries.

(b) The National Resettlement Policy Guidelines

Regarding land acquisition for electricity infrastructure, the Electricity Act No. 15 of 1995 provides a number of guidelines for the acquisition of land and rights over land. Section 14 of the Electricity Act makes reference to the Lands Acquisition Act Cap 296, Part III (Section 12), that deals with the principles of assessing the amount of compensation for the affected assets. The Act covers compensation for loss structures, cropland and fruit trees. In addition, this Act also stipulates conditions that can lead to compulsory acquisition of land through the office of the Republican President.
However, both the Electricity Act and the Land Acquisition Act do not provide detailed guidance on the resettlement process. Some individual institutions, including ZESCO, have developed their own resettlement guidelines based on the above Acts, the World Bank Environment and Social Framework Policies on Involuntary Resettlement, and international best practice.

(c) The Zambia Land Policy

Land in Zambia is vested in the Republican President, who holds it in trust for and on behalf of the people. The President may, through the Commissioner of Lands, alienate land to citizens or non-citizens. The vision of the National Land Policy is to implement an efficient and effective land administration system that promotes the security of tenure, equitable access and utilisation of land for the sustainable development of the country. However, most of the land in Zambia is traditional land under the jurisdiction chiefs.

(d) The Transport Policy 2019

The policy aims to facilitate sustainable growth and development of the transport sector in order to ensure the provision of efficient, safe, gender and environmentally friendly, quality and adequate services for the benefit of the people of Zambia. Implementation of the project will be to the requirements of the policy. Among the principles of the road policy is that 'transport services and infrastructure shall be provided in a sustainable manner". The general objective of this policy is "to transform Zambia into a regional transport hub with fully integrated transport systems supporting socio-economic development".

The policy specific objectives are to:
- Harmonise all pieces of legislation governing the road sector to minimise overlap of mandates and adherence to core mandates;
- Promote development of road transport services, facilities and infrastructure that meet global safety standards;
- Promote sustainable mobility of both goods and passengers to meet economic and social needs; and
- Develop systems to facilitate non-motorised transport.

(e) The National HIV/AIDS/STI/TB Policy 2002

The Policy is premised on the aspiration of Zambia achieving a Human Immunodeficiency Virus and Acquired Immuno-deficiency Syndrome (HIV/AIDS) free status. It is guided by a couple of underlying principles namely, setting a stage for an appropriate legal framework, which is essential for the overall attainment of the vision, and, most importantly, having a proper national co-ordination and advocacy framework, which is necessary for the development, implementation and coordination of HIV/AIDS/STI/TB strategies and interventions. The Policy also recognises that HIV/AIDS/STI/TB is a serious public health, social and economic problem affecting the whole country, which needs to be addressed.

(f) The National Forest Policy 2014

The vision of the National Forest Policy of 2014 is to attain sustainable management of all types of the forests to enhance forest products and services utilisation that will contribute to climate change mitigation, income generation, poverty reduction, job creation and protection and maintenance of biodiversity. The main objectives of this policy are:

- Manage the country forests to maximize productivity and the developmental potential of the forest resources;
- Empower local communities and traditional leaders to ensure adequate protection and management of forests;
- To improve the role of forests in addressing climate change in order to contribute to reducing its impacts through appropriate mitigation and adaptation measures;
- To increase the participation of the private sector in the development of the forest industry to enhance the contribution of the sector to the growth of the economy;
- To enhance the processing and marketing of forest products and services in order to ensure the optimal contribution of the forest sector to the national economy and the forest industry;
- To put in place measures that will promote sustainable harvesting of wood and production of charcoal to reduce deforestation;
- To strengthen research institutional capacity to provide informed decision-making;
- To strengthen and develop human capacity with extension skills and a service delivery mindset to effectively meet stakeholders' needs;
- To develop and broaden the skills and knowledge of personnel involved in forest management and development and support training.

(g) National Policy on Climate Change

This National Policy on Climate Change (NPCC) (2016) was developed to support and facilitate a coordinated response to climate change issues in the country. It will enable Zambia to realign its climate-sensitive sectors of the economy, and its society, to meet development goals through adaptation and mitigation interventions. At the same time, it will contribute to the achievement of the overall objective of the United Nations Framework Convention on Climate Change (UNFCCC) which is “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. Zambia signed and ratified the UNFCCC on June 11, 1992, and May 28, 1993, respectively.

(h) National Water Policy

The policy aims at promoting sustainable water resources development in order to facilitate equitable provision of adequate quantity and quality of water for all competing uses at acceptable cost, and to ensure security of supply under varying conditions. Among the policy measures aimed at achieving long term sustainability of water resources, there is:

- Harvesting and ownership of water resources in the country under state control. One of the identified strategies to achieve this is the revision of weak legislation and development of conventions and protocols in accordance with the Helsinki Rules which embody the concept of best joint utilization of internationally shared waters.

- Promoting water resources development through an integrated management approach. One strategy to achieve this is the performance of environmental impact assessments prior to imple-

mentation of any development project, developing an appropriate institutional and legal framework for effective management of water resources. The policy recognizes the Environmental Protection and Pollution and other pieces of legislation relating to water quality.

Five main categories are identified in discussing possible conflict in the use of water. These are: domestic, industrial, agricultural including irrigation, livestock watering, and freshwater aquaculture, recreational and ecosystem management.

(i) Agricultural Policy

The National Agricultural Policy (2004) states five objectives of the agricultural sector including the assurance of national and household food security, creation of income and employment, maintenance and improvement of the agricultural resource base, contribution to the national balance of payments and to sustainable industrial development. To achieve these objectives, various sector strategies are outlined and include the following:

- Strengthening and monitoring the liberalization of markets and facilitating private sector development;
- Promoting and securing access of agricultural products to both local and international markets;
- Diversification of agricultural production and utilization;
- Strengthening and facilitating the provision of agricultural services;
- Facilitating availability and accessibility of land for agriculture and development of infrastructure in potentially productive areas;
- Development and promotion of appropriate technology;
- Promotion of sustainable, environmentally sound agricultural practices. This includes the promotion of conservation farming, agro-forestry and greater use of irrigation;
- Strengthening emergency preparedness through provision of timely crop forecasts and early warning information, where necessary, while also maintaining strategic food reserves.

(j) National Policy on Wetlands Conservation, September 2001

This Policy was formulated in response to the fragmented sectoral policies and Acts. It aims to provide a holistic programme of action to promote the conservation and prudent use of wetland ecosystems. It acknowledges the importance of wetland ecosystems in Zambia in providing major fisheries, and important habitats for various wildlife species.

(k) The National Gender Policy (NGP) 2014

The NGP is aimed at ensuring the attainment of gender equality in the development process by redressing the existing gender imbalances. It also provides for equal opportunities for women and men to actively participate and contribute to national development. The policy emphasizes issues of poverty, noting that women and children are differentially affected compared to men. Females are singled out as experiencing more poverty than any other social group in the country, while the HIV and AIDS pandemic and violence against women are exacerbating the situation. The policy addresses gender issues such as poverty, decision making, gender-based violence, HIV and AIDS. Furthermore, Zambia has signed the following international governing documents on gender:

- The Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) in 1984;
- The Beijing Declaration and Platform of Action in 1995;
- The Millennium Development Goals (MDGs) in 2000.

2.5.2 National Environmental Legislation Framework

The legislative responsibility of administering the EIA process is vested in ZEMA, formerly known as the Environmental Council of Zambia (ECZ). This is in line with the Environmental Management Act No. 12 of 2011, Statutory Instrument No. 28 of 1997 –The EIA Regulations. The Agency is mandated to:

a) Identify types of projects, plans and policies for which environmental impact assessments are necessary and to undertake or request relevant institutions to undertake such assessments for consideration by the agency.
b) Monitor trends in the use of natural resources and their impact on the environment.
c) Request information on the quantity, quality, and management methods of natural resources and environmental conditions from any individual or organization anywhere in Zambia.
d) Consider and advise the government, on all major development projects at initial stage and on the effects of any sociological or economic development on the environment.

In addition to the above, and the Ministry of Green Economy and Environment in consultation with ZEMA, is empowered to make regulations by statutory instrument for any matter that could be prescribed under the Act on the protection of the environment.

Environmental Management Act, N°. 12 of 2011

The principal legislation governing environmental management in Zambia is the Environmental Management Act (EMA) of 2011. The Act provides for the sustainable management of natural resources, protection of the environment, and the prevention and control of pollution. It establishes and empowers the Zambia Environmental Management Agency to provide for and demand for environmental assessments for projects, and to carry out monitoring and inspections.

Relevance: Of particular significance to the project is Section 29 of the Act, which demands that development projects that have an effect on the environment shall not undertake without a written approval of the Agency and shall be implemented in accordance with any conditions imposed in the approval letter. This has necessitated the preparation of this ESIA to key out the impacts of the project and put in place mitigation measures.

Compliance: The ESIA reports for the Malawi- Zambia 400kV Transmission Interconnector project is being prepared before the commencement construction works.

The Environmental Impact Assessment (EIA) Regulations, SI 28 of 1997

The Environmental Impact Assessment (EIA) Regulations, Statutory Instrument (SI) 28 of 1997, Section 29 (1) of the Act states that 'A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter, and except in accordance with any conditions imposed in that approval". In Zambia, it is a legal requirement under these Regulations that before a developer commences implementing a project, an EIA report must be prepared and submitted to ZEMA for review and approval.

Relevance: According to the First Schedule (Regulation 3(2) of the EIA Regulations, the proposed Project falls within the category which requires an ESIA study to be undertaken and submitted for approval.

Compliance: During the detailed study, all the negative environmental and social impacts likely to result from the project will be identified and mitigated in accordance with these regulations.

The Environment Management (Licensing) Regulations (SI 112 of 2013)

There are several parts in this SI giving regulatory powers to ZEMA to control the discharge of water pollutants, air emission pollutants, pesticides and other toxic substances, waste (both municipal and hazardous) and ozone depleting substances in order to safeguard the general health, safety or welfare of persons, animal life, and plant life.

The portions of the regulations that are of relevance to the project are listed below.

a) Part II: Air and Water Pollution Regulations

Relevance*:* During project implementation, the contractor will be handling fuel, oils and other chemical substances, which have to be managed in accordance with the provisions of this Statutory Instrument to avoid emissions into water resources and the ambient environment.

Compliance: The project shall endeavour to prevent and minimise effluent discharge into the environment. Measures to prevent and minimize emissions to the ambient environment shall include servicing of vehicles to ensure minimal exhaust fumes are emitted, periodic dust suppression using water bowsers and limiting on extent of area for vegetation clearing to limit dust emissions.

b) Part III: Waste Management Regulations

Relevance: Section 12 (1) declares that a person who intends to reclaim, re-use, recover, recycle, transport, dispose of, transit, trade in, export waste or collect and dispose of waste from industrial, commercial, domestic or community activities or own, construct or operate a waste disposal site or facility for the permanent disposal or storage of waste shall apply to the Agency for a waste management licence. Section 13 (1) directs that a holder of a waste management licence shall (e) ensure that generated waste is treated and disposed of in an environmentally sound manner. The project will generate construction waste materials such as rock waste, cement bags, plastics, food debris and faecal waste from the construction camps.

Compliance: The project shall ensure that measures for the management of biodegradable and non-biodegradable waste are in compliant with these Regulations and international best practice principles such as the re-use, recycle and reduce principle, where necessary. The project will seek to engage a licensed waste management contractor to transport and dispose the waste.

c) Part IV: Hazardous Waste Regulations

Relevance: Section 21 recognizes that a holder of a hazardous waste licence who stores hazardous waste shall (b) comply with the requirements for storage of dangerous waste prescribed in the Eighth Schedule. The project will generate used oils, oil filters and batteries from construction equipment which will need to be managed in line with these Regulations.

Compliance: Hazardous waste shall be stored in a well bundled, secure and labelled area. Further, a licensed hazardous waste transporter will be engaged to transport hazardous waste to a licensed disposal facility.

The Public Roads Act, CAP 12 of 2002

The Public Roads Act provides for the establishment of the Road Development Agency responsible for the planning, management, and coordination of the road network in Zambia. Part III of this law prohibits road infringement by stipulating dimensions of road reserves within which no construction of any structures is allowed.

Relevance: The project will use existing access roads, where they exist, and open up new access, where necessary.

Compliance: The developer is required to meet road safety standards in design and implementation of the project. Height clearance at road crossing points as well as the transportation of construction materials and equipment should adhere to the national road safety standards.

The Road Traffic Act No 11 of 2002

The Road Traffic Act No. 11 of 2002 provides for the establishment of the Road Transport and Safety Agency (RTSA) and defines its functions. It also provides for a system of road safety and traffic management in Zambia.

Relevance: The traffic during transportation of construction materials has potential to cause accidents hence traffic control measures must be observed, and access roads must comply with the provisions of the Act.

Compliance: Traffic safety measures shall be implemented during both the construction and operation phases of the project. Road signage and speed restrictions shall be put in place.

The Petroleum Act, CAP 424

This Act, among other things, regulates the conveyance and storage of petroleum, inflammable oils and liquids.

Relevance: During construction, the contractor will transport and store petroleum and inflammable oils and liquids, whose handling is governed by this Act.

Compliance: The ESIA will propose measures to comply with regulations under this law during the transportation of fuel for construction equipment and generators located. The handling of re-fueling activities will require adherence to environmental, health and safety legal requirements.

The Urban and Regional Planning Act, No. 3 of 2015

This piece of legislation establishes procedures for integrated urban and regional planning in a devolved system of governance so as to ensure multi-sector cooperation, coordination and involvement of different levels of ministries, provincial administration, local authorities, traditional leaders and other stakeholders in urban and regional planning. It also seeks to ensure sustainable urban and rural development by promoting environmental, social and economic sustainability in development initiatives and controls at all metropolitan and regional planning levels.

Relevance: The Act provides for the appointment of regional planning authorities, provincial planning authorities and local planning authorities whose main responsibilities are the preparation, approval of layout plans and revocation of development plans. Section 19 (1) affirms that a planning authority shall prepare an integrated development plan for its area. Section 19 (3) states that an integrated development plan shall be the principal planning instrument to guide and inform all planning and development in the area of the local authority and in all planning decisions of a planning authority. Among other objectives, an integrated development plan shall provide for local economic development to alleviate poverty; environmental management; and protection of ecologically sensitive areas, heritage and cultural sites.

Compliance: Route selection for the proposed will take into consideration all planned developments in Chipata and Vubwi districts. The project site layout plans will need to be approved by the Town Councils in consultation with the respective Provincial Planning Authorities before construction commences in accordance with the provisions of this Act.

The Lands Act, No. 27 of 1995

The Lands Act is the statute governing land administration in Zambia. Land in Zambia is vested in the Republican President, who holds it in trust for and on behalf of the people. The President may, through the Commissioner of Lands, alienate land to citizens or non-citizens. However, most of the land in Zambia is traditional land under the jurisdiction chiefs.
Relevance: The power line traverses both traditional land and state land and consent is required from the land owners, including the chiefs.

Compliance: ZESCO will approach all the relevant institutions and private land owners to acquire the land along the power line corridor.

The Local Government Act, No. 2 of 2019

The Act provides for the establishment of Councils in districts, the functions of local authorities and the local government system. Some of these functions relate to pollution control and protection of the environment. The main functions of the Public Health Department of the local authority include solid waste management, food control services, and disease control.

Relevance: The proposed transmission project will pass through Chipata and Vubwi districts. Hence, the developer and the contractors are required to observe all the applicable by-laws related to food safety, disease control, workers living conditions and environmental protection.

Compliance: The project shall recognise the authority of the local authorities and will comply with the specifications and any relevant by laws set up by the affected local authorities.

Occupational Health and Safety Act of 2010

The Act establishes the Occupational Health and Safety Institute and provides for its functions; provides for the establishment of health and safety committees at workplaces and for the health, safety and welfare of persons at work. Most important is the provision regarding the protection of persons, other than persons at work, against risks to health or safety arising from, or in connection with, the activities of persons at work.

Relevance: Section 16(1) declares that an employer shall ensure, so far as is reasonably practicable, the health, safety and welfare of the employees at a workplace by, among other measures;

(a) providing for measures to deal with emergencies and accidents, including adequate first-aid arrangements;

(b) providing at the employer's expense all appropriate protective clothing or equipment to be used in the workplace by employees, who in the course of employment, are likely to be exposed to the risk of bodily injuries, and adequate instructions in the use of such protective clothing or equipment.

Construction activities shall expose workers to occupational health and safety risks due to factors such as operation of equipment, handling of materials and exposure to construction site hazards.

Compliance: The project will develop, as part of the Environmental Management Plan, occupational health and safety procedures to minimise occupational health and safety risks and promote employee welfare at the workplace. The contractor will be obliged to provide his workers with appropriate Personal Protection Equipment (PPEs).

The Public Heath (Infected Areas) (Corona Virus Disease 2019) Regulations, SI Number 22 of 2020

The Public Health (Infected Areas) (Corona Virus Disease 2019) Regulations provides, among many others, the definition of Covid-19, conveyance, infected area, and unsanitary conditions.
Relevance: The project will be employing different types of people from various backgrounds and locations where the disease might have occurred, thereby causing a severe threat of transmitting the disease to other workers.
Compliance: The project will ensure adherence to all the provisions of the statutory instrument in order to provide the health of all the employees on the project site.

The Forests Act, No. 4 of 2015

An Act to provide for the establishment and declaration of National Forests, Local Forests, joint forest management areas, botanical reserves, private forests and community forests; provide for the participation of local communities, local authorities, traditional institutions, non-governmental organizations and other stakeholders in sustainable forest management; provide for the conservation and use of forests and trees for the sustainable management of forests ecosystems and biological diversity; establish the Forest Development Fund; provide for the implementation of the United Nations Framework Convention on Climate Change and Convention on International Trade in Endangered Species of Wild Flora and Fauna.

Relevance: The Act promotes the sustainable management of forest resources for the sustainability, conservation and preservation of ecosystems and biological diversity in forest areas and open areas.

Compliance: The ESIA report shall recommend appropriate measure to promote and enhance the conservation of forest resources and clearing of vegetation shall only be confined to the wayleave. Tree planting shall be encouraged during project implementation.

The Water Resources Management Act, No. 21 of 2011

The Water Resources Management Act No.21 of 2011 establishes the institutional regulatory framework, including the creation of; the Water Resources Management Authority (WARMA), Catchment Councils and Water Users Associations in line with decentralised governance system. The Act provide for the management, development, conservation, protection and preservation of the water resources and its ecosystems and promotes the adaptation to climate change. The WRMA is also responsible for the domestication and implementation of the basic principles and rules of international law relating to the environment and shared water resources as specified in the treaties, conventions and agreements to which Zambia is a State Party.

Relevance: The Act guards against the discharge or disposal of any pollutant into a water resource.

Compliance: The ESIA report will propose measures that will be undertaken to ensure that activities during the construction and operation of the project road do not result in pollution and degradation of water resources in the project area.

The Employment Code Act, No. 15 of 2019

This Act provides legislation relating to the employment of persons. It also spells out the terms of employment (permanent or contractual) and forbids gender discrimination in the recruitment process.

Relevance: The construction and operation phases of the project will involve the employment of skilled and unskilled manpower and their engagement should follow the provisions of this Act.

Compliance: The project shall ensure that individuals who are employed on the project are of the right age, not forced labour, and there will be no gender discrimination.

The Workers Compensation Act, No. 10 of 1999

This Act makes provision for the establishment and administration of a Fund for the compensation of the workers disabled by accidents to, or diseases contracted by, such Workers in the course of their employment, and for the payment of compensation to dependents of Workers who die as a result of such accidents or diseases; for the payment of contributions to such Fund by employers; for the grant of pensions and allowances to certain dependents of Workers who, being in receipt of pensions for such disablement, die from causes not connected with such accidents or diseases.

Relevance: Many employment opportunities will be created and work will involve the use of machinery and equipment that may cause injury to workers during their use or operation.

Compliance: The contractor will make contributions to the Fund on behalf of the workers. In the event of any injury to any person, due compensation shall be provided.

The Public Health Act, No. 22 of 1995

This Act provides for the prevention and suppression of diseases and the general regulation of all matters connected with public health in Zambia. Amongst other things, the Act prohibits anyone from causing a nuisance, where nuisances are given to include amongst others, any collection of water or any cesspit, latrine or urinal found to contain mosquito larvae. In addition, any collection of water, sewage or waste which permits or facilitates the breeding of parasites, insects or other agents which may lead to the infection of people or domestic animals.

Relevance: Temporary camps will be erected during the construction period and adherence to heath regulations is required.

Compliance: Management will ensure that the project site and the construction camps areas are provided with toiles, adequate water supply and other facilitates to keep them in clean and sanitary conditions.

The Factories Act, 1999

The Act regulates the conditions of employment in factories and other places of work as regards the safety, health and welfare of persons employed therein. The Act also provides for the examination and inspection of specific plant and machinery in order to ensure safety. The Factories Inspectorate under the Ministry of Labour and Social Security is the mandated authority under the Act.

Relevance: All places of work as defined under this Act will be deemed a 'factory' where safety, health and general welfare of employees will be required to be upheld.

Compliance: To ensure that the occupational health and safety of employees is upheld during the construction and operational periods, all employees will be trained in health and safety protocols. All employees will be equipped with adequate and appropriate personal protective equipment and the devices, tools and equipment that will be used by the employees will be regularly inspected, maintained and repaired if found to be defective.

The National Heritage Conservation Act No. 23 of 1989 and National Heritage Conservation Commission Amendment Act No. 13 of 1994

The National Heritage Conservation Act establish the National Heritage Conservation Commission (NHCC) and provides for the conservation of ancient, cultural and the natural heritage, relics, and objects of aesthetic, historical, pre–historical, archaeological, or scientific interest. The NHCC is also responsible for enforcing the World Heritage Convention 1992, under which the heritage sites (such as significant waterfalls) are included in the World Heritage list as World Heritage Sites.
Relevance: Construction works on the project may lead to the discovery of ancient heritage or relics which have to be reported to the Commission for identification and conservation

Compliance: During the ESIA study the Consultant shall pay particular attention to establishing the presence of any artefacts or objects of archaeological significance along the project corridor. The Commission will be informed about any findings.

The Roads and Traffic Act No. 2 of 2011

The Act makes provision for the care, maintenance and construction of roads in Zambia, for the control of motor traffic, for the licensing of drivers and motor vehicles, for the compulsory third party insurance of motor vehicles, for the licensing and control of public service vehicles and public services, and for other miscellaneous provisions relating to roads and motor traffic.

***Relevance*:** It is inevitable that during the different phases of the project, a number of vehicles (haulage) will be in operation delivering construction related material, which risk accidents.

***Compliance*:** The Developer and Contractor will ensure that all the vehicles used on the project are licensed, certified to be roadworthy, and insured. All drivers must have the necessary competences and valid licences for the type of vehicles they are driving.

The National Pensions Scheme Act No.7 of 2015

Section 3 of this Act stipulates the formation of the National Pension Scheme Authority. Some of the key responsibilities of NAPSA are registration of employers and employees, collection of contributions, enforcement of compliance, and investment of funds not immediately required for payment of benefits, processing of claims and payment of benefits and education of members.

Relevance: Employment of workers will be guided by the provisions of this Act.

Compliance: All the worker to be employed on the project will be registered and paid up on their contributions to NAPSA.

National Council for Construction Act No. 13 of 2003

An Act to provide for the establishment of the National Council For Construction and to define its functions :to provide for the promotion and development of the construction industry in Zambia; to provide for the registration of contractors; to provide for the affiliation to the Council of professional bodies or organizations whose members are engaged in activities related to the construction Industry; to provide for the establishment of the Construction School; to provide for the training of persons engaged in construction or in activities related to construction; and to provide for matters connected with or incidental to the fore-going.

Relevance: The proposed development will involve construction works and all the contractors will have to be registered with the National Council for Construction.

Compliance: All construction contractors to be engaged on the project shall be registered and be compliant with the National Council for Construction terms and conditions.

The Standards Act No. 4 of 2017

This is an Act to continue the existence of the Zambia Bureau of Standards and re-define its powers and functions; provide for standardization and quality assurance of products and services through the setting of national standards and provision of conformity assessment services for products and services.

Relevance: The development will require that materials (pipes, sand, stone, cement, machinery and other finished materials), food stuff and drinking water be transported to the site meet the prescribed national standards.

Compliance: All raw materials, drinking water and food staff and pipe works procurement, and all designs and layouts will be in compliance with the Zambia Bureau of Standards.

The Zambia Wildlife Act No. 14 of 2015

This Act provides for the establishment, control and management of National Parks, bird and wildlife sanctuaries and for the conservation and enhancement of wildlife eco-systems, biological diversity and objects of aesthetic, pre-historic, historical, geological, archaeological and scientific interest in National Parks; provide for the establishment, control and co-management of Community Partnership Parks for the conservation and restoration of ecological structures for non-consumptive forms of recreation and environmental education; provide for the sustainable use of wildlife and the effective management of the wildlife habitat in Game Management Areas; enhance the benefits of Game Management Areas to local communities and wildlife; involve local communities in the management of Game Management Areas; provide for the development and implementation of management plans; provide for the regulation of game ranching; provide for the licensing of hunting and control of the processing, sale, import and export of wild animals and trophies; provide for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the Convention on Wetlands of International Importance especially as Waterfowl Habitat, the Convention on Biological Diversity, the Lusaka Agreement on Cooperative Enforcement Operations Directed at Illegal Trade in Wild Fauna and Flora and other international instruments to which Zambia is party; repeal the Zambia Wildlife Act, 1998; and provide for matters connected with, or incidental to, the foregoing.

Relevance: There may be wildlife species in the project area. Hence, there provisions of the Act need to be followed for the conservation of wildlife in the project area.

Compliance: Appropriate measures will be recommended in the Environmental Management Plan to boost wildlife conservation in the project area

Mines and Minerals Development Act (MMDA) NO.11 of 2015

The MMDA provides for the administration of the mining industry through the Ministry of Mines and Mineral Development. The Act outlines the different mining permits that can be obtained under this act i.e. small- and large-scale exploration or mine licenses, small or large-scale gemstone licenses, artisanal and mineral processing licenses. The Act also provides for royalties and taxes applicable to the sector.

Relevance: Project implementation will involve establishment of borrow pits and quarrying for aggregate stones by the contractor, which have to comply with the MMDA.
Compliance: The mining of borrow pits and quarrying for aggregate stones by the contractor for construction works have to comply with the MMDA.

The Tourism and Hospitality Act No. 13 of 2015

The Act provides for the sustainable development of the tourism industry through effective tourism planning, management, promotion, and coordination to ensure sustainable tourism; provide effective mechanisms for coordination amongst the Government, private sector, and local communities for the sustainable development of tourism through public- private partnerships and community participation; provide for integration of tourism into national development planning, budgeting and decision-making processes related to infrastructure development, environmental management and protection and empowerment of local communities; strengthen linkages and co o-ordination between tourism development and key subsectors such as arts and culture, heritage, transport, education, energy, forestry, fisheries, wildlife, and water resource management.
Relevance: The construction works may disturb, damage or destroy potential sites for tourism development if maximum care is not taken during line corridor selection.
Compliance: During the ESIA study, measures will be put in place for the preservation of sites with potential for tourism development.

Anti-Gender Based Violence Act (2011)

The Anti-Gender Based Violence Act of 2011 is a major step towards the fight against gender-based violence (GBV) in Zambia. GBV is defined as a hindrance to the attainment of gender equality and the realisation of the social and economic goals of Zambia, as it erodes the confidence of the survivors that they can contribute to development efforts. Gender-based violence (GBV) in Zambia takes the form of physical, mental, social or economic abuse against a person because of that person's gender and includes violence that may result in physical, sexual or psychological harm and suffering to the victim. It may also include threats or coercion, or the arbitrary deprivation of liberty, whether in public or private life.

Relevance: There is the possibility of GBV and sexual abuse to occur among the workers. Hence, this Act is relevant.

Compliance: The project will enforce the provisions of the GBV Act to ensure that issues of GBV are adequately addressed at construction sites among the workers and between the workers and the communities.

Arbitration Act No. 19 of 2000

This Act provides for arbitration in cases where the land owner/occupier does not agree with the amount of compensation being offered. Under section 12 (2) of the Act, the parties to arbitration are free to determine the procedure for appointing the arbitrator or arbitrators. Section 12 (3) (b) states that if the parties are unable to agree on the arbitration, another arbitrator shall be appointed, upon request of a party, by an arbitral institution.

Natural Resources Conservation Act, Cap 315, 1970

The Act relates to the monitoring of natural resource conservation and utilization outside forest reserves and national parks, as well as control of bush fires and powers of Minister to make regulations.

Fisheries Act, 2011

The Act promotes the sustainable development of fisheries and a precautionary approach in fisheries management, conservation, utilisation and development; establish fisheries management areas and fisheries management committees; provide for the regulation of commercial fishing and aquaculture; establish the Fisheries and Aquaculture Development Fund.

Gender Equity and Equality Act, 2015

The Act promotes gender equality and elimination of economic and social discrimination in Zambia. The Minister, through consultations with relevant Ministers, implements special measures on gender equity and equality to meet challenges faced by women living in rural and peri-urban areas. As the Anti-Gender-Based Violence Act, this Act describes the type of discrimination that women face, including GBV, and describes the rights of GBV victims and the procedure for filing complaints.

Electricity Act No.433 of 1995

Provides for the regulation of the generation, transmission, distribution and supply of electricity; and provides guidance on the matters connected with or incidental to the foregoing, and to ensure ZESCO power projects and operations are carried out in line with the provisions of the Electricity Act.

Energy Regulation Act Cap. 436, 1995

The Act creates the Energy Regulation Board (ERB). The role of the ERB, among other functions, is to ensure all energy utilities in the sector are licensed, to monitor levels and structures of competition, and to investigate and remedy consumer complaints.

Rural Electrification Authority Act No 20 Of 2003

The Zambia Rural Electrification Authority (REA) is a statutory body created through Act No.20 of 2003, to spearhead development of electricity infrastructure in rural areas to facilitate access to electricity. REA's objective is to increase access to electricity for most of Zambians. It is also committed to improving the quality, efficiency and performance of the electricity industry in Zambia, through both established and more contemporary modes of power generation.

A summary of legal and institutional outline is illustrated in the table below.

Table 2: Summary of Legal and Institutional Management

Legal Instrument	Main Provisions	Responsible Institutions	Relevance to the Project
Environment and Natural Resources Management			
Environmental Management Act No.12 of 2011	To protect the environment and control pollution, to provide for the health and welfare of persons, animals, plants, and the environment. The Act covers water, air, waste, pesticides and toxic substances, noise, ionizing. radiation, and natural resources, etc.	Zambia Environmental Management Agency, Ministry of Green Economy and Environment	EIA approval decision letter is necessary for project implementation and environmental monitoring to continue throughout the project phases
Natural Resources Conservation Act, Cap. 315 of 1970	Conservation and improvement of natural resources and control of bush fires.	Ministry of Green Economy and Environment	Monitoring of natural resource conservation and utilization aspects
Local Administration (Trade Effluent) Regulations, No. 161 of 1986	Standards for and regulates discharging of effluent into aquatic environment and define permissible effluent limits for industry	Local Councils	Responsible for management of domestic and industrial waste
Town and Country Planning Act, Cap 283 of 1962	Provides for the appointment of planning authorities, the preparation approval and revocation of development plans, and the control of development and subdivision of land	Local Councils	Approvals of construction and area plans
Water Resources Development and Management			
Water Supply and Sanitation			
The Water Supply and Sanitation Act No. 28 of 1997	Framework for providing and regulating water and sanitation services to all areas. Creates the Council (i.e., NWASCO) which administers the Act	Ministry of Local Government & Housing; NWASCO	Regulation of water supply and sanitation services

Legal Instrument	Main Provisions	Responsible Institutions	Relevance to the Project
Forestry Resources Management			
The Forest Act No. 7 of 1999	Control, manage, conserve, and administer National and Local forests; Participation of local communities, traditional institutions, and NGOs; Conservation and sustainable use of forests and trees; and Implementation of International Instruments.	Zambia Forestry Commission (yet to be formulated). Currently run by the Department of Forestry	Coordination and management of the protected forest areas and open forests.
Wildlife Resources Management			
The Zambia Wildlife Act, No. 12 of 1998	To control and manage national parks, GMAs and bird sanctuaries for the purposes of conserving and enhancing wildlife ecosystems.	Department of National Parks and Wildlife	To protect both wildlife and forest resources
Fisheries Resources Management			
Fisheries Act, Cap 200 of 1974	Provides for development of commercial fishing and the registration of fishermen and their boats and the protection of endangered fish species	Ministry of Fisheries and Livestock	Promotion of conservation of fish species in the water bodies.
Mining Activities			
Mines and Minerals Act, No. 31 of 1995	Regulates the law relating to mines and minerals	Ministry of Mines Energy and Water Development	To preserve the area if minerals are found and regulation of mineral resources exploitation.
Agriculture			
Agriculture (Fertilizer and Feed) Act, No. 226 of 1990	Regulates and controls the manufacture, processing and importation and sale of agricultural fertilizers and feed, and establishes minimum standards and purity	Ministry of Agriculture	Soil fertility conservation.
Cultural Aspects			
National Heritage Conservation Act No. 23 of 1989	Protection of heritage sites, archaeological sites, and artifacts.	National Heritage Conservation Commission	Monitoring and management of all identified cultural and archaeological sites in the area
Energy Management			
Energy Regulation Act Cap. 436 of 1995	Regulates prices for electricity, petroleum products and other energy related products	Energy Regulation Board	License for energy generation, transmission and trading required.
Electricity Act No.433 of 1995	Generate, Transmit and Distribute electricity in Zambia	Ministry of Energy, and Energy Regulation Board	It is the governing Act for the operations of the power station, transmission and distribution power lines.
Lands Management			
The Lands Act Cap. 288 of 1995	Controls the alienation of land for various uses by developers.	Ministry of Lands	Governs the acquisition of land to be used for the development of the transmission line

2.5.3 International Environmental Conventions and Protocols to which Zambia is a Signatory

Zambia has the mandate to ensure that all activities being implemented within the country do not only comply with the local legislation but also fits well with international requirements. Zambia is party to more than thirty International and Regional Conventions and Protocols. The most relevant environmental conventions in relation to the undertaking are:

- Convention dealing with the Protection of the World Cultural and Natural Heritage (1972) and ratified by Zambia in 1982.
- Statutes of the International Union for the Conservation of Nature and Natural Resources (IUCN).
- Convention on International trade in Endangered Species of the wild fauna and flora (CITES), 1993.
- RAMSAR Convention and Bonn Convention.
- Zambia has also ratified the Basel Convention (1994) which regulates transboundary movements of hazardous wastes.

Some of the conventions are discussed below.

(a) African Convention on the Conservation of Nature and Natural Resources, 1968

This convention advocates for the conservation and sustainable management of biodiversity, with a particular focus on critical ecosystems such as lakes and rivers.

Relevance: The project has significant implications for soil preservation, water resources, and the protection of local flora and fauna.

Compliance: The project will implement mitigation measures in line with the convention's principles to prevent project-induced soil erosion and anthropogenic impacts that could lead to the dominance of single species.

(b) The Convention on Biological Diversity, 1992

Originating from the Rio Agenda 21, this convention emphasizes the conservation and protection of biodiversity globally. It establishes principles for biodiversity management strategies, including specific measures to address the threat of invasive species. The convention also integrates principles of equity and intellectual property rights in line with Agenda 21.

Relevance: The project's construction phase involves the clearing of vegetation, which directly impacts the local biodiversity.

Compliance: The project will strictly adhere to the convention's provisions, ensuring that biodiversity in the area is preserved and protected throughout its lifecycle.

(c) United Nations Framework Convention on Climate Change, 1992

The Convention rallies parties to take action to reverse anthropogenic factors responsible for the accelerated climatic variations seen through changing temperatures due to an accelerated build-up of Green House Gases (GHGs) resulting from unsustainable industrialization models or technologies.

Relevance: Evidence of climate change is now common knowledge. The project may contribute to climate change due to increase in the emissions from the machinery, dust generation and tree removal during construction phase.

Compliance: The project will act responsibly starting from the design stage to void carbon dioxide emissions and use best technologies to reduce its emissions and impacts in regard to climate change. Most importantly, the removal of trees will be avoided, and were necessary minimised and trees removed compensated for.

(c) Stockholm Convention on Persistent Organic Pollutants, 2004

Stockholm Convention on Persistent Organic Pollutants is an international environmental treaty, signed in 2001 and effective from May 2004, that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs). POPs are defined as “chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment”. Key elements provided for in Articles 1, 3, 5, 6, and 11 of the Convention include the requirement that developed countries provide new and additional financial resources and measures to eliminate production and use of intentionally produced POPs, eliminate unintentionally produced POPs where feasible, and manage and dispose of POPs wastes in an environmentally sound manner.

Relevance: Transformers and other electrical equipment use industrial oil for cooling and lubrication, which may contain POPs.

Compliance: The project will ensure that use of POPs in electrical equipment is not allowed to meets the requirements of this protocol.

(d) **Ramsar Convention**

The general objective of the Ramsar Convention is to curtail the loss of wetlands and to promote prudent use of all wetlands. The convention addresses one of the most important issues in Southern Africa, namely the conservation of water sources and use of the natural and the human environments in an intergenerational equitable manner.

Relevance: - The project may bring about surface and underground water pollution and, therefore the convention will be adhered to.

Compliance: The effluent prone areas will be made of concrete to ensure that all the spillages are contained before contaminating the underground water. The machines will be installed and maintained on concrete bases.

(e) **Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal**

The objective is to control import and export of hazardous wastes. It also aims at ensuring that any trans-boundary movement and disposal of hazardous waste, when allowed, is strictly controlled and takes place in an environmentally sound and responsible manner.

Relevance: - Hazardous wastes may be generated and disposed of during the construction and operation phases of the project.

Compliance: Maximum control measures shall be put in place to ensure that their transportation and disposal is done in accordance with provisions of this Convention.

(f) **Convention on Migratory Species and the African – Eurasian Water Bird Agreement**

Like other migratory species, water birds cross several international borders during their migration, facing a wide range of threats. Without international cooperation, conservation efforts of one country can be meaningless if these birds are not protected in another country.

Relevance: - These species require protection in accordance with this Convention.

Compliance: Maximum measures will be put in place to ensure that workers do not kill any birds around on the project site.

2.5.4 International Environmental and Social Standards

This section establishes the foundation for conducting the Environmental and Social Impact Assessment (ESIA) for the Malawi-Zambia 400 kV Transmission Interconnector Project. The project is committed to meeting international best practices in environmental and social performance by adhering to standards set by key international stakeholders, including Swedfund and the European Investment Bank (EIB). These standards provide a framework for identifying, assessing, and managing environmental and social impacts and implementing mitigation measures to minimize adverse effects on the environment and communities.

(a) Swedfund's Policy for Sustainable Development

Swedfund, as a development finance institution, is committed to contributing to sustainable development. This involves promoting economic growth, environmental sustainability, and social inclusion in the markets where we operate.

Vision and Mission

- Vision: To contribute to poverty reduction through sustainable investments.
- Mission: To provide risk capital, expertise, and financial support to businesses in developing countries.

Sustainable Investment Principles

- Economic Viability: Ensuring investments are financially sustainable and contribute to long-term economic growth.
- Environmental Responsibility: Minimizing environmental impact by promoting efficient use of resources, reducing emissions, and supporting renewable energy projects.
- Social Inclusion: Upholding human rights, improving working conditions, and fostering gender equality and community development.

Strategic Objectives

- Impact Measurement: Regular assessment of the social, environmental, and economic impacts of investments.
- Transparency and Accountability: Maintaining open communication and reporting on sustainability performance.
- Capacity Building: Strengthening the capabilities of investees to manage sustainability challenges effectively.

Implementation Framework

- Due Diligence: Rigorous screening and evaluation of potential investments for compliance with sustainability criteria.
- Monitoring and Evaluation: Continuous monitoring and periodic evaluation to ensure adherence to sustainability standards and objectives.

- Stakeholder Engagement: Collaborating with stakeholders, including local communities, governments, and other investors, to enhance the sustainability impact.

Environmental and Social Governance (ESG)

- Policy Integration: Embedding ESG considerations into all investment decisions and management processes.
- Risk Management: Identifying and mitigating potential ESG risks associated with investments.
- Compliance: Adhering to international standards and best practices in ESG.

Commitment to International Standards

Aligning with global frameworks such as the United Nations Sustainable Development Goals (SDGs), Paris Agreement, and International Labour Organization (ILO) standards.

Conclusion

Swedfund is dedicated to fostering sustainable development through responsible investments. By integrating economic, environmental, and social considerations into its investment strategy, Swedfund aims to create lasting positive impacts in the communities where it operates.

(b) European Investment Bank Environmental and Social Standards

The EIB Performance Standards set out the underlying principles for sustainable project management, including impact/risk assessment, mitigation strategies, public consultation and performance monitoring. Their relevance to the Project is briefly summarized below:

EIB PERFORMANCE STANDARD 1: Assessment and Management of Environmental and Social Impacts and Risks.

This standard establishes the requirement environmental and social considerations throughout the life of a project through initial baseline studies and identification of risks and impacts, establishment of management programmes that describe mitigation and performance improvement measures and actions to address identified risks and impacts, stakeholder engagement and application of management system to monitor and improve performance.

EIB PERFORMANCE STANDARD No. 2: Pollution Prevention and Abatement

The EIB defines pollution prevention as avoidance of any deterioration in the quality of human health or the environment, and any loss of biodiversity, by avoiding, reducing and, if possible, compensating/remedying significant adverse effects of projects in line with current internationally disseminated technologies and good practice. The standards deals with an integrated approach to prevention and control of emissions into air, water and soil, to waste management, to energy efficiency and to accident prevention for the protection of the environment as a whole and therefore, avoiding the shift of pollution from one environmental medium to another.

EIB PERFORMANCE STANDARD NO. 3: BIODIVERSITY AND ECOSYSTEMS

Sets out a commitment approach to development that protects and conserves biodiversity, including habitats, species and communities, ecosystem diversity, and genes and genomes, all of which have potential social, economic, cultural and scientific importance that is compatible with maintaining the resilience of ecosystems and their functions and processes in order to achieve at least no net loss of biodiversity and ecosystem services.

EIB Performance Standard No. 4 CLIMATE-RELATED STANDARDS

Sets out to promote climate-friendly strategies by promoting climate change mitigation projects in various sectors and promoting the adoption of energy efficient solutions in the projects by mainstreaming

climate risk considerations generally into the project cycle and to promote Adaptation projects or projects with adaptation components and measures, in the interests of long term sustainability.

EIB PEFORMANCE STANDARD No. 5: CULTURAL HERITAGE
This standard recognizes the significance of cultural heritage as part of individual and collective identity, its central role in supporting the objectives of sustainable development and the promotion of cultural diversity and aims to protect irreplaceable cultural heritage and to provide guidance for protecting cultural heritage throughout a Project's life cycle.

EIB PERFORMANCE STANDARD NO. 6: INVOLUNTARY RESETTLEMENT
Outlines a policy to avoid or minimize involuntary physical resettlement as a consequence of the project. Where it is unavoidable, it requires suitable measures to mitigate adverse impacts on affected stakeholders, including appropriate compensation for any economic displacement such as loss of subsistence or commercial livelihood.

EIB PERFORMANCE STANDARD No.7: RIGHTS AND INTERESTS OF VULNERABLE GROUPS
The standard highlights the need for some indigenous people (individuals or groups) who may be less resilient to risks and adverse impacts than others. Within the context of EIB operations, individuals and/or groups who are at a higher risk of being unable to anticipate, cope with, resist and recover from project-related risks and/or adverse impacts are considered vulnerable. Vulnerable individuals or groups may include women, children, the elderly, the poor, ethnic, religious, cultural or linguistic minorities, or indigenous groups may have their land and resources are encroached upon by or significantly degraded by a Project). Their languages, cultures, religions, spiritual beliefs, and institutions may also be under threat.

EIB PERFORMANCE STANDARD 8: LABOUR STANDARDS
Highlights the need for good labour practices and the use of appropriate codes of conduct as important elements to protect the reputation of firms, and further amplifies the need for workers' rights regarding income generation, employment creation, relationship management, commitment to staff, retention and staff benefits. It identifies and outlines the need to provide workers with a safe and healthy working environment. This Performance Standard is guided by international conventions.

EIB PERFORMANCE STANDARD No. 9: OCCUPATIONAL AND PUBLIC HEALTH, SAFETY AND SECURITY
Highlights the need for access to health, education or social protection arising from exposure to hazards, risks and negative impacts in terms of public health and safety. The standard promotes the protection of the health and safety of employees at work throughout the project life cycle by ensuring safe, healthy, hygienic and secure working and accommodation conditions and, effectively, a working environment that respects and safeguards the right to privacy, and when appropriate, to the enjoyment of the highest attainable standard of physical and mental health of workers and their families(e.g. in workers accommodation) which may arise through or be amplified by project-related occurrences such as increased environmental pollution, elevated noise levels the spread of communicable diseases or disproportionate use of violence by private or public security forces. Considerations should also be given to occupational health and safety issues arising in the context of projects.

EIB PERFORMANCE STABDARD No. 10 STAKEHOLDER ENGAGEMENT
Stakeholder Engagement is defined as an inclusive and iterative process that involves, in varying degrees, stakeholder analysis and engagement planning, timely disclosure and dissemination of/access to information, public consultations and stakeholder participation, and a mechanism ensuring access to

grievance and remedy. It outlines the process of engagement and stresses the value of public participation in the decision-making process throughout the preparation, implementation and monitoring phases of a project.

Environmental, Health and Safety Guidelines

The EIB EHS Guidelines were designed to broadly define 'good international industry practice' and set specific minimum design and operating standards (such as for emissions, discharge or exposure limits) in regard to the environment, occupational health and safety, community health and safety, and life cycle impacts including during construction, operation and decommissioning.

The detail in these standards is generally derived from globally recognised sources (such as the World Health Organisation) and are basically intended for application where host government's legislation is either not available or is potentially deficient in regards to good international practice. Stipulated performance levels and measures are "generally considered to be achievable in new facilities by existing technology at reasonable costs".

The General EHS Guidelines are designed to apply to all projects and all sectors, but the detailed requirements can be superseded by sector guidelines, where factors such as facility size, technology and associated impacts merit specific attention. The specific industry sector EHS Guidelines that may be applicable to the proposed project include the guidelines on Waste Management Facilities, Mining and Water and Sanitation.

2.5.5 Corporate Standards and Guidelines

The ESIA Study will take into consideration the following Corporate environmental and social standards developed by ZESCO.

(a) Environmental and Social Impact Assessment, No: BD.15100.SPPR.00002 of 23/05/2016.

The purpose of this Procedure is to provide guidance on how to conduct an effective environmental and social impact assessment study on all ZESCO projects. The Assessment is aimed at prudent identification of positive and negative impacts so as to avoid or mitigate negative impacts, while enhancing the positive ones. This Procedure highlights the various steps taken to assess environmental and social impacts, risks and opportunities of projects. It also provides a planning framework for the following:

a) The possible integration of environmental and social considerations throughout the life cycle of projects (from planning to operation, and even decommissioning);

b) Provides a framework for effective dialogue with stakeholders through engagement, consultation and disclosure of project-related information on matters that directly affect them;

c) Offers a framework for the systematic consideration of the environmental and social effects and the formulation of measures to mitigate the negative and enhance the positive ones; and

d) Identifies mechanisms aimed at implementing management/mitigation measures.

(b) Resettlement and Compensation Action Plan, No: BD.15100.SPPR.00003 of 23/05/2016

The purpose of this Procedure is to provide guidance in the planning and execution of involuntary resettlement associated with ZESCO projects and operations. The Procedure will apply to any project and operation that may result in the loss of assets, the impairment of livelihood, or the physical relocation of an individual, household, or community. This Procedure identifies the socio-economic impacts of pro-

jects and operations and provides guidance on the mitigation options. It also provides a planning framework for the following:

a) Compliance with local and international resettlement and compensation management regulations and procedures on how to deal with Project Affected Parties (PAPs);

b) Full and fair compensation of all PAPs where involuntary resettlement is unavoidable; and
c) Consultation and involvement of all parties affected by involuntary resettlement in the resettlement planning process to ensure that the mitigation of adverse effect as well as the benefits of resettlement are appropriate and sustainable. The ultimate goal of a RCAP is to enable those affected or displaced by a project to be fairly and adequately compensated to improve their standard of living—a goal that requires an examination of social, environmental, and economic conditions beyond simple physical inventories.

(c) Environmental and Social Management Plan No: BD.15100.SPPR.00005 of 23/05/2016

The purpose of this Procedure is to provide guidance on how to develop and implement comprehensive Environmental and Social Management Plans (ESMPs) for all ZESCO projects and operations. It also outlines the duties and responsibilities of the Developer and the Contractor with respect to environmental management and protection during construction and operation phases of Projects. The procedure ensures compliance with local and international environmental and social laws, regulations and guidelines. Further, the Procedure provides a framework for the planning, preparation, implementation, monitoring and review of the ESMP.

2.5.6 Institutional Framework

The key national institutions and agencies pertinent to this project include:

- Ministry of Infrastructure, Housing, and Urban Development
- Zambia Environmental Management Agency (ZEMA)
- Energy Regulation Board (ERB)
- Local Authorities: Chipata City Council and Vubwi Town Council
- Local Traditional Chiefs along the transmission line corridor
- Department of National Parks and Wildlife
- Department of Forestry
- The Contractor
- Department of Mines and Mineral Development

The roles and responsibilities of each of these statutory bodies, as they relate to this project, are detailed below.

(a) Ministry of Infrastructure Housing and Urban Development

The Ministry of Infrastructure, Housing and Urban Development (MIHUD) is responsible for overall policy formulation and monitoring of the infrastructure developments. The Ministry oversees the construction and civil engineering activities to the extent that they should not adversely affect the environment. The Government Valuation Department (GVD), located in the Ministry of Infrastructure, Housing and Urban Development. GVD is responsible for the preparation of Valuation Reports upon request from a user Ministry or Institution such as ZESCO. The Valuation reports form a basis for the fair compensation of project affected persons that may have their structures affected by the rehabilitation of the project. Further GVD will play a big role in the resolution of disputes relating to the valuation amounts as part of the grievance redress mechanism.

(b) ZESCO

ZESCO will be responsible for the overall management, supervision and execution of the Project through a Project Implementation Unit (PIU) that will be established. ZESCO shall hire a Project Management Consultant (PMC) to design the construction works and supervision of the proposed construction works. ZESCO will procure the Contractor following the EIB's procurement policy for carrying out the construction activities of the Project. The specific role of the PIU shall be to:

- Assist the PIU in drafting the Environmental, Social, Health and Safety requirements in the bidding and contract documents in accordance with the ESMP;
- Supervise the contractor's work to ensure compliance with the environmental, social, health and safety requirements of the bidding documents and ESMP. Provide recommendations for implementation of corrective actions for any non-compliances and suggest improvements for contractor's performance;
- Prepare quarterly progress reports on the implementation of the ESMP for transmission to the financiers throughout the project implementation period; and
- ZESCO will implement the RAP in conjunction with respective district local governments of Chipata and Vubwi.

(c) District Councils and Traditional Leadership

Local Councils and Traditional leadership are responsible for local policy matters, economic development, resolution of local conflicts and the provision of leadership in their respective areas. City and District councils and traditional leaders are key players in the mobilisation of local people's participation in developmental programmes such as the proposed project. Further, the local and traditional authorities may play a role in the recruitment of workers on the project.

(d) Zambia Environmental Management Agency (ZEMA)

ZEMA is empowered under the Environmental Management Act (EMA), No. 12 of 2011 to ensure that major developmental activities in Zambia adhere to the provisions of the Environmental Impact Assessment (EIA) Regulations of 1997. It is a requirement under the EIA regulations that any road rehabilitation/construction project exceeding 10Km should undergo an EIA process before the commencement of civil works. Upon the successful conclusion of the EIA, ZEMA issues a Decision Letter to either approve or disapprove such a project.

(e) The Department of National Parks and Wildlife

The presence of the project contract workers could provide a market of game meat; therefore, the Department will play an important role to mitigate against illegal wild animals' offtake through sensitisations to the workforce on the provisions of the Wildlife Act and prevention of the contractor workers providing a market for illegal game meat.

(f) The Department of Forestry

The project activities will result in the removal of some trees, which will have to be compensated for by planting replacement trees. The Department of Forestry will play a key role in raising of tree nurseries, work with the community and other stakeholders who will be involved in the compensatory tree planting programme.

(g) Mines and Minerals Development Department (MMDD)

The cadastre Office at the Ministry of Mines and minerals Development, under the Department of Mines and Minerals is responsible for issuing mining licences. The project will require industrial minerals inputs

like gravel, laterite and stone aggregate for the civil works on the project. These materials have to be sourced locally and mined under licences for borrow material extraction and quarrying operations. The mining licence stipulates the environmental clearance, mining methods and the safe use of explosives and other hazardous substances.

2.6 Resource Requirement

The project capital cost on the Zambian side is estimated at USD 35 million and the works are expected to be undertaken over a period of 24 months from the start date. However, more accurate projects costs will be determined after completing the feasibility study, including project designs.

3. PROJECT OBJECTIVES

The primary objective of this project is to enhance regional electricity integration and facilitate cross-border electricity trade between Zambia and Malawi, and neighbouring countries within the region.

The transmission line project is aimed at:

- Improving security of electricity supply and minimise load shedding;
- Facilitating export of electricity to generate revenue to support the operations and network expansion programmes of ZESCO;
- Increasing access to electricity services in Eastern Province and the country at large;
- Providing sufficient and dependable power to support development activities in Zambia; and
- Contributing to the improvement in the standard of living of the people within and outside the project area.

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4. EXISTING ENVIRONMENTAL CONDITIONS

This chapter provides a detailed overview of the existing environmental, socio-economic, and cultural conditions in the project area, based on the approach and methodology employed during the scoping study. The scoping study followed a systematic process to identify the key environmental and social aspects potentially impacted by the project. This process included:

- **Desktop Studies**: Review of existing literature, reports, and environmental data sources to establish baseline conditions in the project area.
- **Field Surveys**: Initial field assessments were conducted to gather direct observations and data on critical environmental features, including local flora, fauna, and habitat types.
- **Stakeholder Consultations**: Engaging local communities and relevant stakeholders to understand their concerns and observations regarding the environmental aspects of the area.

This approach aimed to collect preliminary data essential for identifying potential impacts and guiding further environmental and social assessments during the ESIA phase. This chapter outlines the baseline data gathered through these methods, providing foundational context for evaluating future project impacts.

4.1 Environmental Baseline

4.1.1 Environmental Baseline and Habitat Analysis

In line with international standards from entities such as the EIB and World Bank, the habitats within the project area have been categorized to ensure compliance with additional Environmental and Social (E&S) requirements. This includes identification of **Natural Habitat**, **Modified Habitat**, and **Critical Habitat** within the project's area of influence.

- **Natural Habitat**: The project area contains several stretches of primary woodland and riparian vegetation zones that remain largely undisturbed by human activities. These areas are characterized by native tree species and biodiversity, essential for the ecological integrity of the region. They play a critical role in supporting local wildlife and maintaining ecosystem stability. The proposed power line avoids the hills, which have natural habitat.
- **Modified Habitat**: Much of the land around agricultural fields, towns, and infrastructure development, particularly near Chipata and other settlements, is classified as modified habitat. While these areas support a mix of native and non-native species, human activities have led to changes in the structure and function of the ecosystem.
- **Critical Habitat**: Specific regions, especially those that support rare, endangered, or endemic species, are identified as critical habitats. These areas include ecological zones with sensitive vegetation or specific species of conservation concern, as highlighted in biodiversity surveys conducted in the region adherence to the varied definitions and expectations of international financiers and facilitates a clear strategy for conservation efforts during project implementation. There are no places in the project area which are classified as critical habitats. The proposed power line traverses modified habitat with agricultural fields, settlements and scatted woodlands with modified (secondary) vegetation.

4.1.2 Climate

The project area, encompassing the Chipata and Vubwi districts, is situated at an elevation that contributes to its distinctive climatic conditions. Both districts experience a Tropical Wet and Dry climate, also known as a Savanna climate. This type of climate is characterized by a clear distinction between the

wet and dry seasons, which significantly influences the local environment and agricultural activities.

Temperature

The average annual temperature in the in the project area is approximately 25.34°C (77.61°F), which is slightly higher—by about 2.01%—than the national average for Zambia. This relatively warm temperature is consistent throughout the year, with minor fluctuations between the hottest and coolest months. The warm climate supports a range of agricultural activities, which are a vital part of the local economy, though it also necessitates careful water management, especially during the dry season.

Precipitation

Precipitation in the region is moderate, with the area typically receiving around 82.6 millimeters of rainfall annually. The rainfall is concentrated during the rainy season, which spans from November to April. During this period, the region experiences approximately 128.29 rainy days per year, meaning that it rains about 35.15% of the time annually. This seasonal rainfall pattern is critical for the cultivation of crops such as maize, tobacco, and groundnuts, which are commonly grown in the region.

Wind

This section outlines the wide-area hourly average wind vector, which includes both speed and direction, measured at 10 meters above ground level. It is important to note that wind conditions at any specific location are influenced by local topography and other factors, causing instantaneous wind speed and direction to fluctuate more widely than the hourly averages.
In the project area, the average hourly wind speed increases significantly during the winter months, rising from 14 kilometers per hour to 17.7 kilometers per hour over the course of the season. For reference, on October 12, 2023, identified as the windiest day of the year, the daily average wind speed reaches 19.6 kilometers per hour. In contrast, on February 16, the calmest day of the year, the daily average wind speed drops to 9.7 kilometers per hour.

4.1.3 Geography and soils

Geography of the Malawi-Zambia 400kV Interconnector Project Area

The Malawi-Zambia 400kV Interconnector Project is situated within the Eastern Province of Zambia, a region known for its diverse topography and strategic geographical position. The Eastern Province is bordered by Malawi to the east and Mozambique to the south, placing the project within a transboundary context that necessitates careful consideration of cross-border environmental and socio-economic dynamics.

Regional Overview

The Eastern Province is characterized by its undulating highlands, which are part of the broader Central African Plateau. One of the most prominent geographical features in the region is the Luangwa Valley, a significant rift valley that demarcates the highlands separating Zambia and Malawi. This valley is not only a key physical landmark but also a crucial ecological zone that supports a rich diversity of wildlife and vegetation.

To the north of the project area lies a portion of the Nyika Plateau, which extends above Lake Nyasa (also known as Lake Malawi). This plateau, although a small part of the Eastern Province, is an important ecological area, hosting unique flora and fauna. Its elevation contributes to the varied climatic conditions experienced across the region.

Major Urban Centres

The Eastern Province's most developed urban centre is Chipata, a city that serves as a commercial and administrative hub. Chipata is also the fifth most developed city in Zambia, playing a pivotal role in the region's economy. It is followed by other towns such as Lundazi and Petauke, which are also significant in terms of regional development. However, the Malawi-Zambia 400kV Interconnector Project also traverses Vubwi, a smaller and more recently established district that was formerly part of Chadiza District. Vubwi's elevation to district status reflects ongoing administrative restructuring aimed at improving local governance and service delivery.

Topography and Watershed

The Eastern Province is bordered to the north-west by Muchinga Province and to the south-west by Central and Lusaka Provinces. The topography of the region includes isolated hills along the eastern border, with some elevations reaching between 1,800 and 2,100 meters above sea level. These highlands contribute to the area's watershed dynamics, as the province lies within the critical watershed region that separates the Congo and Zambezi River systems. This geographical positioning influences the flow of water resources, impacting both surface and groundwater systems in the project area.

4.1.4 Geology

Geological Setting

The Malawi-Zambia 400kV Transmission Interconnector project area is situated within a geologically complex region characterized by its position in the ENE-WSW trending segment of the Neoproterozoic mobile belt. This tectonic setting is marked by a dynamic geological history, featuring a variety of rock types that have undergone multiple phases of deformation, metamorphism, and intrusion. The geological framework of the area is predominantly composed of rocks belonging to the Basement Complex, overlain by metasedimentary rocks of the Katanga SuperGroup.

Basement Complex

The Basement Complex represents the foundational geological unit of the project area and is composed of some of the oldest rock formations. This complex is characterized by a suite of polymetamorphic rocks that have been intricately folded and intruded by a variety of igneous bodies. The rock types within the Basement Complex include:

- **Granulites:** High-grade metamorphic rocks that form the core of the complex, often displaying a gneissic texture. These rocks are typically found in the northern parts of the project area.
- **Migmatites:** These rocks represent a hybrid between metamorphic and igneous processes, where partial melting and recrystallization have produced a heterogeneous mix of gneiss and granite.
- **Amphibolites:** Metamorphosed mafic rocks that typically occur as bands or lenses within the more felsic components of the complex.
- **Schists:** These are medium- to high-grade metamorphic rocks that exhibit a well-developed foliation, often composed of minerals like biotite, muscovite, and quartz.
- **Granitoids:** A collective term for granitic rocks within the complex, including granites, syenites, and marginal charnockite. These granitoids are significant as they represent various intrusive events that have shaped the geological evolution of the area.

The Basement Complex rocks serve as the oldest geological foundation in the project area and have been subjected to multiple phases of tectonic activity, leading to the complex folding and metamorphism observed today.

Katanga SuperGroup

Overlying the Basement Complex unconformably are the younger rocks of the Katanga SuperGroup. This sequence of rocks, which is typically of greenschist facies, represents a significant period of sedimentation and tectonic activity in the region. The Katanga SuperGroup rocks in the Vubwe general area are characterized by:

- **Metasedimentary Rocks:** These rocks have undergone low-grade metamorphism and are often associated with narrow mylonitic fault zones, which are indicative of significant tectonic shearing and deformation. The presence of phyllonitization, a process where rocks are converted into fine-grained foliated rocks known as phyllonites, highlights the intensity of deformation that these rocks have experienced.

The Katanga SuperGroup rocks are crucial in understanding the tectonic evolution of the project area, as they record the younger sedimentary and structural history that overlays the more ancient Basement Complex. Refer to Figure 4 below.

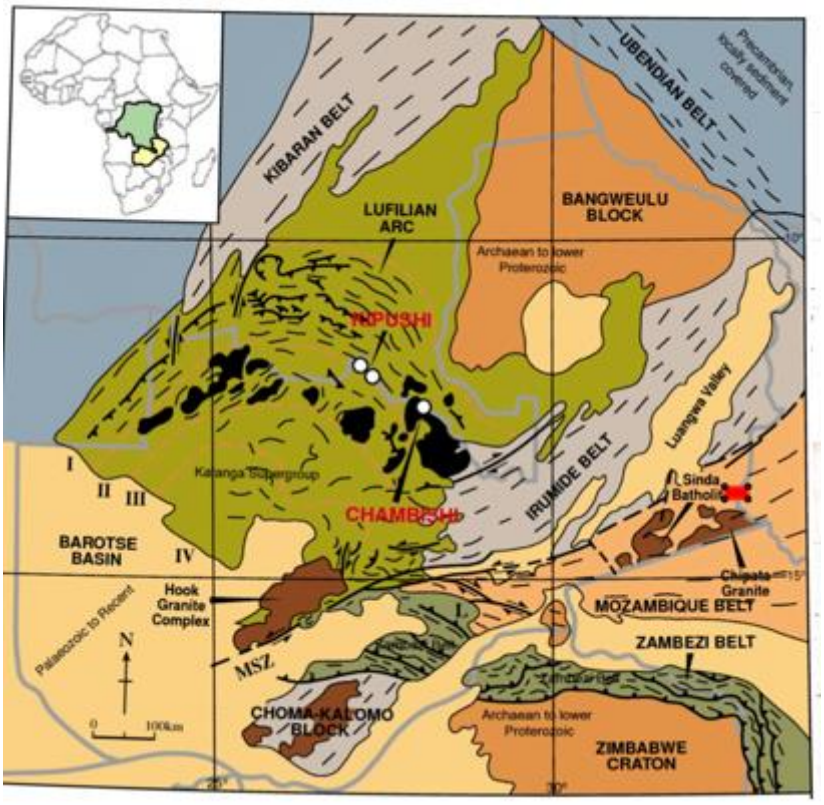

Figure 4: Tectonic setting of project Area

Regional Geology

The regional geology of the project area, as illustrated in **Error! Reference source not found.** below, reveals a stratigraphic sequence dominated by rocks of the Basement Complex, which can be divided into three main types based on their age and lithology:

1. **Granulitic Facies Rocks (excluding charnockites):** These high-grade metamorphic rocks form the bulk of the northern part of the area. Their granulitic texture indicates a history of deep burial and high-temperature metamorphism, making them some of the oldest and most stable rocks in the region.
2. **Precambrian Granitic Gneiss, Migmatites, and Granites:** Exposed primarily in the south-eastern part of the area, these rocks represent a diverse suite of metamorphic and igneous processes. The gneissic and migmatitic textures suggest a history of intense deformation and partial melting, while the granites indicate episodes of igneous intrusion.
3. **Granite Pods:** These occur as small, localized bodies in the central parts of the area. The granites are younger than the surrounding metamorphic rocks and have influenced the structural trends in their vicinity, suggesting that they were emplaced during a later phase of geological activity.
4. **Charnockitic Granite:** Covering approximately 30% of the area, particularly in the southern region, these rocks are contemporaneous with the other granitic bodies but exhibit a higher grade of metamorphism. The charnockitic granite is indicative of a unique metamorphic environment that was distinct from the conditions that formed the surrounding rocks.

The geology of the Malawi-Zambia 400kV Transmission Interconnector project area is a testament to the region's complex geological history. Refer to Figure 5 below. The interplay between the ancient Basement Complex rocks and the overlying Katanga SuperGroup reflects a dynamic tectonic environment that has shaped the landscape over hundreds of millions of years. Understanding this geological setting is crucial for the successful planning and implementation of the interconnector project, as it informs decisions related to construction, resource management, and environmental impact mitigation.

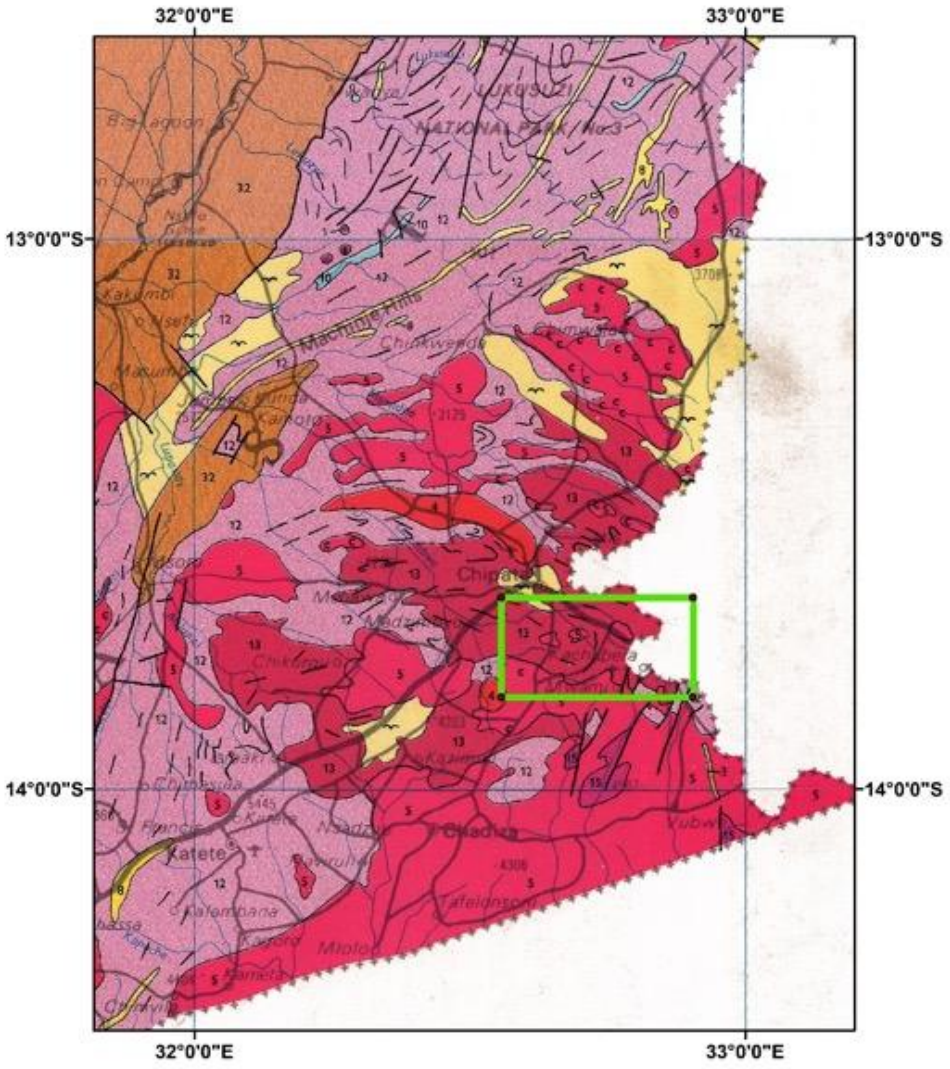

Figure 5: Regional map of the Area with rectangle highlight

N.B.: Due to the large scale of the area, local geology cannot be used to represent its geology. Therefore, geology can be represented only up to regional scale.

4.1.5 Seismicity

The seismicity of the Malawi-Zambia 400kV Transmission Interconnector project area is a critical aspect of the project's risk assessment and structural planning. According to the seismicity map developed by the Geological Survey Department of Zambia, (Refer to Figure 6) the project area is located within a region that exhibits relatively low seismic activity, with a historical record of earthquake magnitudes in the range of 4 to 5 on the Richter Magnitude Scale within a 20-30 km radius. However, it is important to note that no earthquake epicentres have been directly recorded within the immediate vicinity of the project site itself.

Seismic Risk Considerations

While the project area is not situated in a high-seismicity zone, it is geographically proximate to the East African Rift Valley System, a tectonically active region that extends through parts of eastern Africa,

including Zambia's northern and northeastern regions. The Rift Valley system is associated with the ongoing tectonic divergence of the African Plate, leading to the formation of several large lakes, including Lake Tanganyika, Lake Mweru, and Lake Malawi. This tectonic activity is a significant source of seismic events in the region, with occasional earthquakes of varying magnitudes.

Given the proximity of the project area to this tectonic feature, there is a recognized need to consider the potential effects of seismic events originating from the Rift Valley. Seismic hazard assessments indicate that areas within this tectonic regime have a 10% probability of experiencing peak ground accelerations (PGA) ranging from 0.4 to 0.8 m/s² over a 50-year period. Although the project area itself is not expected to experience significant seismic shaking, the influence of regional seismic events cannot be entirely discounted.

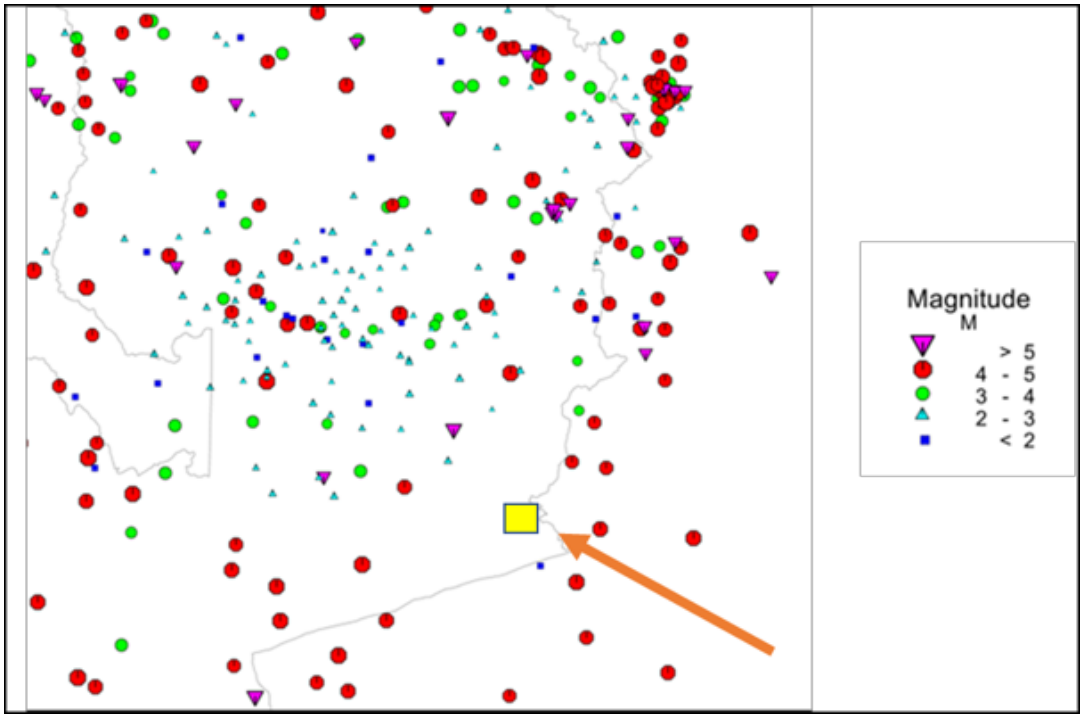

Figure 6: Map showing the 50yrs to recent earthquake epicentres around the project area.

4.1.6 Hydrology

The hydrology within the Malawi-Zambia 400kV Interconnector project area, traversing the Chipata and Vubwi districts, is shaped by a complex interplay between surface water and groundwater systems. This region is characterized by seasonal rivers and streams, alongside significant groundwater resources, both of which are intricately influenced by the area's topography and climate.

Surface Water Systems

The project area is intersected by a network of small rivers and streams (Refer to Figure 7) that are primarily ephemeral, with their flow patterns closely tied to seasonal changes. The proposed transmission line crosses the Lutembwe River after crossing the Lusaka Road. It also crosses the Chibila River before intersecting the Mwami and Vubwe Rivers in Vubwi district.

These watercourses are most active during the rainy season, which spans from November to April, when the region experiences its peak rainfall. During this period, precipitation drives surface runoff, replenishing the rivers and streams, increasing their flow rates and water levels. This seasonal flow is

essential for local agriculture, supporting irrigation and other water-dependent activities, as well as maintaining natural ecosystems.

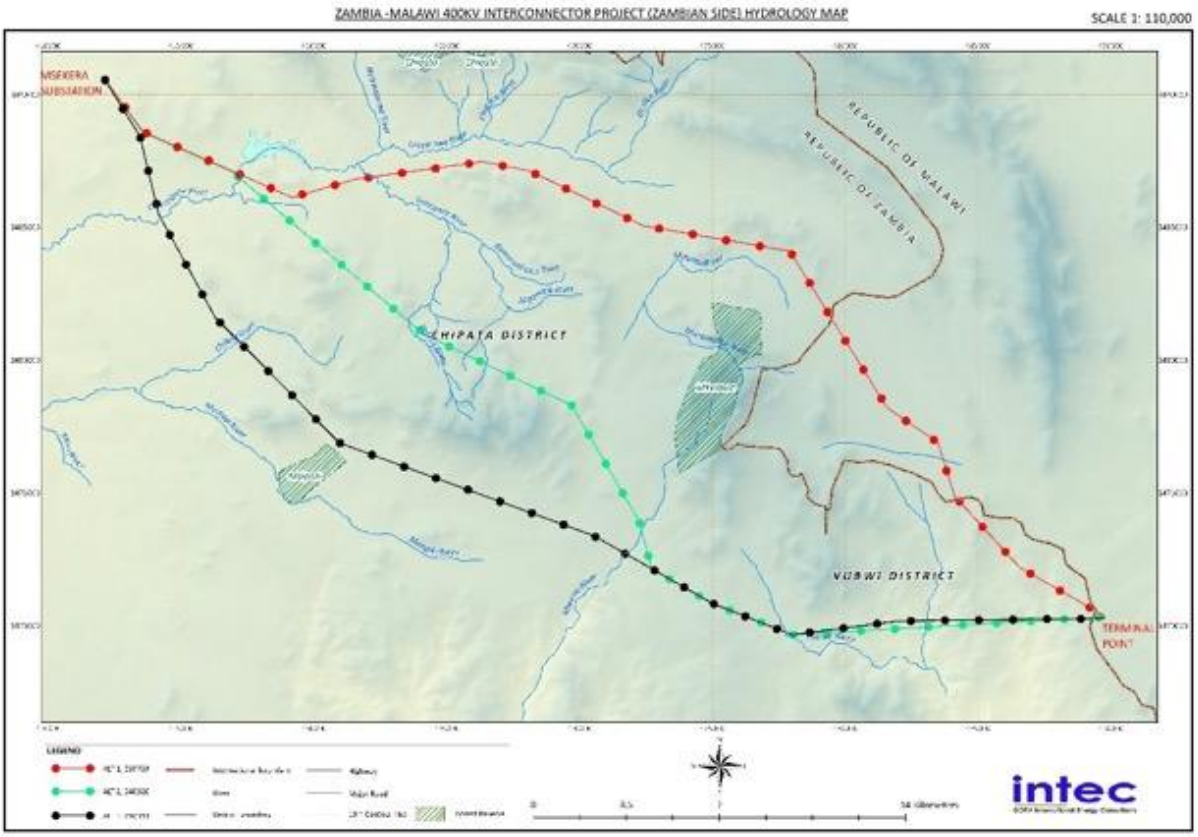

Figure 7: Hydrology of Malawi-Zambia 400kV Interconnector Project Area

During the dry season, from May to October, the flow in these watercourses diminishes significantly, with many smaller streams drying up entirely. The larger streams maintain minimal flow, sustained by limited groundwater discharge and residual moisture from the wet season. This seasonal variability underscores the critical need for efficient water management, especially for communities that depend on these surface water sources for their daily needs.

Lutembwe River

The Lutembwe River is a vital watercourse within the Chipata district. It originates in the eastern range of hills near the Mwami Border, following a dendritic drainage pattern. This perennial river is a crucial water source, with its flow regulated by the Lutembwe Dams 1 and 2, located approximately 20 km from the border post. These dams supply water to the City of Chipata. As a tributary of the Msandile River, which flows through the Mambwe district, the Lutembwe River has an average flow rate of approximately 0.634 m^3/s, with recorded minimum and maximum flows of 0.062 m^3/s and 2.335 m^3/s, respectively.

Groundwater Systems

In addition to surface water, the project area is underlain by a dynamic groundwater system that is closely linked to the region's topography. The Chipata and Vubwi districts are characterized by a landscape of rolling hills, many of which are covered with primary miombo woodland. These elevated areas are crucial to the region's groundwater dynamics.

The miombo woodlands, which dominate the hilltops, play a significant role in groundwater recharge. The deep-rooted vegetation retains moisture and facilitates the infiltration of rainwater into the soil, contributing to the replenishment of the underlying aquifers. This process is vital for sustaining groundwater levels, which serve as an essential water source for both ecological and human use.

4.1.7 Flora and Habitats

Flora and Fauna of the Project Area

The project area for the Malawi-Zambia 400kV Interconnector is characterized by a diverse and ecologically significant array of flora and fauna, with distinct terrestrial and riparian ecosystems that play vital roles in maintaining regional biodiversity and environmental stability.

Terrestrial Vegetation: Miombo Woodland

The principal terrestrial vegetation type within the project area is miombo woodland, a widespread and ecologically important ecosystem across much of Southern and Eastern Africa. This woodland is primarily dominated by three key genera: ***Brachystegia***, ***Isoberlinia***, and ***Julbernardia***. These genera are well adapted to the region's climatic conditions and are integral to the structure and function of miombo woodlands.

- ***Brachystegia*** species, often forming dense canopies, are crucial for providing shade and reducing soil erosion. Their leaves and pods are also an important food source for various herbivorous animals, including insects and, where present, ungulates.

- ***Isoberlinia*** trees contribute to the biodiversity of the woodland, offering habitat and food sources for a range of species. These trees are known for their resilience to fire, which is a common occurrence in miombo ecosystems, thus playing a role in the ecological succession of these woodlands.

- ***Julbernardia*** species are equally important, with their seeds serving as a food source for birds and other wildlife. The wood from these trees is also used locally for construction and firewood, highlighting their socio-economic importance.

These trees form the backbone of the miombo woodland, creating a unique habitat that supports a variety of life forms. The canopy provided by these trees creates a microclimate that fosters the growth of understory plants, including shrubs, herbs, and grasses, which in turn support a diverse array of animal species.

Figure 8: *Brachystegia* and other Miombo Woodland Tree Species in the Project Area

Riparian Vegetation: Wetland Ecosystems

In addition to miombo woodlands, the project area also features riparian vegetation along the banks of streams and rivers. These wetland areas are vital for maintaining the hydrological and ecological balance within the landscape.

- ***Phragmites australis***, commonly known as the common reed, is a dominant species in these riparian zones. This tall, grass-like plant is essential for stabilizing riverbanks, reducing erosion, and filtering pollutants from water before it enters larger water bodies. Its dense root systems also provide habitat for aquatic organisms and nesting sites for birds.

- ***Diospyros mespiliformis***, or African ebony, is another significant riparian species. This tree is valued not only for its ecological role but also for its economic importance, as its hard, dark wood is highly prized. Ecologically, the African ebony provides food for a variety of animals, including birds and mammals, through its fruit, and contributes to the stabilization of riverbanks with its deep root systems.

Endangered Plant Species: Zambia is home to 4,747 known plant species, of which 12 are listed as threatened on the IUCN Red List, representing approximately 0.3% of the country's flora. The project area, located within a dry miombo woodland, is less likely to harbor species such as *Baphia speciosa*, *Dacryodes trapnellii*, and *Ophrestia unicostata*, which are listed in the IUCN Red List and are more adapted to wetter miombo woodlands. However, this does not preclude the potential presence of other threatened plant species. A detailed biodiversity assessment will be undertaken to identify plant species in the area, including those on the IUCN Red List.

4.1.8 Fauna

The fauna within the Malawi-Zambia 400kV Interconnector project area, located primarily within the dry miombo woodland ecosystem, is diverse and plays a crucial role in maintaining the ecological balance of the region. The observations made during field visits highlight a range of species across various taxonomic groups, each contributing uniquely to the area's biodiversity and ecological functions.

Insects

Insects form one of the most diverse and ecologically significant groups in the project area, particularly within the miombo woodlands.

- **Beetles**: Beetles represent a particularly diverse group in this environment. Among the observed species, scarab beetles, dung beetles, longhorn beetles, and ground beetles were prominent. Scarab beetles and dung beetles are vital for nutrient recycling as they break down organic matter. Longhorn beetles, often associated with decaying wood, play a role in decomposition, while ground beetles are important predators of other invertebrates, helping to control pest populations.
- **Termites**: Termites are a keystone species in miombo woodlands, playing a critical role in breaking down dead wood and leaf litter. Their activities contribute to soil formation and nutrient cycling. The intricate underground structures created by termites also enhance soil aeration and water infiltration, benefiting the broader ecosystem.
- **Ants**: Various ant species were observed, showcasing their ecological diversity. Ants are integral to the ecosystem, involved in processes such as seed dispersal, soil aeration, and predation on other insects. Their presence indicates a healthy and functioning ecosystem.
- **Grasshoppers and Locusts**: These insects were commonly observed in grassy areas within the woodland. Grasshoppers and locusts are primary herbivores and serve as a food source for a variety of predators, including birds and reptiles. Their population dynamics can significantly influence vegetation patterns.
- **Butterflies and Moths**: These lepidopterans were mainly observed near rivers and streams, where the availability of water and flowering plants is higher. Butterflies and moths are crucial pollinators, and their presence near water bodies suggests a rich floral diversity in these riparian zones.
- **Wasps and Bees**: Both wasps and bees were noted for their importance as pollinators and predators. Bees, in particular, are essential for the pollination of many flowering plants, while wasps help control pest populations through predation.
- **Ticks and Mites**: These small arachnids are prevalent in many terrestrial ecosystems. While some ticks and mites can be pests and disease vectors, they also play roles in decomposition and soil processes.

Amphibians and Reptiles

The amphibian and reptile populations in the project area are indicative of the region's diverse micro-habitats, ranging from moist areas near water bodies to drier woodland environments.

- **Amphibians**
  - **Frogs and Toads**: Frogs and toads are likely the most common amphibians in the area, thriving in proximity to water bodies which provide necessary moisture and breeding grounds. Their presence is a positive ecological indicator, as amphibians are often sensitive to environmental changes, particularly in water quality.
- **Reptiles**
  - **Snakes**: A variety of snake species were observed, including grass snakes, tree snakes, and vipers. These reptiles occupy different niches within the ecosystem, with grass snakes often found in grassy or marshy areas, tree snakes in more arboreal habitats, and vipers in both open and covered terrains. Their presence highlights the habitat's complexity and the availability of prey species.
  - **Lizards**: Lizards, including chameleons, were also recorded. These reptiles are diverse in form and function, with chameleons known for their role in controlling insect populations. Lizards generally contribute to the regulation of insect and small vertebrate populations, thus maintaining ecological balance.

Birds

Avian species are a significant component of the biodiversity in the project area, serving as ecological indicators and contributing to various ecosystem services.

- **Passerines (Perching Birds)**: Passerines were particularly prevalent in the area. These birds are critical for seed dispersal, which helps in the regeneration of plant species, especially in disturbed areas. They are also important pollinators and play a role in controlling insect populations, thus contributing to the ecological stability of both woodland and riparian zones.
- **Ecological Value**: While the area is not designated as an Important Bird Area (IBA), the diversity and abundance of bird species observed still underscore the ecological importance of the region. The avian presence supports the maintenance of biodiversity and helps sustain the ecological functions of the woodland and associated ecosystems.

Mammals

The mammalian fauna observed within the project area reflects the impacts of human activities, such as poaching and habitat alteration, which have led to noticeable changes in the population dynamics of larger wildlife.

- **Absence of Large Mammals**: The project area has a noticeable absence of larger mammals, such as antelopes and primates, which are typically associated with such ecosystems. This absence is likely due to poaching pressures and habitat fragmentation, which have reduced the populations of these species.
- **Small Mammals**: While larger mammals are scarce, smaller mammals may still be present, though not extensively observed during the visits. These include rodents and other small species that play roles in seed dispersal, soil aeration, and as prey for larger predators.

4.1.9 Protected Areas

The Malawi-Zambia 400kV Transmission Interconnector Project does not traverse any designated National Park, Game Management Area or Forest Reserve. Careful planning has ensured that the proposed transmission line routes avoid all nearby forest reserves, thereby minimizing potential impacts on protected and ecologically sensitive areas. This strategic routing reflects a commitment to preserving the region's natural resources while advancing the project's development objectives.

The nearest protected area is Msipazi Forest Reserve (FR), which is about 320m from the proposed transmission power line. Mkwawe FR is about 3.6km away, Chipata FR is more than 10km away while Mbewule Ranch and Nature Conservation Reserve (private) is approximately 2.4km away from the power transmission power line.

4.1.10 Landscape

The landscape of the Malawi-Zambia 400kV Transmission Interconnector project area is characterized by a diverse topography and distinct natural features, reflective of the broader geographical and ecological setting of the Eastern Province of Zambia.

Topographical Features

The project area traverses a varied terrain that includes rolling hills, expansive plateaus, and river valleys. The eastern part of the region, where the interconnector line is proposed, is marked by a series of isolated hills, some rising to elevations between 1,800 and 2,100 meters. These hills form part of the broader highland system that defines the border between Zambia and Malawi, contributing to the region's striking visual and geological diversity. The hills gradually descend into the Luangwa Valley, a notable geological feature resulting from rifting, which further accentuates the topographical contrast within the area.

Vegetation and Land Use

The landscape is predominantly covered by miombo woodland, a type of savanna woodland that is typical of the region. This vegetation type is characterized by a mix of *Brachystegia*, *Julbernardia*, and *Isoberlinia* tree species, which create a dense canopy in some areas, particularly on the hills and higher elevations. The woodland gives way to more open grasslands and cultivated lands in the lower-lying areas, especially near settlements and along river valleys where agricultural activities are concentrated. The interconnector project area, therefore, encompasses a mosaic of natural and human-altered landscapes, reflecting the dual pressures of conservation and land use.

Figure 9: Secondary vegetation common in the project area and traversed by all the 3 alternatives

Water Features

The landscape is interspersed with several seasonal rivers and streams that flow through the project area, particularly during the rainy season. These watercourses, such as the Lutembwe, Lubwe, and Mwami rivers, not only shape the physical landscape but also play a crucial role in supporting local ecosystems and communities. The river valleys are often lined with riparian vegetation, which contrasts with the drier woodland areas, adding to the visual and ecological diversity of the landscape.

Human Settlements and Infrastructure

Human influence on the landscape is evident through the presence of villages, roads, and agricultural fields. The city of Chipata, the most developed urban centre in the region, and smaller towns like Vubwi, contribute to the area's infrastructure.

Scenic and Cultural Value

The landscape of the project area holds significant scenic and cultural value. The rolling hills, diverse vegetation, and flowing rivers create a picturesque setting that is valued by local communities for both its aesthetic and practical significance. Culturally, the landscape is interwoven with the lives of the local populations who rely on it for agriculture, water, and other natural resources.

5. PROPOSED PROJECT DESCRIPTION AND ACTIVITIES

5.1 Project Components

The proposed transmission line project will have two components:

- Construction of the 400kV transmission line between Chipata West Substation and Zambia – Malawi border at Mwami covering approximately 46km.
- Expansion of Chipata West Substation to accommodate a new busbar arrangement and associated infrastructure.

5.2 Construction

5.2.1 Overhead Transmission Line

The works for the proposed construction of the 400kV transmission line between Chipata West Substation and Mchinji at the Malawian border will include the following activities;

- Carrying out bush (vegetation, trees and anthills) clearing, route survey and profiling, tower spotting, conductor profiling;
- Supplying and erection of all foundations complete with stubs;
- Supplying and erection of suspension towers;
- Supplying and erection of tension towers;
- Supplying and erection of insulators, fittings and hardware;
- Supplying and stringing of conductors, one per phase complete with vibration dampers;
- Supplying and stringing of earth wires and OPGW complete with vibration dampers;
- Supplying and installation of earthling counterpoise wire; and
- Supplying bolts, nuts, washers and other materials as specified in Bill of Quantities, to the extent required to complete the line installation.

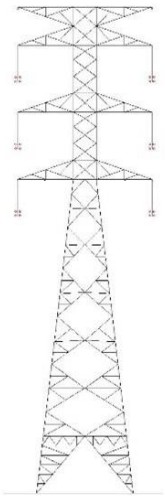

Figure 10: Typical tower configuration for 400 kV OHL

The number, type and location of towers is currently under study.

5.2.2 Substation

Chipata West Substation will be expanded to accommodate a new busbar arrangement and associated infrastructure. The works shall include the following:

- Line Bay and Transformer Bay;
- Transformers and Busbars;
- Auxiliary AC and DC Supply Systems;
- Earthing System;
- Control system;
- Protection System;
- Metering system

Structural Steelwork shall include supports for the isolating switches, circuit breakers, current and voltage transformers, operating cubicles, etc., including foundations bolts and other fixing material; and b) (one) complete set of gantry towers and support structures for the busbars, line bay, bus coupler and transformer bays.

Civil works for the Substation shall include the following:

- Bush clearing, including anthills and all trees, if available;
- Earthwork on the platform;
- Complete soil testing and results for engineering foundations;
- Necessary draining;
- Transformer oil pits, bund walls, fire walls and foundations;
- Support and Gantry foundations, including holding-down bolts;
- Cable ducts and covers;
- Control building, with battery room, Relay and Control Room
- Perimeter fence;
- Stone chippings in the extended substation area;
- Landscaping and replanting of vegetation (trees and grass)

Figure 11: Existing Chipata West Substation

Decommissioning of any of the existing substation infrastructure or equipment is not anticipated during construction.

5.3 Operation and Maintenance

The Project shall be declared operational once all pre-commissioning tests and activities are completed and the line energized. Routine operation and maintenance of the transmission line, the wayleave (vegetation control) and other technical inspections (line patrols), general line performance and normal switchings shall constitute the operational phase of the Malawi – Zambia 400kVtransmission line.

The transmission line, including the substation, shall be operated and maintained by ZESCO, in accordance with standard procedures designed to ensure the integrity of the transmission system. Routine inspections will be conducted on the transmission line to ensure line security and public safety. During operation, routine maintenance of the transmission line will be carried out during annual wayleave maintenance by ground patrol. The vegetation along the wayleave will be controlled to minimize conducting power to the ground and ground clearances are not to be exceeded.

ZESCO currently uses mechanical bush clearing control of vegetation according to the ZESCO wayleave maintenance guidelines.

5.4 Decommissioning

The transmission line and associated infrastructure will be designed, operated, and maintained to ensure long-term safe and efficient service. When components of the power line infrastructure eventually reach the end of their lifecycle, the decommissioning process will aim to address essential environmental considerations and meet all regulatory requirements.

Decommissioning and abandonment plans will be developed in accordance with ZEMA regulations. Key environmental aspects to consider in the decommissioning plan include:

- **Soil and Land Quality**: Potential risks to soil quality, including contamination from materials or components, must be evaluated, with specific attention to ensuring the site is left clean and safe for future use.
- **Vegetation Restoration**: Where necessary, restoration of vegetation will help return the site to a condition similar to its pre-project state, facilitating natural habitat recovery.
- **Waste Management**: Plans for managing decommissioned materials will prioritize re-use and recycling where feasible to minimize waste and environmental impact.
- **Water Resources**: Protection of any nearby water sources will be essential to prevent contamination during the removal of structures and materials.

5.5 Anticipated Wastes from the Project Cycle

The project will be made up of four phases namely preparation, construction, operation and decommissioning phase. Each of the phases comprises a series of activities contributing to overall attainment of the project objectives. The proposed project will produce several by-products (waste), may require careful management to minimize negative impacts.

- **Vegetation Clearance and Habitat Disturbance:** The construction of the transmission line will involve the clearance of vegetation along the right-of-way, which may result in habitat disturbance for local wildlife and loss of biodiversity. This by-product of the project will need to be managed through careful planning and the implementation of mitigation measures, such as reforestation and habitat restoration programs, to minimize environmental impacts.

- **Soil Erosion and Sedimentation:** The earthworks associated with the construction of the transmission line and substations may lead to soil erosion, particularly in areas with steep slopes or loose soils. This could result in increased sedimentation in nearby water bodies, affecting water quality and aquatic ecosystems. Erosion control measures, such as the installation of silt fences and the stabilization of exposed soils, will be necessary to manage this by-product.

- **Construction Waste and Debris:** The construction activities will generate waste materials, including scrap metal, concrete, packaging, and other debris. Proper waste management practices, including recycling and the safe disposal of non-recyclable materials, will be essential to prevent environmental contamination and ensure compliance with environmental regulations.

- **Noise and Dust Generation:** During the construction phase, activities such as excavation, transportation of materials, and the operation of heavy machinery will generate noise and dust. While these impacts are temporary, they may affect the quality of life for nearby residents and wildlife. Mitigation measures, such as dust suppression techniques and noise barriers, will be implemented to minimize these by-products.

- **Sewerage Waste:** Sewerage waste will be generated in the residential camps and work stations during construction phase and will be managed by the use of toilets. During operation phase all sewage will be discharged through appropriate pit latrines, underground sewer lines into the proposed septic tank and soak away system.

- **Hazardous waste:** During construction, operation and commissioning of the project, hazardous waste generated, which includes material soiled with oil, will be stored in a hazardous waste site and will be dispose in accordance with ZEMA guidelines.

The Malawi-Zambia 400kV Transmission Interconnector Project will produce a range of primary products that enhance regional energy infrastructure and security, alongside several by-products that require careful management to mitigate environmental and social impacts. The successful implementation of the project will depend on balancing these outcomes to achieve the intended benefits while minimizing potential negative effects.

6. IDENTIFICATION OF ENVIRONMENT IMPACTS

6.1 Impact Areas

Potential impacts presented in the following tables represent a list of the main potential environmental, socioeconomics and cultural heritage impacts for the construction, pre-commissioning, and operation of the project.

Impact areas include:

- Resources and Waste.
- Geology, Soils and Contaminated land.
- The Water Environment.
- Air Quality and Climatic factors.
- Noise and Vibration.
- Biodiversity and Nature Conservation.
- Landscape and Visual Impacts.
- Socio-Economic Impacts.
- Displacement of Land Uses.
- Property and People.
- Community Health and Safety.
- Working Conditions.
- Cultural Heritage.

6.2 Construction

Table 3: Potential Impacts Related to Project Construction

Impact Area	Potential Impact/Source	Area of Influence
Resources and waste	• Use of large quantities of construction material • Disposal of construction waste • Transportation of construction material and waste • Sewage (black and grey water) management and disposal • Consumption of fuel by vehicles and machinery • Use of water for construction activities, camps, yards	• Local to regional, depending on impact and specific location of waste disposal sites and origin of construction material and fuel
Geology, Soils and Contaminated land	• Excavation works during construction including off-site quarrying where needed (substation, tower foundations) • Clearance of working strip, logistic sites (yards, camp sites) and access roads will affect top soil with the risk of resource loss • Physical damage through soil compaction and accidental contamination (see also resources and waste). • Contaminated sediments from past activities	• Local, within working strip (up to 50 m) and the footprint of associated facilities (substation, camp site, construction material warehouse) • Impacts from contaminated sediments will be Local or Regional depending on the location of the waste disposal sites
Water Environment	• Sediment plumes from working strip, yards, camps and access roads due to rainwater runoff	• Local, specific distances depend on local conditions. Could be up to a kilometer downstream of the discharge location
	• Oil & chemical contamination from machinery on working strip, yards, camps and access roads	• Impacts will be local and typically within the working strip (up to 50 m), along construction materials depot, construction machines parking grounds and waste disposal sites
	• Generation of wastewater and solid waste (from camps, working strip)	• Local, specific distances depend on local conditions. Could be up to a kilometer downstream of the discharge location
Air Quality and Climatic factors	• Impacts from dust generated from earth movements, excavation, vehicles movement, stockpiles, unpaved surfaces, etc. along the working strip, access roads, yards and camps.	• Local, typically in the vicinity of the pipeline's working strip (within 100 m) and associated facilities (new roads, yards, camps). Specific distances depend on

Impact Area	Potential Impact/Source	Area of Influence
	Receptors will include residential population, workers, fauna and flora species, cultural, historic, water quality, etc.	local conditions and could be up to hundreds of meters in certain unfavorable meteorological situations
	• Impacts from emissions to the atmosphere from machinery and vehicles (i.e. generators, excavators, bulldozers, trucks, cars, etc.). Receptors will include residential population, workers, fauna and flora species, water quality, etc.	• Local, typically vicinity of the construction corridor (within 100 m) and up to hundreds of meters. Specific distances depend on local conditions. • Global - Greenhouse gases
Noise and Vibration	• Impacts from noise and vibration from machinery, construction vehicles, blasting of rocks (if required). Noise receptors will include residential population (and sensitive receptors like schools and hospitals), workers, fauna, cultural/historical buildings, etc.	• Local, specific distances depend on local conditions and source. For machinery and construction vehicles typically between working strip (up to 50 m) and up to hundreds of meters. For blasting. Up to 10 km
Biodiversity and Natural Habitats	• Impacts from habitat loss. The impacts will be both temporary and long term/permanent. Temporary impacts will arise from the working strip, camps and yards which will be reinstated to pre-construction conditions once construction is completed. • Habitat fragmentation created by linear structures (overhead power lines, access roads)	• Local working strip (50 m) and footprint of associated facilities
	• Impacts to fauna and flora species of nature conservation interest from the project's activities (e.g. noise, aqueous discharges, sediments plumes, greater human pressure to previously inaccessible areas) during construction works with particular reference to sensitive areas such as nesting places, old growth forests, wetlands, rivers, riparian vegetation and areas identified as rich in endemic and protected species.	• Local, specific distances depend on source of impact and local conditions. Typically immediate vicinity of working strip of pipeline (up to 50 m) and associated facilities (new roads, yards, camps). Specific distances depend on local conditions and could be up to hundreds of meters in certain unfavorable conditions. Impacts to water quality and aquatic habitats could be up to a kilometer depending on the impact and the condition
Landscape and Visual Impacts	• Temporary and permanent landscape and visual impacts from land take and above-ground structures. The impacts	• Local: depending on the visual accessibility of the working stripe and its associated structures (Access

Impact Area	Potential Impact/Source	Area of Influence
	will be temporary for camps and yards which will be reinstated to pre-construction conditions once construction is completed. Sections with potentially significant landscape impacts include elevated terrain and forested areas.	roads, camps, materials and equipment depots, waste deposition sites). Up to 10 km in certain circumstances (Regional)
Displacement of Existing Land Uses, Property and People	• Impacts on land uses will arise as a result of land take for the substation and the footprint of the towers. Land for camps and yards will be re-instated, where possible, following the completion of the construction activities returning the land to its original use. Impacts on annual crops will be temporary along the working strip, along which annual crops can be grown once re-instated. For permanent crops (i.e. trees) it is likely there will be height restrictions for safety reasons.	• Local: Owners and users of land along the working strip and associated facilities (new roads, yards, camps) and areas to be occupied by the substation
Socio Economic impacts	• Impacts to local livelihoods and loss of household income as a result of construction works (e.g. temporary and long term occupation of agricultural land or reduced access)	• Local: Owners and users of land within the construction corridor for the transmission lines and associated facilities (new roads, yards, camps) and areas to be occupied by the substation. • Local: Land owners and users of land plots and areas affected by decreased accessibility due to the presence of construction sites.
	• Economic benefits to households and to the local economy as a result of direct/indirect job creation during construction works. • Benefit to the local community and economy as a result of local procurement of materials for construction and other services to supply the project. • Limited national economic benefits due to employment or procurement of specialists or equipment not available in the regions	• Local and regional (communities and region): Individuals will benefit from employment and procurement opportunities. • National: Employment and procurement opportunities for construction specialists and providers of goods and services
	• The presence of workers on the site during construction works could exert pressure on social infrastructures (water, electricity, roads, health centres).	• Local and regional: Use of facilities by the Project workforce thereby reducing access to communities in

Impact Area	Potential Impact/Source	Area of Influence
	• While there might be a temporary pressure on these infrastructures in the short term, there may be also a positive impact on infrastructure development in the medium to long term, if the project helps develop existing infrastructures.	the vicinity of the construction corridor, associated facilities (new roads, yards) and construction camps as well as areas around the substation.
	• The presence of workers on the site and the money they earn and spend may cause changes to local customs and norms and result in local inflation	• Local and regional: Communities, land owners and users in the vicinity of the construction corridor and associated facilities (new roads, yards, camps) and areas around the substation
Community Health and Safety	• Safety risks for communities as a result of construction works. • Increased traffic loads on roads adjacent to the project. • Potential health impacts due to exposure to EMF • Potential nuisance due to the Corona effect from transmission lines	• Local: Communities currently using and living along the roads to be transited by the project's vehicles. • Local and regional: Communities along transportation routes • Local: Communities and individual houses close to the substation and along the RoW of the transmission line.
	• Potentially increased incidence of dis-ease associated with the presence of the workforce. • Potentially increased incidents of Gender-based Violence and child labour due to the influx of labour force into the project area. • Vulnerable groups such as the women, girls, boys, the aged and the physically challenged may experience abuse and exploitation. • Increased pressure on local services (health, leisure, police, etc.) from the project's workforce resulting in de-creased access for local communities	• Local and regional: Communities near workers camps.
	• Location of workforce in camps near local communities could result in negative worker – community interactions.	• Local: Communities close to worker camps.
Working Conditions	• Risk of injuries for workforce as a result of excavations and working in the vicinity of active roads. • Risk of electrocution	• Local: directly and in the vicinity of construction sites.

Impact Area	Potential Impact/Source	Area of Influence
	• Exposure to accidents and emergency situations	
Cultural heritage (known and potential) including "intangible cultural heritage" (ICH)	• Ground disturbing construction activities including permanent and temporary occupations (i.e. working strips, overhead power line, workforce camps, landfills/land takes and accesses).	• Local: working strips, overhead power lines and associated facilities (new roads, yards, camps) and areas to be occupied by the substation

6.3 Operation, Maintenance and Decommissioning

Table 4: Potential Impacts Related to Project Operation, Maintenance and Decommissioning

Impact Area	Potential Impact/Source	Area of Influence
Resources and waste	• Waste generated by the OHL and the Substation during operation and maintenance.	• Local: depending on specific conditions and needs of the operational and maintenance process.
Noise and Vibration	• Impacts from noise emissions during the normal operation of the high voltage system. Noise and vibration receptors will be affected in the vicinity of facilities and along the power lines	• Local: in the vicinity of facilities and along the power lines less than 50m
Biodiversity and Nature Conservation	• Impacts to flora and fauna from the routine maintenance/clearance of the construction corridor where no tall vegetation will be allowed to avoid interference with the lines. • Impacts to birds due to collision or change of their flying patterns • Disturbance during decommissioning phase	• Local, relevant to the construction corridor with regard to clearance of vegetation. • Regional or broader with respect to impacts to migratory birds

Impact Area	Potential Impact/Source	Area of Influence
Landscape and Visual Impacts	• Impacts to landscape due to the installation of towers and other permanent installations (i.e. substation). • Impacts to landscape from routine maintenance of the construction corridor (keeping vegetation low)	• Local, but visible from larger distances depending on local conditions
Displacement of Existing Land Uses, Property and People	• Permanent land acquisition/easement during operation • Permanent changes to land use, in particular agricultural land for permanent crop production (e.g. tall tress).	• Local: Owners and users of land along the power line corridor and areas to be occupied by towers and substation.
Socioeconomic Impacts	• Contribution to a sustainable economic development of Zambia and the region and to the global climate protection through the reduction of CO2 emissions. • Benefits in service provision (i.e. quality of power supply) • Land use restriction for safety reasons below the line (no building structures, no tall trees)	• National, regional and local • Local: Users and owners of land affected by safety measures
Community Health and Safety	• Risk of electrocution for people climbing on the towers or stealing tower bolts and equipment.	• Local: communities living along the high voltage power lines
	• Electromagnetic Fields (EMF)	• Local: communities living along the line route, farmers working below the lines.
Working Conditions	• Risk of injuries for workforce (electrocution, working at heights, etc.) as a result of routine project operation activities and maintenance	• Local: Workforce involved in maintenance
Cultural heritage (known and potential) Including "intangible cultural heritage" (ICH)	• No specific impacts or risks are ex-pected during the operation (land take and earth works limited to construction phase). • Ground disturbing removal and restoration activities during decommissioning	• Local, the construction corridor and footprint of associated de-commissioning activities

7. DESCRIPTION OF PROJECT ALTERNATIVES

In the scoping process, the consideration of alternatives is a vital component that shapes the overall direction of a project. This section focuses on identifying and evaluating various options that can meet the project's objectives while minimizing potential environmental and social impacts.

The review of alternatives during the scoping process ensures that a range of viable pathways is considered. This includes analysis of different designs, routes, and technologies related to the project. By systematically assessing these alternatives, the scoping process facilitates informed decision-making, supports compliance with regulatory requirements, and enhances stakeholder engagement.

7.1 OHL route Alternatives

7.1.1 Description of alternatives

Three alternative line routes were considered for the project in Zambia as shown in **Error! Reference source not found.** below. A detailed site investigation exercise was undertaken to identify and evaluate the environmental/ecological and socio-economic (including archaeological and cultural) constraints associated with each alternative and to recommend the optimal route that minimizes environmental and social economic impacts.

Alternative Line 1

Alternative 1 (Alt 1) begins at the Chipata West substation and traverses through the Malanda farm, which features approximately one kilometer of well-preserved miombo primary vegetation. The farm is earmarked for subdivision for residential housing development.

The route then crosses the Lusaka - Chipata Road (T4) into farmland impacting several houses and mango trees before crossing the Lutembwe stream. The line takes a south-east direction to avoid the south-western periphery of Chipata City. It continues into an undulating terrain featuring hills and flat arable land characterized by a mixture of primary vegetation and secondary miombo woodland. The line follows T4 for some good distance passing through Mashanga area and makes a turn in the south-eastern direction at Chilumbu and crossing into Malawi at Mgabi for about 10km and re-enters Zambia in Vubwi district. Eventually the line crosses back into Malawi in Mwami border area, stretching a distance of approximately 45.6km with a width of 50m.

In terms of settlements, there are few and scattered settlements in the first half of the corridor while the second half is characterized by a high concentration of villages because of the good accessibility provided by the paved (T4) and small gravel roads. Between the villages, there are agricultural fields of various size and small portions of secondary (disturbed) vegetation.

Towards the Malawi border, Alt 1 passes through a hilly area with a primary (undisturbed) vegetation cover which provide prime habitat for mammals and reptiles.

Alternative Line 2

Similar to Alternative 1, the proposed route for Alternative 2 (Alt 2) begins at the Chipata West substation and passes through Malandula Farm for about 1km, an area notable for its primary miombo vegetation. The farm is earmarked for subdivision for residential housing development.

Alt 2 then crosses the Lusaka - Chipata Road and following Alternative 1 for about 6km. It makes a south-eastern turn into farmland impacting several houses and mango trees before crossing the Lutembwe stream. The line continues into an undulating terrain featuring hills and flat arable land characterized by a mixture of primary vegetation on the hills and secondary miombo woodland.

The line continues through hilly terrain punctuated with flat arable land crossing D128 (Chadiza Road) and passing through Nyamfinzi Hill near Feni Village, which is the headquarters for Paramount Chief Mpezeni. It crosses RD 403 near Feni and joins the corridor for Alt 3 near Mwami for about 17km. It crosses D804 (Vubwi Road) and continues in the eastern direction, enters Vubwi District and passes between Mkoma and Satwe hills. Thereafter, the line heads towards the border with Malawi and passes through a hilly terrain characterized by primary (undisturbed) vegetation cover which provides prime habitat for mammals and reptiles.

The area along the line route is characterized by a mixture of cultivated fields and small portion of woodlands up to Mwami. Thereafter, there is an extended woodland with primary (relatively undisturbed) vegetation cover between Mwami and the Zambia/Malawi border.

In terms of settlements, the section between Chipata and Mwami is characterized by scattered settlements separated by extended empty areas, with lower density compared to Alt 1. The settlements consist of villages of various sizes located along the feeder roads to be used as access to this alternative. After Mwami, settlements are almost absent up to the Malawi border.

The power line will be 45.7km with a width of 50m.

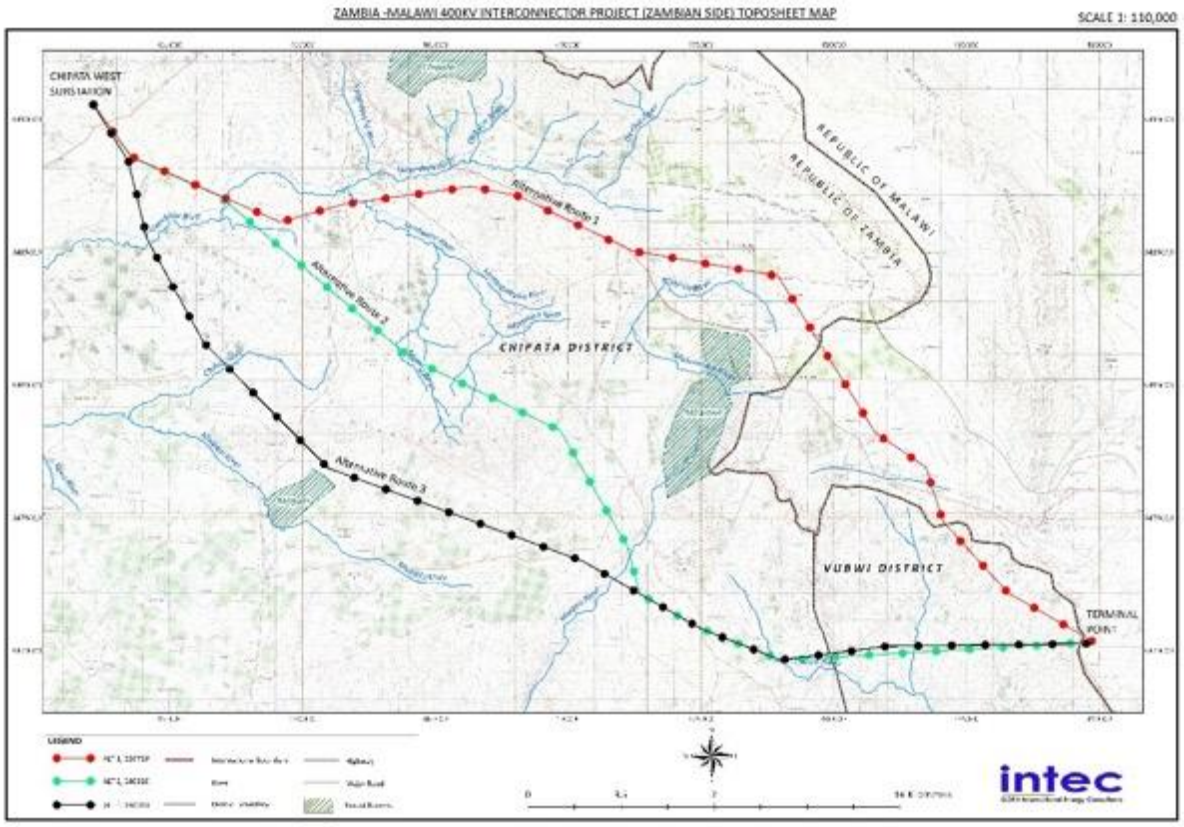

Figure 12: Proposed Alternative Line Routes of the Malawi-Zambia 400kV Project

Alternative Line 3

Like Alternatives 1 and 2, the proposed route for Alternative 3 (Alt 3) begins at the Chipata West substation and traverses through Malandula Farm, an area with primary miombo vegetation. The farm is earmarked for subdivision for residential housing development.

Leaving Chipata West substation the route runs almost parallel to that of alternative 1 and 2 for about 6km and heads southeast direction passing between Chinyaku and Lafu villages and avoids Makangila Hill. The line corridor avoids Msenza Hill and Msipasi Forest Reserve in the south and Nyamfinzi Hill in the north and crosses D128 and RD 403. Thereafter, the corridor for Alt 3 merges with Alt 2 until the border with Malawi. Alt 3 avoids Mbewule Ranch and Nature Conservation located on Nkoma Hill between Mwami and the border with Malawi.

The area along the line route is characterized by a mixture of cultivated fields and small portion of woodlands up to Mwami. Thereafter, there is an extended woodland with primary (relatively undisturbed) vegetation cover between Mwami and the Zambia/Malawi border.

In terms of settlements, the section between Chipata and Mwami is characterized by scattered settlements separated by extended empty areas, with lower density compared to Alt 1 and Alt 2. After Mwami, settlements are almost absent up to the Malawi border.

Unlike Alternatives 1 and 2 which cut through some of the hills, Alt 3 avoids the hilly terrain with dense stands of primary miombo woodland, thus minimizing potential damage to the ecosystem and prime habitat for wildlife. This alignment avoids ecologically sensitive hills and traverse through predominantly agricultural land with minimal impact on settlements.

Line 3 is 46.3km long with a width of 50m.

Table 5: Land occupied by Each Alternative Line and the Number of Structures Affected

	Length (km)	RoW Width (m)	Land Occupied (ha)	Built Structures in the RoW
Alt-1	45.6	50	228.0	26
Alt-2	45.7	50	228.5	33
Alt-3	46.3	50	231.5	9

7.1.2 Environmental and socioeconomic evaluation

The OHL route alternatives were evaluated on the basis of a number of parameters. The parameters used for the evaluation and the results of the evaluation are presented below.

Table 6: Parameters for environmental and socioeconomic evaluation

No.	Constraint	Alt 1	Alt 2	Alt 3
A	**Socio-economic / Cultural**			
1.	Settlements	Moderate concentration of settlements	Moderately low concentration of settlements	Low concentration of settlements

No.	Constraint	Alt 1	Alt 2	Alt 3
2	Number of structures affected	26	33	9
3	Agriculture (including commercial farms)	High number of agricultural fields	Moderate	Low
4	Public service facilities (schools, health centres, recreation centres	None	None	None
5	Major Roads and railway crossings	High	Low	Low
6	Border crossings	3	1	1
7	Planned Developments	None	None	None
8	Archaeological sites	None	1 graveyard	None
9	Land occupied by the power line (hectares)	228	228.5	231.5
B.	**Environmental / Ecological**			
10	National Parks / Game Management Areas	None	None	None
11	Forest Reserves	None	None	None
12	Primary vegetation on the Hills	High	High	Low
13	Secondary vegetation on flat land	Low	Low	Moderate
14	River crossings / Wetlands	Moderate	Low	Low
14	Impact on wildlife	Moderate	Moderate	Low
16	Mines and Quarries	N/A	N/A	N/A
17	Dumpsites	None	None	None
18	Terrain	Moderately hilly	Moderately hilly	Fairly flat
19	Accessibility (existing)	Good	Moderate	Low

In terms of environmental and socioeconomic footprint, Alt 3 performs better than Alt 1 and Alt 2. Although it is slightly longer (approx. 1.5%) than the other two Alternatives, it affects much less built structures and it has less impact to biodiversity as it avoids crossing hilly areas with primary vegetation. In contrast, it is less accessible (in terms of existing access roads) than the other two Alternatives.

As a consequence, Alt 3 is the preferred alternative OHL route in environmental and socioeconomic terms.

7.1.3 Overall evaluation

The overall evaluation of the OHL alternatives (including technical, environmental and socioeconomic parameters) is based on the Multi Criteria Decision Analysis (MCDA) methodology. The methodology works with quantitative parameters which are normalized in order to be comparable. The normalization is carried out using the formula below:

Normalised value = -value/max(value) + 1

As a consequence, the preferred alternative presents the highest sum of the individual parameters.

A number of technical parameters were considered for the technical evaluation. Such parameters included the following:

- Transmission grid capacity improvement
- RES integration
- Reliability margins
- Public service facilities
- Planned Developments
- Crossing of national parks or other protected areas
- Dumpsites, etc.

Only a selection of the full set of technical parameters were used. The reason is that some of the parameters showed no differentiation among the alternatives. In other cases, some parameter were considered to be dependent on other parameters. For instance, the specific costs depend on the length of the line, and the length along inaccessible areas or hilly terrain – parameters that are already considered.

A final list of parameters was selected, which:

- Are independent variables;
- Are significant for the project;
- Differentiate among the alternatives, and
- Can be quantified (i.e. represented by a number)

The list of parameters used for the overall evaluation are shown below.

Table 7: List of parameters for overall evaluation

Parameter	Comment
Technical	
Length (km)	The overall length is very important as it affects the cost of the construction, the losses of the line as well as indirectly, the environmental and socioeconomic footprint during construction and operation
Length along inaccessible areas (km)	Crossing inaccessible areas increases the cost of the construction as well as the environmental and socioeconomic footprint of the project since it is related with the construction of access roads
Crossings of roads	Crossings of infrastructure increases the complexity of construction and the cost
Length along hilly terrain (km)	Difficult terrain may increase the cost of construction as well as the time necessary for construction
Socioeconomic	
Number of built structures affected	Physical resettlement is the most important socioeconomic impact, which according to international standards needs to be demonstrably avoided or minimized
Area of agricultural land crossed (ha)	The area of agricultural land crossed by the OHL affects the cost of the line, as it is a measure of the compensation costs that will need to be paid to PAPs
Environmental	

Parameter	Comment
Primary vegetation on hills affected (km)	In lack of any other evidence of biodiversity constraints in the project area, the preservation of the primary miombo vegetation on the hills is an important consideration from the environmental as well as cultural perspective

The results of the overall evaluation are presented in Table 8. Both the actual and normalised values are shown. The results of the evaluation show that the overall performance is maximized for Alt 3, which is the preferred alternative.

Table 8: Results of overall evaluation

	actual value			max value	normalised value		
	Alt 1	Alt 2	Alt 3		Alt 1	Alt 2	Alt 3
Technical							
length (km)	45.6	45.7	46.3	46.3	0.015	0.013	0.000
length along inaccessible Areas (km)	5.6	24	11	24	0.767	0.000	0.542
crossings of roads	4	2	2	4	0.000	0.500	0.500
length along hilly terrain (km)	5	20	10	20	0.750	0.000	0.500
Socioeconomic							
number of built structures affected	26	33	9	33	0.212	0.000	0.727
area of agricultural land crossed (ha)[2]	169.95	192.5	146.85	192.5	0.117	0.000	0.237
Environmental							
primary vegetation on hills affected (km)	12.2	28.8	0.25	5	0.576	0.000	0.991
					2.437	**0.513**	**3.497**

[2] The length of OHL crossing primary miombo vegetation (from our GIS) is 12.2 km, 28.8 km and 0.25 km for Alt-1, Alt-2 and Alt-3 respectively.

7.2 Technological Options for the Transmission Line

A number of technological options for the transmission line were also examined in the framework of alternatives assessment. Such options were the following:

- Type of towers: towers typically used by ZESCO have been considered in order to facilitate operation and maintenance by ZESCO staff;
- Type of foundations: typical pad and chimney foundations will be used in normal terrain, as they are the standard in this industry. Platform-type foundations will be used only in challenging terrain (i.e. marshes, wetlands) in order to improve stability;
- Type of line: the use of underground cable instead of overhead line has been examined. The use of underground cable was rejected due to the voltage of the line as well as the associated costs for construction;

More detailed information for the technical details of construction will be provided in the ESIA.

7.3 The No-Project Scenario

This scenario explores the potential consequences of not constructing the Malawi - Zambia 400 kV Transmission Interconnector.

If the project is not undertaken, ZESCO and ESCOM will not be able to import electricity during the periods of scarcity arising from lower power generation due to different factors such as climate change and equipment failure. This would result in continued load shedding and low voltage supply, which would further compromise reliability of electricity supply to customers. In times of excess power, the two utilities will be unable to export electricity to each and other countries. This will hinder cooperation in the energy field as well as economic development in the two countries.

The absence of reliable electricity will have a detrimental socioeconomic impact. It will slow down progress in key social sectors like education, healthcare, and overall quality of life, particularly in rural communities. The impacts will be felt in particular by the poorer and more vulnerable parts of the community.

The absence of the Malawi-Zambia 400 kV interconnector will have adverse environmental impacts as well. Existing electricity supply challenges will persist, exacerbating environmental pressures. Continued reliance on wood fuel will accelerate deforestation and habitat loss, while a lack of transmission infrastructure will prevent the development of renewable energy sources, locking both countries into an unsustainable energy trajectory with severe environmental consequences.

For all these reasons, the no-project scenario is not a sustainable option in both environmental and socioeconomic terms.

8. CONSULTATION AND PUBLIC PARTICIPATION

8.1 Scope

Stakeholder engagement for the project is aligned with both national Zambian requirements and best international practices, including the EU and European Investment Bank (EIB) Performance Requirements. Public consultation is a critical component of this process, as it helps to identify potential local environmental and socio-economic issues associated with the proposed project. Moreover, it offers a platform for generating innovative ideas and alternative approaches that may not have been previously considered by the project proponents.

The Zambian Environmental Management Act No. 12 of 2011 underscores the importance of public participation, as articulated in Part VII of the Act. Furthermore, the Environmental Impact Assessment (EIA) Regulations of 1997 mandate continuous public involvement throughout the EIA process, beginning with the scoping phase and extending through the preparation of the Terms of Reference (ToR) for environmental and social impact assessments. The Fourth Schedule of these Regulations provides detailed guidance on conducting EIA studies, with a pronounced emphasis on public engagement.

In compliance with Zambian environmental legislation and international best practices for conducting environmental impact assessments, a comprehensive scoping exercise was carried out at the initial stage of the EIA study for the Zambian component of the proposed Malawi-Zambia 400kV Transmission Interconnector project. This process is explained in the following.

8.2 Scoping Consultation

The scoping phase consultation has been integral to establishing contacts with stakeholders, establishing communication channels for the next project phases, as well as gathering information on the environmental and socio-economic baseline of the project area. The primary objectives of this phase included:

- **Informing Government, Traditional Authorities, and Communities:** Key stakeholders, including government officials, traditional leaders, and local communities, were informed about the project, its scope, and potential impacts.
- **Gathering and Recording Initial Concerns:** The initial concerns, issues, and perspectives of the communities were gathered and documented to inform subsequent stages of the EIA process.
- **Preparing for Upcoming Consultations:** Communities were informed about the forthcoming public consultations, including those during the scoping and EIA phases, to ensure their active participation.
- **Strengthening Stakeholder Relationships:** Efforts were made to build and strengthen relationships between stakeholders and ZESCO Ltd., fostering a collaborative environment for the project's development.
- **Understanding Engagement Approaches:** The consultation process also aimed to identify the most effective approaches and methodologies for engaging with communities in the project area, ensuring that their voices are heard and considered throughout the project lifecycle.

8.3 ESIA Strategy for Information Disclosure

The stakeholder engagement strategy for the Environmental and Social Impact Assessment (ESIA) of the Malawi-Zambia 400 kV Interconnector Project will be structured around the following phases of the project management cycle:

1. **Preparation of Terms of Reference (TORs)**
   - Clearly outline the scope, objectives, and methodologies for the ESIA.
   - Engage relevant stakeholders early to gather input on the ToRs to ensure comprehensive coverage of all potential environmental and social impacts/risks.
2. **Research and Development of Studies**
   - Conduct thorough environmental and social studies as per the defined ToRs.
   - Regularly update stakeholders on the progress of the studies, ensuring transparency in methodologies and preliminary findings.
   - Use multiple channels (e.g., public meetings, community briefings, online platforms) to disseminate information and gather feedback.
3. **Monitoring Phase**
   - Implement a robust monitoring framework to track the project's environmental and social performance.
   - Provide periodic reports to stakeholders on monitoring results and any corrective actions taken.
   - Facilitate stakeholder access to monitoring data to ensure continuous engagement and transparency.
4. **Completion, Validation, and Final Disclosure**
   - Finalize the ESIA report, incorporating feedback from stakeholders.
   - Validate the report through consultations with key stakeholders, ensuring that their concerns and suggestions have been adequately addressed.
   - Publicly disclose the final ESIA report and related documents through accessible platforms (e.g., Government websites, public libraries, community centers).
   - Organize public meetings and briefings to present the final findings and discuss the implications and mitigation measures with the affected communities and other interested parties.

This strategy aims to ensure that all relevant stakeholders, including marginalized and vulnerable groups, are informed and actively engaged throughout the ESIA process. By maintaining transparency and inclusiveness, the project can effectively address environmental and social concerns, fostering trust and cooperation among all parties involved.

8.4 Engagement Methods and Techniques

Public Meetings and Workshops: Organize meetings and workshops in affected communities to present information about the ESIA and RAP, and to gather feedback.

Focus Group Discussions: Conduct targeted discussions with specific groups, such as women, youth, and vulnerable populations, to understand their unique perspectives and concerns.

Surveys and Questionnaires: Conduct surveys to collect quantitative and qualitative data on stakeholder views and concerns using questionnaires.

Interviews: Conduct one-on-one interviews with key stakeholders, including Government officials, community leaders, and NGO representatives.

Online Platforms: Utilize digital platforms to disseminate information and gather feedback from stakeholders who may not be able to attend in-person meetings.

8.4.1 Key Issues to be Addressed

Environmental Issues: Potential impacts on biodiversity, land use, water resources, air quality, and noise levels.

Social Issues: Land acquisition and resettlement, impacts on local communities, health and safety concerns, and cultural heritage.

Economic Issues: Employment opportunities, local economic development, and impacts on local businesses.

Regulatory Issues: Compliance with national and international environmental and social regulations and standards.

8.4.2 RAP Specific Engagement

Identification of Affected Persons: Identify individuals and households that will be affected by land acquisition and resettlement.

Compensation and Resettlement Plans: Develop and discuss compensation packages and resettlement plans with affected persons to ensure fair and adequate compensation.

Livelihood Restoration: Engage with affected communities to develop and implement livelihood restoration programs to help them rebuild their lives post-resettlement.

Grievance Redress Mechanism: Establish a transparent and accessible mechanism for affected persons to raise concerns and seek redress.

8.4.3 Disclosure of Information

Draft ESIA and RAP Reports: Prepare and disclose draft ESIA and RAP reports, summarizing potential impacts, proposed mitigation measures, and resettlement plans.

Public Consultations: Hold public consultations to present the draft reports, gather feedback, and address any concerns raised by stakeholders.

Final Reports: Incorporate stakeholder feedback into the final ESIA and RAP reports, and disclose these reports to all relevant stakeholders.

Continuous Updates: Provide continuous updates to stakeholders throughout the project cycle, ensuring they are informed about project progress and any changes.

8.4.4 Reporting and Feedback

Documentation: Document all stakeholder engagement activities, including meetings, workshops, and consultations, to ensure transparency and accountability.

Feedback Integration: Incorporate stakeholder feedback into the ESIA and RAP, and ensure that concerns are addressed in the final project design and implementation.

Follow-Up: Conduct follow-up engagements to inform stakeholders about how their feedback has been integrated and to update them on project progress.

The ESIA and RAP engagement and disclosure process is essential for ensuring that the project is developed in an environmentally and socially responsible manner. By actively involving stakeholders and addressing their concerns, the project can mitigate negative impacts, promote sustainable development, and build trust with affected communities. This approach aligns with national and international standards, ensuring a transparent and inclusive project development process.

8.4.5 Proposed Strategy to Incorporate the View of Vulnerable Groups

The stakeholder engagement plan for the Malawi-Zambia 400kV interconnector will prioritize inclusiveness, transparency, participation, and accessibility, particularly for vulnerable individuals and groups. Recognizing that vulnerable status may prevent some individuals or communities from openly participating in large meetings, or due to mobility and other disabilities, the project will organize separate small group discussions at easily accessible venues. Measures will include providing interpreters if needed, using large print materials, giving verbal presentations for illiterate participants, offering transportation assistance, and scheduling meetings to accommodate women/child headed households or work obligations.

This approach ensures that groups typically underrepresented in general community gatherings have their voices and concerns heard throughout the project lifecycle, thereby integrating their considerations into the project's design and technical assistance activities.

The following strategies will be used to reach the vulnerable groups:

Identify Leaders: Engage with leaders of vulnerable and marginalized groups to facilitate outreach.

Database Maintenance: Maintain a database of marginalized groups through existing vulnerable people associations, including associations of persons with disabilities, refugees, migrants, and women-led businesses.

Leverage Existing Projects: Use systems from existing projects that include vulnerable populations to identify and engage these groups.

Social Baselines in Studies: Ensure social baselines adequately capture the constraints of various vulnerable groups. This includes understanding women's availability, religious observances, language preferences, and ensuring interpreters or facilitators who speak the local languages. Additionally, having women-led facilitators to discuss sensitive issues such as gender-based violence or project-related risks.

Engage Community and Religious Leaders: Collaborate with community leaders, religious leaders, CSOs, and NGOs working with vulnerable groups.

Face-to-Face Focus Group Discussions: Organize direct focus group discussions with affected communities to ensure their input is thoroughly considered.

By implementing these strategies, the project aims to foster a more inclusive engagement process, ensuring that all stakeholders, especially those who are vulnerable and marginalized, are effectively involved and their concerns are addressed throughout the project's development and implementation.

8.5 Engagement Methods and Tools

Effective stakeholder engagement is crucial for the successful completion of the Environmental and Social Impact Assessment (ESIA) for the Malawi-Zambia 400 kV Interconnector Transmission Line Project. The engagement methods and tools outlined below are designed to ensure inclusive, transparent, and meaningful participation of all stakeholders throughout the project lifecycle.

(a) Physical Engagement

Public Meetings: Public meetings will be held with stakeholders in various locations in the project area.

Key Informant Interviews (KIIs): Conduct interviews with key stakeholders, including Government officials, community leaders, NGO representatives, and technical experts to gather in-depth insights and specialized knowledge.

Informal Interviews: Engage in casual conversations with community members during site visits to capture unstructured feedback and build trust.

(b) Information Dissemination

Project Brochures, Posters and Flyers: Distribute printed materials summarizing the project, its impacts, and the engagement process to ensure stakeholders have access to concise and understandable information.

Information Boards: Set up boards in community centers, local Government offices, and other strategic locations with project updates and contact information for further inquiries.

(c) Digital and Media Engagement

Project Website: Create a dedicated website with comprehensive information about the project, including ESIA reports, engagement schedules, and contact details. Provide a platform for online feedback submission.

Social Media: Utilize social media channels to share project updates, announce public meetings, and engage with a wider audience.

Radio Announcements: Use local radio stations to broadcast project information, especially in remote areas where access to digital platforms may be limited.

(d) Forums/Workshops and Training Sessions

Thematic workshops will be organized around a specific topic where relevant local and national level stakeholders will be involved.

Capacity Building Workshops: Organize workshops to enhance the capacity of local stakeholders, including community representatives and local authorities, to engage effectively in the ESIA process.

Technical Training Sessions: Provide training for project staff and local consultants on best practices for stakeholder engagement and communication.

(e) Feedback and Grievance Mechanisms

Grievance Redress Mechanism (GRM): Establish a formal mechanism for stakeholders to submit grievances and receive timely responses. Ensure the GRM is accessible, transparent, and responsive.

Feedback Forms: Provide forms at all engagement events for stakeholders to submit written feedback, ensuring their concerns are documented and addressed.

(f) Monitoring and Reporting

Engagement Logs: Maintain detailed logs of all engagement activities, including participant lists, discussion points, and outcomes. Use these logs for monitoring and evaluation.

Progress Reports: Regularly publish reports summarizing engagement activities, stakeholder feedback, and how this feedback has influenced project decisions.

The stakeholder engagement methods and tools are designed to foster an inclusive, transparent, and participatory process. By employing a variety of engagement techniques, the project aims to ensure that all stakeholders, especially vulnerable and marginalized groups, are adequately informed and have the opportunity to contribute to the project's development and implementation.

8.6 Engagement Activities Undertaken so far

A first contact with stakeholders took place during the site investigation surveys carried out by joined Consultant and ZESCO teams in the period **2 to 6 June 2024** in Chipata and Vubwi districts. The following stakeholders were contacted during this exercise:

- The District Commissioners – Chipata
- Town Clerk – Chipata
- Acting Director of Planning – Chipata City Council
- Director Legal – Chipata City Council
- Provincial Planner – Socio-economic
- Provincial Planner – Physical
- District Commissioner – Vubwi
- District Socio-economic Planner – Vubwi
- District Agricultural Coordinator – Vubwi
- Paramount Chief Mpezeni (represented by Senior Induna Mushamune)
- Chief Pembamoyo of Vubwi District
- Local residents in the villages

A more structured Scoping Consultation took place in the period 29 July to 3 August 2024, by joined Consultant SAPP and ZESCO teams – supported by Government Administration in Chipata and Vubwi as well as the traditional leaders (chiefs and headmen). A total of 12 meetings were held in selected locations in the project area, covering all 3 alternative OHL routes. Two meetings were held at district level in Chipata and Vubwi while ten meetings were held at the communities.

Table 9: Schedule of Scoping Consultation Undertaken

No.	Date	Time	Venue	Target Group
Chipata District				
1.	Monday 29th July 2024	09:00	Chipata Council Chamber	Chipata DDCC members
2		14.30	Kauzu Primary School	Community members near Chipata West substation
3	Tuesday 30th July 2024	09.30	Katandala Primary School	Kantandala community members
4		14.30	Mgabi	Mgabi community members
5	Wednesday 31st July 2024	09:00	Feni Community Museum	Feni community members
6		14.30	Kayeke	Kayeke Community members
7	Friday 2nd August 2024	10.00	Mtowe Primary School	Mtowe Community members
8		14.30	Lunyike Primary School	Lunyike Community members
9	Saturday 3rd August 2024	10.00	Chipata South Satellite City	Community members
10		14.30	Makwelelo Community School	Chinyaku community members
Vubwi District				
11	Thursday 1st August 2024	09.30	Vubwi Town Council Chamber	DDCC members
12		14.30	Chisiya Primary School	Chisiya Community members

Publicity was ensured through newspaper advertisement, posters and radio broadcasts. Two local radio stations were used to disseminate the information about the meetings in both English and ChiChewa (local language).

The table below provides a list of some of stakeholders consulted during the initial site investigation and Scoping meetings. Lists of stakeholders who attended the 12 scoping meetings are given in the respective minutes of each meeting as provided in the appendices.

Table 10: Summary of Scoping Consultation contacts

Date	Stakeholder	Description
03.06.2024	Zopher Musenge (ZESCO)	Inaugural meeting
03.06.2024	Milton Hamoombe (ZESCO)	Inaugural meeting
03.06.2024	Moses Chansa (ZESCO)	Inaugural meeting
03.06.2024	Ireen Chilando (ZESCO)	Inaugural meeting
03.06.2024	Elidah Mwanza (Chipata District Commissioner)	Courtesy Call
03.06.2024	Aaron Kamalondo (Chipata District Town Clerk)	Courtesy Call
03.06.2024	Willard Makwelele	Planning meeting
03.06.2024	Nicholas Simunza	Planning meeting
03.06.2024	Lyn Galapa	Planning meeting

Date	Stakeholder	Description
03.06.2024	Bwalya Kamwa	Planning meeting
03.06.2024	Chewe Christopher	Scoping Consultation
03.06.2024	Lizzy Nambela	Scoping Consultation
04.06.2024	Phillimon Lungu	Scopimg Consultation
04.06.2024	Given Sakala	Scoping Consultation
04.06.2024	Norman Nyendwa	Scoping Consultation
04.06.2024	Stephen Mphanza (Senior Headman Mshamune)	Scoping Consulation
04.06.2024	Stephen Daka	Scoping Consultation
04.06.2024	Monica Banda	Scoping Consultation
04.06.2024	Margaret Daka	Scoping Consultation
04.06.2024	Esau Daka	Scoping Consultation
04.06.2024	Paulina Moyo	Scoping Consultation
04.06.2024	Bedasio Ngoma	Scoping Consulation
04.06.2024	Gabriel Ndobvu	Scoping Consultation
04.06.2024	Supia Phiri	Scoping Consultation
04.06.2024	Ruth Chisi	Scoping Consultation
04.06.2024	Given Sakala (Vubwi District Commissioner)	Scoping Consultation
04.06.2024	Chief Pembamoyo	Scoping Consultation
04.06.2024	Clement Njobvu	Scoping Consultation
04.06.2024	Yotamu Njobvu	Scoping Consultation
04.06.2024	Teleka Chirwa	Scoping Consultation
04.06.2024	Nason Zulu	Scoping Consultation
04.06.2024	Lydia Phiri	Scoping Consultation
04.06.2024	Daniel Phiri	Scoping Consultation
04.06.2024	Pontino Miti (Malunga farm)	Scoping Consultation
04.06.2024	Patrick Lungu (Moyo Ward Councilor)	Scoping Consultation
04.06.2024	Councilor Mbuzi	Scoping Consultation
04.06.2024	Mr & Mrs Lombe – Food Cost Farm (Kanjala Ward)	Scoping Consultation
05.06.2024	Mrs. Mwanza	Scoping Consultation

Date	Stakeholder	Description
05.06.2024	Samson Mwanza	Scoping Consultation
08.07.2024	ZESCO Project Staff	Scoping planning meeting
13.07.2024 **14.07.2024** **16.07.2024** **24.07.2024**	General Public Newspaper Public Notices in the Times of Zambia	Scoping Public Notice
28.07.2024 **30.07.2024**	General Public Weekly Radio Scoping Meetings Announcements on Radio Maria and Breeze FM	Scoping Consultations
26.07.2024	Mr. Sikazwe – Chipata District Administrative Officer	Planning Courtesy Call
26.07.2024	Headman Kauzu	Planning Courtesy Call
28.07.2024	Chief Chinyaku	Courtesy Call
28.07.2024	Headman Mgabi	Courtesy Call
28.07.2024	Frank Phiri – Feni Administrator	Scoping Planning meeting
28 07.2024	Headman Dingeni	Scoping Planning meeting

The main feedback received during Scoping consultations undertaken between 29 July and 3 August 2024 is summarised below. This feedback will be taken into consideration in the development of the Terms of Reference for ESIA studies, project design and decision making throughout the project lifecycle.

- When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
- All the people who are going to be affected by the project need to be compensated adequately for the losses suffered, whether they have title deeds or not. Compensation for the houses, shops, crops and fruit trees should be paid to the affected people before being relocated.
- In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
- Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
- Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
- Some communities should be provided with electricity as a corporate social responsibility initiative. Alternatively, the project can build a school, clinic or staff houses.
- Forest (vegetation) protection should be emphasised during construction. To compensate for the trees which will be cut, new indigenous trees (not exotic trees) should be planted in areas which will be identified in collaboration with the Department of Forestry and the community.
- Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
- To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.
- Some of the contractors do not care about their workers and they leave the project site at the

end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.

- The project should be inclusive to all people in the community, including people with disabilities.
- A small committee of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.

8.7 Scoping Disclosure

8.7.1 Scoping Disclosure Objectives

The purpose of the scoping disclosure meetings was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the development of the Terms of Reference for ESIA studies, project design and decision making throughout the project lifecycle.

The specific objectives of the Scoping Disclosure exercise were to:

(a) give feedback to stakeholders on the views, concerns and suggestions provided by stakeholders during scoping meetings in July and August 2024;
(b) inform the stakeholders on the preferred route and the factors which were considered during route selection.

The scoping disclosure exercise was undertaken by a team of GOPA-intec consultants and ZESCO staff.

8.7.2 Scoping Disclosure Meetings Held

A total of 12 meetings were held in the project area from 25th to 30th December 2024, two meetings were at district level and 10 at community level. Meetings were held in the same locations where the scoping meetings were held in July and August, targeting the same communities along all the three alternative line routes. The programme for the meetings is given below.

Table 11: Schedule of Scoping Disclosure Meetings

No.	Date	Time	Venue	Target Group
Chipata District				
1.	Monday 25th November 2024	09.30	Katandala Primary School	Kantandala community members
2		14.30	Mgabi	Mgabi community members
3	Tuesday 26th November 2024	09:00	Feni Community Museum	Feni community members
4		14.30	Kayeke	Kayeke Community members
5	Wednesday 27th November 2024	09:00	Chipata Council Chamber	Chipata DDCC members
6		14.30	Kauzu Primary School	Community members near Chipata West substation
7	Friday 29th November 2024	10.00	Mtowe Primary School	Mtowe Community members
8		14.30	Lunyike Primary School	Lunyike Community members
9	Saturday 30th November 2024	10.00	Jenda Primary School	Jenda Community members
10		14.30	Makwelelo Community School	Chinyaku community members
Vubwi District				
11	Thursday 28th November 2024	09.30	Vubwi Town Council Chamber	DDCC members

No.	Date	Time	Venue	Target Group
12		14.30	Chisiya Primary School	Chisiya Community members

To publicise the scoping disclosure meetings, announcements were made on the local radio station and community leaders (village headmen, Ward Development Committee members and Ward Councillors) were contacted to disseminate the information about the scoping disclosure meetings. Attendance was good despite being the beginning of the farming season, when people are busy with ploughing and planting their fields. The highest attendance recorded was 82 and the lowest was 27.

During the scoping disclosure meetings, the keys issues raised by stakeholders during the Scoping meetings in July and August were presented for further discussion (refer to 8.6).

The preferred alternative transmission line route was also presented. The stakeholders were informed that alternatives 1 and 2 were not preferred. Alternative route 3 was selected as the preferred route because fewer people will be affected and less vegetation will be cleared since Alt-3 passes through flat land, most of which is already cleared for agricultural purposes. It was mentioned that further engagement will focus on the communities along Alt-3.

Minutes of the Scoping Disclosure meetings, including the stakeholders who attended the meetings are given in the Appendices.

8.7.3 Feedback from the Stakeholders

The stakeholders at district and community levels expressed their appreciation of the feedback provided through the scoping disclosure meetings and they noted that they look forward to the commencement of the project. They encouraged ZESCO and the Consultant to continue with stakeholder consultation throughout the project's lifecycle. They also urged ZESCO to ensure that all the key issues raised by stakeholders are considered in the ESIA process, project design and implementation.

9. SOCIAL ANALYSIS

9.1 Demography, population, and public services

The project area, which spans across Chipata and Vubwi districts, presents distinct demographic profiles and public services crucial for understanding the local context of the Malawi-Zambia 400kV Interconnector Project.

Chipata District: Chipata is a prominent district within the Eastern Province of Zambia, covering an area of approximately 1,691 square kilometres. The district is home to a population of 322,703 people, yielding a high population density of 190.8 individuals per square kilometre. This density reflects Chipata's role as a regional hub, contributing to its rich demographic tapestry.

Chipata boasts a well-established public health infrastructure, with a total of 33 health facilities. These include 3 hospitals that serve as key healthcare providers, 16 health centres offering primary and preventive services, and 14 health posts strategically located to cater to the rural populace. The district's education system is equally robust, featuring 362 schools that cater to various educational needs. The breakdown includes 278 primary schools, 45 secondary schools, 68 community schools, and 9 tertiary institutions. This extensive educational network underscores the district's commitment to fostering educational development at all levels.

Vubwi District: Vubwi is a relatively new district, having been recently upgraded from a town under Chadiza District. It spans an area of 981.7 square kilometres and has a total population of 53,118, resulting in a lower population density of 54.11 individuals per square kilometre. This population comprises 26,465 males and 26,653 females, with the majority of residents, approximately 45,643 individuals, residing in rural areas, while 7,475 live in the urban centre.

Vubwi public service infrastructure is still developing, reflecting its recent status as a district. Currently, the district has 1 stage 1 health centre and 9 health post, catering to the healthcare needs of the population. The educational infrastructure includes 8 secondary schools, 27 primary schools, 5 community schools and 2 private pre-schools which serve as the foundation for the district's education system. The district has no tertiary institution. Despite its limited facilities, Vubwi public services are gradually expanding, with ongoing efforts to improve accessibility and service delivery to meet the growing needs of its population.

Transportation and Telecommunications Infrastructure

Transportation: Chipata District is strategically located with a well-developed transportation network that plays a pivotal role in regional connectivity. The T4 road, also known as the Great East Road, is the primary artery that links Chipata with Lusaka, the capital city of Zambia, and extends to the Mwami border with Malawi. This road is crucial for the movement of goods and people, facilitating trade and economic activities across the border.

In addition to the T4 road, the D128 road connects Chipata to Chadiza in the southwest, while the D804 road links Chipata to Vubwi in the southeast. These roads are essential for ensuring that the Malawi-Zambia 400kV Interconnector Project can access various parts of the project area with relative ease. The road network supports a diverse range of vehicles, including heavy trucks, buses, motorcycles, and smaller vehicles, which are vital for both public transportation and the movement of goods.

Telecommunications: The project area benefits from a comprehensive telecommunications infrastructure that includes both mobile and fixed-line services. These services ensure that residents, businesses, and project stakeholders maintain connectivity, which is essential for communication, operational coordination, and the efficient implementation of the Malawi-Zambia 400kV Interconnector Project. Mobile network coverage is widespread, enabling real-time communication across even remote areas, while fixed-line services provide a reliable backbone for data transmission and internet connectivity.

This robust infrastructure not only supports the everyday needs of the local population but also plays a critical role in facilitating the smooth execution of large-scale projects like the interconnector, ensuring that all stakeholders remain connected and informed throughout the project lifecycle.

Water Supply and Sanitation

In Chipata and Vubwi Districts, water supply and sanitation services in urban and peri-urban areas are managed by the Eastern Water and Sewerage Company, which operates under the regulatory framework of the National Water and Sanitation Council (NWASCO). This company is responsible for providing reliable water and sanitation services within these designated areas.

However, this service does not extend to rural villages, where residents rely on alternative sources for their water supply. Villagers typically access water from boreholes or wells. For sanitation, pit latrines are commonly used as the primary form of toilet facilities. This arrangement highlights the disparity in service availability between urban and rural areas, emphasizing the need for targeted solutions to address the water and sanitation needs of all communities within the districts.

9.2 Land Tenure and Land use

There are several Acts governing the administration of land, viz; Cap 292, 289, 288 for the allocation and alienation of land, Land Acquisition Act which provides for the compulsory acquisition of land and the Local Government Act (No. 22 of 1991) which provides for control of land by Local Authorities. Under the Lands Act, land has been demarcated into categories, namely: state, local authority and traditional land. The ZESCO LIMITED 61 traditional authorities (Chiefs) have rights over the traditional land, with a mandate to recommend to the Government to lease out land.

The project area has some land that is obtained from the Government and the owners are issued with title deeds. However, majority of the people have traditional land that is allocated to them by the local chiefs and headmen or inherited from the family.

Land uses in the area is mainly for settlement and farming. Commercial farming is practiced in the area, but to a small extent. Majority of the people practice subsistence farming. The major crops grown include maize, cotton, sweet potatoes, sorghum, groundnuts, cotton, rice, pumpkins and sunflower. Livestock is reared in some parts of the project area include cattle, sheep, goats and pigs.

9.3 Economy and livelihood

Local Economy and Livelihoods

The local economy of Chipata and Vubwi districts is diverse and dynamic, with agriculture serving as the cornerstone of economic activity. Chipata, in particular, is a key transport hub for trade between Zambia and Malawi, reinforcing its strategic importance in regional commerce. Agriculture dominates the socio-economic landscape of both districts and the broader Eastern Province, providing the primary source of employment and contributing significantly to regional economic growth through tax revenues and other financial benefits. The influence of the agricultural sector extends beyond farming, permeating various facets of local life and underpinning the economic stability of the region.

In Chipata, the hospitality industry also plays a crucial role in the local economy. The district caters to both residents and visitors, especially during significant cultural events. Two major traditional ceremonies, the Nc'wala ceremony of the Ngoni people and the Kulamba ceremony of the Chewa people, draw visitors to the area each year. The Nc'wala ceremony, held in Chipata every February, and the Kulamba ceremony, celebrated outside Chipata, boost the hospitality sector, particularly in accommodation and related services.

Transportation services and general trading are other vital components of the local economy. A broad spectrum of goods and services are traded within the districts, contributing to economic activity and supporting livelihoods.

The informal sector complements these more formal economic activities, encompassing a wide range of enterprises that are integral to the livelihoods of many residents. These include motorbike transportation services, trade in second-hand clothing and footwear, vegetable and food sales, beer brewing, carpentry, grocery sales, and the operation of restaurants and bars. Additionally, charcoal production and sales are notable informal activities that provide income for local families. These diverse informal economic activities are essential, not only for meeting the daily needs of the community but also for sustaining the local economy, offering resilience and adaptability in the face of economic fluctuations.

Figure 13: An agricultural field with a well vegetated hill in the background common in the project area

9.4 Historical and Cultural Heritage

The Malawi-Zambia 400kV Transmission Interconnector project traverses the culturally rich districts of Chipata and Vubwi, located in Zambia's Eastern Province. These districts are predominantly inhabited by two major ethnic groups: the Ngoni and the Chewa. Each group has a profound historical and cultural heritage that continues to shape the social fabric and identity of the region.

The Ngoni People and Paramount Chief Mpezeni

The Ngoni people, under the leadership of Paramount Chief Mpezeni, occupy much of Chipata District. The Ngoni are warrior people with a storied history, having descended from the Zulu kingdom in South Africa. They migrated northwards during the Mfecane period in the early 19th century, eventually settling in what is now Zambia, Malawi, and Mozambique.

Paramount Chief Mpezeni, the title taken by the ruling chief of the Ngoni, is a significant historical figure. The first Mpezeni, a warrior-king, established one of the largest and most formidable Ngoni kingdoms in the region. His reign was marked by resistance against colonial incursions, particularly by the British. In 1897, after years of conflict and negotiations, Mpezeni was defeated by the British forces. Despite his defeat, Mpezeni retained his title and authority, becoming a paramount chief under British colonial rule. His successors have continued to hold this position, with the title of Paramount Chief Mpezeni being passed down through generations, symbolizing the enduring legacy of Ngoni leadership and cultural pride.

The Ngoni people continue to honor their heritage through the annual Nc'wala traditional ceremony. This event, held on the last Saturday of February at Mtenguleni Village in Chipata, is one of the most significant cultural gatherings in Zambia. The ceremony is a time for the Ngoni to pay homage to their god, ancestral spirits, and Paramount Chief Mpezeni, expressing gratitude for the first fruits of the harvest. It is a vibrant celebration of Ngoni identity, featuring traditional music, dance, and rituals that draw thousands of participants and visitors from across the region and beyond.

The Chewa People and Their Heritage

The Chewa people, predominantly found in Vubwi District, also have a rich cultural history. Oral traditions trace the origins of the Chewa to Malambo, a region in the Luba area of present-day Democratic Republic of Congo. From there, they migrated southwards into northern Zambia and then eastwards into the highlands of Malawi, establishing themselves as a dominant group in the region.

The Chewa are known for their deep spiritual connections and traditional governance systems, which are intricately linked to their chieftaincy under Paramount Chief Gawa Undi, who resides in Katete District. The Chewa social structure is matrilineal, with inheritance and succession passing through the female line, a practice that has influenced the region’s social organization and cultural practices.

One of the most important cultural events for the Chewa is the Kulamba traditional ceremony, held annually in the last week of August. This ceremony, conducted at Mkaika in Katete District, brings together Chewa people from Zambia, Malawi, and Mozambique to pay homage to their chief and give thanks for the harvest. It is also a time to honor the ancestors and seek their blessings for the coming year. The Kulamba ceremony is a powerful expression of Chewa unity and cultural continuity, featuring the iconic Nyau dancers, who perform masked dances that are both spiritual and entertainment.

Cultural Significance in the Project Area

The historical and cultural heritage of the Ngoni and Chewa people is not only a source of regional pride but also a vital aspect of the local economy. The Nc'wala and Kulamba ceremonies attract numerous visitors to the area, boosting the hospitality industry and generating income for local businesses. These events are important for cultural tourism, drawing attention to the rich traditions and vibrant community life of Eastern Province.

9.5 Indigenous People

In the project area, and in Zambia as a whole, there are no groups of people classified as indigenous people according to EIB and World Bank standards.

10. POSSIBLE ANALYSIS OF INFORMATION GAPS

10.1 Desktop Studies

Desktop studies will include additional research to identify existing documentation that contains information relevant to key resources present in the project environment. Potential sources include publicly available literature with relevance to the project site and general area. Secondary sources of information include maps, population census reports, reports from relevant Government ministries/department, research institutions, NGOs and development agencies.

Finally, project engineering documents will be reviewed for quantitative information on environmental elements. Studies that may provide useful data could be geo-technical investigations, process and operations, water source investigations, surface drainage studies, soil classification studies, air emission studies and any other studies of relevance.

10.2 Field Surveys

A number of environmental topics, as identified from secondary information, stakeholder meetings and site visits, will need to be studied in more detail in order to provide a solid basis for impact assessment and mitigation. The specialist studies/surveys to be undertaken, will therefore aim to gather information that is not available from secondary sources or to validate secondary sources of information.

The following surveys are planned:

- Environmental quality survey - including noise, atmospheric quality and freshwater quality;
- Biodiversity survey – covering vegetation, birds, mammals and insects;
- Socioeconomic survey;
- Cultural Heritage survey.

More details will be provided in the ToR for the ESIA.

11. IMPACT ASSESSMENT AND MITIGATION MEASURES

11.1 Impact Assessment Methodology

In the assessment of potential impacts arising from the proposed project, a systematic approach is required to ensure that all environmental, socio-economic, and cultural heritage effects are evaluated with precision and clarity. The terminology and ratings outlined in this chapter serve as critical tools for determining the significance of these impacts, guiding both the evaluation process and subsequent decision-making.

The impact assessment process relies on a series of defined criteria, each representing a different dimension of the potential impacts. These criteria include the nature, duration, extent, intensity, and probability of the impacts. By systematically evaluating these aspects, we can determine not only the significance of the impacts but also prioritize mitigation measures effectively.

The **nature of predicted impacts** considers whether an impact is neutral, adverse, or beneficial to the environment. The **duration** examines how long the impact will persist, ranging from short-term effects to those that are permanent. The **extent** of the impact assesses the geographical scope, from site-specific to national-level impacts. The **intensity** evaluates the degree to which natural, cultural, or social functions and processes are affected. Lastly, the **probability** of impact considers the likelihood of the impact materializing, ranging from improbable to definite.

Each criterion is assigned a specific rating, which, when combined, provides a comprehensive assessment of the impact's significance. This structured approach ensures that the assessment is both thorough and objective, facilitating informed decision-making that balances project development with environmental and social stewardship.

The following table (**Error! Reference source not found.**) presents the impact assessment terminology and corresponding ratings that will be utilized in determining the significance of impacts associated with the project.

Table 12: Impact Assessment Ratings for determining significance

Assessment Criteria		Ratings Used for determining significance
Nature of predicted impacts (N)		
Neutral	No impact on the environment	**0**
Negative	Adverse impact on the environment	**-**
Positive	Beneficial impact on the environment	**+1**
Duration of predicted impact (D)		
Short term	An impact that persists for 0 - 5 years	**1**
Medium term	An impact that persists for between 5 - 15 years.	**2**

Assessment Criteria		Ratings Used for determining significance
Long term	An impact that will cease after the operation life of the project.	**3**
Permanent	No mitigation will occur (Permanent feature)	**4**
Extent of the impact (E)		
Site specific	Impact within the boundaries of the site	**1**
Local	Impact within an area of 5 km of the site	**2**
Regional	Impact within the Eastern Province	**3**
National	Impact on national scale	**4**
Intensity of the impact (I)		
Low	Impact affects the environment in such a way that no natural, cultural and social functions and processes are affected.	**1**
Medium	Where the affected environment is altered but natural, cultural and social functions and processes continue, albeit in a modified way.	**2**
High	Natural, cultural or social functions and processes are altered to the extent that they will temporarily cease.	**3**
Very high	Natural, cultural or social functions and processes are altered to the extent that they will permanently cease.	**4**
Probability of impact (P)		
Improbable	The possibility of the impact to materialise is very low.	**2**
Probable	There is a distinct possibility that the impact will occur.	**4**
Highly probable	It is most likely the impact will occur.	**6**
Definite	The impact will occur regardless of any prevention or corrective actions.	**8**
Impact Assessment Terminology and Ratings to be used in determining significance		
Assessment Terminology		**Ratings Used for determining significance**
Significance of predicted impact (S) = (E + D + I) x P		
High	An impact that is capable of causing sufficient change in the environment and fundamentally affect the status, potential productivity or usage of the environment.	**> 50**

Assessment Criteria		Ratings Used for determining significance
Medium	An impact that is capable of causing change in the environment but does not fundamentally affect the status, potential productivity or usage of the environment.	**25 - 50**
Low	An impact which is either too small to be measured or does not give rise to any material change in the environment.	**< 25**

11.2 Assessment of Impacts

A preliminary assessment of impacts has been carried out, based on available information and the Consultant's experience from similar assignments. This preliminary assessment serves the purpose of scoping out some of the environmental topics if they impact to them is perceived to be negligible.

Table 13: Preliminary assessment of impacts

Topics	Construction	O&M
Resources and Waste	Medium	Low
Geology, Soils and Contaminated land	Low	N/A
The Water Environment	Low	N/A
Air Quality and Climatic factors	Medium	N/A
Noise and Vibration	Medium	Low
Biodiversity and Nature Conservation	Low	Medium
Landscape and Visual Impacts	Low	Low
Socio-Economic Impacts	Positive	Positive
Displacement of Land Uses	Medium	Low
Property and People	Medium	N/A
Community Health and Safety	Medium	Medium
Working Conditions	Medium	Low
Cultural Heritage	Low	N/A

Table 14 and Table 15 below present a summary of the anticipated project impacts as well as the mitigation measures typically used to address such impacts

11.3 Construction

Table 14: Potential Impacts and Mitigation Measures Related to Project Construction

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
Resources and waste	• Use of large quantities of construction material • Disposal of construction waste • Transportation of construction material and waste • Sewage (black and grey water) management and disposal • Consumption of fuel by vehicles and machinery • Use of water for construction activities, camps, yards	• Local to regional, depending on impact and specific location of waste disposal sites and origin of construction material and fuel	• Materials to be sourced and disposed of with sustainable procurement principles and from as close as possible to the project area - so as to minimise impacts of production and transport. • Identify beneficial uses or opportunities for recycling construction spoil and other wastes wherever possible. • Waste management plan to be implemented • Environmental and social management plan
Geology, Soils and Contaminated land	• Excavation works during construction including off-site quarrying where needed (substation, tower foundations) • Clearance of working strip, logistic sites (yards, camp sites) and access roads will affect top soil with the risk of resource loss • Physical damage through soil compaction and accidental contamination (see also resources and waste). • Contaminated sediments from past activities	• Local, within working strip (up to 50 m) and the footprint of associated facilities (substation, camp site, construction material warehouse) • Impacts from contaminated sediments will be Local or Regional depending on the location of the waste disposal sites	• Construction site management plan • Preservation of topsoil • Reinstatement of topsoil following completion of construction activities • Oil & Chemicals Spill Contingency Prevention & Planning • Detailed transmission line route investigations to avoid contaminated areas

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
Water Environment	• Sediment plumes from working strip, yards, camps and access roads due to rainwater runoff	• Local, specific distances depend on local conditions. Could be up to a kilometer downstream of the discharge location	• Management of working strip, access roads, yards and camps, waste disposal sites, appropriate machinery maintenance to minimize sediment and pollutants runoff into water courses and ground • Monitoring of water quality – Environmental Monitoring Plan
	• Oil & chemical contamination from machinery on working strip, yards, camps and access roads	• Impacts will be local and typically within the working strip (up to 50 m), along construction materials depot, construction machines parking grounds and waste disposal sites	• Fueling / bunkering procedure for machinery, generators, etc. • Bounded or contained oil/fuel storages • Oil & Chemicals Spill Contingency Prevention & Planning • Chemical handling procedures • Oil & Chemical spill response kit on sites • HSE Training of all on-site personnel on environmental awareness (including managing erosion and siltation on site and waste management) and oil & chemical spill prevention and response. This mitigation measure is valid for all impacts.
	• Generation of wastewater and solid waste (from camps, working strip)	• Local, specific distances depend on local conditions. Could be up to a kilometer downstream of the discharge location	• Treatment of wastewater prior to discharge in any water body • Locate yards and camps away from water courses/water bodies • Waste management plan
Air Quality and Climatic factors	• Impacts from dust generated from earth movements, excavation, vehicles movement, stockpiles, unpaved surfaces, etc. along the working strip, access roads, yards and	• Local, typically in the vicinity of the pipeline's working strip (within 100 m) and associated facilities	• Good construction site management practices such as covering of loose materials, vehicle speed limits, watering dusty surfaces in dry weather, sheeting of trucks, etc. • Environmental and social management plan

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
	camps. Receptors will include residential population, workers, fauna and flora species, cultural, historic, water quality, etc.	(new roads, yards, camps). Specific distances depend on local conditions and could be up to hundreds of meters in certain unfavorable meteorological situations	
	• Impacts from emissions to the atmosphere from machinery and vehicles (i.e. generators, excavators, bulldozers, trucks, cars, etc.). Receptors will include residential population, workers, fauna and flora species, water quality, etc.	• Local, typically vicinity of the construction corridor (within 100 m) and up to hundreds of meters. Specific distances depend on local conditions. • Global - Greenhouse gases	• Maintenance of equipment and vehicles • Routing of construction traffic away from sensitive areas • Training of operators and drivers • Avoiding construction traffic from crossing densely populated areas or historic centres • Traffic management plan • Use of low sulphur fuels if available • Environmental and social management plan.
Noise and Vibration	• Impacts from noise and vibration from machinery, construction vehicles, blasting of rocks (if required). Noise receptors will include residential population (and sensitive receptors like schools and hospitals), workers, fauna, cultural/historical buildings, etc.	• Local, specific distances depend on local conditions and source. For machinery and construction vehicles typically between working strip (up to 50 m) and up to hundreds of meters.	• Good construction site management • Limiting working hours close to sensitive receptors • Using specific mitigation on noisy equipment (acoustic shielding) • Locating noisy equipment away from noise sensitive receptors • Speed limits for vehicles • Adequate Personal Protective Equipment (PPE) for workers • Monitoring of main emission sources - Environmental Monitoring Plan

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
		For blasting. Up to 10 km	• Environmental and social management plan.
Biodiversity and Natural Habitats	• Impacts from habitat loss. The impacts will be both temporary and long term/permanent. Temporary impacts will arise from the working strip, camps and yards which will be reinstated to pre-construction conditions once construction is completed. • Habitat fragmentation created by linear structures (overhead power lines, access roads)	• Local working strip (50 m) and footprint of associated facilities	• Route and associated infrastructure location selection • Minimise footprint wherever possible (e.g. narrower working strip) • Restore pre-construction conditions as far as possible (e.g. re-vegetation of working strip)
	• Impacts to fauna and flora species of nature conservation interest from the project's activities (e.g. noise, aqueous discharges, sediments plumes, greater human pressure to previously inaccessible areas) during construction works with particular reference to sensitive areas such as nesting places, old growth forests, wetlands, rivers, riparian vegetation and areas identified as rich in endemic and protected species.	• Local, specific distances depend on source of impact and local conditions. Typically immediate vicinity of working strip of pipeline (up to 50 m) and associated facilities (new roads, yards, camps). Specific distances depend on local conditions and could be up to hundreds of meters in certain unfavorable conditions. Impacts to water quality and	• As above for water quality, air quality noise & vibration impacts • Management of dust, air emissions, aqueous discharges and waste to minimise impacts on flora, fauna and ecosystems (e.g. locating fixed machinery as far as possible from sensitive habitats) • Restrict construction during certain periods/seasons at certain areas • Monitor impacts on flora and fauna at sensitive locations - Environmental Monitoring Plan • Environmental and Social Management Plan • Biodiversity Action Plan (BAP) for specific important species, if appropriate. • Relocate endemic/rare plant species to suitable nearby habitats

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
		aquatic habitats could be up to a kilometer depending on the impact and the condition	
Landscape and Visual Impacts	• Temporary and permanent landscape and visual impacts from land take and above-ground structures. The impacts will be temporary for camps and yards which will be reinstated to pre-construction conditions once construction is completed. Sections with potentially significant landscape impacts include elevated terrain and forested areas.	• Local: depending on the visual accessibility of the working stripe and its associated structures (Access roads, camps, materials and equipment depots, waste deposition sites). Up to 10 km in certain circumstances (Regional)	• Restore pre-construction conditions as far as possible (e.g. re-vegetation of camps and yards) • Visual mitigation measures where deemed necessary • Location of new roads, temporary accesses and camps away from sensitive landscape locations
Displacement of Existing Land Uses, Property and People	• Impacts on land uses will arise as a result of land take for the substation and the footprint of the towers. Land for camps and yards will be re-instated, where possible, following the completion of the construction activities returning the land to its original use. Impacts on annual crops will be temporary along the working strip, along which annual crops can be grown once re-instated. For permanent crops (i.e. trees) it is likely there	• Local: Owners and users of land along the working strip and associated facilities (new roads, yards, camps) and areas to be occupied by the substation	• Develop and implement a Resettlement Action Plan (RAP) setting out how resettlement for permanent and temporary acquisition of land will be managed and mitigated in line with local legislation and ESS5. • Ongoing stakeholder engagement with communities near the substations and along the route of the transmission lines, in line with the Stakeholder Engagement Plan (SEP)

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
	will be height restrictions for safety reasons.		
Socio Economic impacts	• Impacts to local livelihoods and loss of household income as a result of construction works (e.g. temporary and long term occupation of agricultural land or reduced access)	• Local: Owners and users of land within the construction corridor for the transmission lines and associated facilities (new roads, yards, camps) and areas to be occupied by the substation. • Local: Land owners and users of land plots and areas affected by decreased accessibility due to the presence of construction sites.	• Ensure that the Resettlement Action Plan provides for the restoration or improvement of livelihoods. • Robust monitoring of implementation and success of the RAP with corrective measures implemented where livelihoods are not fully restored. • Stakeholder engagement with local communities and affected people in line SEP.
	• Economic benefits to households and to the local economy as a result of direct/indirect job creation during construction works. • Benefit to the local community and economy as a result of local procurement of materials for construction and other services to supply the project. • Limited national economic benefits due to employment or procurement	• Local and regional (communities and region): Individuals will benefit from employment and procurement opportunities. • National: Employment and procurement oppor-	• Ensure maximisation of employment and procure opportunities for local people and businesses. • Maximise local employment during construction and provide a fair and transparent recruitment process • As far as possible, procure goods from local suppliers through sub-contracts to local firms (subject to availability, quality and cost) and purchasing of goods from local retailers

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
	of specialists or equipment not available in the regions	tunities for construction specialists and providers of goods and services	
	• The presence of workers on the site during construction works could exert pressure on social infrastructures (water, electricity, roads, health centres). • While there might be a temporary pressure on these infrastructures in the short term, there may be also a positive impact on infrastructure development in the medium to long term, if the project helps develop existing infrastructures.	• Local and regional: Use of facilities by the Project workforce thereby reducing access to communities in the vicinity of the construction corridor, associated facilities (new roads, yards) and construction camps as well as areas around the substation.	• Provide access for the Project workforce to the required recreational, social and health facilities either at construction camps or through agreements with local facilities, to minimise pressure on local facilities. • Identify through a focussed study infrastructure upgrades that would benefit local communities e.g. access roads.
	• The presence of workers on the site and the money they earn and spend may cause changes to local customs and norms and result in local inflation	• Local and regional: Communities, land owners and users in the vicinity of the construction corridor and associated facilities (new roads, yards, camps) and areas around the substation	• Stakeholder engagement with affected communities/ groups/ people in line with SEP. • Develop a Workers Code of Conduct that will include disciplinary measures for those that break the Code requirements.

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
Community Health and Safety	• Safety risks for communities as a result of construction works. • Increased traffic loads on roads adjacent to the project. • Potential health impacts due to exposure to EMF • Potential nuisance due to the Corona effect from transmission lines	• Local: Communities currently using and living along the roads to be transited by the project's vehicles. • Local and regional: Communities along transportation routes • Local: Communities and individual houses close to the substation and along the RoW of the transmission line.	• Develop a community Safety Management Plan to address safety risks for communities, including traffic related risks. • Provide traffic awareness training at local schools and at community level to raise the awareness of communities regarding avoidance of road related accidents. • Respect safety distances provided by national legislation and international standards • Reroute transmission lines or resettle individual houses in case of proximity to project infrastructure
	• Potentially increased incidence of dis-ease associated with the presence of the workforce. • Potentially increased incidents of Gender-based Violence and child labour due to the influx of labour force into the project area. • Vulnerable groups such as the women, girls, boys, the aged and the physically challenged may experience abuse and exploitation. • Increased pressure on local services (health, leisure, police, etc.) from the project's workforce resulting in de-	• Local and regional: Communities near workers camps.	• Apply strict worker management policies and prevention measures • Provide access for the Project workforce to the required recreational, social and health facilities either at construction camps or through agreements with local facilities, to minimise pressure on local facilities. • Develop and enforce Code of Conduct for workers in accordance with the Labour laws and other national laws for the protection of the vulnerable.

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
	creased access for local communities		
	• Location of workforce in camps near local communities could result in negative worker – community interactions.	• Local: Communities close to worker camps.	• Avoid locating worker camps close to communities. • Provide access for the Project workforce to the required recreational, social and health facilities either at construction camps or through agreements with local facilities, to minimise pressure on local facilities. • Worker Codes of Conduct will be developed with appropriate disciplinary procedures for breaches.
Working Conditions	• Risk of injuries for workforce as a result of excavations and working in the vicinity of active roads. • Risk of electrocution • Exposure to accidents and emergency situations	• Local: directly and in the vicinity of construction sites.	• Use of PPE at all times required by the nature of the works undertaken • Develop an HSE management system for the project in accordance with international good practice. The HSE plan will identify risks to worker health and safety and describe the HSE Management System. • Good site management practice (training and qualification of staff, appropriate work standards) will be implemented to reduce health and safety risks. Fencing or marking where there are open ditches etc. to stop people or animals from accidents. • Development of Emergency Response Plans and training of the workforce on their implementation
Cultural heritage (known and potential) including "intangible cultural heritage" (ICH)	• Ground disturbing construction activities including permanent and temporary occupations (i.e. working strips, overhead power line, workforce camps, landfills/land takes and accesses).	• Local: working strips, overhead power lines and associated facilities (new roads, yards, camps) and areas to be occupied by the substation	• Cultural Heritage Management Plan. • Detailed reconnaissance survey of known monuments, ICH and archaeological sites. • Implementation of archaeological monitoring and a "chance finds" procedure with special focus on high potential archaeological areas.

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
			• Avoidance of known/likely impacts by project redesign for archaeological site, monuments and ICH. • Removal of resources by rescue excavations and associated studies. • ESMP within the ESIA to outline Cultural Heritage Management.

11.4 Operation, Maintenance and Decommissioning

Table 15: Potential Impacts and Mitigation Measures Related to Project Operation, Maintenance and Decommissioning

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
Resources and waste	• Waste generated by the OHL and the Substation during operation and maintenance.	• Local: depending on specific conditions and needs of the operational and maintenance process.	• Waste management plan
Noise and Vibration	• Impacts from noise emissions during the normal operation of the high voltage system. Noise and vibration receptors will be affected in the vicinity of facilities and along the power lines	• Local: in the vicinity of facilities and along the power lines less than 50m	• Monitoring of main emission sources - Environmental Monitoring Plan • Location of system components away from sensitive receivers
Biodiversity and Nature Conservation	• Impacts to flora and fauna from the routine maintenance/clearance of the construction corridor where no tall vegetation will be allowed to avoid interference with the lines.	• Local, relevant to the construction corridor with regard to clearance of vegetation.	• Restore pre-construction conditions as far as possible (e.g. re-vegetation of working strip) • Monitor impacts on flora and fauna at sensitive locations • Environmental and Social Management Plan • Specific measures to improve visibility of the line and avoid bird collisions.

Impact Area	Potential Impact/Source	Area of Influence	Potential preventive/mitigation measures
	• Impacts to birds due to collision or change of their flying patterns • Disturbance during decommissioning phase	• Regional or broader with respect to impacts to migratory birds	
Landscape and Visual Impacts	• Impacts to landscape due to the installation of towers and other permanent installations (i.e. substation). • Impacts to landscape from routine maintenance of the construction corridor (keeping vegetation low)	• Local, but visible from larger distances depending on local conditions	• Restore pre-construction conditions as far as possible (e.g. re-vegetation of working strip) • Use landscape features (i.e. undulating landscape, tall vegetation) to reduce the visibility of the towers as much as possible.
Displacement of Existing Land Uses, Property and People	• Permanent land acquisition/easement during operation • Permanent changes to land use, in particular agricultural land for permanent crop production (e.g. tall tress).	• Local: Owners and users of land along the power line corridor and areas to be occupied by towers and substation.	• The ESMP will consider impacts to land during operation and decommissioning and provide for compensation to land owners/users in line with local legislation and ESS5. • Undertake engagement with the communities along the route as part of the stakeholder engagement plan in line with the SEP.
Socioeconomic Impacts	• Contribution to a sustainable economic development of Zambia and the region and to the global climate protection through the reduction of CO2 emissions. • Benefits in service provision (i.e. quality of power supply) • Land use restriction for safety reasons below the line (no building structures, no tall trees)	• National, regional and local • Local: Users and owners of land affected by safety measures	• None required • Route selection process with the aim to reduce areas of conflict to a minimum. • Stakeholder engagement and detailed surveys during detailed design to identify and minimise potential areas of conflict

Community Health and Safety	• Risk of electrocution for people climbing on the towers or stealing tower bolts and equipment.	• Local: communities living along the high voltage power lines	• Stakeholder engagement and provision of safety information to the public • Appropriate signage to illustrate the danger and (probably) fencing to hinder climbing. • Frequent inspection of the line
	• Electromagnetic Fields (EMF)	• Local: communities living along the line route, farmers working below the lines.	• Appropriate tower design and line configuration to reduce EMF generation • Location of the line away from sensitive receptors • Restrictions to working beneath the line.
Working Conditions	• Risk of injuries for workforce (electrocution, working at heights, etc.) as a result of routine project operation activities and maintenance	• Local: Workforce involved in maintenance	• Develop a HSE management system for the project in accordance with international good practice. The HSE plan will identify risks to worker health and safety and describe the HSE Management System. • Good site management practice (training and qualification of staff, appropriate work standards) will be implemented to reduce health and safety risks
Cultural heritage (known and potential) Including "intangible cultural heritage" (ICH)	• No specific impacts or risks are expected during the operation (land take and earth works limited to construction phase). • Ground disturbing removal and restoration activities during decommissioning	• Local, the construction corridor and footprint of associated decommissioning activities	• Cultural Heritage Management Plan (including ICH)

12. CONCLUSION AND RECOMMENDATIONS

This Scoping Report outlines the approach that guided data collection, data analysis and stakeholder engagement activities undertaken so far, and will guide future activities throughout the project. The ESIA for the Zambia-Malawi 400kV Transmission Line Project ESIA will be conducted in strict accordance with the provisions of the Zambian Environmental Management Act, 2011, in conjunction with the Environmental Impact Assessment Regulations of 1997. These legal instruments provide a robust framework for assessing environmental, social, and cultural impacts, ensuring that all relevant national standards are adhered to throughout the project lifecycle.

In addition, the ESIA process will incorporate international best practices in environmental and social governance (ESG), ensuring that the project aligns with global sustainability objectives, including the United Nations Sustainable Development Goals (SDGs), the Paris Agreement on Climate Change, other relevant environmental conventions to which Zambia is a signatory, as well as E&S safeguards of Swedfund and EIB. This comprehensive approach ensures that the Malawi – Zambia 400kV Interconnector Project will be implemented in an environmentally responsible and socially inclusive manner, safeguarding both ecological integrity and the well-being of affected communities.

13. DECLARATION OF AUTHENTICITY OF REPORT

I, …… the undersigned, declare that the Scoping Report described herein provides information describing the project area and scoping issues as raised by stakeholders and interested and affected parties during the scoping exercise and that the proposed terms of reference, derived from this report, satisfies the framework needed for conducting Environmental Impact Assessment studies for the proposed construction of the Malawi-Zambia 400kV Transmission Line Interconnector between Chipata in Zambia and Lilongwe in Malawi.

For and on behalf of **ZESCO Limited**.

……..

Name:……..

Position:……..

ZESCO Limited

14. REFERENCES

Acts and Regulations

1. Government of the Republic of Zambia. (1989). *National Heritage Conservation Act, No. 23 of 1989* and *National Heritage Conservation Commission Amendment Act, No. 13 of 1994*. Government Printers, Lusaka, Zambia.
2. Government of the Republic of Zambia. (1995). *The Public Health Act, No. 22 of 1995*. Government Printers, Lusaka, Zambia.
3. Government of the Republic of Zambia. (1995). *The Lands Act, No. 27 of 1995*. Government Printers, Lusaka, Zambia.
4. Government of the Republic of Zambia. (1997). *The Environmental Impact Assessment Regulations, Statutory Instrument No. 28 of 1997*. Government Printers, Lusaka, Zambia.
5. Government of the Republic of Zambia. (1999). *The Factories Act, 1999*. Government Printers, Lusaka, Zambia.
6. Government of the Republic of Zambia. (1999). *The Workers Compensation Act, No. 10 of 1999*. Government Printers, Lusaka, Zambia.
7. Government of the Republic of Zambia. (2002). *The Public Roads Act, CAP 12 of 2002*. Government Printers, Lusaka, Zambia.
8. Government of the Republic of Zambia. (2002). *The Road Traffic Act, No. 11 of 2002*. Government Printers, Lusaka, Zambia.
9. Government of the Republic of Zambia. (2003). *National Council for Construction Act, No. 13 of 2003*. Government Printers, Lusaka, Zambia.
10. Government of the Republic of Zambia. (2010). *The Occupational Health and Safety Act, No. 36 of 2010*. Government Printers, Lusaka, Zambia.
11. Government of the Republic of Zambia. (2011). *Environmental Management Act, No. 12 of 2011*. Government Printers, Lusaka, Zambia.
12. Government of the Republic of Zambia. (2011). *The Roads and Traffic Act, No. 2 of 2011*. Government Printers, Lusaka, Zambia.
13. Government of the Republic of Zambia. (2011). *The Water Resources Management Act, No. 21 of 2011*. Government Printers, Lusaka, Zambia.
14. Government of the Republic of Zambia. (2011). *Anti-Gender Based Violence Act, 2011*. Government Printers, Lusaka, Zambia.
15. Government of the Republic of Zambia. (2013). *The Environmental Management (Licensing) Regulations, Statutory Instrument No. 112 of 2013*. Government Printers, Lusaka, Zambia.
16. Government of the Republic of Zambia. (2015). *The Urban and Regional Planning Act, No. 3 of 2015*. Government Printers, Lusaka, Zambia.
17. Government of the Republic of Zambia. (2015). *The Standards Act, No. 4 of 2015*. Government Printers, Lusaka, Zambia.
18. Government of the Republic of Zambia. (2015). *The Forests Act, No. 4 of 2015*. Government Printers, Lusaka, Zambia.
19. Government of the Republic of Zambia. (2015). *The Mines and Minerals Development Act, No. 11 of 2015*. Government Printers, Lusaka, Zambia.
20. Government of the Republic of Zambia. (2015). *The Tourism and Hospitality Act, No. 13 of 2015*. Government Printers, Lusaka, Zambia.
21. Government of the Republic of Zambia. (2015). *The Zambia Wildlife Act, No. 14 of 2015*. Government Printers, Lusaka, Zambia.
22. Government of the Republic of Zambia. (2015). *The National Pensions Scheme Act, No. 7 of 2015*. Government Printers, Lusaka, Zambia.
23. Government of the Republic of Zambia. (2019). *The Local Government Act, No. 2 of 2019*. Government Printers, Lusaka, Zambia.
24. Government of the Republic of Zambia. (2020). *The Public Health (Infected Areas) (Corona Virus Disease 2019) Regulations, Statutory Instrument No. 22 of 2020*. Government Printers, Lusaka, Zambia.
25. Government of the Republic of Zambia. (2019). *The Employment Code Act, No. 15 of 2019*. Government Printers, Lusaka, Zambia.

Books, Reports, and Articles

26. Banda, I. (2015). *Chipata and Chanida Water Supply and Sanitation: Feasibility Study*. British Government Department for International Development.
27. Chipata City Council. (2021). *Joint Integrated Development Plan 2021-2030*.
28. Mileji, C. M., & Mulenga, M. N. (2020). *Factoring Seismic Hazard in Structural Design of Infrastructure in Zambia*. International Journal of Engineering Research and Development.
29. Red Cross Climate Centre. (2021). *Climate Profiles of Countries in Southern Africa: Zambia*.
30. Vubwi District Council. (2020). *Integrated Development Plan 2020-2030*.

Online Sources

31. *Geography of Eastern Province, Zambia*. (Accessed 17/08/2024). Available at: http://en.wikipedia.org
32. *Geology of Eastern Province, Zambia*. (Accessed 17/08/2024). Available at: http://openjicareport.jica.go.jp
33. *Ngoni People*. (Accessed 17/08/2024). Available at: http://en.wikipedia.org
34. *Chewa People*. (Accessed 17/08/2024). Available at: http://en.wikipedia.org

International Environmental Conventions and Protocols to which Zambia is a Signatory

- African Convention on the Conservation of Nature and Natural Resources, 1968
- United Nations Framework Convention on Climate Change, 1992
- The Convention on Biological Diversity, 1992
- Stockholm Convention on Persistent Organic Pollutants, 2004

International Environmental and Social Standards

- World Bank Environmental and Social Safeguard Policies
- Swedfund's Policy for Sustainable Development
- European Investment Bank Environmental and Social Standards

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Appendices

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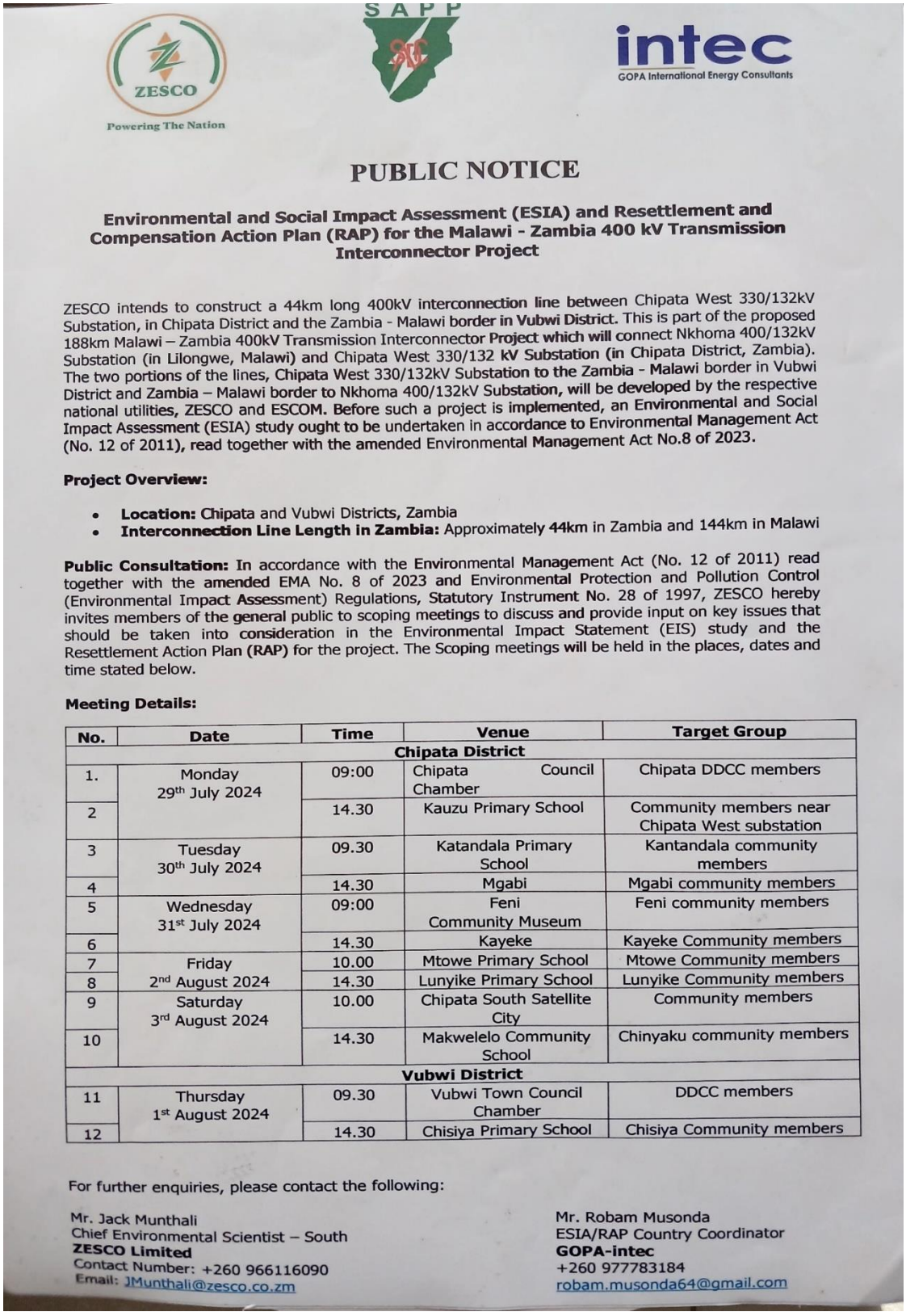
Consultant:

GOPA-International Energy Consultants GmbH
Hindenburgring 18, 61348 Bad Homburg v.d.H., Germany
Phone: +49 (6172) 1791-800; Fax: +49 (6172) 944 95 20
Email: info@gopa-intec.de; www.gopa-intec.de

APPENDICES

APPENDIX 1: Notices of Scoping Meetings



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PUBLIC NOTICE

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

ZESCO intends to construct a 44km long 400kV interconnection line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District. This is part of the proposed 188km Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) and Chipata West 330/132 kV Substation (in Chipata District, Zambia). The two portions of the lines, Chipata West 330/132kV Substation to the Zambia - Malawi border in Vubwi District and Zambia – Malawi border to Nkhoma 400/132kV Substation, will be developed by the respective national utilities, ZESCO and ESCOM. Before such a project is implemented, an Environmental and Social Impact Assessment (ESIA) study ought to be undertaken in accordance to Environmental Management Act (No. 12 of 2011), read together with the amended Environmental Management Act No.8 of 2023.

Project Overview:

- **Location:** Chipata and Vubwi Districts, Zambia
- **Interconnection Line Length in Zambia:** Approximately 44km in Zambia and 144km in Malawi

Public Consultation: In accordance with the Environmental Management Act (No. 12 of 2011) read together with the amended EMA No. 8 of 2023 and Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, Statutory Instrument No. 28 of 1997, ZESCO hereby invites members of the general public to scoping meetings to discuss and provide input on key issues that should be taken into consideration in the Environmental Impact Statement (EIS) study and the Resettlement Action Plan (RAP) for the project. The Scoping meetings will be held in the places, dates and time stated below.

Meeting Details:

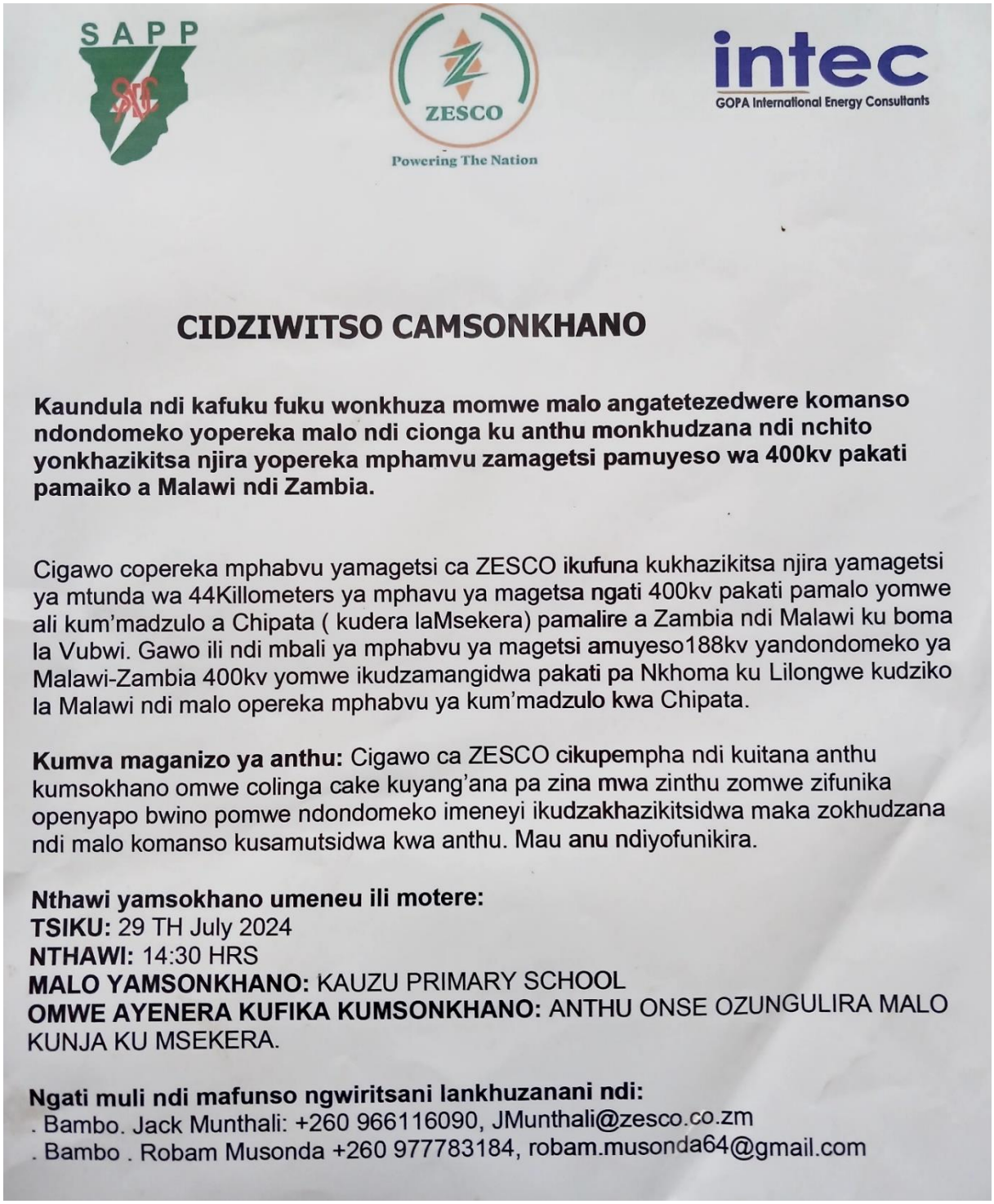
No.	Date	Time	Venue	Target Group
Chipata District				
1.	Monday 29th July 2024	09:00	Chipata Council Chamber	Chipata DDCC members
2		14.30	Kauzu Primary School	Community members near Chipata West substation
3	Tuesday 30th July 2024	09.30	Katandala Primary School	Kantandala community members
4		14.30	Mgabi	Mgabi community members
5	Wednesday 31st July 2024	09:00	Feni Community Museum	Feni community members
6		14.30	Kayeke	Kayeke Community members
7	Friday 2nd August 2024	10.00	Mtowe Primary School	Mtowe Community members
8		14.30	Lunyike Primary School	Lunyike Community members
9	Saturday 3rd August 2024	10.00	Chipata South Satellite City	Community members
10		14.30	Makwelelo Community School	Chinyaku community members
Vubwi District				
11	Thursday 1st August 2024	09.30	Vubwi Town Council Chamber	DDCC members
12		14.30	Chisiya Primary School	Chisiya Community members

For further enquiries, please contact the following:

Mr. Jack Munthali
Chief Environmental Scientist – South
ZESCO Limited
Contact Number: +260 966116090
Email: JMunthali@zesco.co.zm

Mr. Robam Musonda
ESIA/RAP Country Coordinator
GOPA-intec
+260 977783184
robam.musonda64@gmail.com

Public Notice for Scoping Meeting for Chipata and Vubwi Districts



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CIDZIWITSO CAMSONKHANO

Kaundula ndi kafuku fuku wonkhuza momwe malo angatetezedwere komanso ndondomeko yopereka malo ndi cionga ku anthu monkhudzana ndi nchito yonkhazikitsa njira yopereka mphamvu zamagetsi pamuyeso wa 400kv pakati pamaiko a Malawi ndi Zambia.

Cigawo copereka mphabvu yamagetsi ca ZESCO ikufuna kukhazikitsa njira yamagetsi ya mtunda wa 44Killometers ya mphavu ya magetsa ngati 400kv pakati pamalo yomwe ali kum'madzulo a Chipata (kudera laMsekera) pamalire a Zambia ndi Malawi ku boma la Vubwi. Gawo ili ndi mbali ya mphabvu ya magetsi amuyeso188kv yandondomeko ya Malawi-Zambia 400kv yomwe ikudzamangidwa pakati pa Nkhoma ku Lilongwe kudziko la Malawi ndi malo opereka mphabvu ya kum'madzulo kwa Chipata.

Kumva maganizo ya anthu: Cigawo ca ZESCO cikupempha ndi kuitana anthu kumsokhano omwe colinga cake kuyang'ana pa zina mwa zinthu zomwe zifunika openyapo bwino pomwe ndondomeko imeneyi ikudzakhazikitsidwa maka zokhudzana ndi malo komanso kusamutsidwa kwa anthu. Mau anu ndiyofunikira.

Nthawi yamsokhano umeneu ili motere:
TSIKU: 29 TH July 2024
NTHAWI: 14:30 HRS
MALO YAMSONKHANO: KAUZU PRIMARY SCHOOL
OMWE AYENERA KUFIKA KUMSONKHANO: ANTHU ONSE OZUNGULIRA MALO KUNJA KU MSEKERA.

Ngati muli ndi mafunso ngwiritsani lankhuzanani ndi:
. Bambo. Jack Munthali: +260 966116090, JMunthali@zesco.co.zm
. Bambo . Robam Musonda +260 977783184, robam.musonda64@gmail.com

Notice for Community Scoping Meeting in Local Language (held at Kauzu Primary School)

TIMES OF ZAMBIA, SATURDAY, JULY 13, 2024 3

admitted to UTH, Levy

•A WOMAN of Kamimzekenzeke Ward in Mufumbwe District of North-Western Province casts her vote in yesterday's by-elections. Picture by ESTHER NG'ANDU

10,473 Kafue households benefit from food for work relief package

5 years stands

ZESCO

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PUBLIC NOTICE

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

ZESCO intends to construct a 44km long 400kV interconnection line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District. This is part of the proposed 185km Malawi - Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) and Chipata West 330/132 kV Substation (in Chipata District, Zambia). The two portions of the lines, Chipata West 330/132kV Substation to the Zambia - Malawi border in Vubwi District and Zambia – Malawi border to Nkhoma 400/132kV Substation, will be developed by the respective national utilities, ZESCO and ESCOM. Before such a project is implemented, an Environmental and Social Impact Assessment (ESIA) study ought to be undertaken in accordance to Environmental Management Act (No. 12 of 2011), read together with the amended Environmental Management Act No.8 of 2023.

Project Overview:

- **Location:** Chipata and Vubwi Districts, Zambia
- **Interconnection Line Length in Zambia:** Approximately 44km in Zambia and 141km in Malawi

Public Consultation: In accordance with the Environmental Management Act (No. 12 of 2011) read together with the amended EMA No. 8 of 2023 and Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, Statutory Instrument No. 28 of 1997, ZESCO hereby invites members of the general public to scoping meetings to discuss and provide input on key issues that should be taken into consideration in the Environmental Impact Statement (EIS) study and the Resettlement Action Plan (RAP) for the project. The Scoping meetings will be held in the places, dates and time stated below.

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			Chipata District	
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3	Tuesday 30th July 2024	09:30	Katandula Primary School	Katandula community members
4		14:30	Mpali	Mpali community members
5	Wednesday 31st July 2024	09:00	Feni Community Museum	Feni community members
6		14:30	Kayeke	Kayeke Community members
7	Friday 2nd August 2024	10:00	Mfuwe Primary School	Mfuwe Community members
8		14:30	Lungelo Primary School	Lungelo Community members
9	Saturday 3rd August 2024	10:00	Chipata South Satellite City	Community members
10		14:30	Mafowelelo Community School	Chinyalu community members
			Vubwi District	
11	Thursday 1st August 2024	09:30	Vubwi Town Council Chamber	DDCC members
12		14:30	Chiuya Primary School	Chiuya Community members

For further enquiries, please contact the following:

Mr. Jack Manthali
Chief Environmental Scientist – South
ZESCO Limited
Contact Number: +260 966116898
Email: JManthali@zesco.co.zm

Mr. Robert Muvirala
ESIA/RAP Country Coordinator
GOPA-intec
+260 977763184
robert.muvirala1@gmail.com

Scoping Meeting Advertisement in the Times of Zambia of 13th, 14th, 16 and 24th July 2024

APPENDIX 2: Minutes, Attendance registers, Issues Raised and Responses of Consultative Meeting

1. Chipata District Development Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Eastern Comfort Lodge
Date: 29.07.2024
Time: 09:30hrs

Introduction

The public engagement and consultations were conducted in Chipata District and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decisionmaking; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under World Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The first round of public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks,
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

GOPA-intec Team

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist (Secretary)

ZESCO Team

NAME	TITLE
Kandi Shikabi	Principal Social Officer
Milton Hamoombe	Senior Area Manager
Juddy Mwaba	Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	43
Female	18
Total	61

The list of names of other people who attended the DDCC meeting is attached to these minutes.

INTRODUCTIONS

After singing the National anthem and opening prayer, the Chairperson Mr. Kapembwa Sikazwe, Chipata District Administration Officer (DAO), requested all the members present to introduce themselves by name, title and the institutions they were representing.

OPENING REMARKS BY THE DISTRICT ADMINISTRATION OFFICER

The Chairperson, Mr. Kapembwa Sikazwe, welcomed all the members present. He mentioned that the project under consideration was of paramount importance to the nation and the southern African region and it will facilitate the importation and exportation of power among nations in the region.

He made reference to the drought which Zambia has experience this year and said that a project of this nature would enable Zambia to import power from neighbouring countries. Mr. Sikazwe mentioned that all projects have both positive and negative effects. Therefore, it was important for all stakeholders to actively take part in the EIA process and support the project. The views of the institutions represented in the meeting was important to ZESCO and would be incorporated in the planning and implementation processes of the project. He called upon all the people present to participate fully in the deliberations.

OVERVIEW OF THE PROJECT BY ZESCO

The ZESCO Senior Area Manager, Mr. Milton Hamoombe, outlined the history of the project. He mentioned that Zambia and Malawi had been exporting and importing electricity to/from each other on a small scale for a long time through Lundazi and Chama. He mentioned that ZESCO and ESCOM, power utilities in Zambia and Malawi respectively, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia.

He mentioned further that the decision to construct the transmission power line followed Inter-Utility Memorandum of Understanding signed between ZESCO and ESCOM, which is in turn based on an Inter-Governmental Memorandum of Understanding signed between the Governments of Malawi and Zambia. This project will be undertaken under the auspices of the Southern African Power Pool (SAPP).

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

Furthermore, he mentioned that before a project of this magnitude is implemented, an Environmental and Social Impact Assessment (ESIA) has to be conducted in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023 and Statutory Instrument No. 28 of 1997 (Environmental and Social Impact Assessment Regulations). Under the same Regulations, it is a requirement that stakeholder consultative meetings are held in the project area to raise awareness about the project and to get the views of the stakeholders for incorporation in project planning and design.

Mr. Hamoombe mentioned that the focus of the meetings was to inform stakeholders about the proposed project, get their views, concerns and suggestions which will be incorporated into project planning and implementation. The consultation will culminate in the development of the Terms of Reference for the ESIA study. He emphasized the importance of the ESIA and RAP processes and encouraged members present to feel free to make contributions and suggestions for the success of the project.

BRIEFING ON THE ROLE OF SOUTHERN AFRICAN POWER POOL (SAPP)

The SAPP representative, Ms. Nomasonto Mnisi, gave a brief presentation on the role of SAPP. She mentioned that SAPP was the energy organ of the Southern African Development Coordination Conference (SADCC). The main function of SAPP to build power generation and transmission

capacities in the region and enhance power trading to make the region energy sufficient. Further, she mentioned that it was in the interest of SAPP to see that projects of this nature are undertaken in compliance with both national environmental regulations and international best practice. Furthermore, she mentioned that the project under consideration was of paramount importance not only to Malawi and Zambia, but also to the entire SADCC region.

GOPA-INTEC PRESENTATION ON THE PROJECT AND THE ESIA PROCESS

GOPA-intec Country Coordinator, Mr. Robam Musonda, made a presentation detailing the ESIA/RAP process and the need for stakeholder consultation for the success of the project. Mr. Musonda highlighted what is involved in the construction of a transmission power line such as route selection, surveying, bush clearing and vegetation removal for creation of a wayleave, line pegging to determine tower positions, excavation and civil works, assembling of tower structures and equipment erection, stringing of conductor expansion of Chipata West substation and commissioning. He also mentioned that three alternative power routes were under consideration and the preferred route would be selected after examining environmental, social, technical and financial factors.

The Country Coordinator went further to give the environmental legal framework applicable to large projects. He made reference to the Environmental Management Act (EMA) No. 12 of 2011 and Environmental Protection and Pollution Control Act (Environmental Impact Assessment) Regulations, Statutory Instrument (SI) 28 of 1997, Section 3 (1) which compels project developer to undertake environmental and social impact assessment study before project implementation starts. He explained that the purpose of the ESIA study was to identify the potential adverse and positive impacts of the project, analyse impacts and develop appropriate mitigation measures to minimise or eliminate completely the adverse impacts and to enhance the positive impacts and development management plans with associated costs (including the Resettlement Action Plan). He mentioned that the scoping meeting taking place was part of the stakeholder consultation process aimed at getting the views of stakeholders which will be incorporated in the development of the Terms of Reference of the ESIA study. The ESIA study will be undertaken when the Terms of Reference are approved by the Zambia Environmental Management Agency (ZEMA).

He went further to outline the components of the ESIA study as the physical, biological, social and cultural environments.

In ending his presentation, Mr. Musonda appealed to the members present to be at liberty to make contributions essential for the ESIA process and project planning.

WAYLEAVE ACQUISITION PRESENTATION BY ZESCO:

The ZESCO Principal Social Officer, Mr. Kandi Shikabi, described the engagement and negotiation process for obtaining wayleave from community members and stakeholders. Written and signed consent from landowners is required for ZESCO to access the land to implement its projects. Compensation is provided for any losses incurred by the landowner. He mentioned that the purpose of the wayleave was to maintain public safety, safety of employees and to protect electricity infrastructure in order to maintain reliable power supply.

Building of houses and other structures as well as planting trees in the wayleave is not permissible for safety reasons. However, some activities such as animal grazing and cultivation of low-lying crops is allowed in the wayleave.

The mention that the wayleave size depended on the voltage levels of the power line and the project under consideration required a wayleave size of 50m, i.e. 25m on either side of the pylon.

PLENARY (QUESTIONS/ CONCERNS & RESPONSES)

Name and Institution	Concern	Response/Remarks
Martha Sinzala, Fisheries Department	Ms. Sinzala wanted to know the duration of this project	It was explained that the duration of the project would be determined when the feasibility studies are completed.
Lwarence Muzi, from COPECRED (NGO)	Mr. Muzi wanted to know how the environment would be protected and this includes vegetation and the forest and fauna. He was concerned about the tendency to cut indigenous plants and plant exotic ones	The response was that this would be done through the Project contractor's Environmental management plan which also includes the waste management plan When it comes to replanting, the project will consider indigenous plants and not exotic ones.
Naomi Banda, from Mary's Meals (NGO)	Ms. Banda wanted to know the distance between Nkhoma substation and Chipata substation and what the estimated cost of the project was.	The response was that the cost of the project would only be known after the designs are completed. The estimated total distance of the power line was 188km.
Kafula Nyalungwe, Zambia Agency for persons with Disability	Ms. Nyalungwe wanted to encourage the project to be inclusive in the EIA process and include people with disabilities.	The response was that even during meeting invitations, there has been an emphasis for more vulnerable people, women, youth and differently-abled people to attend the meetings
Frank Phiri, Nsingo Ward Councillor	Have you established how farmer-dominated Feni area people who are likely to be relocated due to the wayleave will be resettled	The response was that people will not be taken too far away from their original way of life for continuity. The houses will be relocated by a few metres only to pave for the construction of the power line. The assessment of affected crops will be done by the office of the District Agricultural Coordinator

	Another concern was that people will lose their livelihoods. The project should ensure that it employs the locals to work on the project because displaced people need the wages even more. Some of the contractors do not care about their workers and sometimes don't even pay them their wages	(DACO) and a livelihood restoration plan will be put in place by ZESCO. There is no need to get unskilled labour from elsewhere when the locals can do these jobs even better. Contractors should acquaint themselves with the country's labour laws immediately they are hired. ZESCO will continue to induct contractors immediately they are hired to make them understand the labour laws related to wages and salaries. ZESCO would also consider inducting the workers on their rights in the contract. The Grievance Redress Mechanism (GRM) has also been put in place to assist in ensuring that complaints are received and corrective action taken.
Musa Manda, Islamic Society of Zambia	The Project should promote Corporate Social Responsibility. The stakeholder engagement should be on-going and a liaison committee should be put in place.	Issues of Corporate Social Responsibility was a preserve ZESCO top management and ZESCO was unable to make a commitment at this stage. A Stakeholder Engagement Plan was would be prepared to ensure continuous engagement with all stakeholders.

Bishop George Mvula, Chair-person - ICOZ (Church organ-ization)	Do you compensate people with land title - What type of people do you compensate, those with title deeds or those on traditional land? We need the church to be invited for meetings of this nature to ensure active participation of the church.	The response was that both people on tradition land and those on land with title deeds area eligi-ble for compensation if they suffer damages from the project. The church is one the stakeholders and this inter-action will continue.
Jason Kumwenda, Zitandizeni / Transparency International (NGO)	Will the compensation agreements be translated in the local language for the sake of people who are unable to read English? Will the compensation be the same for all the affected people?	There is a deliberate move to translate all material into local language for people to understand. We continue to engage councillors/ local leaders to protect the interests of the community mem-bers and other vulnerable people of society. The amount of compensation depends on the na-ture and size (quantity) asset(s) affected.
Mr. Richard Kumwenda, Chipata Chamber of Com-merce	The people who are compensated under pro-jects tend to become even more poorer because they misuse the money given to them. Some even divorce and marry new wives. The pro-posal is to give them a school, house or hospital rather than cash to avoid them misusing it and becoming worse off than they were before the project.	There is need for continuous community sensitisa-tions and education to ensure such incidences re-duce.
Jameson Silungwe, Msekela Ward Councillor	Where does ZESCO hope to source the power from? If it will depend on hydro-power then the project will be a white elephant because Zambia is already struggling with a power deficit.	It was explained that ZESCO is working on various solar projects to improve the energy mix. This project is beneficial to Zambia as an intercon-nector so that we will be able to import power from Malawi whenever they have a surplus.

Jane Kaunda, Vice Director – VIF (NGO)	What will be the capacity or impact of the project? How will the project improve power security	Interconnectivity through this project will increase power security in Zambia.
Pastor Emmanuel Musonda, Seventh Day Adventist (SDA) Church	There was a proposal that a small committee be put in place to ensure that the people in charge of the project are supervised, especially contractors.	The Grievance Redress Mechanism is in place so to include on the committee a Councillor, traditional leadership, Headmen, NGOs, CSOs, Community Development and DACOs Members of the community will be encouraged to report all grievances to the GRM committee so that they are addressed.
Annie Zulu, Chipata Chamber of Commerce	Why not take power to Ntombimbi since it doesn't have power and is situated along Alternative 2, which is shorter than the other 2?	The proposed project is a very high voltage line and cannot be used in homes. For the locals, there are local distribution teams.
Eddy Ngoma, Chipata City Council - Public Relation Department	What public sensitization have ZESCO put in place?	We have 12 meetings already lined up and this starts with the district level and goes all the way to the wards and community levels. A Stakeholder Engagement Plan, with Communication strategy, is being finalized for stakeholder consultation and sensitization.
Kapembwa Sikazwe, District Administration Officer (DAO)	How are we going to ensure that there are no HIV/Aids cross infections on the project? How are we going to avoid dust pollution and Waste management	A Health, Safety and Security Management Plan (HSSMP) will be developed with appropriate mitigation measures for HIV. The distribution of condoms in the project area will also be considered. The contractor will need to engage in dust suppression and put in place a Waste Management Plan.

Kapembwa Sikazwe, District Administration Officer (DAO)	How will safety be guaranteed among community members who might want to climb the pylons	Sensitisation strategies for the for safety will be put in place. ZESCO has a safety department which go in community for sensitization.
Limbikani Nyirenda, from EVY (NGO)	Mr. Nyirenda wanted to find out what climate mitigation has been put in place to avoid climate change as a result of the project	Planting of trees will be including in the Environmental Management Plan.
Mathews Kachali, Ward Councillor	Mr Kachala wanted to find out if the project is able to with hold a percentage of the contractor's fees until three months after the project to ensure that contractors do not use community members' labour and run away	The employer does not have the legal right to withhold funds from the contractor for the purpose of paying salaries.

CLOSING REMARKS

The Chairperson thanked all the members present for attending the meeting and for their positive contributions. He commended all the stakeholders who attended the meeting for representing their organisations and the communities. He further commended SAPP, ZESCO and GOPA – intec for facilitating for the meeting. The meeting ended with a prayer and the national anthem.

Signed

Charity Moonga

Secretary

Signed

Kapembwa Sikazwe

Chairperson

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: 29th July 2024

Location: Chipata

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	EMAIL	PHONE NUMBER	DATE
1	Malenga Mwale	Bahai faith	BBM	Malengamwale@gmail.com	0977896444	29-07-24
2	MWEWA SEBASTIAN	ZP	DW OPS	Sebastianmwewa@gmail.com	0977242886	29/7/24
3	EMMANUEL MUSONDA	SDA PASTOR	DIRECTOR	emmanuelmusonda@gmail.com	0977208823	29/7/24
4	Evelyn BANDA	DWRD	E.A	evelynbanda08@gmail.com	0977021515	29/07/24

S	NAME	ORGANISATION	TITLE	EMAIL	PHONE NO	DATE
6	EDWIN MATOKWANI	GOPA-Intec	Ecology Expert	edmatokwani@gmail.com	0978214322	29/07/24
7	PALACE CHISUMPA DNRPC	GOPA- INTEC	Principal Regional Planner	Palacechisumpa@gmail.com	0977966804	29/07/24
8	JASON P. KAMLANGA	CHIPATA DISTRICT COUNCIL	VICE CHAIRPERSON	Jason Peter Kamanga @ gmail.com	0979880330	11
9	MOSES MANDA	ISCC	P/COORDINATOR	MOSESMANDA85@gmail.com	0977072334	29/07/24
10	Isaac Kaunda	NIF	Vice Director	Isaackaunda@gmail.com	0977423424	29/07/24
11	Kunda m caroline	VIF	P/Coordinator	Kundacarol183@gmail.com	0776794251	29/07/24
12	ANTHONY MANDA	Infrastructure	DISTRICT PLANNER	mandanthony2018@gmail.com	0977755482	11
13	LAWRENCE MUZI	COPECRED	ENVIRONMENTAL OFFICER	abenalawmuzi@gmail.com	0977128839	29/07/2024
14	FRANSISTAN NDHLOVU	NOA	Public Officer	[illegible]	0977305706	29.07.24
15	Moses Mbuzi	Chipata City Council	Councillor	mosesmbuzi114@gmail.com	0976229088	29.07.24
16	DALEMA MWAPE	National Assembly of Zambia	MP	[illegible]	0977265169	[illegible]
17	Shughe M. Johnson	Lundazi Council	Manager	Shughejohnson@gmail.com	0977200850	29.7.24
18	Ngoni Banda	Mafinga Council	SFO	[illegible]	0779915587	29/07/24
19	MBAMANDA KANDA	NRZ-Luangeni	Prof. Assistant	mbalandakanda830@gmail.com	0977966735	[illegible]
20	N. Ng Kuluma	[illegible]	ESIA Expert	[illegible]	[illegible]	[illegible]
21	Lucky Muwaba	ZESCO-Lusaka	Social Scientist	lmwaba@zesco.co.zm	0977101080	29.07.24
22	George Mubela	ZESCO - Lusaka	Wayleave Officer	[illegible]	0977348372	29.07.24
23	FRANK PHIRI	Chipata City Council	Ward Councillor	frankphiri@gmail.com	0977257563	29/07/24
24	CHISOMO MIBI	CHIPATA CITY COUNCIL	WARD COUNCILLOR	CHISOMOMIBI@gmail.com	0977197835	29/07/24
25	Ruth Bwembelo	ZEMA	Inspector	bwembelonth@gmail.com	0966-028033	29/07/24
26	BRIAN MUMBA	ZESCO	Chief ENG. Tens	bmumba@zesco.co.zm	0977976277	29/07/24
27	Ernest Mabonga	ZICTA	Dir. Admin. Mgmt	emabonga@zicta.zm	0977099665	29/07/24
28	MARTHA SIWALA	MFLC	O FLC	marthasiwala@yahoo.com	0977438797	29/07/24
29	COLLINS KATETE	EW&C	MANAGER-CHIMWA	Collins.Katete@ewsl.co.zm	0977331069	29/07/24
30	KAFULA NKHUNGWE	ZAPP	PROV. COORDINATOR	kapnkm@yahoo.com	0977226677	29/07/24
31	Annies Zulu	CCCI	Treasurer	anniezulu1170@y.mail.com	0978751787	29/07/24
32	MELODY MOTO	MCDSS	ACDSO	Mbupmelody3100@gmail.com	0977467572	29/07/24
33	MWABA STEPHEN	MOE	ASO	mwabastephen86@gmail.com	0977264423	29/07/24
34	STELLA SAKALA	GOPA	GOPA RAP SPECIALIST	stellasakala04@gmail.com	0977600486	29/7/24

	NAME	ORGANISATION TITLE	EMAIL	PHONE NUMBER	DATE
35	KAPEMBWA SIKAZWE	DIST. ADMINISTRATOR	silaguri_1978@yahoo.co.uk	0928838962	29/7/24
36	Milton Hamambe	ZESCO Ltd	SAM	mhamambe@zesco.co.zm	0977 173583	29/7/24
37	Chisenga Chibelo	OIC-SD	Executive Dir	Chisechibe@gmail.com	0974091505	29/7/24
38	Phiri Victoria	DZITHANDIZENI	Admin assistance		0777562705	29/7/24
39	GEORGE MVULA	ICDZ M/BODY	CHAIRPERSON	geomvula84@gmail.com	0977154569	29/7/24
40	ALEX MUNUSA	C.C.C	CLLR	alexchida@gmail.com	0974402628	29.07.24
41	Florence Sichi	C.C.C	Cllr	florencesichi@gmail.com	0978356916	29/07/24
42	Victor Banda	Agriculture	DDCO	victorbanda27@gmail.com	0977 852665	29/7/24
43	John Chitsima	Human Rights Com.	R.C	johnchitsima@gmail.com	0978 457088	29/07/24
44	MATHEWS KACHALI	C.C.C	COUNCILLOR	mathewskachali02@gmail.com	0977529482	29/07/24
45	Daka Daniso	National Guidance	Pagan	Bandad.phiri@gov.zm		
46	ALLAN MBEWE	Forestry Dept	DFO	allanmbewe92@gmail.com	0978532664	29/07/24
47	Rev. Nkole Jabulani	ECZ	Chairperson	jabulaniNkole@gmail.com	0977411251	29/07/24
48	Francisca Chirwa	Social Welfare	SWO	francisca.pwele1991@gmail.com	0979686691	29/07/24
49	Kenny Lukwesa	GOPA INTEC	Consultant	kenny.lukwesa@gmail.com	0976593203	29/07/24
50	Kasoti Sakala	ZEMA LSK	DFO	kasotisakala@zesco.co.zm	0977852420	29/07/24
51	Enock Mbilombo	ZCCB	Archivist		0977458221	29/07/24
52	Charity Mooya	GOPA-INTEC	Community Specialist	mooyacharity10@gmail.com	0977880059	29/07/24
53	Mathews Ngoma	AVAP	Co-ordinator	Mathews2@gmail.com	0979145455	29/07/24
54	Moses Chansa	ZESCO - ENV. SCIENTIST	ENV. SCIENTIST	MChansa2@gmail.com	0968487122	29/07/24
55	John Phiri	Chipata DHO	HCC	johnd.p74@gmail.com	0977562056	29/7/24
56	FRANCIS SITABONI	MLGC-CHIPATA	PRO	francissitaboni2510@gmail.com	0977160729	29/7/24
57	LAMECK BANDA	CHISOMO C.P	PO		0977368942	29/7/24
58	Kwandakwadi Nyirenda	E.V.Y	E.D	Pyrandakwadi76@gmail.com	0977056137	29/07/24
59	Esther Sumo	CCC	ELLR.		0955607236	29/07/24
60	Richard Chinyadza	CCCI	Proselyte	mrsjbanda@gmail.com	0977966834	29/07/24
61	Annie.S. Zulu	CCCI	TW Eastern	annezulu117@g.mail.com	0978751887	29/7/24
62	JASON P. MANDA	DZITHANDIZENI	V/Chairperson	Jason.peter.manda@yahoo.com	0978850350	29/7/2024
63	ALLAN MBEWE	FORESTRY DEPT	DFO	allanmbewe92@gmail.com	0978532664	29/7/24
64	Eddie Ngoma	Chipata City Council	P.D.O	eddiechuxdmw@yahoo.com	0964187153	29/7/24

ATTENDANCE LIST FOR MEETING FOR ZESCO STAKEHOLDERS MEETING HELD ON 29TH JULY, 2024

S/N	NAME	ORGANIZATION	CONTACT NO.	SIGN
1	Bonte Ngoma	Chipata City Council	0964187153	
2	NOMVSONTO MANSI	SOUTHERN AFRICAN POWER POOL nomasonto.mansi@sapp.co.zm		
3	Benson Kabunga	GOPA Intec Consultant	0975593263	
4	Kristy Sikwiti	ZESCO – Lusaka	0977834120	
5	Evelyn Banda	DWRD	0977024515	
6	Anthony Mwanza	Infrastructure	0977755432	
7	Chisenga Chibesa	SP	0977095105	
8	Collins Katete	Earlier Water & Sanitation Limited	0977331069	
9	Ruth Bweembelo	ZEMA	0964028033	
10	Kafula Nalungwe	ZAPP	0977261624	
11	Annie S. Zulu	CCCI	0978751787	
12	Susile Siwo	CCC	0955100736	
13	Richard Kamwendo	Chipata Chamber of Commerce	0977766834	
14	Banda Dabwiso	National Guidance & Religious Affairs	0977529482	
15	Konzwani Chanda	GOPA Intec Consultant	0975546365	
16	W. Mkandawire	GOPA – ESIA Expert	0977485799	
17	Esther Chitsa/mk	Human Rights Commission	0977285766	
18	Kapindula	NAP	0977305067	
19	Francisca Chirwa	SOCIAL WELFARE	0979668691	
20	Enock Msimuko	ZCCB	0974515221	
21	PALACE CHISUNGA	DNRPC	0977966804	
22				
23				
24				
25				
26				
27				

2. VUBWI DISTRICT DEVELOPMENT STAKEHOLDER CONSULTATIVE MEETING

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Vubwi Council Chamber
Date: 01 August 2024
Time: 09:30hrs

AGENDA OF THE MEETING

- Call to Order
- National Anthem
- Opening Prayer
- Introductions
- Opening Remarks
- Overview of the Project by ZESCO
- Presentation on the Project and the ESIA process by the Consultant (GOPA-intec)
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer and National Anthem

ATTENDANCE

SELECTED DDCC Members

NAME	TITLE
Moffat Mwanza	Vubwi Council Secretary (Chairperson)
Given Sakala	Vubwi District Commissioner
Vincent Mwale	Council Chairman

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Principal Social Officer
Milton Hamoombe	Senior Area Manager
Juddy Mwaba	Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	33
Female	6
Total	39

The list of names of other people who attended the DDCC meeting from Vubwi is attached to these minutes.

INTRODUCTIONS

After the National anthem and opening prayer, the Chairperson Mr. Moffat Mwanza, Vubwi Council Secretary, requested all the members present to introduce themselves.

OPENING REMARKS BY THE DISTRICT COMMISSIONER

The District Commissioner, Mr. Given Sakala, welcomed all the members presented. He extended a special welcome to the ZESCO team and GOPA-intec consultants to Vubwi District. He emphasized the importance of all stakeholders to take part in the EIA process and support the project. He called upon all the people present to participate fully in the deliberations.

OVERVIEW OF THE PROJECT BY ZESCO

The ZESCO Senior Area Manager, Milton Hamoombe, outlined the history of the project. He mentioned that Zambia and Malawi had been exporting and importing electricity to/from each other on a small scale for a long time through Lundazi and Chama. He mentioned that ZESCO Limited and ESCOM, power utilities in Zambia and Malawi respectively, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia.

He mentioned further that the decision to construct the transmission power line followed Inter-Utility Memorandum of Understanding signed between ZESCO and ESCOM, which is in turn based on an Inter-Governmental Memorandum of Understanding signed between the Governments of Malawi and Zambia. This project will be undertaken under the auspices of the Southern African Power Pool (SAPP).

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

Furthermore, he mentioned that before a project of this magnitude is implemented, an Environmental and Social Impact Assessment (ESIA) has to be conducted in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023 and Statutory Instrument No. 28 of 1997 (Environmental and Social Impact Assessment Regulations). Under the same Regulations, it is a requirement that stakeholder consultative meetings are held in the project area to raise awareness about the project and to get the views of the stakeholders for incorporation in project planning and design.

Mr. Hamoombe mentioned that the focus of the meetings was to inform stakeholders about the proposed project, get their views, concerns and suggestions which will be incorporated into project planning and implementation. The consultation will culminate in the development of the Terms of Reference for the ESIA study. He emphasized the importance of the ESIA and RAP processes and encouraged members present to feel free to make contributions and suggestions for the success of the project.

GOPA-INTEC PRESENTATION ON THE PROJECT AND THE ESIA PROCESS

GOPA-intec Country Coordinator, Mr. Robam Musonda, made a presentation detailing the ESIA/RAP process and the need for stakeholder consultation for the success of the project. Mr. Musonda highlighted what is involved in the construction of a transmission power line such as route selection, surveying, bush clearing and vegetation removal for creation of a wayleave, line pegging to determine tower positions, excavation and civil works, assembling of tower structures and equipment erection, stringing of conductor expansion of Chipata West substation and commissioning. He also mentioned that three alternative power routes were

The Country Coordinator went further to give the environmental legal framework applicable to large projects. He made reference to the Environmental Management Act (EMA) No. 12 of 2011 and Environmental Protection and Pollution Control Act (Environmental Impact Assessment) Regulations, Statutory Instrument (SI) 28 of 1997, Section 3 (1) which compels project developer to undertake environmental and social impact assessment study before project implementation starts. He explained that the purpose of the ESIA study was to identify the potential adverse and positive impacts of the project, analyse impacts and develop appropriate mitigation measures to minimise or eliminate completely the adverse impacts and to enhance the positive impacts and development management plans with associated costs (including the Resettlement Action Plan). He mentioned that the scoping meeting taking place was part of the stakeholder consultation process aimed at getting the views of stakeholders which will be incorporated in the development of the Terms of Reference of the ESIA study. The ESIA study will be undertaken when the Terms of Reference are approved by the Zambia Environmental Management Agency (ZEMA).

He went further to outline the components of the ESIA study as the physical, biological, social and cultural environments.

In ending his presentation, Mr. Musonda appealed to the members present to be at liberty to make contributions essential for the ESIA process and project planning.

WAYLEAVE ACQUISITION PRESENTATION BY ZESCO

The ZESCO Principal Social Officer, Mr. Kandi Shikabi, described the engagement and negotiation process for obtaining wayleave from community members and stakeholders. Written and signed consent from landowners is required for ZESCO to access the land to implement its projects. Compensation is provided for any losses incurred by the landowner. He mentioned that the purpose of the wayleave was to maintain public safety, safety of employees and to protect electricity infrastructure in order to maintain reliable power supply.

Building of houses and other structures as well as planting trees in the wayleave is not permissible for safety reasons. However, some activities such as animal grazing and cultivation of low-lying crops is allowed in the wayleave.

The mention that the wayleave size depended on the voltage levels of the power line and the project under consideration required a wayleave size of 50m, i.e. 25m on either side of the pylon.

PLENARY (QUESTIONS/ CONCERNS & RESPONSES)

Name and Institution	Concern	Response/Remarks
Ngaite Vera, Director – Health Services, Vubwi Town Council	Will settlements be considered for compensation?	Those whose houses, fruit trees and crops will be affected will be compensated adequately.
Isaac Banda, Councillor	Mr. Banda wanted to know how long the project will take to compensate people.	The response was that the affected people would soon be identified and the affected assets documented. An independent private or government valuer would be hired to evaluate the property to determine the required compensation package. All the compensation and resettlement details will be contained in the Resettlement Action Plan (RAP) which will be prepared.
Moses Daka, Forestry Technician	Mr. Daka requested ZESCO and the Consultant to share Shapefiles for the power line route so that Forestry Department would estimate the volume of vegetation to be cleared.	ZESCO indicated that Shapefiles would be shared at a later stage when the power line route is finalized.
Henry Phiri, Councillor	We would like to see the maps and which areas (places) will be affected.	The maps were shown to Mr. Phiri and the places where the lines would pass were pointed out to him and he appreciated the line route selection process.
Moffat Mwanza, Council Secretary	How long is the entire process to commencement of works?	The response was that it was not yet known how long the process would take because there are a number of activities to be undertaken between now and commencement of works.

		The ESIA process and technical feasibility study need to be completed, tender documents be prepared and bidding process be completed and project finances be sourced.
Phillip Mathias Zulu, District Education Board Secretary (DEBS)	Will the 400Kv line increase power supply in Vubwi and Chipata districts? Will institutions like schools and clinics be relocated if they are found to be within the power line wayleave?	The response was that the project is expected to facilitate the export or import electricity for the benefit of the entire county of Zambia. The power line route will be planned in such a way that it avoids all schools, health centres and other public social amenities.
Joseph Matibishi, Director of Finance, Vubwi Town Council	What is wrong with the existing power line to Malawi?	The exiting 66kV power line to Malawi has a low carrying capacity. Hence, the need to build a new transmission power line with higher carrying capacity (400kV).
Shadreck Tembo, District Water Development Officer	What will the project do about the groundwater recharge considering that trees will be cut during bush clearing to pave for the construction of the power line?	The response was that bush clearing will be restricted to the 50m wayleave and ecologically sensitive areas will be avoided during route selection to avoid disturbing important ground the areas.
Felix Mbewe, Water Engineer, Vubwi Town Council	When the power line is constructed, is power coming from Zambia or Malawi, since Malawi seems to have plenty of water.	The power line the is expected to facilitate the export or import electricity for the benefit of the entire county of Zambia. When Zambia has excess power, it will export to Malawi and vice versa.

Moffat Mwanza, Council Secretary	Is there compensation to people whose fields will be affected?	There is no compensation for passing the power line through the field since people will be allowed to use the land under the power line for growing of low crops such as potatoes, ground-nuts, beans and vegetables. However, people whose fruit trees and crops will be affected are eligible for compensa-tion. The project will target to com-mence construction works after har-vest.
Mr. Felix K. Lubasi, District Community Development Officer	What percentage of the project cost is Corpo-rate Social Responsibility (CSR)?	The project is not costed yet since the feasibility studies are not yet com-pleted. Regarding CSR, it is the privi-lege of top ZESCO management to de-cide.
Mr. Felix K. Lubasi, District Community Development Officer	The power line will be constructed through Vubwi District. Local people should be given priority when employing worker.	The project team will work with com-munity leaders to ensure that local people benefit from the project through employment.
Moffat Mwanza, Council Secretary	How long is the entire process to commence-ment of works?	The response was that it was not yet known how long the process would take because there are a number of activities to be undertaken between now and commencement of works. The ESIA process and technical feasi-bility study need to be completed, ten-der documents be prepared and bid-ding process be completed and project finances be sourced.

Phillip Mathias Zulu, District Education Board Secretary (DEBS)	Will the 400Kv line increase power supply in Vubwi and Chipata districts? Will institutions like schools and clinics be relocated if they are found to be within the power line wayleave?	The response was that the project is expected to facilitate the export or import electricity for the benefit of the entire county of Zambia. The power line route will be planned in such a way that it avoids all schools, health centres and other public social amenities.
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Moffat Mwanza, Council Secretary	Is there compensation to people whose fields will be affected?	There is no compensation for passing the power line through the field since people will be allowed to use the land under the power line for growing of low crops such as potatoes, groundnuts, beans and vegetables. However,

		people whose fruit trees and crops will be affected are eligible for compensation. The project will target to commence construction works after harvest.
Mr. Felix K. Lubasi, District Community Development Officer	What percentage of the project cost is Corporate Social Responsibility (CSR)?	The project is not costed yet since the feasibility studies are not yet completed. Regarding CSR, it is the privilege of top ZESCO management to decide.
Mr. Felix K. Lubasi, District Community Development Officer	The power line will be constructed through Vubwi District. Local people should be given priority when employing worker.	The project team will work with community leaders to ensure that local people benefit from the project through employment.

CLOSING REMARKS

The District Commissioner thanked all the members present for attending the meeting and for their positive contributions.

The ZESCO Senior Area Manager thanked the District administration for organizing the meeting. He assured the meeting of continued consultation and collaboration for the success of the project.

The meeting concluded with a prayer and the National Anthem.

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Vubwi

Date: July - August 2024

Location: Vubwi

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	EMAIL	PHONE NUMBER	DATE
01	LUBASI K. SIMBANGALA	MCDSS COM - DEV	D.C.D.O.	lubasiksimba@gmail.com	0974364104	1/08/24
02	Norman Nyendwa	Council	SEP	normannyendwa88@gmail.com	0976033176	1/08/24
03	Ngaite Vera	COUNCIL/HEALTH SERVICES	DIRECTOR-HEALTH SERVICES	ngaite.vera@moh.gov.zm	0978564908	01/08/2024

04	ANTONELLA BANDA	COUNCIL	HEALTH INSPECTOR	mbozibanda@gmail.com	0974100714	01/08/24
05	Evarine Mooya	Council	District Aids Coordination Advisor	evamooya67@gmail.com	0979668396	01/08/24
06	Joseph Matabish	Council	Director of Finance	josephmatabish@gmail.com	0955747356	01/08/24
07	ZULU PHILLIP MELKIAS	M.O.E	DEBS	zuluphillipm@yahoo.com	0977977374	01/08/24
08	PANGANANI NGOMA	N.P.A.	SENIOR PUBLIC PROSECUTOR	npanganani@gmail.com	0976502828	01/08/24
09	PHIRI JONATHAN S.	COUNCIL	CHIMPHANJE AREA WARD COUNCIL	JonathanStephenphiri@gmail.com	0776802821	01/08/24
10	Joseph Mubiana	MCDSS	Social Welfare Officer	liikemubiana@gmail.com	0977691643	01/08/24
11	MARTIN J. SAKALA	VUBWI TOWN COUNCIL	DIRECTOR PLANNING	msakala9@gmail.com		
12	BANDA DEUS DAVID	Councillor	Mbozi Councillor	deusband@92gmail.com	0972740505	01/08/24
13	ISAAC C. BANDA	Councillor	Vubwi Councillor	—	0770596070	01/08/24

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Vubwi

Date: July - August 2024

Location: Vubwi

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	EMAIL	PHONE NUMBER	DATE
1	QUEEN B.B BANDA	DMMU	DDMO	queenbbbanda@yahoo.com	0977988344	1-08-2024
2	SHADRECK F. TEMBO	MWDS	DWDO	fegurssonshadrach@gmail.com	0976832567	1-08-2024
3	ALISTALIKO DOROBA	N.A.Z	P.A	listalikodoroba@gmail.com	0979125812	01/08/2024

4	KANDI SHIKABI	ZESCO LSK	PSO	kshikabi@zesco.co.zm	0977854126	1/08/24
5	MOSES DAKA	FORESTRY DEPARTMENT	FORESTRY TECHNICIAN	dakamoses86@yahoo.co	0977355339	1/08/24
6	NYAMBE SISOWAELA	OFFICE OF THE PRESIDENT (SPECIAL DIVISION)	EXECUTIVE OFFICER	nyambetsiso05@gmail.com	0777296737	1/08/24
7	Nomasonto Mnisi	SAPP		nomasonto.mnisi@sapp.co.zw	+2773 057-9497	1/08/24
8	EDWIN MATOKWANI	GOPA INTEC	Ecology Expert	edmatokwani@gmail.com	0978214322	1/08/24
9	MILTON HAMOMBE	ZESCO LTD	SAM - Easter	mhamombe@zesco.co.zm	0977193673	01/08/24
10	MWALE VINCENT	Vubwi town council	C/CHAIR	mwalevincentisaiah1952@gmail.com		
11	SAKALA GIVEN	VUBWI BADMIN	BC	Sakalagivenfs@gmail.com	0973243144	1/08/24
12	MOFFAT MWAWA	VUBWI T. COUNCIL	CS	moffatmwawa5@gmail.com		
13	KWENDA SIMEON	VUBWI TOWN COUNCIL	COUNCILLOR	Simeonkwenda@gmail.com	0974205781	1/08/24
14.	Judy Mwaba	ZESCO LSK	social specialist	Jmwaba@zesco.co.zm	0971010180	11

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

1st August

Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: July - August 2024

Location: Vubwi

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	EMAIL	PHONE NUMBER	DATE
1.	ALINASE CHANDA	VUBWI TOWN COUNCIL	QUANTITY SURVEYOR	AlinaseQS@gmail.com	0770749535	1/08/24
2	PHIRI ASONI MEKELANI	MOA	AGRICULTURAL OFFICER	asonmekelani phiri@gmail.com	0777118594	01/08/24
3	FELIX MBEWE	VUBWI TOWN COUNCIL	WAT-SAN ENGINEER	felixmas95@gmail.com	0973457040	1/08/24

4.	KASOMPE PRINCE	VUBWI POLICE STATION	FORI OIC	Kasompep80@gmail.com	0973551737	01/08/24
5	DEOGRATIUS MWAMBA	VUBWI TOWN COUNCIL	DHRA	ddmwamba@gmail.com	0979755688	01/08/24
6	MIKE PHIRI	VUBWI TOWN COUNCIL	COUNCILLOR	—	0777510844	01/08/24
7	PHIRI HENRY	VUBWI TOWN COUNCIL	COUNCILLOR	—	0978299841	01/08/24
8	BANDA DAWSON	VUBWI TOWN COUNCIL	COUNCILLOR	—	0971745427	01/08/24
9	Towela Tembo	Vubwi Town Council	ACDO	—	0970506767	01/08/24
10	ELIDA SAKALA	VUBWI TOWN COUNCIL	PRO	elidasakala96@gmail.com	0971756737	01/08/24
11	MOSES CHANSA	ZESCO	ENVIRONMENTAL SCIENTIST	MChansa2@zesco.co.zm	0968642722	01/08/24

3. Kauzu Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA IN LILONGWE.

PROJECT: Proposed 400kV Transmission Line between Lilongwe in Malawi and Chipata District of Eastern Province - Zambia.
SUBJECT: ESIA Stakeholder Engagement Meeting Minutes
VENUE: Kauzu Primary School
DATE: 29th July, 2024, Time: 14:30hrs
PRESENT: ESIA Consultants, ZESCO staff, Community Members and Other Stakeholders. (Refer to the Attendance Register attached).

Background

The meeting was held as part of stakeholders' consultation to conform to Zambia Environmental Management Agency (ZEMA) requirements in line with The Environmental Management Act No. 12 of 2011 as amended by Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997 – The Environmental Impact Assessment Regulations; including International best practices for the preparation of ESIA Report, as a required step of the EIA process.

The meeting provided an opportunity to raise awareness for the community around Kauzu area on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi. This scoping meeting also preceded corporate and individual meetings the ESIA consultants and ZESCO held with some of the Interested and Affected People (IAPs) at site identification and scoping stage in the project area.
The stakeholder engagement meeting notice was first placed in the Times of Zambia on Saturday, July 13, which was three weeks before the commencement of the meetings, as guided by ZEMA. The notice ran three times on a weekly basis before the meeting. Additionally, the notice of the meetings also ran on Radio Maria and Breeze FM to invite the public and all stakeholders for the scheduled meetings. Posters and flyers were also stuck in strategic areas to create awareness of the meeting.
After all the preparations, the meeting was finally held on 29th July, 2024 at Kauzu Primary School in Chipata District.

ATTENDANCE LIST

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

MEETING AGENDA

Calling meeting to order:
National Anthem:
Opening Prayer:
Opening & Welcoming Remarks:
Introductions and purpose of Stakeholder Engagement meeting:
Plenary (Questions & Answers, Submission of key issues of concern/ Responses and Remarks)
Closing Remarks
Prayer

Kauzu Primary School Headteacher

Calling the meeting to order.
The meeting was called to order by Kauzu Primary Headteacher Reselian Sinazongwe of Kauzu village who called for singing of the national anthem and an opening prayer.
Welcoming Remarks
After the prayer, the welcoming remarks were given by the headteacher Mr. Sinazongwe, who welcomed the villagers and all stakeholders at the meeting and told them as the community that this was their meeting and that they should all participate. He later asked the ESIA members to introduce themselves and explain the purpose of meeting to the local people.
Purpose of the Meeting.

Mr. Benson Kabungo, a member of the Environmental and Social Impact Assessment (ESIA) team from GOPA - Intec, explained the site investigation exercise and highlighted the preferred three alternative routes for the proposed 400KV transmission line between Zambia and Malawi.

ZESCO Senor Area Manager Mr. Hamoombe explained the project to the community members saying the interconnection between Malawi and Zambia would improve power trade between the two countries and beyond.
GOPA- intec RAP Expert Stella Sakala informed the assembly that the project was important for the improvement of power supply between Malawi and Zambia. Ms. Sakala further explained that the day's meeting was necessary for the Environmental Impact Assessment (EIA) of the project to be approved by the Zambia Environmental Management Agency (ZEMA) before any construction work could proceed. Ms Sakala explained that the stakeholders were in Kauzu to interact with the community and hear from them. She said that those who had concerns should make use of the Grievance Redress Mechanism that had been put in place. She urged the community to expect surveyors in the area who would come to survey the area and begged them not to remove or vandalise angle bars that would be put in place.

Ms. Sakala outlined the importance of community involvement and support to the project to secure approval from ZEMA. She reiterated the commitment by the project team to uphold the law and all recommended procedures in the construction of the 400kV interconnector between Malawi and Zambia. She re-emphasized the importance of the stakeholder engagement meetings and explained that the process of stakeholder consultation was a requirement by national regulations that govern the project implementation process of Environmental and Social Impacts Assessments of projects, without which ZEMA would not approve the project. Ms. Sakala further explained that the process was an important one as it gave the community and other stakeholders the chance to present any issues of concern about

the project and see to it that such concerns are adequately addressed before ZEMA could make a decision about the project.

She outlined the purpose of the stakeholder meeting as follows:

- Legal requirement by ZEMA in line with Environmental Management Act (EMA) 2011;
- Informs stakeholders about the ESIA process;
- Gives an opportunity to Interested and Affected People (IAPs) to express views, concerns, suggestions, and recommendations to the project before the ESIA Report is finalised; and
- Gives the project team an opportunity to integrate recommendations and resolutions into development with the view that such developments are both environmentally and socially acceptable.

Ms. Sakala encouraged everyone, especially the women and other vulnerable people to feel free to speak as the meeting was meant to identify their issues of concern.

She further explained that the project would need 50meters width of land for the pylons under the project and members of the community, who were located in the said land would need to be relocated but they would be compensated according to verdicts to be handed by government valuers.

SCOPING MEETINGS MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Dan Banda (Mazala Section)	Mr. Banda wanted to know when the project would start and how long it will take to complete it.	Ms. Sakala explained that the project had already started and it was going through various stages, having started with meetings at a higher level of which now it was at the scoping and stakeholder engagement stage.
Nelson Phiri (Uweka section)	Mr. Phiri wanted to find out what will happen to the community members who would be relocated from their farms.	Ms. Sakala explained that the government has put in place measures for organizations to hold consultations with communities before relocating them. In this case, ZESCO and GOPA-intec would involve the District Agricultural Coordinator (DACO)'s office when the time comes to relocate the farmers. Additionally, all areas where the selected alternative route passes, an evaluation, done by the government valuation department will be conducted and those to be relocated will be compensated.

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Whyson Msoni	Mr. Msoni asked if the local community will benefit from the 400kV project power lines.	The response by the ZESCO area manager, Mr. Hamoombe was that these are high voltage power lines and cannot supply homes.
Reselian Sinazongwe	Mr. Sinazongwe asked how people get connected to the Rural Electrification Authority power	Mr. Hamoombe said the best is to reach out to REA. Additionally,community members could team up and apply for power through Constituency Development Fund, through the local ZESCO office.
Simon Kanyinji	Mr. Kanyinji wanted to find out if the people living along the 3rd alternative route line had been consulted	
Jackson Nyirenda	Mr. Nyirenda raised a concern that Government rules are such that if you do not have papers or title for the land, you cannot be compensated	There are guidelines in place explaining who will be compensated.
Agness Jere	Ms. Jere wanted to find out if an entire house will be destroyed if only a part of it is in the project area	Ms. Sakala explained that when a census evaluation is carried out, affected community members will be paid for relocation. It was emphasized that no demolition will take place haphazardly. All crops will be protected and none of them will be destroyed and the project will wait for post- harvest period to implement the project. The communities will be involved in the evaluation and they are the ones that will show the project and government teams who to work with in identifying who will need to be compensated.

		The community would be requested to choose three people who will work with the project during the evaluation census and no affected persons will be disadvantaged in any way, if anything, all affected persons' lives will be improved after relocation e.g. those living in thatched houses will end up with iron sheet houses.
Simon Kanyinji (Uweka section)	Mr. Kanyinji asked when the census is starting.	The response was that the project is still investigating the lines. Surveyors will in due course visit the area to carry out some markings. Along the route, Agricultural crops like maize, groundnuts and sweet potatoes will still be allowed to be planted but tall – growing trees would not be allowed.
Langston Mazala	Langson wanted to find out what would happen to the community members' crops	Ms. Sakala explained that as stated earlier, the DACO's office as well as government valuers would be involved in determining compensation to the affected persons.

come of the Community Consultation meeting

meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400kV transmission line project.

:tive stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: CHARITY MOONGA - Chinangoto Date 04.08.2024

Minutes Confirmed by: Sinazongwe Reselian Date 04.08.2024

Position: Chairperson (0971514661)
0960557683

4. Katandala Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV TRANSMISSION LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRICT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Katandala Primary School
Date: 30th August 2024
Time: 10:30 hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:
Information on the initial Project Planning processes

- **Description of the Project**
- **ESIA processes**
- **Social and environmental issues/risks (compensation)**
- **Project benefits and negative consequences**

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ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE	
Robam Musonda	Country Coordinator	
Godfrey Chileshe (Dr)	GBV/SEA Expert	
Willie Kalunga	ESIA Expert	
Stella Sakala	RAP Expert	
Edwin Matokwani	Ecology Expert	
Benson Kabungo	GIS/RS Specialist	
Charity Moonga	Communication Specialist	

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	27
Female	30
Total	57

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 KV

Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,
(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives
(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and
(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

MEETING AGENDA

Calling meeting to order:
National Anthem:
Opening Prayer:
Opening & Welcoming Remarks:
Introductions
Overview of the Project & Purpose of Stakeholder Engagement meeting:
Plenary (Questions & Answers, Submission of key issues of concern/ Responses and Remarks)
Closing Remarks
Prayer

Katandala Primary School Deputy Headteacher

Calling the meeting to order.
The meeting was called to order by Katandala Primary School Deputy Headteacher Zamiwe Ngulube of Katandala village who later called for singing of the National Anthem and an opening prayer.
Welcoming Remarks
After the prayer, the welcoming remarks were given by the deputy headteacher Ms. Zamiwe Ngulube, who welcomed the community and all stakeholders at the meeting. Ms. Ngulube urged the community members and all stakeholders to freely participate as that was their meeting. She then asked the ESIA stakeholders to introduce themselves and explain the purpose of the meeting to the local people.
Purpose of the Meeting.

GOPA- intec RAP expert Stella Sakala explained that the meeting was about the 400kV interconnector to be constructed between Zambia and Malawi and the requirement of the law was that the community should have a voice in all projects that concerned them. She asked the community if they had accepted the project to which they all responded in the affirmative.

Mr. Benson Kabungo, a member of the Environmental and Social Impact Assessment (ESIA) team from GOPA - Intec, explained the site investigation exercise that took place in the project area in June and through the use of maps, highlighted the three identified alternative routes for the proposed 400kV transmission line between Zambia and Malawi.

Ms.Sakala explained that in due course, engineers would be in the area to decide which alternative route

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was the best. She said surveyors were also expected to be in the area to consider the 50 meters wayleave on which the power lines would pass.

She explained that no trees or houses would be allowed in the area where the wayleave will set up but members of the community will be free to graze their cows, goats and other animals as well as to grow groundnuts, maize, and other crops but tall vegetation of more than two meters would not be allowed because the 400kV line would be too powerful and affect the people.

Ms. Sakala further explained that when surveyors visit the project area, they would peg the area and in demarcating the land, they would place angle bars of which the members of the community should not temper with.

She said a census would also be carried out by ZESCO and the consultants and the District Agricultural Coordinator's office would also be involved in the census – determining what was owned by the people affected by the project and all the property would be written down. ZESCO and the consultants would then return to the project area to inform the community members the results of the census evaluation of their property and the community will also be informed about the houses affected by the project, which will be demolished and the affected members of the community would then be compensated.

Members of the community who would feel unfairly treated during project implementation were asked to follow the steps provided by the Grievance Redress Mechanism (GRM) as provided by the project. There will be a committee to consider the verdict of the complaint. She urged the community not to be afraid of the project but instead take ownership of the project for their own good.

In her closing remarks, Ms. Ngulube urged the community members to take advantage of the project as it protected them through the Grievance Redress Mechanism.

Ms. Sakala encouraged everyone, especially the women and other vulnerable people to feel free to speak as the meeting was meant to identify their issues of concern.

She outlined the purpose of the stakeholder meeting as follows:

- Legal requirement by ZEMA in line with Environmental Management Act (EMA) 2011;
- Informs stakeholders about the ESIA process;
- Gives an opportunity to Interested and Affected People (IAPs) to express views, concerns, suggestions, and recommendations to the project before the ESIA Report is finalised; and
- Gives the project team an opportunity to integrate recommendations and resolutions into development with the view that such developments are both environmentally and socially acceptable.

Angela Mumba (Moneni Section)	Ms. Angela Mumba asked how long the compensation plan for the project area affected persons would go on.	If the houses are in the wayleave, money will be given according to the value of the house. The payment will be a once off payment.
Winson Daka (Moneni Section)	Mr. Winson Daka expressed concern that when project contractors arrive they are usually good to the locals, but when they have obtained the community goodwill, they never consider the locals for jobs and only give the affected community members a bit of money and disappear. He gave an example of a contractor who set up base in their area and later vanished, leaving the community members in anguish. He also said there was also a contractor who was creating the one border stop shop who came and paid project affected persons huge sums of money some of which was pegged at K1million.	Ms. Stella Sakala's response was that the contactor would be inducted and given the stipulated labour laws. They will be instructed that unskilled labour in the project area be from among the people of Katandala area. Both women and ladies would take part in the available unskilled labour.
Headman Mzilikazi	Headman Mzilikazi asked if people would be treated the same as those who were compensated under that one stop border post.	There are guidelines in place explaining how affected people will be compensated.

Outcome of the Community Consultation meeting

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KATANDALA SCOPING MEETINGS MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
John Zulu (Mzilikazi Section)	Mr. Zulu asked that when the power from Malawi is finally available, will the local people need to pay huge sums of money to access the power?	The response was that these are high voltage pylons which were not meant for home consumption but will feed into the national grid.
Judah Phiri (Zinja Mulayi or Jesat section)	Mr. Phiri wanted to find out if, when connecting the power, will the community need to pay.	Mr. Hamoombe said that power will not be free but will be prepaid as has been normally happening in Zambia.
John Phiri (Mcholwa section)	Mr. Phiri wondered why ZESCO power lines could not be connected in their area, despite them already having poles standing.	The response was that the situation prevailing in the communities would be properly understood after investigating the alternative routes.

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The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400KV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: CHARITY MOONGA Date 4TH AUGUST, 2024

Minutes Confirmed by: ZAMINE NGWUBE Date 4th AUGUST, 2024

Position: ACTING DEPUTY HEADTEACHER.

SAPP

ZESCO
Powering The Nation

intec
GOPA International Energy Consultants

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Katandala

Date: July 2024 30th

Location: Chipata

	NAME	~~TITLE~~ Gender	VILLAGE	PHONE/EMAIL	SIGNATURE	Age
65	Jonashan banda	male	Chanzala	0774639524	J. banda	Age 33
66	Luciano zulu	m	Chanzala	0979191691	L. Zulu	Age 39
67	Ickensi zulu	M	Kaluwa	0775050232	[illegible]	Age 31
68	Jonachim mwale	M	Chanzala	0773632054	[illegible]	Age 43
69	PATRICK MWALE	M	MISHOLO			59
70	Chairperson Zamiwe Ngulube	f	Katandala	0976509609	[illegible]	49
71	Adrof Zulu	f	Mulale	0912764844		40

	NAME	GENDER	VILLAGE	PHONE	SIGNATURE	AGE
72	WELUZANI TEMBO	M	SHABATI	0971038890	Wel	28
73	EUARISTO SOKO	M	SHABATI	0974581503	E. Soko	24
74	Lumelo Tembo	M	SHABATI	0970622287	L. Tembo	40
75	DYNACIOUS KAPAMBWE	M	SHABATI	0773 699890	Kapambwe	45
76	LIMBIKANI MPHANZA	M	MUNSHAWA	0776108785	L MPhanza	29
77	GODFREY MITI	M	KALUWA	0978071233	[illegible]	69
78	FRANCIS XMITI	M	KALUBA	0974276420	[illegible]	56
79	KENNETH ZULU	M	MZILIKAZI	0976585646	[illegible]	32
80	Ired tembo	F	Kamanga	0770846123	Itembo	29
81	Lesa ngoma	F	Kambunga		Lngoma	33
82	margret Phiri	F	Kamanga	0979268911	MPhiri	33
83	Elizabeth Jere	F	nthambusha	0977654942	Jere	24
84	Dailess Phiri	F	Nthambusha	0777734532	Phiri	40
85	Josphine Daka	F	mashanga	0971741804	J Daka	61
86	Elina Tembo	F	Kaishare	0776828081	E. Tembo	30
87	Stella PHIRI	F	Mashanga	0970706304	S. Phiri	70
88	ALICE NJobvu	F	Mashanga	0976862357	A. NJobvu	31
89	Faides Phiri	F	Jesat	0970113380	F. Phiri	50
90	BEAUTY PHIRI	F	MASHANGA	0979886390	[illegible]	53
91	Mary Njobvu	F	mashanga	0970650604	[illegible]	41
92	Dorothy Mwale	F	Jesat	0973825988		60
93	ONESTER NYOKA	F	MZILIKAZI	0978807406	[illegible]	65
94	Fosita Malunga	F	Mashanga	0974722689	F. Malunga	67
95	Rabecca zimba	F	moneni		R Zimba	56
96	Yohane Njobvu	M	mashanga	0774305535	Y. NJobvu	26
97	Lucas Zulu	M	Chuzula	0970566202	L Zulu	
98	Stella Sakala	F	ZESPA	0977600480	[illegible]	
99	JUDY MWABA	F	ZESCO	0971 01 01 80	[illegible]	
100	Deborah Chidwa	F	Mashanga	0777307303	[illegible]	52

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101	Ireen Mvula	female	Kamanga	—	Arini vulu
102	Loveness Banda	female	Mashanga	—	Laves Banda
103	Mbonyiwe Njovu	female	Kashate	0974526063	M.N.
104	Enoliko Ngoma	Male	Mashange	0971734907	[illegible]

Katandala

List of villages/traditional Leadership consulted in the Malawi-Zambia ESIA

June, 2024

	Name	Village/District	Date
39	EMMAH MPHANZA	MSHAWA	24
40	ROYCE NGWENYA	CHANZALA	35
41	PAULINE BANDA	SHABATI	60
42	TAMARA MAWERE	SHABATI	67
43	ESNART PHIRI	~~MA~~KALUBA	27
44	TRIPHONIA PHIRI	KALUBA	35
45	FOSTINA NGOMA	JESAT	39
46	NATASHA PHIRI	MZILIKAZI	28
	MARY BANDA	MASHANGA	50
	ANGELA NYIRONGO	KAMANGA	43
	EUNICE MWALE	MASHANGA	36
	JENIPHER MBEWE	MASHANGA	21
	MABLE MITI	SHABATI	23
	THANDIWE MASINA	NGOCHO	23
	IDESI PHIRI	SHABATI	26
	REDSON MWALE	TURNOFF	94
	AGNESS PHIRI	SHABATI	28
	GLADYS BANDA	JESAT FARMS	42
	MARY PHIRI	MASHANGA	37
	CHITA SOKO	KALUBA	24
	DORCEN MUMBA	GINGER	36
	BEATRICE NJOBVU	MASHANGA	32
	ELIZABETH ZULU	MASHANGA	25
	SILIVELIYA NGOMA	MISHOKO	42
	JUDITH BANDA	MSHAWA	23
	REGINA ZULU	MSHAWA	20
	ELIDAH NJOBVU	MASHANGA	33
	SERAH DAKA	MSHAWA	26
	ALICE PHIRI	MASHANGA	20
	MABVUTO NJOBVU	KAISHALE	40
	RUTH PHIRI	SHABATI	40
	ELIZABETH PHIRI	MSHAWA	55
	SANDRA MWALE	TURNOFF	24
	CHARITY ZIMBA	NJHAMBUSHA	28
	~~CHA~~ CATHRINE BANDA	CHANZALA	22
	LOVENESS ZULU	KAMANGA	32
	NAOMY KAMANGA	KAMANGA	33
	MAINGA PHIRI	COTTAGE	56

Katandala

List of villages/traditional Leadership consulted in the Malawi-Zambia ESIA

June, 2024

Name	Village/District	Gender	Date	Age
Keddy Chilumbu	Ngocho	m		62 yrs
Malachi Phiri	Mzilikazi	m		41 yrs
Banda Samuel	Kaulile	m		69 yrs
Raphael Banda	"	m		59 yrs
Patrick Kwabe	Mashanga	m		39 yrs
Aslas Banda	"	m		61
Clevers Daka	Mwale	m		27
Mwanida Mphonza	Chanzala	f		18
Catherine Chuulu	Misholo	f		60
Elizabeth Njohu	Mashanga	f		37
Zenaida Tembo	Mashanga	f		27
Margaret Mbwe	Moneni	f		25
Sarah Banda	Kamanga	f		35
Oswald Mbao	Mashanga	M		36
Kamunyima Kamunyima	Mashanga	M		36
Eunice Zimba	Kamanga	f		63
Temani Zulu	Kamanga	M		70
Christine Lungu	Moneni	f		22

Katandala

List of villages/traditional Leadership consulted in the Malawi-Zambia ESIA

July
June, 2024

	Name	Village/District	Date
1	BENSON BANDA MAHAMA	KAISHALE	66 yr
2	FANWELL NJOBVU	MASHANGA	67
3	MASAUSO PHIRI	KAMANGA	25
4	CHIYESO NJOBVU	MASHANGA	33
5	STEPHEN PHIRI	MASHANGA	32
6	TICKET TEMBO	MASHANGA	45
7	MICHEAL TEMBO	KAMANGA	51
8	ABEL MBAO	KALIMU	29
9	MICHEAL ZULU	NTHAMBUSHA	39
10	AMOSE NGWALE	KAISHALE	40
11	MSUPA BANDA	KAMANGA	70
12	EMMANUEL DAKA	MASHANGA	20
13	PETER MALUNGA	MASHANGA	63
14	ROBERT PHIRI	KAMANGA	59
15	JOHN CHILUMBU	NGOCHO	29
16	CHARLES TEMBO	MASHANGA	58
17	RAPHEAL MITI	DINGENI	65
18	EVANS MITI	DINGENI	69
19	GESHOM TEMBO	MASHANGA	79
20	ROLENCE PHIRI	MONENI	25
21	ROSEMARY MOYO	KAMANGA	57
22	JOHN ZULU	MZILIKAZI	83
23	CHARLES ZIMBA	MSHAWA	60
24	BERTHA MSIMUKO	MONENI	34
25	DANIEL MWALE	NTHAMBUSHA	60
26	ADAM CHILUMBU	NGOCHO	64
27	LETESIYA NKHOSI	MGABI	63
28	NYAMAZABENE TEMBO	SHABATI	64
29	MALITA NKHOSI	MGABI	86
30	ASEDI JERE	LOPO	80
31	PATRICIA MBEWE	MGABI	62
32	TOMALIDA NG'OMBE	LOPO	92
33	JULIET HARA	SHABATI	53
34	FLORENCE MBEWE	SHABATI	22
35	MUSOZI MBEWE	SHABATI	22
36	DAMALESS TEMBO	SHABATI	17
37	KATALINA PHIRI	MGABI	38
38	LILIAN DAKA	CHANZALA	23

Katandala

List of villages/traditional Leadership consulted in the Malawi-Zambia ESIA

June, 2024

Name	Village/District		Date	AGE
SHALON PHIRI	KAISHALE			39
MKALIMO LUNGU	KAISHALE			40
SABITVA MPHANZA	NTHAMBUSHA			34
NICOLAS PHIRI	KAISHALE			60
CHARLES NJOBVU	KAISHALE			65
MARY ZULU	MASHANGA			18
LEONISA BANDA	MASHANGA			17
SPECIAL ZULU	KALUBA			32
MARGRET PHIRI	KAMANGA			42
IRILEDY TEMBO	KAMANGA			29
YUPA PHIRI	JESAT			64
KADUKA TEMBO	MASHANGA			53
CHRISTOPHER NJOBVU	MASHANGA			62
ANDREW BANDA	KHAULILE			70
JOYCE MWALE	MASHANGA			25
JOSPHINE TEMBO	MASHANGA			44
MARY ZIWA	MASHANGA			22
BRENDA NGOMA	MONENI			38
NOAH PHIRI	MASHANGA			55
PATRICIA NGOMA	MASHANGA			20
SAMUEL LUKHELO	MSHAWA			29
MICHEAL NYANGA	KAISHALE			29
PETER NJOBVU	KAISHALE			24
PHILIMON NYOKA	SHABATI			33
ISAAC BANDA	SHABATI			30
Esaya Lungu	Mlale	female		42
John Phiri	Misholo	Male		64
Mary Zulu	Jesat	female		48
Madaliso Phiri	Jesat	Male		55
Mirriam Sakala	Mashanga	female		42
Hilda Mawere	Mashanga	female		67
Janet Banda	Moneni	female	(097676[illegible]33166)	42
Asina Khumalo	Moneni	female		51
Phales Jere	Moneni	female	(0970800077[illegible])	40
Plagia Daka	Kamanga	female		20
Dulika Lungu	Chanzala	female	(0776113156)	16
Gertrude Mseni	Kambusha	female	(0975720093)	25
Beauty Banda	Kaulika	female	(0972639160)	40

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

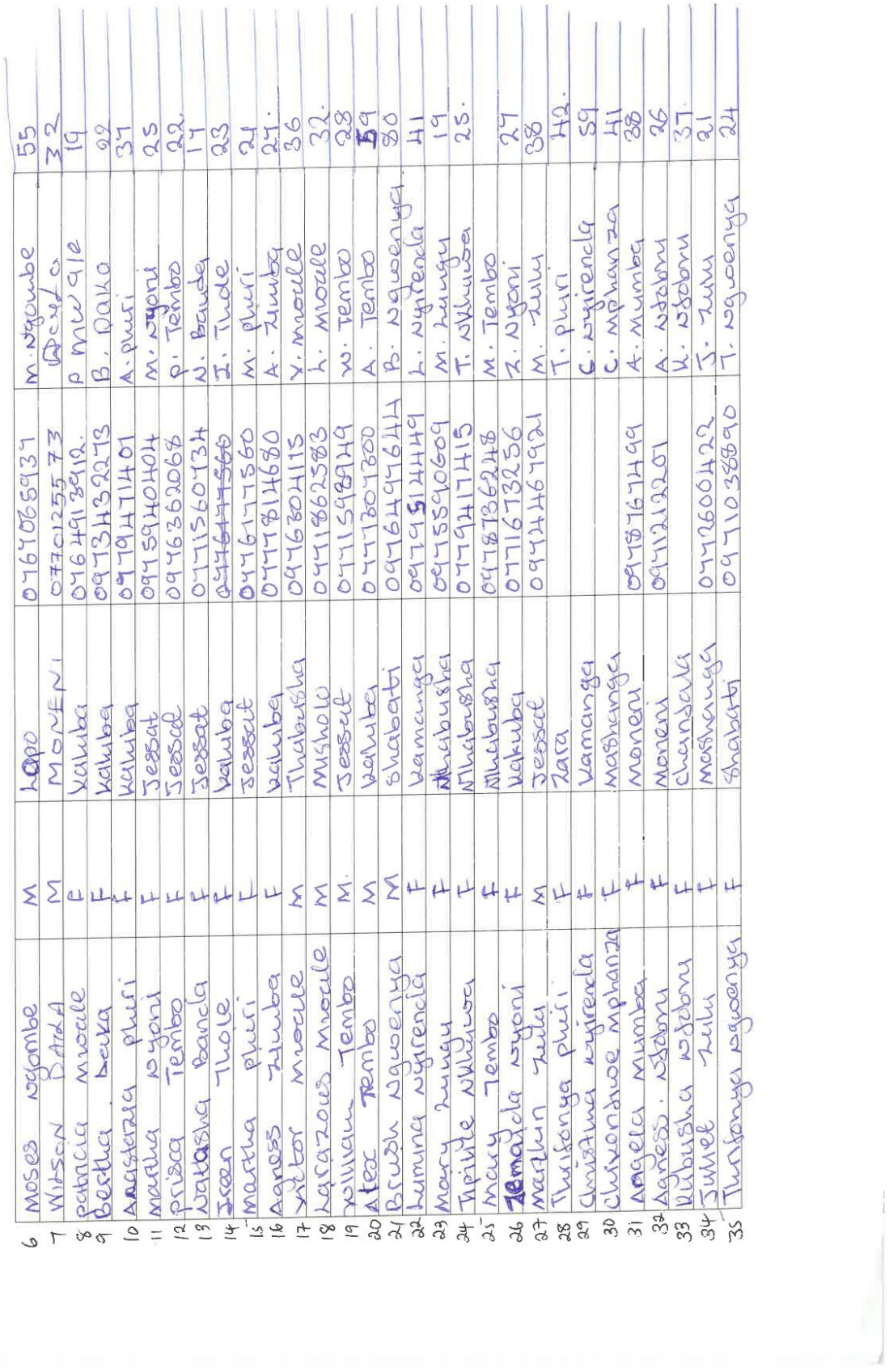
Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: July 2024 30th

Location: ~~Chipata~~ Katandala

	NAME	~~TITLE~~ Gender	VILLAGE	PHONE/EMAIL	SIGNATURE	Age
1	Mathias Mphanza	Male	Jessat	0975854265		43
2	Theresa Zungu	F	Ngocho	0978710835	T. Lungu	56
3	Asedi Jere	F	Lopo		N	68
4	Tomalda Zulu	F	Lopo			68
5	Anastazia Zulu	F	Ngocho	0976590094	N Zulu	20



6	Moses Ngombe	M	Lopo	0767065937	M. Ngombe	55
7	Wilson Daka	M	Moneni	0770125573	Daka	32
8	patricia Mwale	F	Kakuba	0764913912.	P Mwale	19
9	Bertha Daka	F	Kakuba	0973432273	B. Daka	22
10	Anastazia Phiri	F	Kakuba	0979471401	A. Phiri	37
11	Martha Nyoni	F	Jessat	0975940404	M. Nyoni	25
12	Prisca Tembo	F	Jessat	0976362068	P. Tembo	22.
13	Natasha Banda	F	Jessat	0771560734	N. Banda	17
14	Ireen Thole	F	Kakuba	~~0776177560~~	I. Thole	23
15	Martha Phiri	F	Jessat	0776177560	M. Phiri	21
16	Agness Zimba	F	Kakuba	0777814680	A. Zimba	27.
17	Victor Mwale	M	Thabusha	0976304115	V. Mwale	36
18	Larazous Mwale	M	Misholo	0771862583	L. Mwale	32.
19	William Tembo	M.	Jessat	0771598949	W. Tembo	28
20	Alex Tembo	M	Kakuba	0777307300	A. Tembo	59
21	Brush Ngwenya	M	Shabati	0976497644	B. Ngwenya	80
22	Lumina Nyirenda	F	Kamanga	0979514449	L. Nyirenda	41
23	Mary Lungu	F	Nthabusha	0975590609	M. Lungu	19
24	Tipilile Nkhuwa	F	Nthabusha	0779417415	T. Nkhuwa	25.
25	Mary Tembo	F	Nthabusha	0978736248	M. Tembo	
26	Zemaida Nyoni	F	Kakuba	0771673256	Z. Nyoni	27
27	Martin Zulu	M	Jessat	0974467921	M. Zulu	38
28	Thrifonya Phiri	F	Zara		T. Phiri	42.
29	Christina Nyirenda	F	Kamanga		C. Nyirenda	59
30	Chikondiwe Mphanza	F	Mashanga		C. Mphanza	41
31	Angela Mumba	F	Moneni	0978767499	A. Mumba	38
32	Agness. Ndobru	F	Moneni	0971212201	A. Ndobru	26
33	Kubusha Ndobru	F	Chandala		K. Ndobru	37.
34	Juliet Zulu	F	Mashanga	0772600422	J. Zulu	21
35	Thrifonya Ngwenya	F	Shabati	0971038890	T. Ngwenya	24

36	Romeo M. Bunda	F	Chanzara	0966 693156	R. Bunda	39
37	Anastazia Zulu	F	Kalubea	0960 520851	A. Zulu	59
38	Anna Ngoncho	F	Ngoncho	0977 743 1746	A. Ngoncho	63
39	Cwace Mbewe	F	Jarvu	0966 744 311240	G. Mbewe	42.
40	Pauline Phiri	F	Jessel	0966 8[illegible]5024	P. Phiri	74
41	Lenah Zimba	F	Kalubea	0960 409917	L. Zimba	42.
42	Rabbeca Zulu	F	Chanzara		R. Zulu	23.
43	Regina Phiri	F	Mushelo	0966 125 36698	R. Phiri	24.
44	Baluteo Zimba	M	Maneni	0966 413512	B. Zimba	34
45	Miriam Musonda	F	Maneni	0966 191613	M. Musonda	45
46	Godfrey Phiri	M	Mashewera	0966 991 46780	G. Phiri	52.
47	Gustone Mlauzi	M	Jessel	0966 855662 21	G. Mlauzi	59
48	Mabyuto Musale	M.	Mashewera	0966 780 469985	M. Musale	42.
49	Felicia Temba	F	Mashewera	0977 478 891247	F. Temba	28
50	Kennedy Zulu	M	Mzimvezi	0977 488 511243	K. Zulu	61
51	Tayson Banda	M	Bauchaka	0966 882 81092	T. Banda	60
52	Cwace Phiri	F	Mashewera	0966 759243	G. Phiri	38
53	Squlas Banda	M	Mzimvezi		S. Banda	49
54	Mariam Zulu	F	Bauchaka	0965 332 67066	M. Zulu	24
55	Raphael Banda	M	Mwabaskha	0966 246 74498	R. Banda	43
56	Malamula Zulu	M	Bauchaka	0977 280 10243	M. Zulu	28
57	Petulo Ndebu	M	Bauchaka	0976 813316	P. Ndebu	68
58	Jackson Musale	M	Bauchaka	0966 [illegible]293385	J. Musale	62.
59	Andrea Banda	M	Bauchaka	0977 479 18498	A. Banda	70
60	George Zulu	M	Mashewera	0979 613 66861	G. Zulu	26
61	Charles Ngoma	M	Mwabaskha	0975 559 06609	C. Ngoma	34
62	Kelvin Temba	M	Bauchaka	0977 260 03385	K. Temba	30
63	John Zulu	M	Mzimvezi	0977 445 60201	J. Zulu	31
64	Achim Phiri	M	Cotteage	0979 729 5589	A. Phiri	64

5. Mgabi Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV TRANSMISSION LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Mgabi
Date: 30th July 2024
Time: 10:30 hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The first round of public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (compensation)
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE	
Robam Musonda	Country Coordinator	
Godfrey Chileshe (Dr)	GBV/SEA Expert	
Willie Kalunga	ESIA Expert	
Stella Sakala	RAP Expert	
Edwin Matokwani	Ecology Expert	
Benson Kabungo	GIS/RS Specialist	
Charity Moonga	Communication Specialist	

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	27
Female	30
Total	57

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400kV Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

MEETING AGENDA

Calling meeting to order:
National Anthem:
Opening Prayer:
Opening & Welcoming Remarks:
Introductions
Overview of the Project & Purpose of Stakeholder Engagement meeting:
Plenary (Questions & Answers, Submission of key issues of concern/ Responses and Remarks)
Closing Remarks
Prayer

Headman Mgabi

Calling the meeting to order.

The meeting was called to order by Headman Mgabi of Mgabi village who later called for singing of the national anthem and an opening prayer.

Welcoming Remarks

After the prayer, the welcoming remarks were given by Headman Mgabi, GOPA – intec RAP expert Stella Sakala Kayope urged the community members and all stakeholders to freely participate as that was their meeting. She then asked the ESIA stakeholders to introduce themselves and then explained the purpose of the meeting to the local people.

Purpose of the Meeting.

Ms. Stella Sakala, a RAP expert from GOPA-intec explained that the meeting was about the 400kV interconnector to be constructed between Zambia and Malawi and the requirement of the law was that the community should have an input in all projects that concerned them. She asked the community if they had accepted the project to which they all responded in the affirmative. She explained that the 400kV interconnector transmission was a high voltage and not meant for direct household consumption. Ms. Sakala explained there three alternative lines hads been identified of which one would be selected.

Mr. George Mubela , a Wayleave officer from ZESCO, explained the maps to the community.

The RAP Expert later explained that explained that no trees or houses would be allowed in the area where

the wayleave pass but members of the community will be free to only plant crops that are below two meters in height. The community will also be allowed to graze their cows, goats and other animals as well as to grow groundnuts, maize, and other crops but tall vegetation of more than two meters would not be allowed.

She said a census would also be carried out by ZESCO and the consultants and the District Agricultural Coordinator DACO's office would also be involved in the census – determining what was owned by the people affected by the project and all the property would be written down. ZESCO and the consultants would then return to the project area to inform the community members the results of the census evaluation of their property and the community will also be informed about the houses affected by the project, which will be demolished and the affected members of the community would then be compensated.

Ms. Sakala further explained that Members of the community who would feel unfairly treated during project implementation were asked to follow the steps provided by the Grievance Redress Mechanism (GRM) as provided by the project.
There will be a committee to consider the verdict of the complaint. He urged the community not to be afraid of the project but instead get on board and take ownership of the project for their own good.

Ms. Sakala encouraged everyone, especially the women and other vulnerable people to get on board feel free to speak out during the meeting so that they are all heard as the meeting was meant to identify their issues of concern.

She outlined the purpose of the stakeholder meeting as follows:

- Legal requirement by ZEMA in line with Environmental Management Act (EMA) 2011;
- Informs stakeholders about the ESIA process;
- Gives an opportunity to Interested and Affected People (IAPs) to express views, concerns, suggestions, and recommendations to the project before the ESIA Report is finalised; and
- Gives the project team an opportunity to integrate recommendations and resolutions into development with the view that such developments are both environmentally and socially acceptable.

MGABI SCOPING MEETINGS MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Sebastian Lukhelo	Mr. Lukhelo asked how people with bare land without any crop in their fields will be compensated	The response was since the farmers will continue using their fields, they will not be compensated for the bare land. The project will also consult with chiefs and the council to ask for land to build a wayleave, whenever necessary
	Are we as the local people going to benefit from the electricity that will come from the 400KV interconnector transmission line	The power that will come from the transmission line would not be for local consumption but would contribute to the national grid
Nedson Tembo	Mr. Tembo asked whether the power would be subsidized for the locals	The response was that the power would go directly to the substation for redsitribution
Cypriano Chilufya	Mr. Chilufya wanted to know if the local people would be paid for bare land after harvesting their crops	The response was that since life would continue as normal for such farmers, they might not be paid for

		that type of land which would not have anything growing on it.
Davis Phiri from Mgabi	Mr. Phiri asked if the power that would come from Malawi would be cheaper	The response was that the 400kV interconnector would be used to assist countries share surplus power and the price of the electricity was not likely to change
Headman Mzilikazi Falazia Phiri Shadreck Jere	Headman Mzilikazi, Falazia and Shadreck Jere asked if people would be treated the same as those who were compensated under that one stop border post.	There are guidelines in place explaining how affected people will be compensated. ZEMA needs everyone to know about this project to ensure that the EIA process is approved
Rita Soko	Ms. Soko asked where she would relocate to if her house was affected by the project because clearly her neighbour would not accept her anywhere near them. She also wanted to know if the traditional leaders were the traditional leaders consulted about the project	The project was working with the traditional leadership with regard to compensation and relocation of project affected people. The traditional leadership was consulted about the project and were aware about it.
Barbara Banda	Ms. Banda wanted to find out if the project was willing to build other houses as compensation for the people that would be affected by the project	The response was that the relocated community members would be paid money and given three months to build their new homes. No one will be chased from their homes without compensation. The new houses built should be better than the previous ones. Men were also cautioned against leaving their wives and marrying other women when they are compensated for their houses affected by the project implementation.

7

Barbara Banda	Ms. Banda additionally wanted to find out who would be in charge of valuing the prices for the houses between the project team and the owners of the houses.	The response was that that exercise would be carried out by government valuers.
Belita Zulu	Ms. Zulu wanted to find out if the project would also consider improving the water situation in the area	The response was that the project had no intention of embarking on water reticulation in the area.

utcome of the Community Consultation meeting

he meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400KV transmission line project. Active akeholder participation was encouraged to address community concerns and ensure the project's success.

onfirmation of Minutes

Minutes prepared by: CHARITY MOONGA Date 04/08/2024

Minutes Confirmed by: LOLESI WKHOSI Date 04/08/2024

osition: Headman: MOOJOBI

SAPP

ZESCO
Powering The Nation

intec
GOPA International Energy Consultants

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

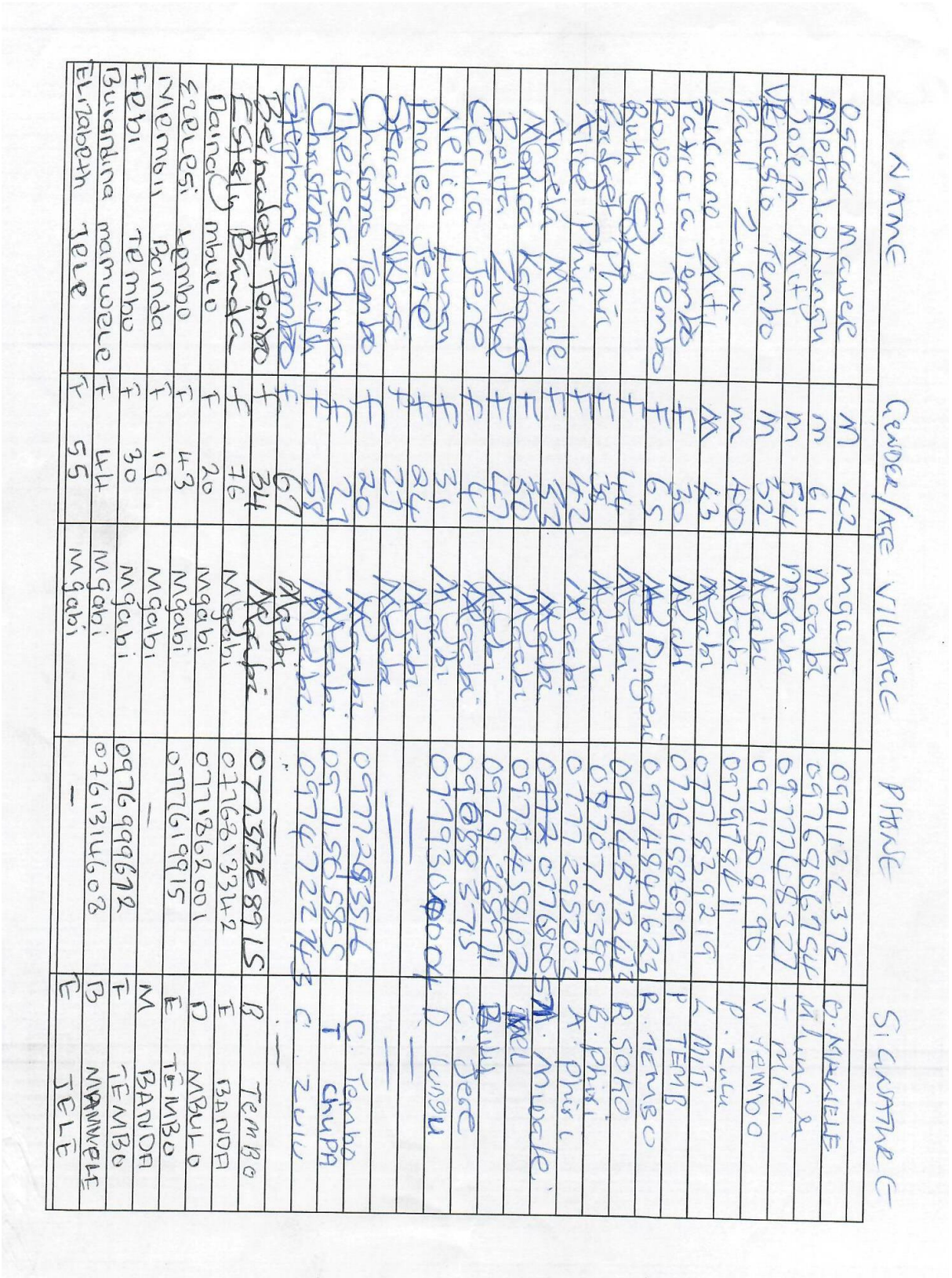
Meeting/Event: Malawi – Zambia ESIA

Attendance List Mgabi

Date: July – August 2024

Location: Chipata/Vubwi

	NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
1.	Hosea Zulu	M 32	Mgabi	0976598033	
2.	Richard Mwale	M 51	Mgabi	0978728637	R. Mwale
3.	Elias Zulu	M 31	Mgabi	0976503640	E Zulu
4.	Evans Mwanza	M 45	Mgabi		
5.	Given Banda	M 32	Mgabi	0777292487	G. Banda



NAME	GENDER/AGE	VILLAGE	PHONE	SIGNATURE
Oscar Mawere	M 42	Mgabi	0971132375	O. MAWERE
Anetaliso Mungu	M 61	Mgabi	0976806754	A. Mungu
Joseph Mithi	M 54	Mgabi	0977648327	J. Mithi
Venasio Tembo	M 32	Mgabi	0971508196	V. TEMBO
Paul Zulu	M 40	Mgabi	0975178411	P. Zulu
Luciano Mithi	M 43	Mgabi	0977839219	L. Mithi
Patricia Tembo	F 30	Mgabi	0976159699	P. TEMB
Rosemary Tembo	F 65	Mt Dingeni	0977489962	R. TEMBO
Ruth Soko	F 44	Mgabi	0977487246	R. SOKO
Rachel Phiri	F 38	Mgabi	0976715369	B. Phiri
Alice Phiri	F 42	Mgabi	0977295203	A. Phiri
Angela Mwale	F 33	Mgabi	0972 0776805	A. Mwale
Monica Kabanga	F 30	Mgabi	0977459102	M. Mwel
Bella Zulu	F 42	Mgabi	0979 295911	Bulu
Cecilia Jere	F 41	Mgabi	0976883715	C. Jere
Nelia Lungu	F 31	Mgabi	0977930 0041	D. Lungu
Phales Jere	F 24	Mgabi		
Steven Mwale	F 23	Mgabi		
Chisomo Tembo	F 20	Mgabi	0977289356	C. Tembo
Theresa Chupa	F 27	Mgabi	0971505855	T. Chupa
Christina Zulu	F 58	Mgabi	0974222743	C. Zulu
Stephano Tembo	F 67	Mgabi		
Bernadette Tembo	F 34	Mgabi	0775388915	B. Tembo
Estela Banda	F 76	Mgabi	0776813342	E. BANDA
Diana Mbulo	F 20	Mgabi	0771868001	D. MBULO
Esther Lembo	F 43	Mgabi	0776199915	E. TEMBO
Memory Banda	F 19	Mgabi		M. BANDA
Tembi Tembo	F 30	Mgabi	0976999672	T. TEMBO
Bwandina Mamvere	F 44	Mgabi	0761314602	B. MAMVERE
Elizabeth Jere	F 55	Mgabi		E. JERE

Velonika	Phili	F 23	mgabi	—	V PHILI
Matuuda	Kakhande	F 26	Mgabi	0971509762	M KAKHANDE
Esinati	Mwaza	F 27	Mgabi	—	E MWAZA
Anasitazia	Tembo	F 40	Mgabi	—	A TEMBO
Fositina	Chilumbu	F 30	mgabi	—	F CHILUMBU
Hildah	Zulu	F 29	mgabi	—	H[illegible]
Idah	Banda	F 26	~~[illegible]~~ mgabi	0974637275	I. Banda
Vailet	Zulu	F 44	mgabi	—	V. Zulu
Fridah	Zulu	F 33	mgabi	0971505894	F. ZULU
Esther	Mwale	F 21	mgabi	0770400827	E MWALE
Charity	Tembo	F 47	mgabi	—	C. Tembo
Bertha	Maposa	F 49	mgabi	0973298958	B. Maposa
Exprusha	Zulu	F 62	Mgabi	—	E. Zulu
Makilina	Daka	F 32	Mgabi	—	M. DAKA
Edward	Zulu	M 29	mgabi	0973062450	[illegible]
Anazio	Zulu	M 27	mgabi	0977542296	[illegible]
Felix	Soko	M 27	mgabi	0973787973	F. Soko
Francese	Phiri	M 41	mgabi	0974651575	F. Phiri
Cypriano	Chilfwa	M 34	Lopo	0970350691	[illegible]
Francese	Zulu	M 27	mgabi	0974219409	F. Zulu
Peter	Phiri	M 49	mgabi	0974656822	P. Phiri
Shardreck	Jere	M 39	Lopo	0970707704	S. Jere
Geshomo	Zimba	M 50	Lopo	0978593051	G. Zimba
Taulino	Tembo	M 54	mgabi	—	T. Tembo
Piyo	Zulu	M 44	mgabi	0976501189	P. Zulu
Brian	Zimba	M 28	mgabi	0974046533	B. Zimba
Gabito	Zulu	m 52	mgabi	0779438265	G. Zulu
Davided	Nkosi	m 28	mgabi	0977307037	D. Nkosi
Chisomo	Zimba	m 42	mgabi	0776179958	C. Zimba
Acras	Jere	m 68	Lopo	0978029109	A. Jere
Jackson	Banda	m 51	Lopo	0770976837	J. Banda

Saulosi mulale	m. 32	mgabi	0971652319	S. mulale
Christopher Chilumbu	m. 37	Ngocho	0974742338	C. Chilumbu
Grevaziyo lungu	m. 60	mgabi	—	G. lungu
Friday Tembo	m. 22	mgabi	0970703803	F. Tembo
moses mwanza	m. 55	mgabi	0975647001	M. mwanza.
Sezaliyo Zulu	m. 52	mgabi	0976044668	S. Zulu
Stephan Banda	m. 24	mgabi	0776167312	S. Banda
ISAAC Zulu	M. 49	Mgabi	0978133205	Z. Zulu
sebastian Lukhelo	M 60	Mgabi	0975280251	Shukhalo
venanslo Zulu	M 24	Kasauka	0966230179	Zulu
John Tembo	M 36	mgabi	0775260 50	J Tembo
Bornface Miti	M 24	Digeni	0770719758	B Miti

~~WHYTE VIS~~

WHYTE VISUWA	M 69	MWAMI BORDER	0979437681	[signature]
GERALD LUNGU	M 32	Mugabe	0972577282	[signature]
NELSON MITI	69	Mgabi	0971085178	[signature]
Soster Zulu.	64	Mgabi	0779099888	[signature]
CYPRIAN ZULU	M 73	MGABI	0975364429	[signature]
Elias SAKALA	M 55	MGABI	0976993825	E. [signature]
PAPIAS LUNGU	M. 65	MGABI		P. LUNGU
ASELIMO TEMBO	M 65	MGABI	0971974571	A. TEMBO
POUL CHILUMBU	27	MGABI	0973154906	P. CHILUMBU
NGULUBE JACKSON	68	MWAMI B	0977284147	J Chulube
JERE BERNARD	39	LOPO V	0971-038832	[signature]
JERE SIMBAN	40	LOPO V	0979-159822	S. JERE
ZULU AARON	41	MGABI V	0974565028	A. ZULU
PATRICK BANDA	39	Kasauka	0771266748	[signature]

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

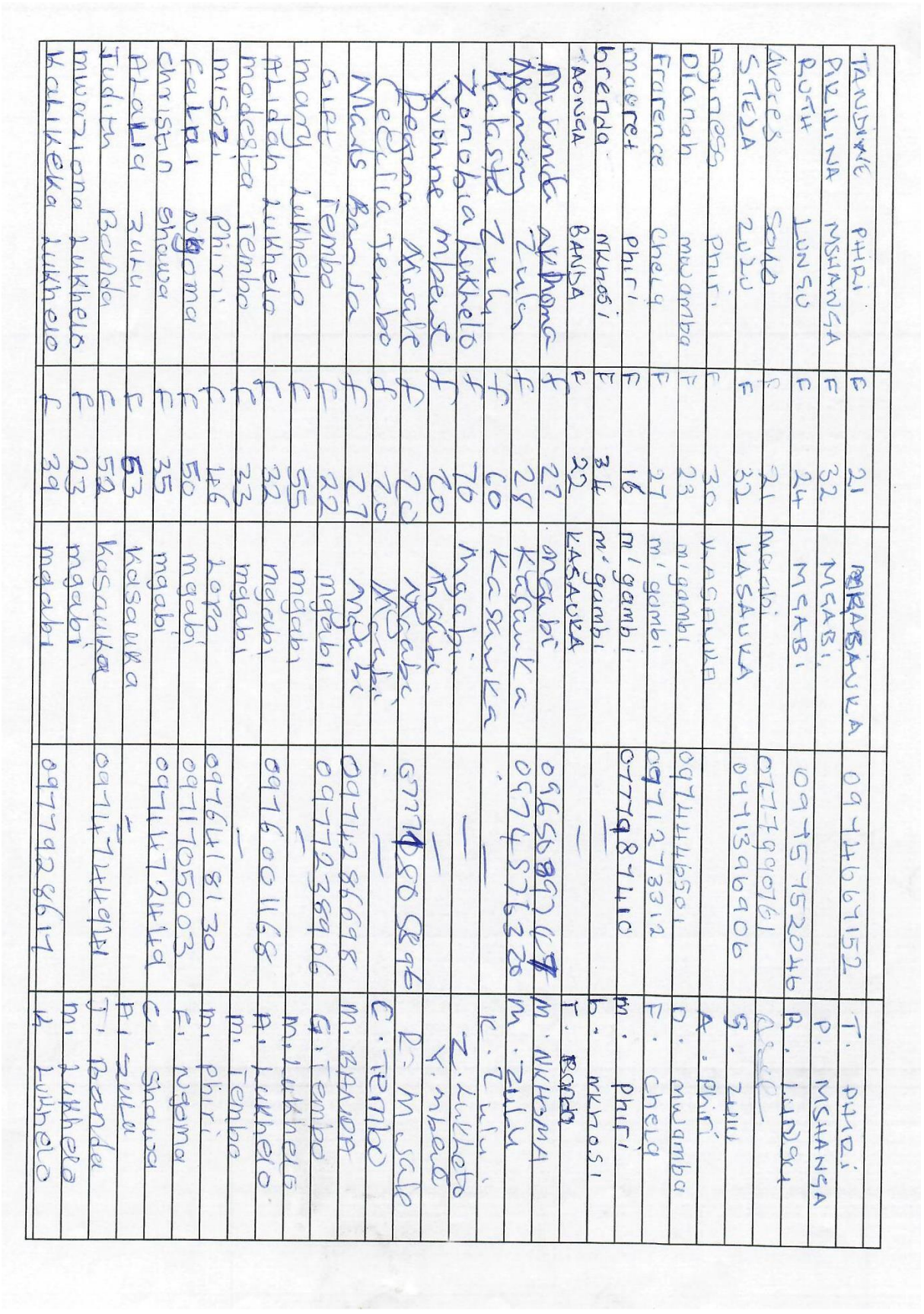
Meeting/Event: Malawi – Zambia ESIA

Attendance List MSABI

Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
MOSES MWANZA	F 25	MSABI		M. Mwanza
LITA SOKO	F 68	MSABI	0779153+600	L. Soko
MARY PHIRI	F 29	MSABI	0977490951	M. Phiri
BIBIAN TEMBO	F 51	MSABI		B. Tembo
JOYCE JERE	F 69	MSABI		J Jere



TANDIWE	PHIRI	F	21	MKABANKA	0977466152	T. PHIRI
PAULINA	MSHANGA	F	32	MSABI		P. MSHANGA
RUTH	LUNGU	F	24	MSABI	0975752046	R. LUNGU
AYERS	SOKO	F	21	Mgabi	0977990761	
STELLA	ZULU	F	32	KASAUKA	0977139869 06	S. ZULU
AGNESS	PHIRI	F	30	KASOKWA	0977446501	A. PHIRI
DIANAH	MWAMBA	F	23	M'GAMBI		D. MWAMBA
FARENCE	CHELA	F	27	M'GAMBI	0977273312	F. CHELA
MARET	PHIRI	F	16	M'GAMBI	0777987440	M. PHIRI
BRENDA	MKHOSI	F	34	M'GAMBI		B. MKHOSI
AGNESS	BANDA	F	22	KASAUKA		T. Banda
Mwende	Zulu	f	27	Mgabi	0965089904	M. NKHOMA
Memory	Zulu	f	28	Kasauka	0977457 6328	M. ZULU
Kalasha	Zulu	f	60	Kasauka		K. Zulu
Zonobia	Lukhelo	f	70	Mgabi		Z. Lukhelo
Yvonne	Mbewe	f	20	Mgabi		Y. mbewe
Pegina	Musale	f	20	Mgabi	0977480 5896	P. Musale
Cecilia	Tembo	f	20	Mgabi		C. Tembo
Mads	Banda	f	27	Mgabi	0977428 6698	M. BANDA
GIFT	TEMBO	F	22	mgabi	0977238906	G. Tembo
MARY	LUKHELO	F	55	mgabi		M. LUKHELO
ALIDAH	LUKHELO	F	32	mgabi	0976001168	A. Lukhelo
MODESTA	TEMBO	F	33	mgabi		M. Tembo
MISEZI	PHIRI	F	46	Zoma	0976418130	M. Phiri
FALERI	NGOMA	F	50	mgabi	0977705003	F. Ngoma
CHRISTON	SHAWA	F	35	mgabi	0977447249	C. Shawa
ATALIA	ZULU	F	53	Kasauka		A. ZULU
JUDITH	BANDA	F	52	Kasauka	0977477491	J. Banda
MWAZIONA	LUKHELO	F	23	mgabi		M. LUKHELO
KALIKEKA	LUKHELO	F	39	mgabi	0977926617	K LUKHELO

Chisomo Phiri	F	18	mgabi	0976045641	C. Phiri
Mervis Milanzi	F	21	mgabi	—	M. Milanzi
Ester Nkhosi	F	36	mgabi	—	E. Nkhosi
Modesta Mwanza	F	33	mgabi	0978824007	M. Mwanza
Mary Banda	F	21	mgabi	—	M. Banda
Esther Zulu	F	54	Kasauka	0977614408	E. Zulu
Angela Zulu	F	22	Kasauka	0979268971	A. Zulu
Anna Tembo	F	50	mgabi	—	A. Tembo
Diana Phiri	F	19	mgabi	—	D. Phiri
Given Banda	M	33	Mgabi	0777292483	G. Banda
Evalista Banda	F	33	Lopo	—	E. Banda
Floridah Tembo	F	35	Lopo	—	F. Tembo
Mary Jere	F	69	Lopo	—	M. Jere
Besmart Tembo	F	32	mgabi	0975326005	B. Tembo
Elizabeth Sambo	F	23	mgabi	—	E. Sambo
Eunice Mshanga	F	50	mgabi	0774506758	E. Mshanga
RHODA NGONDO	F	41	Mgabi	0977634219	[illegible]
Joyce Zulu	F	50	Kasauka	0974474408	J. Zulu
Babra Banda	F	31	Mgabi	0973424711	B. Banda
ACRINA ZULU	F	51	MGABI	0773063575	A. ZULU
ELINA BANDA	F	40	MGABI	0972000901	E. BANDA
Ethel Zulu	F	38	Ang Kasauka	077660095	EEE
Christina Zulu	F	64	Kasauka	0777187117	C. Zulu
David Zulu	M	51	Kasauka	0976279646	D. Zulu
David Tembo	M	43	Mgabi	—	D. Tembo
Davis Phiri	M	31	Mgabi	0970605968	[illegible]
Ellis Daka	F	62	Loopo	—	E. Daka
Falazia Lungu	F	52	Mgabi	0979304187	F. Lungu
Gradson Zulu	M	23	Mgabi	0977293516	[illegible]
John Tembo	M	33	Mgabi	0774445260	J. Tembo

Headman Kasenkam.	M.	43	Kasankam	0979392945	T.	Zulu							
Doreen Phiri	F	30	Lodge	—									
Lovice Nyirenda	F	62	Lodge	0975725348	L.	Nyirenda							
Estelle Phiri	F	60	Lodge	0979787282	E.	Phiri							

6. Feni Community Stakeholder Consultative Meeting held at Chipikula Primary School

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Chipikula Primary School - Feni
Date: 31 July 2024
Time: 09:30 hrs

Introduction

The public engagement and consultations were conducted in Chipata District and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (Compensation)
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator

Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	35
Female	79
Total	114

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 kV Interconnector Project

(a) To Inform the stakeholders with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative

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solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by Nsingo Ward Area Councilor Frank Pofeela Phiri.

Opening Remarks by the Area

The meeting was called to order by Nsingo Ward Area Councilor Frank Pofeela Phiri who welcomed all the people that had attended the meeting. He then proceeded to ask for a volunteer to pray after which the National anthem was sung.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP to raise awareness for the Government officials, NGOs, CSOs, Community Members and Other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

ZESCO Area Manager gave a brief overview of the project which he said started in 2015 when the Governments of Malawi and Zambia signed a Memorandum of Understanding to construct a 400 kV interconnector transmission line between the two countries to improve power trade. He said the transmission line under the project is the one that will connect Zambia and Malawi and will be 188km in length. Mr. Hamoombe explained the history of the project saying the governments of Malawi and Zambia decided to launch the 400kV interconnector and in 2021 signed a Memorandum of Understanding for the project.

He said that the project was significant as it would improve power trade and the two portions of the transmission line would be carried out by ZESCO and ESKOM.

GOPA INTEC PRESENTATION

GOPA- intec RAP Specialist Stella Sakala explained the stages in the ESIA/RAP process and these included route selection and surveying, Bush clearing and vegetation removal, line pegging, excavation, building the foundation of the towers as well as the construction of the steel towers and eventually stringing the transmission line, which in this case would be a high voltage line.

She further explained the purpose of the stakeholder meeting was a legal requirement by ZEMA in line with Environmental Management Act (EMA) 2011, Informing stakeholders about the ESIA process and giving an opportunity to Interested and Affected People (IAPs) to express views, concerns,
suggestions, and recommendations to the project before the ESIA Report is finalized; and
giving the project team an opportunity to integrate recommendations and resolutions into development

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with the view that such developments are both environmentally and socially acceptable.

The RAP Specialist said that three alternative routes had been shortlisted for the project and the third line was the most preferred in terms of less environmental, social and physical constraints.

She explained that the Project was currently conducting the EIA process adding that one component that was being addressed was receiving people's concerns and to that effect, 12 meetings had been arranged with ten of them in communities while two would be held as DDACC meetings in Chipata and Vubwi districts.

She said that the project would need 50 meters in width from the Msekera substation up to Nkhoma substation in Malawi for the wayleave. She said households whose land will be taken to pass way for the wayleave would be compensated.
Government valuers would evaluate the loss that will be incurred by the affected individuals or families and they would be compensated accordingly.

The RAP specialist urged the community to take advantage of the Grievance Redress Mechanism that had been put in place by the project whenever they were not satisfied with the way the project was being implemented.

SCOPING MEETINGS MINUTES

Name and Institution	Concern	Response/Remarks
Muma Chola Alex From Feni Sub Center	Will unskilled labour be brought in from other districts under this project because locals were always sidelined when it came to hiring manpower	The response from ZESCO was that the company was currently inducting all contractors to hire unskilled labour from among the locals in a particular area
Thomas Tembo from Feni Village	What will happen to fields that are under the required 50 meters	The response was that people will still be allowed to use the same fields for animal grazing, as well as for planting crops that were below two meters such as maize, sweet potatoes, vegetables, beans, cassava etc
Cynthia Phiri from Mwaulao	Ms. Phiri wanted to know what will happen if the transmission line passes through someone's house.	The response was that the affected people would be paid money or compensated enough money to build another house, after which they will be requested to vacate the house to pave way from the wayleave.
Stephen Njovu from Luangeni village	Mr. Njovu wanted to know if the power from the 400kV transmission line will benefit his community	The response was that the transmitted power would first go to the ZESCO Msekera substation for redistribution.
Thomaidah Ziba from Feni village	Ms. Ziba wanted to find out where people would need to buy the power under the Malawi-Zambia power project	The response was that the power would still be redistributed by ZESCO and the

		community will still be able to buy the power from ZESCO.
Obvious Daka from Feni Village	Mr. Daka wanted to know what would happen if he sent a complaint of his house being destroyed to pave way for the wayleave and no response was given by the Grievance Redress Committee	The response was that there would be no house that would be broken or destroyed without first compensating the owner of the house.
Alex Chola from Feni Subcenter	Mr. Chola recommended that during project implementation, the project should make sure that people get paid per month to avoid contractors running away with local people's wages.	Recommendation noted
Getrude Zulu from Feni Sub center	Ms. Zulu recommended that when projects such as the Malawi-Zambia power interconnector are introduced, everything should be done to ensure that they commence immediately	The response was that the issue had been noted and would be addressed.
Cypriano Zulu from Maulao Village	Mr. Zulu made an observation that there were enough young men in the area who were capable of working under the project and so they should be given a chance rather than importing labour from other districts.	The response was that only skilled labour such as the one for engineers would be sourced from Lusaka while unskilled labour would be provided by the local people.

Outcome of the Community Consultation meeting

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: CHARITY MOONGA-Binamanyo Date 04/08/2024

Minutes Confirmed by: FRANK PHIRI Date 04/08/2024

Position: CHAIRPERSON/AREA COUNCILLOR

SAPP

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Powering The Nation

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Feni

Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
Donald Mtonga	M / 30	Lufazi v/g	0977294865	[signature]
Mabruto Mtonga	M / 39	Feni Sub-Cent	0975070792	[signature]
Obvious Daka	M / 34	Feni Sub-Cent	0971506573	[signature]
Davison Ingwe	M / 29	Feni Sub-Cent	0770809143	D. Ingwe.
James Chibwe	M / 34	Maulao v/g	0976490915	[signature]

RUNDAD NGOMA	M130	FENI SUB-CENTRE	0978677376	R. Tembo
Richard Tembo	M124	Lupazi	0771601124	
James Ngoliyenga	M162	Mwalgeni v/g	0773707383	J. Ng...
Nsigo Banda	M160	Mwalgeni v/g	-	N. Banda
Gertrude Zulu	P164	Feni sub	0971763534	Zulu
Mary B. Nkomeshya	F137	Feni sub	0976646617	Nkomeshya
Bertha Mwale	P137	Feni Sub-Cent	0977305111	B. Mwale
Veronica Mwale	F120	Lupazi v/g	0770606121	V. Mwale
Matilda Zulu	P124	Lupazi	0779446121244	M. Zulu
Enala Sakala	P130	Lupazi	0970446491453	E. S
Mohamed Phiri	P124	Lupazi	0977611091169	M. Phiri
Dalitso Mbewe	P124	Lupazi	0774090293381	D. M
Dorothy Ngoma	P150	Lwangeni	0977667247598	D Ngoma
Alice Tembo	P138	Lupazi v/g	-	A. Tembo
Florence Phiri	P120	Lupazi	0977077466570	F. P
Jessy Ngulube	P144	Lupazi	0977573037888	
Monica Ngoma Nkamunka	P137	Lupazi	0976641455507	M. Nankeenyanga
Monica Sakala	P121	Lupazi	0971447402902	
ETHEL SOKO	F129	FENI SUB	0977070616262	E. SOKO
FREDY SAKALA	F133	LUFAZI	0770730944	F. SAKALA
Falangina Phiri	P120	Lupazi	0970655050491	F. P
Melegiyana Phiri	P122	Lupazi	-	Phiri
Regina Mwale	P136	Mwalgeni v/g	0977323736878	R. Mwale
Onester Banda	P125	Lwangeni v/g	0976720502726	O. B.
Mary Zulu	P135	Lupazi v/g	-	M. Zulu
Evelyne Ngulube	P125	Lwangeni v/g	0977093521119	E. Ngulube
VENOS PHIRI	C/19	EKWOLOLO	0771731148514	V. P
BANDA J. CHAMEKA	M165	Feni Sub	0977825530	
FRANK PHIRI	M150	FENI SUB	0977257563	
MAWUSISE MBEWE	M/49	FENI SUB	0977321460	Mbewe M
SPELIANO ZULU	M/170	Mwalgeni v/g	-	SZulu

NAMUSHI KOKELA	M/63	FENI SUB CENTRE	0973893992	[illegible]
Emmanuel mambo	M/23	FENI SUB CENTRE	0970758645	Emambo
Judy Mwaba	F	ZESCO	0971010180	[illegible]

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Feni

Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
SOLOMON BANDA	M 65	LUFAZI		S. Banda
TOBIAS PHIRI	M 24	FENI VILLAGE	0976304852	T. Phiri
TOMAIDA ZIWA	F			
FEDENIS MBEWE	M 61	CHIKOKA	0974739267	FMbewe
Solomon Phiri	M 29	CHIKOKA	0973007078	

Thomas Tembo	m/34	feni village	0972747941	T. Tembo
ALEX MUNZA CHOLA	M/35	Feni sub	0975423111	[illegible]
NIKAZIO MBEWE	M/34	CHIKOKA	0774420774	[illegible]
DENIS DAKA	M/31	Feni	0971418231	[illegible]
PHILIP MWANZA	M/34	LUANGENI	0777292408	[illegible]
BUMBILA CHISAU	M/44	FENI SUB	0979334518	[illegible]
SAKALA HENRY	M/56	CHIPIKULA	0977318324	Sakala
STEPHEN NJOBU	M/54	Luangeni NGE	0979257416	[illegible]
NAOMI HARA	F 29	Luangeni	0978759039	N. Hara
ALIPONSINA TEMBO	F 31	Luangeni	0974446413	A. Tembo
AGNESS PHIRI	F 35	Luangeni	0975023734	A. Phiri
PHELILE MWANZA	F 33	Luangeni	0973839797	P. Mwanza
ELIZABETA CHILUMBU	F 19	Luangeni	0977574326	E. Chilumbu
Sarafina Banda	F 22	Lungeni	0970579750	S. Banda
Angela Ngombe	F 19	Lungeni		A Ngombe
Teria Changombe	F 25	Luangeni	0779893924	C Tembe
Modester Nyirenda	F 23	Luangeni	0972201938	M. Nyirenda
Prisca Phiri	F 20	Luangeni	0970917698	P. Phiri
Lizzy Ingre	F/31	Luangeni	0770723225	[illegible]
Naomi Mwale	F/21	Luangeni	0779123802	N. Mwale
Beshat Jere	F/23	maulao	—	B. Jere
Vestina Miti	F/21	Luangeni	0972308628	V Miti
THUNGELA NKHUWA	F 18	Luangeni	0977367900	[illegible]
Mmafela Kapasa	M 40	Feni Sub	0973328775	[illegible]

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Feni

Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
Hellen Mtonga	F 47	Feni Sub Center	mtongahellen@gmail.com 0979 486 428	Mtonga.
Shadrech Y. Banda	M 66	Feni Sub Center	0977825820	
Paul Mwanza	M 43	Feni Subcenter	0978923125	
Mwanza Bwezani	M 44	Feni Subcenter	0978013586	
Hastings Mbewe	M 35	Feni Subcenter	0975024847	

NAME	GENDER/AGE		VILLAGE	PHONE	SIGNATURE
Dingile Mbale	F	48	Feni Subcenter	0973600561	Mbale
Annastazia Mbewe	F	64	Feni Subcenter	0975108152	[illegible]
Scolastica Tembo	F	26	Feni Subcenter	0975007994	[illegible]
Mabuto Mtonga	M	41	Feni Subcenter	0975070792	M. Banda
Obvious Daka	M	35	Feni Subcenter	0971806573	O. Daka
Philip Mwanza	M	34	Feni Sub-center	0777292408	P. M
Thomandah Ziwa	F	55	Feni Village	0977260196	[illegible]
Ellen Jere	F	70	Feni Village	0976535768	E. Jere
Patricia Nkhuwa	F	32	Luangeni	0976224593	[illegible]
Louise Phiri	F	40	Luangeni	0978330548	Phiri
Mushabase Soko	F	18	"	0777813254	M. SOKO
Charity Banda	F	29	Luangeni	0770823892	[illegible]
Mathona Phiri	F	30	Luangeni	0973107282	M. PHIRI
Bertha Nkhuwa	F	27	Luangeni	0771615589	B. Nkhuwa
Desdelia Mwanza	F	27	Luangeni	0974740578	D. Mwanza
Cathreen Mphanza	F	27	Luangeni	0974123692	C. [illegible]
Glaria Nkhoma	F	26	Luangeni	0973112827	G. Nkhoma
Elizabeth Mwanza	F	22	Luangeni	0978193724	E. Mwanza
Matildah Mwale	F	20	Luangeni	0771862025	M. Mwale
Victoria Daka	F	19	Luangeni	0750206041	V. DAKA
Chimwemwe Zulu	F	27	Luangeni	0776975878 2	C. Zulu
Grace Nyambi	F	23	Luangeni	0771611730	G. Nyambi
~~Wifrid~~ Winfridah Banda	F	20	Luangeni	0779425601	W. Banda
Rosmary Tembo	F	28	Luangeni	0773090352	R. Tembo
Memory L. Phiri	F	22	Lufazi	0771601129	M.L. Phiri
Magret Jere	F	34	Luangeni	0978009146	M. Jere
Ethel Daka	F	25	Luangeni	0771338567	E. Daka
Shira Ngoma	F	22	Luangeni	0779929287	S. Ngoma
GLADYS Jere	F	22	Luangeni	0776109123	G. Jere
Benadett Ngulube	F	20	Lufazi	0973461866	B. NGULUBE

36	Caroline nkhuwa	F 19	LUFAZI	—	C. nkhuwa
37	Magret ZULU	F 22	LUFAZI	~~077E~~ 0777734657	M. ZULU
38	Dasiana mumba	F 35	Luangeni	0779894488	D. mumba
39	Rosmary NJOVU	F 63	Luangeni	—	R. NJOVU
40	GUOTHIA PHIRI	F 42	MAULAO	0779894488	C. [illegible]
41	ESTHER NGWALE	F 46	Luangeni	0771857437	E. Ngwale
42	ELIDAH NKHUWA	f 41	MAOLAO	0971071436	E. nkhuwa
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7. Kayeka Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Kayeka Village – Msadelela Tree
Date: 2nd August 2024
Time: 14:30 hrs

Introduction

The public engagement and consultations were conducted in Chipata District and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decisionmaking; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (compensation)
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert

Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	67
Female	145
Total	212

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 kV Interconnector Project

(a) To Inform the stakeholders with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by Kayeka Headman Timothy Zulu

Opening Remarks by the Kayeka Headman

The meeting was called to order by Headman Kayeka who welcomed all the people that had attended the meeting. He then proceeded to ask for a volunteer to pray.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP to raise awareness for the Government officials, NGOs, CSOs, Community Members and Other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

ZESCO Chief Environmental Scientist gave a brief overview of the project which he said started in 2015 when the governments of Malawi and Zambia signed a Memorandum of Understanding to construct a 400 kV interconnector transmission line between the two countries to improve power trade. He said the transmission line under the project is the one that will connect Zambia and Malawi and will be 188km in length. Mr. Shikabi explained the history of the project saying it started in 2015 when the governments of Malawi and Zambia agreed to come up with the 400kV interconnector and in 2021 the two countries signed a Memorandum of Understanding for the project.

GOPA INTEC PRESENTATION

GOPA- intec RAP Specialist Stella Sakala explained the stages in the ESIA/RAP process and these included route selection and surveying, Bush clearing and vegetation removal, line pegging, excavation, building the foundation of the towers as well as the use of steel towers to construct the transmission line, which in this case would be a high voltage line.

She further explained the purpose of the stakeholder meeting as a legal requirement by ZEMA in line with Environmental Management Act (EMA) 2011, Informing stakeholders about the ESIA process and giving an opportunity to Interested and Affected People (IAPs) to express views, concerns,
suggestions, and recommendations to the project before the ESIA Report is finalised; and
giving the project team an opportunity to integrate recommendations and resolutions into the development with the view that such developments are both environmentally and socially acceptable.

The RAP Specialist explained the three alternative routes that had been identified for the project and the third line was the most preferred in terms of less environmental, social and physical constraints.

She explained that according to the EMA requirements, the project was currently conducting the EIA process adding that one component that was being addressed was receiving people's concerns and recommendations hence the decision to hold a meeting with the community to get their views on the project.

She said that the project would need 50 meters in width from the Msekera substation up to Nkhoma substation in Malawi for the wayleave and that members of the community whose land will be taken to pave way for the wayleave would be compensated.
Government valuers would evaluate the loss that will be incurred by the affected individuals or families and they would be compensated accordingly.

The RAP Specialist added that the affected community members would be given three months to rebuild their houses, after being compensated and that they were free to reuse the doors, roofing sheets, window frames and other building materials that they would manage to save from their previous homes.

The RAP specialist urged the community to take advantage of the Grievance Redress Mechanism that had been put in place by the project whenever they were not satisfied with the way the project was being implemented.

She further emphasized that the community members would be compensated for the trees they planted but indigenous trees would not be acceptable for compensation.

ZESCO explained that for unskilled labour, the organization would follow the rules and guidelines as stipulated in the law . In this vein, skilled labour such as that of engineers and surveyors would be sourced from outside the area but unskilled labour would be sourced from among the locals.

SCOPING MEETINGS MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Mary Zulu of Kayeka Village	Why are we being sidelined when it comes to power connection as Kayeka community	ZESCO is not behind some of the connections in some communities being mentioned because some of the areas are being connected by the Rural Electrification Authority
Alex Banda of Kayeka Village	Will there be houses under the 400kV transmission line?	There will be no structure under the 400kV pylons to ensure human safety
Mathew Lukhelo from Kayeka Village	Recommended that the project should not take too long to implement	Recommendation was noted
Dave Banda from Kayeka Village	What will happen if the project comes when its rain season and we have already planted	If there are crops in the field, you will be compensated
Timothy Zulu WDC Chairperson	Welcomed and commended the project stakeholders	This was noted.

Outcome of the Community Consultation meeting

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400KV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: CHARITY MOONGA - Secretary Date 04/08/2024

Minutes Confirmed by: FRANK PHIRI Date 04/08/2024

Position: CHAIRPERSON / AREA COUNCILLOR

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

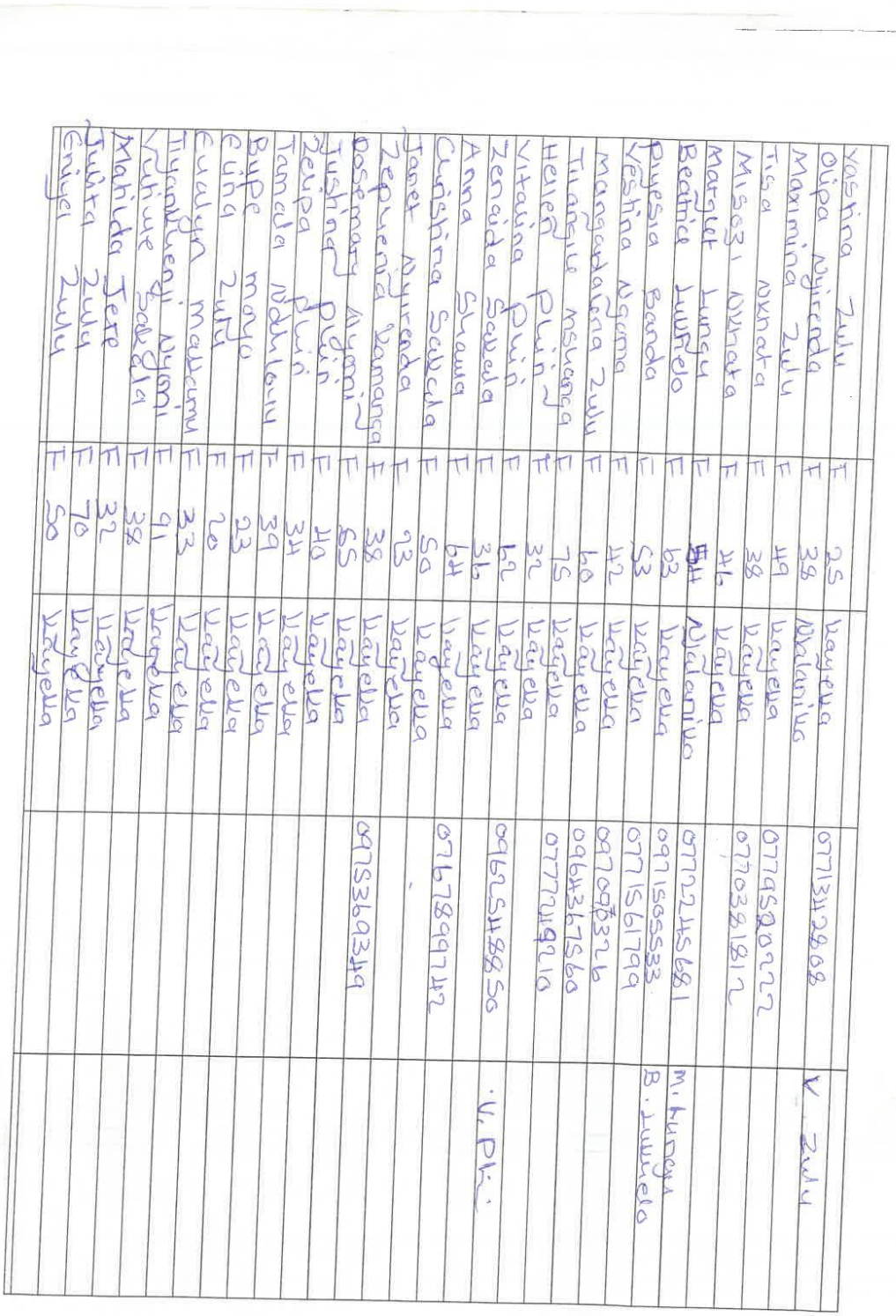
Meeting/Event: Malawi – Zambia ESIA

Attendance List Kayeka

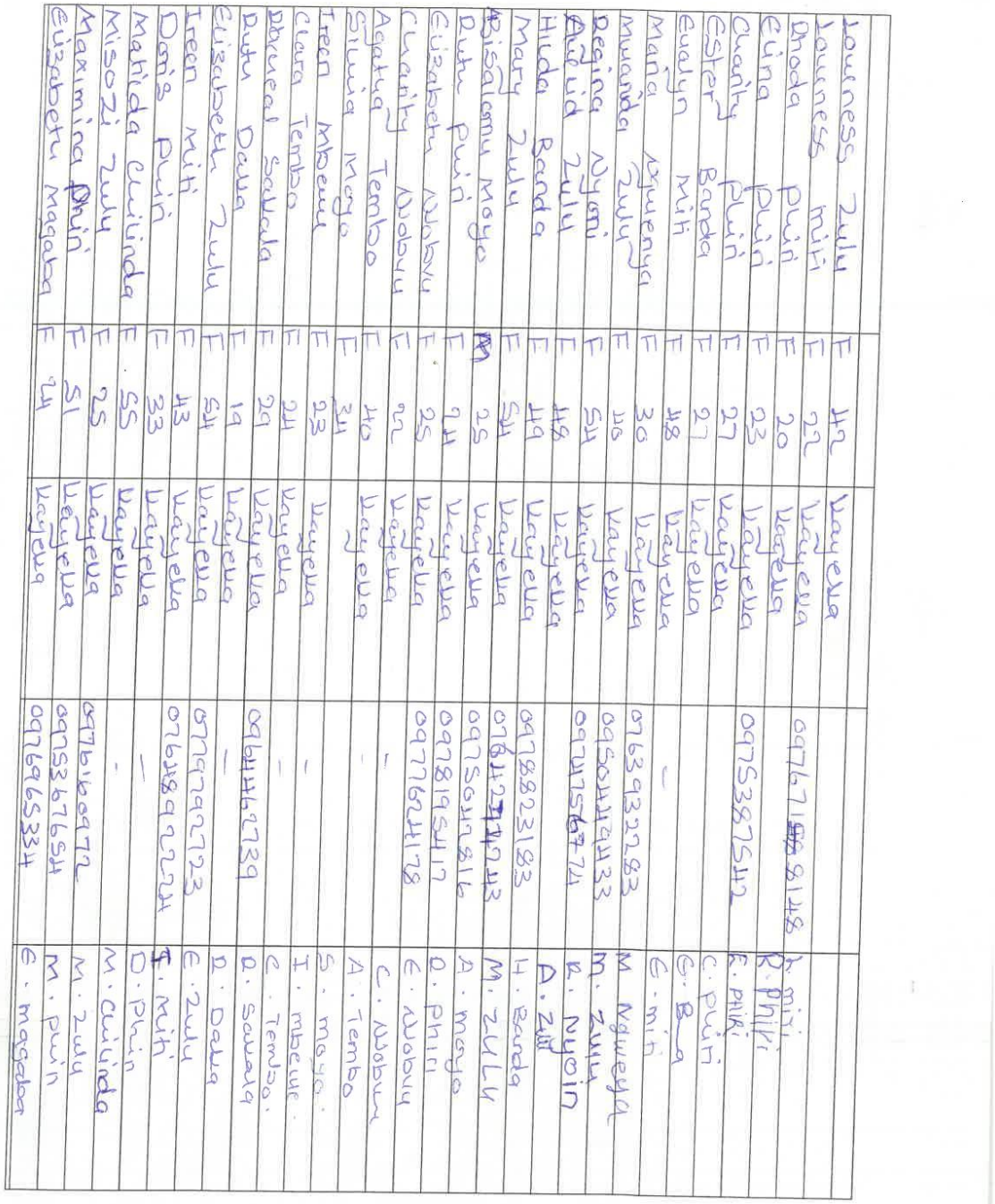
Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
Maclina Nyobuu	F 35	Kayeka	0974503483	[illegible]
Sarah Soko	F 22	Kayeka	0770800610	S. Soko
Fatness Chilinda	F 75	Kayeka	0974755613	F. Chilinda
Margret Manda	F 47	Kayeka	0974715477	M. Manda
Dorathy Banda	F 39	Watanika		



Xashina Zulu	F	25	Headena		0771312808	K. Zulu	
Olipa Ngwenda	F	38	Ndlanivo				
Maximina Zulu	F	49	Kayeya		0774502727		
Tisa Nkhata	F	38	Kayeya		0770381817		
Misozi Nkhata	F	21	Kafeya				
Margret Lungu	F	44	Ndlanivo		0777275981	M. Hunguy	
Beatrice Zulu	F	63	Kayeya		0971595533	B. Zulu	
Ruyesia Banda	F	53	Kayeya		0771561799		
Veshina Ngoma	F	42	Kayeya		0770983276		
Mangandaleka Zulu	F	60	Kayeya		0961257960		
Tilangile Nsheanga	F	75	Kayela		0777209010		
Helen Phiri	F	32	Kayela				
Vitasina Phiri	F	62	Kayela		0961538850	V. Phiri	
Zenaida Sewela	F	36	Kayela				
Anna Shawa	F	64	Headena		0776780747		
Christina Sabeta	F	50	Kayeya				
Janet Nyirenda	F	23	Kayeya				
Zephenia Kamanga	F	38	Kayela		0975369319		
Rosemary Nyoni	F	55	Kayeya				
Justina Phiri	F	40	Kayeya				
Zenpa Phiri	F	34	Kayela				
Tamela Ndhlovu	F	39	Kayela				
Bupe Mayo	F	23	Kayela				
Cina Zulu	F	20	Kayela				
Evelyn Mawere	F	33	Kayela				
Nyambuenyi Nyoni	F	41	Kayela				
Vuhwe Sabeta	F	38	Kayela				
Mahilda Jere	F	32	Headena				
Juliya Zulu	F	70	Headena				
Enifer Zulu	F	50	Kayeya				



Fosta Shaba	F	45	Kayelo	-	F. Shaba
Elina Tembo	F	44	Kayelo	-	E Tembo
Annastasia Tembo	F	56	Kayelo	-	A. Tembo
Standia Tembo	F	72	Kayelo	-	S. Tembo
Annastazia Ndebele	F	29	Kayelo	0771560835	A Ndebele
Judith Kapasa	F	53	Kayelo	-	J Kapasa
Violet Chipweila	F	43	Kayelo	-	V. Chipweila
Elida Banda	F	30	Kayelo	0962374850	E Banda
Dacue el Banda	F	40	Kayelo	0971885108	D. Banda
Aushinei Tere	F	36	Kayelo	-	E Tere
Eunice Mbewe	F	31	Kayelo	0771733575	E. Mbewe
Dubes Phiri				1	D. Phiri

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Kayeka

Date: July – August 2024

Location: Chipata/Vubwi

	NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
1	CHIMFWEMBE RABSON	MALE 58YRS	NYAFINZI P.SCH	0969703456	[illegible]
2	Timothy Zulu	M 45	W.D.C	0974757357	[illegible]
3	DIDASIO TEMBO	M 49	Kayeka	0962233638	DTEMBO
4	ALEX BANDA	M 52	Kayeka	0969270978	[illegible]
5	PHILIP MWALE	M 55	Kayeka	0965241772	[illegible]

6	Paul Sakala	M 55	KAYEKA	0951314723	[illegible]
7	Paul Zulu	M 87	KAYEKA	—	P. Zulu
8	TEMBO RICHARD. G.	M 72	KAYEKA	0777490650	[illegible]
9	BANDA JIMMY	M 64	KAYEKA	0979042087	[illegible]
10	DOMINICO MWANZA	M 68	KAYEKA	0776813451	[illegible]
11	JAMES TEMBO	M 75	Kayeka	0974756941	J. Tembo
12	CHRISTOPHE TEMBO	M 58	Kayeka	0973152496	C Tembo
13	DICKSON BANDA	M 28	Kayeka	0779170358	D. Banda
14	SIMON MWANZA	M 27	Kayeka	0974181452	[illegible]
15	MUTALE BRIAN	M 29	KAYEKA	0774091527	[illegible]
16	MOSES SAKALA	M 36	Kayeka		[illegible]
17	DANIEL ZULU	M 64	Njalaniko	0976532655	[illegible]
18	JIMMY BANDA	M 35	Kayeka	0776834139	[illegible]
19	JOSEPH ZULU	M 75	Njalaniko	0772175378	[illegible]
20	STEVEN MITI	M 44	Kayeka		S Miti
21	DAVID MBEWE	M 29	Kayeka	0774702254	[illegible]
22	TEREGIO NJOBVU	M 30	Kayeka	0963173676	T. NJOBVU
23	PIPASON JERE	M 24	Kayeka	0771566107	[illegible]
24	MASAUSO PHIRI	M 39	Kayeka	0976998879	[illegible]
25	ELIAS PHIRI	M 52	Kayeka		E Phiri
26	BERNAD MAZYOPA	M 25	Kayeka	0776612765	B mazyopa [illegible]
27	JOSEPH PHIRI	M 32	Kayeka	0776972994	J. [illegible]
28	FRANK TEMBO	M 24	Kayeka	0979133474	[illegible]
29	JASTINE MAGAWA	M 26	Kayeka	0779730289	[illegible]
30	LOWRENCE LUKHELO	M 31	Kayeka	0773064168	[illegible]
31	ALIKANJELO SHABA	M 33	Kayeka		A. [illegible]
32	SILVESTER MITI	M 40	Kayeka	0774083041	[illegible]
33	ELIAS MWANZA	M 38	Kayeka	0973461877	[illegible]
34	FREDRICK MAZYOPA	M 28	Kayeka	0776757351	F Mazyopa
35	DENIS LUNGU	M 22	Kayeka	0979501871	D Lungu

36	HELEMUS BANDA	[illegible]	51	Kayelka	0773067508	H Banda
37	MAYESO KHATA	M	30	Kayelka	0779295744	[illegible]
38	Isaac JERE	M	37	Kayelka		I Jere
39	GANIZANI BANDA	M	57	Kayelka		G Banda
40	PETER TEMBO	M	48	Kayelka	0770877161	P. M. Tembo
41	EPHLEM SHABA	M	56	Kayelka	0774702410	[illegible]
42	SIMON LUNGU	M	40	Kayelka		S lungu
43	Alikuryelo Miti	M	60	Kayeka	0978798494	A. Miti
44	Tobias Tembo	M	62	Kayeka	0966252470	T. Tembo
45	Nama Dickson. Zulu	M	52	Kayeka	0763372151	D. Zulu
46	~~DANIE~~ FRANCIS Zulu	M	38	Njalaniko	0978195847	F. Zulu
47	MARTIN JERE	M	44	Kayelka	0971159945	M Jere
48	Gorge Phiri	M	28	Kayelka	0973549206	G Phiri
49	Obvious Tembo	M	18	Kayelka	—	D. Tembo
50	Martin Tembo	M	18	Kayelka	—	M Tembo
51	Lewison Dalla	M	32	Njalaniko	—	L. Dalla
52	Scolastic Zulu	F	29	Njalaniko	0776181817	S. Zulu
53	Ireen Zulu	F	20	Njalaniko	0771554006	I. Zulu
54	Centrida Lukhelo	F	24	Kayelka	0777983932	C. Lukhelo
55	Loveness Phiri	F	18	Kayelka	0776170743	L. Phiri
56	Venasta Lukhelo	F	64	Kayelka	0770880205	V. Lukhelo
57	Juditu Banda	F	20	Kayelka	0967110141	J. Banda
58	Agness Zulu	F	20	Kayelka	—	A Banda
59	Catunine Lupiya	F	20	Kayelka	0770769113	C. Lupiya
60	Mervis Zulu	F	45	Kayelka	0974451165	M. Zulu

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

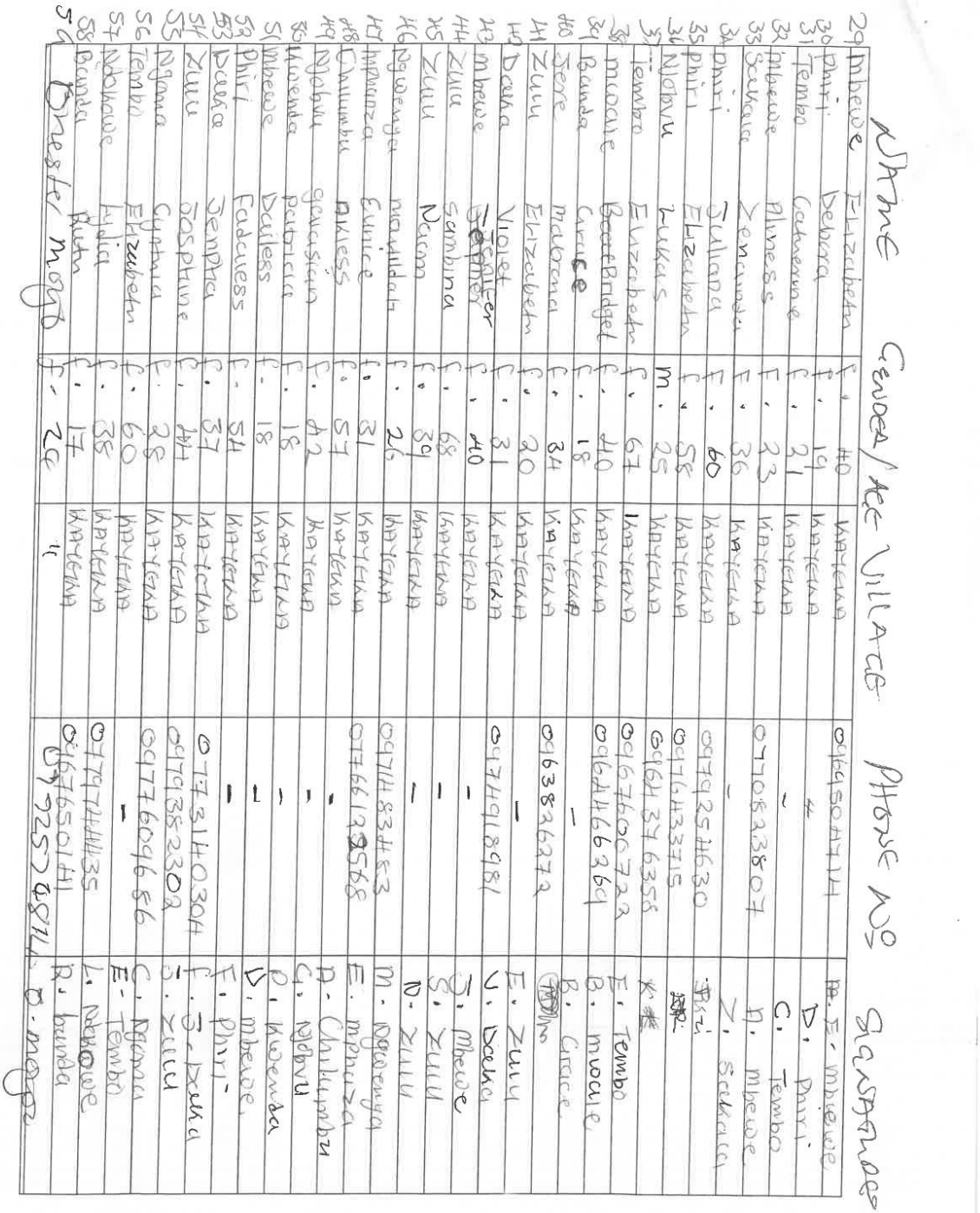
Attendance List Kayeka

Date: July – August 2024

Location: Chipata/Vubwi

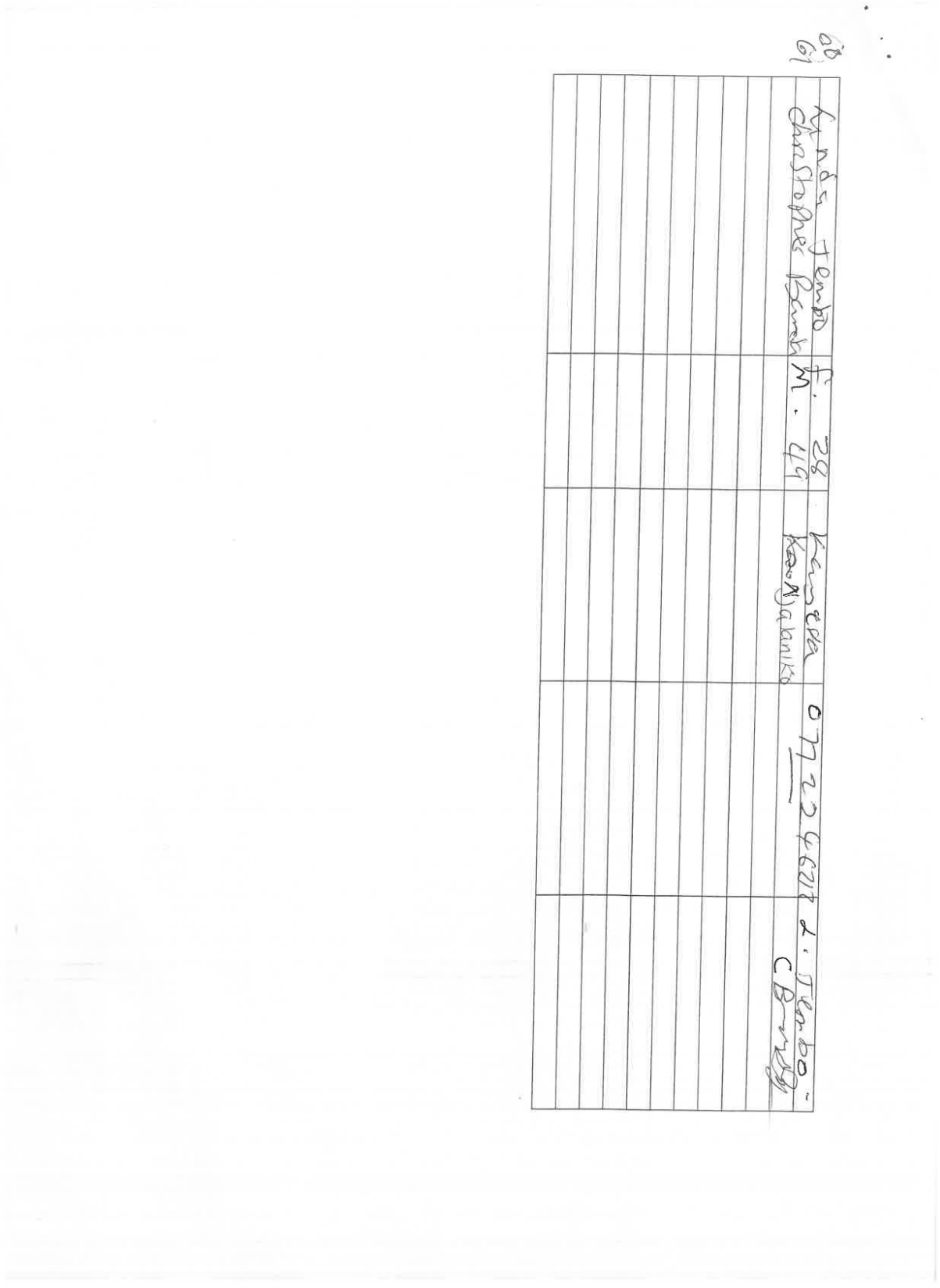
	NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
1.	Mathews Lukhelo	M 62	Kayeeka	0962225841	[signature]
2.	David Banda	M 20	Kayeeka	0770499006	[signature]
3	Innocent Lukhelo	M 22	Kayeka	0776156064	[signature]
4	Stanely Phiri	M 20	Kayeka	0976998714	[signature]
5.	Christopher Phiri	M 29	Kayeka	0974547423	[signature]

	NAME	GENDER/AGE	VILLAGE	PHONE	SIGNATURE
6	Alipot Banda	m. 43	Kayeka	0775[illegible]5581[illegible]	[illegible]
7	Achileo MAZYOPA	m 49	KAYEKA	0977162924	[illegible]
8	EMMANUEL LUKHELO	m 47	KAYEKA	0976059197	E LUKHELO
9	David Banda	m 53	Kayeka	0769758715	—
10	James Banda	m 53	Kayeka	0769758715	—
11	Godfrey Banda	m 48	Kayeka	0769758715	—
12	Rodrick Zulu	m 68	Kayeka	—	
13	John Jere	m 77	Kayeka	07659152286	[illegible]
14	Mary Zulu	f 70	Kayeka	—	—
15	Anna Mazyopa	f 63	Kayeka	—	—
16	Agness Lukhelo	f 61	Kayeka	—	A Lukhelo
11	Onester Mphanza	f 71	Kayeka	0975369268	O. mPhanza
12	Grace Lungu	f 50	Kayeka	—	—
13	Claria Mbewe	f 52	Kayeka	0974757867	C. mbewe
14	Naomi Daka	f 49	Kayeka	0974755572	N. DAKA
15	Josephine Phiri	f 48	Kayeka	—	—
16	Tisauke Phiri	f 72	Kayeka	—	—
17	Vitalina Phiri	f 80	Kayeka	—	—
18	Tilekana Banda	f 80++	Kayeka	—	—
19	Grace Miti	f 33	Kayeka	0777265071	G - Miti
20	Misozi Daka	f 23	Kayeka	0977051543	-M Daka
21	Naomi Zyambo	f 53	Kayeka	0962650501	—
22	Katalina Zulu	f 52	Kayeka	—	—
23	Mary Banda	f 46	Kayeka	0979501524	M. Banda
24	Sylvia Lungu	f 41	Kayeka	[illegible] —	—
25	Charity Ngoma	f 28	Kayeka	0979519015	C. Ngoma
26	Rhoda Sakala	f 48	Kayeka	0978195841	R SAKALA
27	Justina Tembo	f 68	Kayeka	—	J. Tembo
28	Liz Daka	f 46	Kayeka	—	L Daka
	H				



Name | Gender/Age | Village | Phone No | Signature

29	Mbewe Elizabeth	F. 40	Kayelekera	0996150477	B. E. Mbewe
30	Phiri Debora	F. 19	Kayelekera	"	D. Phiri
31	Tembo Catherine	F. 21	Kayelekera	-	C. Tembo
32	Mbewe Phineas	F. 23	Kayelekera	0770623807	P. Mbewe
33	Sakuwa Zenaida	F. 36	Kayelekera	-	Z. Sakuwa
34	Phiri Gladys	F. 60	Kayelekera	0979253630	
35	Phiri Elizabeth	F. 58	Kayelekera	0977643315	
36	Ndovu Lukas	M. 25	Kayelekera	0961 376355	
37	Tembo Elizabeth	F. 67	Kayelekera	0961760723	E. Tembo
38	Mwale Beatbridge	F. 40	Kayelekera	0961466364	B. Mwale
39	Banda Grace	F. 18	Kayelekera	-	B. Grace
40	Zere Madonna	F. 34	Kayelekera	0963826272	
41	Zulu Elizabeth	F. 30	Kayelekera	-	E. Zulu
42	Dewa Violet	F. 31	Kayelekera	0977491891	V. Dewa
43	Mbewe Stephen	F. 40	Kayelekera	-	S. Mbewe
44	Zulu Sambuna	F. 68	Kayelekera	-	S. Zulu
45	Zulu Naomi	F. 39	Kayelekera	-	N. Zulu
46	Ngwenya Mavildah	F. 26	Kayelekera	0977483453	M. Ngwenya
47	Mapanza Eunice	F. 21	Kayelekera	0776123568	E. Mapanza
48	Chilumbu Alvess	F. 57	Kayelekera	-	A. Chilumbu
49	Ndovu Genesis	F. 42	Kayelekera	-	G. Ndovu
50	Mwenda Patricia	F. 18	Kayelekera	-	P. Mwenda
51	Mbewe Dauless	F. 18	Kayelekera	-	D. Mbewe
52	Phiri Faducess	F. 54	Kayelekera	-	F. Phiri
53	Dewa Jenipha	F. 37	Kayelekera	0977311030	J. Dewa
54	Zulu Josphine	F. 44	Kayelekera	0976382308	J. Zulu
55	Ngoma Cynthia	F. 28	Kayelekera	0977604686	C. Ngoma
56	Tembo Elizabeth	F. 60	Kayelekera	-	E. Tembo
57	Ndovu Lydia	F. 38	Kayelekera	0977477435	L. Ndovu
58	Banda Ruth	F. 17	Kayelekera	0961765014	R. Banda
59	Onesite/Mgmt	F. 25		0977255684	O. Mgmt



8. Mtowe Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRICT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Mtowe Primary School
Date: 2 August 2024
Time: 10:30 hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decisionmaking; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (compensation)
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE	
Robam Musonda	Country Coordinator	
Godfrey Chileshe (Dr)	GBV/SEA Expert	
Willie Kalunga	ESIA Expert	
Stella Sakala	RAP Expert	
Edwin Matokwani	Ecology Expert	
Benson Kabungo	GIS/RS Specialist	
Charity Moonga	Communication Specialist	

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	27
Female	30
TOTAL	57

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

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Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 kV Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by Mtowe Primary School Headmaster Mr. Peter Mtonga.

Opening Remarks by the Mtowe Primary School Headmaster Mr. Peter Mtonga

The meeting was called to order by Mr. Mtonga who welcomed the community and everyone present at the meeting. He then asked for a prayer from a volunteer.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP as well as the Consultant GOPA-intec to raise awareness for the Community Members, the traditional leadership and other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

Key Points Discussed in the Meeting at Mtowe Area:

ZESCO Chief Environmental Scientist Mr. Kandi Shikabi:

- Outlined the project's history, explaining that power shortages have been a challenge for Malawi and Zambia and this prompted the governments of the two countries to sign a Memorandum of Understanding (MoU) for the 400KV interconnector from Msekera substation in Chipata to Nkhoma Substation in Lilongwe.
- Since the proposed routes for the power line passes near where Mtowe community is, it is a requirement for the project to hold consultations with the community in Mtowe and surrounding areas to explain the power transmission project to create awareness.
- He explained that after the meetings, an ESIA report would then be written and submitted to ZEMA and once ZEMA is satisfied with the report, the work will begin.
- In Zambia, the transmission line will be 44km while the Malawi side is 144km and 50 meters wayleave would be required.

PRESENTATION BY GOPA-intec

- RAP Specialist Stella Sakala explained that in the 50 meters wayleave space required, community members will still be allowed to plant low-growing crops such as maize, sweet potatoes, beans, soya beans etc but fruit trees and other tall-growing plants will not be allowed.
- If there is a crop in the field at the time of creating the wayleave, an evaluation will be conducted

by the District Agricultural Coordinator (DACO)'s office and all members of the community, who will be affected through the loss of a house or crop and other property, will be compensated.

GOPA-intec Presentation:

GOPA-intec RAP Specialist Stella Sakala:

- Emphasized the importance of EIA and RAP processes, mandated by the Environmental Management Act, for project approval.
- Detailed the ESIA/RAP stages, highlighting the need for stakeholder input to ensure environmental and social acceptability.
- Explained the ESIA/RAP process, including route selection, surveying, bush clearing, line pegging, excavation, and tower construction.
- Highlighted the Chipata substation expansion as a key component of the 400kV transmission line project.
- Indicated that three alternative routes were identified.
- Stressed the importance of integrating recommendations and resolutions to ensure environmental and social acceptability.
- A grievance redress mechanism has since been put in place and members of the community with any grievance were requested to follow the steps outlined in the grievance procedure code to send their complaints to the project.
- Encouraged the community to utilize the Grievance Redress Mechanism for any dissatisfaction with project implementation.

MTOWE SCOPING MEETING MINUTES

Name and Institution	Concern	Response/Remarks
Andrew Lungu from Mtowe Village	Mr. Lungu asked if institutions such as schools and hospitals would be destroyed if they were located in the wayleave of the 400kV interconnector	The response was that while the project would destroy houses along the wayleave, everything possible would be done to avoid institutions such as schools and health centers.
Phillimon Phiri from Mtowe Village	How will the other villages not present at the meeting hear about the project	The response was that the traditional leaders and councilors had been informed about the project and would be conduits educating the rest of the community members who could not attend the meetings about the project. Additionally, the community members who attended the meeting should also inform others about the project
Felistus Tembo from Mtowe Village	Will community members be compensated for bare fields?	The response was no because the community members will continue using the bare land as they have always done.
Andrew Lungu from Mtowe Village	Will people be allowed to continue planting tall crops like one locally known as "muumbu" and local maize call "gogogo" in the wayleave	The response was that ploughing of crops such as sweet potatoes, beans, soya beans, maize and other low-growing crops would be allowed but no crop or plants

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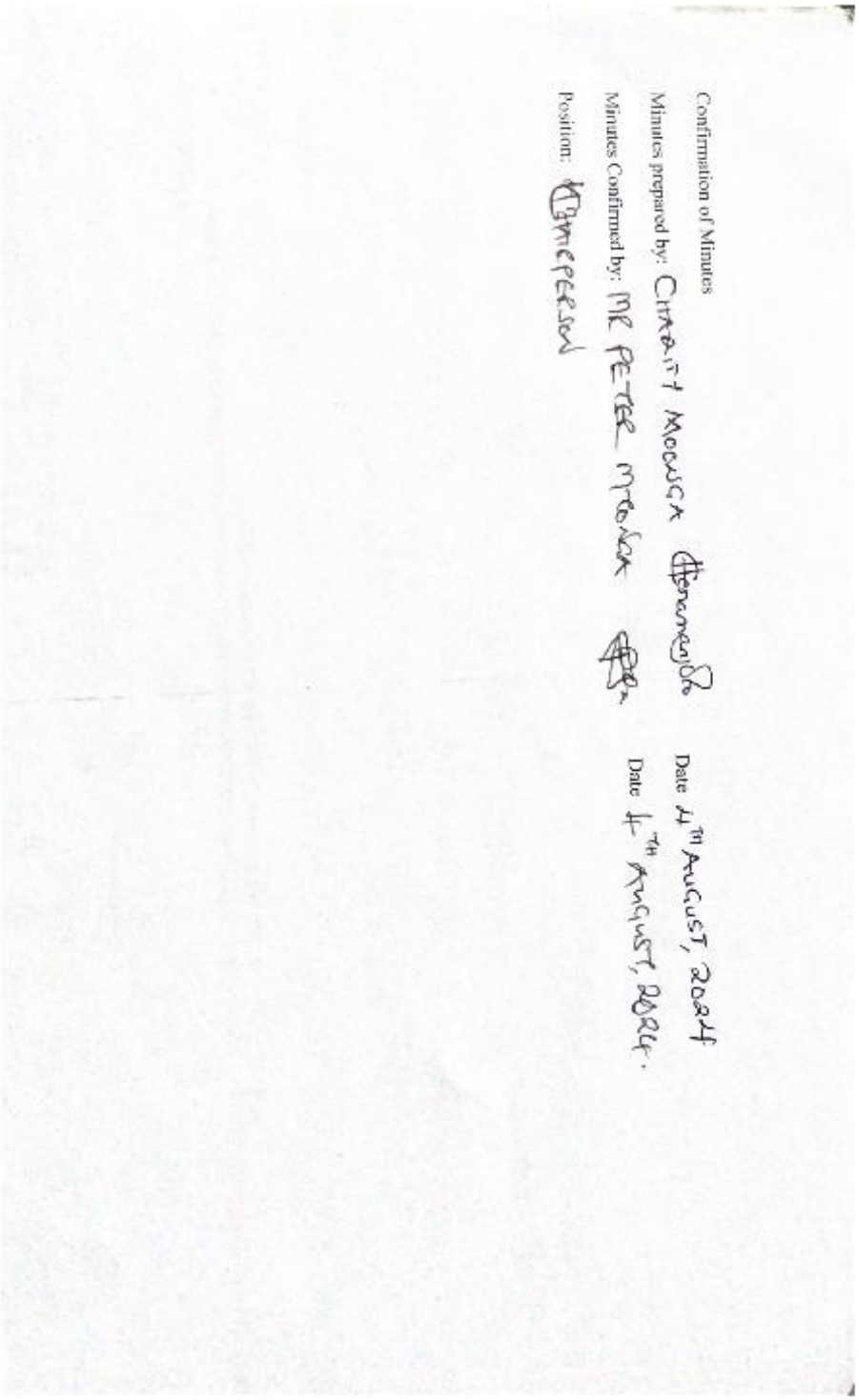
		such as muumbu and the local maize gogogo which can grow taller than two meters
Gabriel Njovu from Mtowe village	Will the project increase the price of electricity	The response was that the electricity tariff will not change but remain the same
Phillimon Lungu	Mr. Lungu asked that if the project comes when people have planted, how long will it take before the community gets compensated	All the beneficiaries will receive their money after the assessments
Cornelius Ngoma from Mtowe Village	What is ZESCO doing about the water problem which is affecting power generation	The Zambian government is promoting a green economy to avoid climate change. The government has also reduced duty on solar power equipment.
David Zulu from Mtowe Village	What measures have been put in place to ensure that the local community benefits from jobs created by the project	The Chiefs/District Commissioners will be involved to ensure that the locals benefit from the unskilled labour project job opportunities

Outcome of the Community Consultation meeting

Summary:

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400KV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure project success.

The meeting closed with a prayer from a volunteer.



Confirmation of Minutes

Minutes prepared by: CHARITY MOONGA Date 4TH AUGUST, 2024

Minutes Confirmed by: MR PETER MTONGA Date 4TH AUGUST, 2024.

Position: CHAIRPERSON

SAPP

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GOPA International Energy Consultants

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

CHAIRPERSON

Meeting/Event: Malawi – Zambia ESIA — TUNDASHI TOMMY 0978219976

Attendance List MTONGA PETER 0965027682

Date: July – August 2024

Location: Chipata/Vubwi mtowe

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
NGOMA Kolonario	M 56	MTOWE	0978320239	[signature]
Zulu David	M 58	Mtowe	0972876006	[signature]
Gerard Tembo	M 58	mtowe	0977142518	[signature]
Efraim Tembo	M 70	mtowe		E Tembo
PHILLIMON PHIRI	M 49	MTOWE	097012473	[signature]

Isaac ngoma	M	63	mtowe		Ingoma.
Leonard phiri	M	57	mtowe		L. [illegible]
Yonas Zulu	M	55	mtowe		Y. [illegible]
Matinas Zulu	M	61	mtowe	0976424965	[illegible]
Stephen moyo	M	81	Kombe	0970833406	[illegible]
Bedansio ngoma	M	61	mtowe		B. [illegible]
Edward lungu	M	44	mtowe SCH	0770893079	[illegible]
Brazio phiri	M	26	mtowe	0970996752	[illegible]
Denis nyoni	M	29	mtowe	0979337428	Dnyoni
Ireen phiri	F	60	mtowe	0770599794	I Phiri
Garasia ngoma	F	52	mtowe	0763441826	A. ngoma
Letesia Banda	F	50	mtowe		[illegible]
Ferestus Tembo	F	57	mtowe	0776817801	F. Tembo.
Stellah mbewe	F	56	mtowe	0976826850	S. m.
Margret Phiri	F	45	mtowe	0974168723	M. Phiri
Matilina Tembo	F	47	mtowe	0970839011	[illegible]
Stellah Zulu	F	47	mtowe		S. [illegible]
Betrice mtonga	F	39	mtowe		B. m.
Francisca phiri	F	62	mtowe	0769156473	[illegible]
Ruth phiri	F	42	mtowe		[illegible]
Faneli mathatho	F	30	mtowe	0772383603	[illegible]
Metadco Zulu	M	64	mtowe		[illegible]
Peling ngoma	F				
~~Ad~~ Andrew lungu	M	52	mtowe	0776161162	A Lungu
Moses Simango	M	45	Kombe	0974030672	M Poko
Gabriel njobou	M	40	mtowe	0971513407	Njobou.
Harrison malupande	M	42	mtowe		H. m
Secelia njobou	F	50	mtowe	–	S. N.
Magret chisi	F	45	mtowe	097656286	M. C.
Veronica lungu	F	40	mtowe	0772612058	V. Lungu

| | | |

9. Lunyike Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRICT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Lunyike Primary School
Date: 2 August 2024
Time: 15:00 hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decisionmaking; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (compensation)
- Project benefits and negative consequences

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ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	80
Female	35
Total	115

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 kV Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by Lunyike Primary School Headteacher Ms. Margaret Mbewe.

Opening Remarks by the Lunyike Primary School Headteacher Ms. Margaret Mbewe

The meeting was called to order by Ms. Mbewe who welcomed the community and everyone present at the meeting. She then asked for the national anthem and a prayer was given by a volunteer.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP as well as the Consultant GOPA-intec to raise awareness for the Community Members, the traditional leadership and other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

Key Points Discussed in the Meeting at Lunyike Area:

PRESENTATION BY GOPA-intec

- RAP Specialist Stella Sakala outlined the project's history, explaining that the entire project was 188km and that in Zambia, the transmission line will be 44km while the Malawi side is 144km and 50 meters wayleave would be required.
- The 400kV interconnector would run from Msekera substation in Chipata to Nkhoma Substation in Lilongwe.
- Highlighted the Chipata substation expansion as a key component of the 400kV transmission line project.
- Indicated that three alternative routes were shortlisted and the community were shown the maps
- It was explained that the ZEMA requirement was that the project should hold consultations with the community in Lunyike and surrounding areas to explain the power transmission project to create awareness.
- The RAP Specialist explained the ESIA/RAP process, including route selection, surveying, bush clearing, line pegging, excavation, and tower construction.
- The RAP specialist further explained that 50 meters wayleave space is required for the project. In the 50meters wayleave, community members would still be allowed to plant low-growing crops such as maize, sweet potatoes, beans, soya beans etc, but fruit trees and other tall-growing plants would not be allowed.

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- If there is a crop in the field at the time of creating the wayleave, an evaluation or census will be conducted by the District Agricultural Coordinator (DACO)'s office and all members of the community, who will be affected through the loss of a house or crop and other property, will be compensated.
- A grievance redress mechanism has since been put in place and members of the community with any grievance were requested to follow the steps outlined in the grievance procedure code to send their complaints to the project.
- Encouraged the community to utilize the Grievance Redress Mechanism for any dissatisfaction with project implementation. Grievance forms would be accessed from the local headmen and members could still call the project directly through the numbers provided.

Mr. Sakala	A Mr. Sakala was concerned about the continued lack of power in Lunyike area despite the area having more people	The response was that community members were free to work with their councilors to apply for electricity using their CDF funds
Lunyike Ward Development Committee Chairman Timothy Mwanza	Mr. Mwanza welcomed the project saying the increase in power transmission will go a long way in curbing problems in his area such as lack of barber shops and hammer mills due to non-availability of electricity	The welcome was noted
Donalia Phiri from Ndangwe **Martha Tembo from Ndangwe**	Ms. Phiri and Ms. Tembo welcomed the power transmission project saying it was long overdue	This was noted
Jackson Mshanga from Jojo	Mr. Mshanga asked the stakeholders to remember Lunyike area to be remembered once the power transmission project is achieved	This was noted

Outcome of the Community Consultation meeting

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure project success.

nutes prepared by: CHARITY MOONGA - [signature] Date 04-08-24

nutes Confirmed by: MBEWE MARGRET [signature] Date 04-08-24.

sition: CHAIRPERSON

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

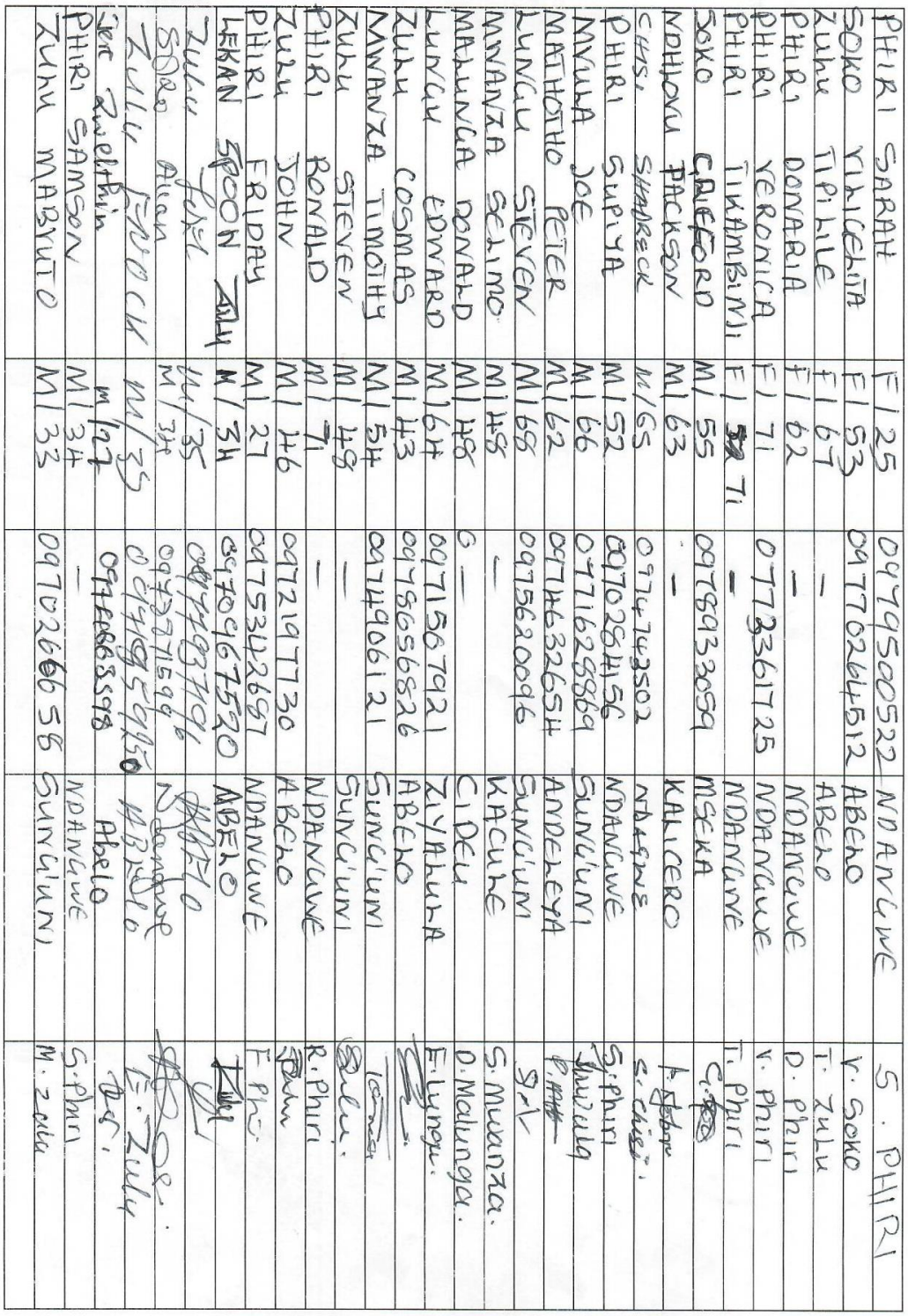
Meeting/Event: Malawi – Zambia ESIA

Attendance List Lunyike

Date: ~~July~~ 2024 2nd Aug.

Location: Chipata

NAME	~~TITLE~~ GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
BANDA DORIS	F/46	NDANGWE	–	D. Banda.
PHIRI DOREEN	F/35	NDANGWE	0970611420	D. Phiri
CHISANGA MEMORY. B	F/32	LUNYIKE	0974660301	~~MB~~
TEMBO MARTHA	F/47	NDANGWE	0976176073	M. Tembo
MVULA ALINESS	F/29	NDANGWE	0776042061	A. Mvula.



PHIRI SARAH	F/25	0979500522	NDANGWE	S. PHIRI
SOKO VILIGELITA	F/53	09770264512	ABELO	V. Soko
ZULU TIPILILE	F/67	—	ABELO	T. ZULU
PHIRI DONARIA	F/62	—	NDANGWE	D. Phiri
PHIRI VERONICA	F/71	0773361725	NDANGWE	V. Phiri
PHIRI TIKAMBINJI	F/~~52~~ 71	—	NDANGWE	T. Phiri
SOKO GRIFFORD	M/55	0978933059	MSEKA	G. [illegible]
NDHLOVU PACKSON	M/63	—	KALICERO	[illegible]
CHISI SHADRECK	M/65	0974743502	NDAGWE	S. Chisi
PHIRI SUPIYA	M/52	0970284156	NDANGWE	S. Phiri
MVULA JOE	M/66	0771628869	SUNG'UNI	[illegible]
MATHOTHO PETER	M/62	0974632654	ANDELEYA	P. [illegible]
LUNGU STEVEN	M/68	0975620096	SUNG'UNI	[illegible]
MWANZA SELIMO	M/48	—	KACULE	S. Mwanza.
MALUNGA DONALD	M/48	0 —	CIDEU	D. Malunga.
LUNGU EDWARD	M/64	0971507921	ZIYALULA	E. Lungu.
ZULU COSMAS	M/43	0978656826	ABELO	[illegible]
MWANZA TIMOTHY	M/54	0974906121	SUNG'UNI	[illegible]
ZULU STEVEN	M/48	—	SUNG'UNI	[illegible]
PHIRI RONALD	M/71	—	NDANGWE	R. Phiri
ZULU JOHN	M/46	0972197730	ABELO	[illegible]
PHIRI FRIDAY	M/27	0975342687	NDANGWE	F. Phiri
LEKAN SPOON ZULU	M/34	0970967520	ABELO	[illegible]
Zulu [illegible]	M/35	0977937196	ABELO	[illegible]
SOKO Allan	M/34	0978871599	Ndangwe	[illegible]
ZULU ENOCK	M/35	0971959250	ABELO	E. Zulu
Jere Zwelthin	M/27	0974663598	Abelo	[illegible]
PHIRI SAMSON	M/34	—	NDANGWE	S. Phiri
ZULU MABVUTO	M/33	0970266658	SUNG'UNI	M. Zulu

		Abero	0770421021	
Phiri Howard	M/29	0770421021	~~Abero~~	[illegible]
SAKALA DAVIDSON	M/54	JOJO	0977622300	[illegible]
PHIRI SIPSON	M/55	CIDEU	0970702445	S. Phiri
NDHOVU ACKSON	M/57	TELEKA	0776172033	A. [illegible]
TEMBO NELSON	M/23	JOJO	0974918557	N. [illegible]
ZULU SYDENEY	M/28	JOJO	0979075399	S. Zulu
CHISI ANANIA	M/37	NDANGWE	0770804045	A. CHISI
MSHANGA HEZON	M/55	JOJO	0977501376	H. Mshanga
MAPOSA LIBERTY	M/57	SUNG'UNI	0978931895	[illegible]
MOYO LAMERK	M/43	JOJO	0976325010	L. Moyo
BANDA SAMSON	M/78	NDANGWE	—	[illegible]
CHIRWA JOSEPH	M/51	JOJO	0977381533	[illegible]
MBUZI SIMON	M/38	JOJO	0976507646	[illegible]
ZULU AGNESS	F/38	ABELO	0970108027	A. Zulu
MBEWE TAMARA	F/22	ABELO	0974708400	T. Mbewe
SAKALA NELIA	F/35	ABELO	0979667628	[illegible]
ZULU MONICAH	F/46	Abelo	0771662554	[illegible]
BANDA CATHEREEN	F/54	ANDELEYA	0974597109	C. Banda.
PHIRI EASTER	F/32	ABELO	0975415762	E. Phiri
TEMBO JOYCE	F/56	SUNGU'UNI	—	J. Tembo
MATHOTHO FLORENCE	F/45	ADREA	0976873004	[illegible]

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Lusaka

Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: July 2024

Location: Chipata

GENDER/AGE

NAME	~~TITLE~~		VILLAGE	PHONE/EMAIL	SIGNATURE
PATRICK PHIRI	M	46	NDANGWE	0774095551	P. PHIRI
PROB PHIRI	m	38	NDANGWE	0976165218	P. PHIRI
YOB DAKA	m	32	SUNGUNI		Y. DAKA
OLIVER SOKO	m	30	NDANGWE		O. SOKO
NORIS PHIRI	m	40	NDANGWE		N. PHIRI

BEATWEL	Zulu	M	52	AREKO	0978750913	B.	Zulu
ROBRICK	PITRI	M	33	NDANGWE		R.	PITRI
KAMUDAYA	BANDA	M	73	NDANGWE		K.	BANDA
JAGERO	PITRI	M	34	NDANGWE	0977209225	J.	PITRI
JOHN	SOKO	M	28	NDANGWE	0977736602	J	SOKO
MARRIONI	SOKO	M	45	NDANGWE		M.	SOKO
FRANCISCO	CHISI	M.	44	NDANGWE		F.	CHISI
LIFOSINA	SOKO	F	24	NSOKO	0977023221	L.	SOKO
MILIKA	BANDA	F	39	LUNGWE	0977233091	M	BANDA
FELIJA	PITRI	F	38	NDANGWE		F.	PITRI
MILIKA	BANDA	F	30	ABEKO		M.	BANDA
RUTH	CHALINDA	F	39	ABEKO	0977091072	R.	CHALINDA
ONESTER	CHISI	F	27	ABEKO	0977164356	O	CHISI
ALINES	NYENDWE	F	30	ABEKO	0977 5[illegible]36	A.	NYENDWE
EDITH	SAKALA	F	32	ABEKO	0977446268	E	SAKALA
EVALISTO	Zulu	M	18	ABEKO	0977001054	E	Zulu
EMMANUEL	Zulu	M	19	ABEKO	0977046307	E.	Zulu
JONATHAN	Zulu	M	17	ABEKO	0977414623	J	Zulu
PETER	Zulu	M	23	ABEKO	0977655216	P.	Zulu
EFRONT	Zulu	M	66	ABEKO	0977681203	E	Zulu
DONALD	PITRI	M	35	NDANGWE	0977173906	D.	PITRI
ISELDEN	SAKALA	M	33	ABEKO	0779787026	B.	SAKALA
CASONI	PITRI	M	29	NDANGWE		G.	PITRI
FRANCISCO	MBEWE	M	23	NDANGWE	0977541208	F.	MBEWE
JOE	MSIMANGA	M	38	JOJO		J.	MSIMANGA
SIANDWEL	CHISI	M	75	NDANGWE		S.	CHISI
MASAU	SOKO	M	23	JOJO	0977541397	M	SOKO
PETER	Zulu	M	54	ABEKO		P.	Zulu
SIMON	Zulu	M	30	ABEKO		S	Zulu
PASITANE	Zu	M	40	ABEKO		P	Zulu

ZENASE MBEWE	M	60	NDREYA	0975594342	[illegible]
BENJEMINI NDABA	M	63	JOJO	0976419993	[illegible]
GIFT NYONI	M	30	ZIYALULA	0771589291	GIFT Nyoni
MUSSA BANDA	M	28	NDANGWE	0975518264	[illegible]
PATWAYO PHIRI	M	37	NDANGWE	0975417319	P. PHIRI
WHYSON MVULA	M	71	SUNGUNI	0979821472	[illegible]
BROWN PHIRI	M	84	ANDREYA		B. PHIRI
ANDREW Zulu	M	72	ABELO		A Zulu
DANIEL Zulu	M	37	ABELO	0976278668	D. Zulu
KISH MATTOTHON	M	38	ANDREYA	0973431970	Kish
PITROS MTUMAYO	M	37	JOJO	0972749482	P. MTUMAYO
POTIFA Zulu	M	62	ABELO	0978567068	P. Zulu
NGOMA P.C. NOAH	M	73	ANDREA	0974741534	[illegible]
MSHANGA JACKSON	M	51	JOJO	0976630155	[illegible]
EZRON CHISI	M	45	NDANGWE	0976296847	Chisi
Benson Nyoni	M	36	Chidea	0777507858	B. Nyoni
GELADI PHIRI	M	70	NDANGWE		G PHIRI
KETASE PHIRI	F	28	NDANGWE	0779243967	K. PHIRI
MELINA LUNGU	F	28	LUNYIKE	0979067888	M. Lungu
TABITA Zulu	F	27	ABELO	0771862087	T Zulu
CATHRINE Zulu	F	63	NDANGWE		C. Zulu
FALESI Zulu	F	43	ABELO	0770010591	F Zulu
MOREEN MOYO	F	63	JOJO	0771555677	M. MOYO
COSAZIWA NKHUWA	F	27	NDANGWE		C. NKHUWA
AGLIPINA SOKO	F	38	ABELO		A SOKO

10. Chipata South Satellite City Community Stakeholder Consultative Meeting held at Jenda Primary School

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Jenda Primary School
Date: 03 August 2024
Time: 10:00hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The first round of public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (Compensation)
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert

Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	27
Female	33
Total	60

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 kV Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by the Area Headman Sezario N'gombe.

Opening Remarks by the Area Headman

The meeting was called to order by Area Headman Sezario N'gombe who welcomed all the people that had

attended the meeting saying that the people of Jenda have been trying to have their homes connected to power but that had not happened till now. He then proceeded to ask for a volunteer to pray.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP as well as the Consultant GOPA-intec to raise awareness for the Community Members, the traditional leadership and other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

Key Points Discussed

ZESCO Regional Manager Milton Hamoombe:

- Outlined the project's history, including the 2021 Memorandum of Understanding (MoU) between Malawi and Zambia for the 400KV interconnector.
- Stressed the project's aim to enhance power trade, with ZESCO and ESKOM responsible for different portions of the transmission line.
- Provided a brief overview of the project, highlighting its initiation in 2015 with the MoU and its significance for improving power trade.
- The 400kV transmission wayleave would pass where people had already built houses of were using the land to plant hence for consultations with them before implementation that program.

GOPA-intec Presentation:

GOPA-intec RAP Specialist Stella Sakala:

- Emphasized the importance of EIA and RAP processes, mandated by the Environmental Management Act, for project approval.
- Detailed the ESIA/RAP stages, highlighting the need for stakeholder input to ensure environmental and social acceptability.
- Explained the ESIA/RAP process, including route selection, surveying, bush clearing, line pegging, excavation, and tower construction.
- The interconnector will assist with the sharing of power.
- Highlighted the Chipata substation expansion as a key component of the 400KV transmission line project.
- Indicated that three alternative routes were shortlisted
- Explained the purpose of stakeholder meetings as a legal requirement by ZEMA, providing an opportunity for Interested and Affected People (IAPs) to express views, concerns, suggestions, and recommendations before the ESIA Report is finalized.
- Stressed the importance of integrating recommendations and resolutions to ensure environmental and social acceptability.
- Explained the steps to project implementation and explained that to date which started with surveying land and putting pegs.
- Confirmed that the project would need 50 meters in width from the Msekera substation to Nkhoma substation in Malawi for the wayleave, with affected households being compensated.
- An evaluation or census would then be conducted along with the evaluation from the District Agriculture Cordinator's (DACO's) office for compensation
- Even during the planting season, people's crops would be compensated.
  There will be full compensation of people whose property would be destroyed.
- Encouraged the community to utilize the Grievance Redress Mechanism for any dissatisfaction with project implementation.

Wayleave Acquisition by ZESCO:

- **ZESCO Head of Delegation Kandi Shikabi:**
- Described the engagement and negotiation process for obtaining wayleave from community members and stakeholders.
- Explained that consent from landowners is required for ZESCO to access the land, with permissible activities on the wayleave including animal grazing and cultivation of low-lying crops.
- After the survey, the alternative route would be chosen by the engineers.

Summary:

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure project success
was being implemented.

MZIGAWA SCOPING MEETING MINUTES

Name and Institution	Concern	Response/Remarks
Brighton Zulu from Farmers Chairperson	Will bare land be compensation	No, because you will continue to use the land despite passing power lines.
Alice Banda from Jenda Village	Where will the line pass from Jenda village	The response was that the line would pass near the hills
Isaac Mwanza from Jenda Village	Will the people continue using the land for farming	The response was that the people would continue to use the 50 meters land for ploughing of crops such as sweet potatoes, beans, soya beans, maize and other low-growing crops would be allowed but no crop or plants taller than two meters would be approved. People will not be compensated for grazing land as they will continue using the land for that purpose.
Samson Kalonga from Jenda Village	Mr. Kalonga observed that it was unfair for the project not to compensate people for the bare agricultural land as it was a family heritage and families stood to lose if the power line	The response was that consent would be sought from individuals, chiefs and

	passed through their bear farming land because there would be no compensation while at the same time, they would not be allowed to build houses there. "You are being unfair because it means you have blocked my children from freely accessing the land and building houses," he said.	headmen as well as the council to give consent for land use. Farminig would still be allowed in the area and not allowing the planting of high-growing crops was for the benefit of the public. It was also explained that development was for everyone and the project would continue to engage and develop,
Charity Zulu from Jenda village	How will the 400KV transmission line benefit the small-scale households	The 400kv powerlines would first go the Msekera substation for possible redistribution
Juvensio Zulu from Solomoni	Can ZESCO /Project consider compensating for bare land	The response was no
Aliuce Banda	Ms. Banda called for development of the Jenda area	This was noted and the ZESCO senior manager would remain after the meeting and address the issue of lack of power in the area
Headman Jenda	The headman cautioned the community against rejecting development in the area as that issue could be taken to the chief for disciplinary action.	This was noted
Mathias Phiri from Kundanga Village	Mr. Phiri advised the community to accept the project for their own benefit. He also called for jobs once the project opens.	The response was that the contractor would be inducted and trained on the labour laws in Zambia which stipulated that the locals should have an upper hand in things to do with unskilled labour.

Brighton Zulu – Chairman D80	Mr. Zulu urged community members to accept the project	This was noted.

Outcome of the Community Consultation meeting

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: Date

Minutes Confirmed by: SEZALIO NGOMBE Date 4-8-2024

Position: HEADMAN/CHAIRMAN

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Jenda

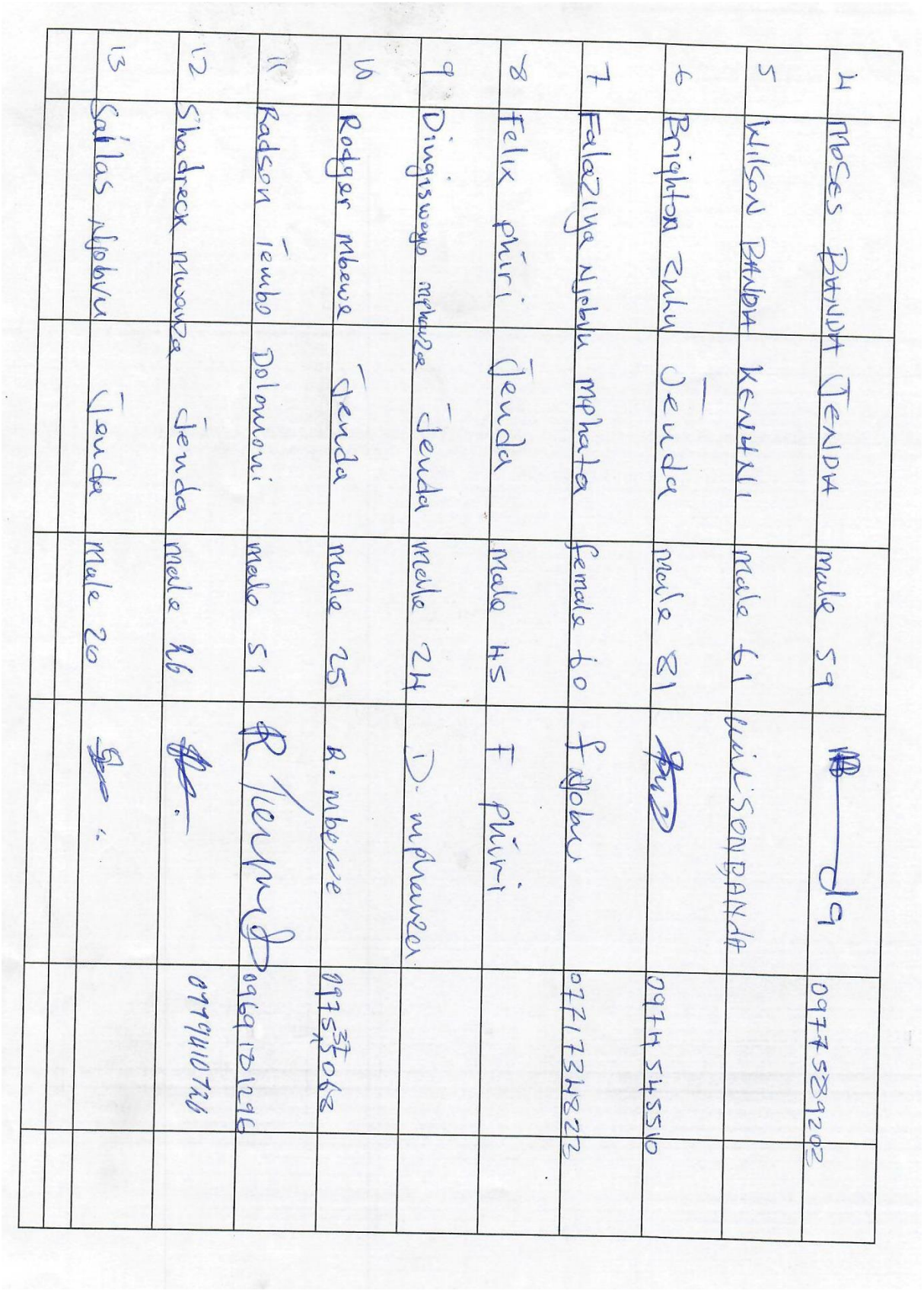
Meeting/Event: Malawi – Zambia ESIA

Attendance List

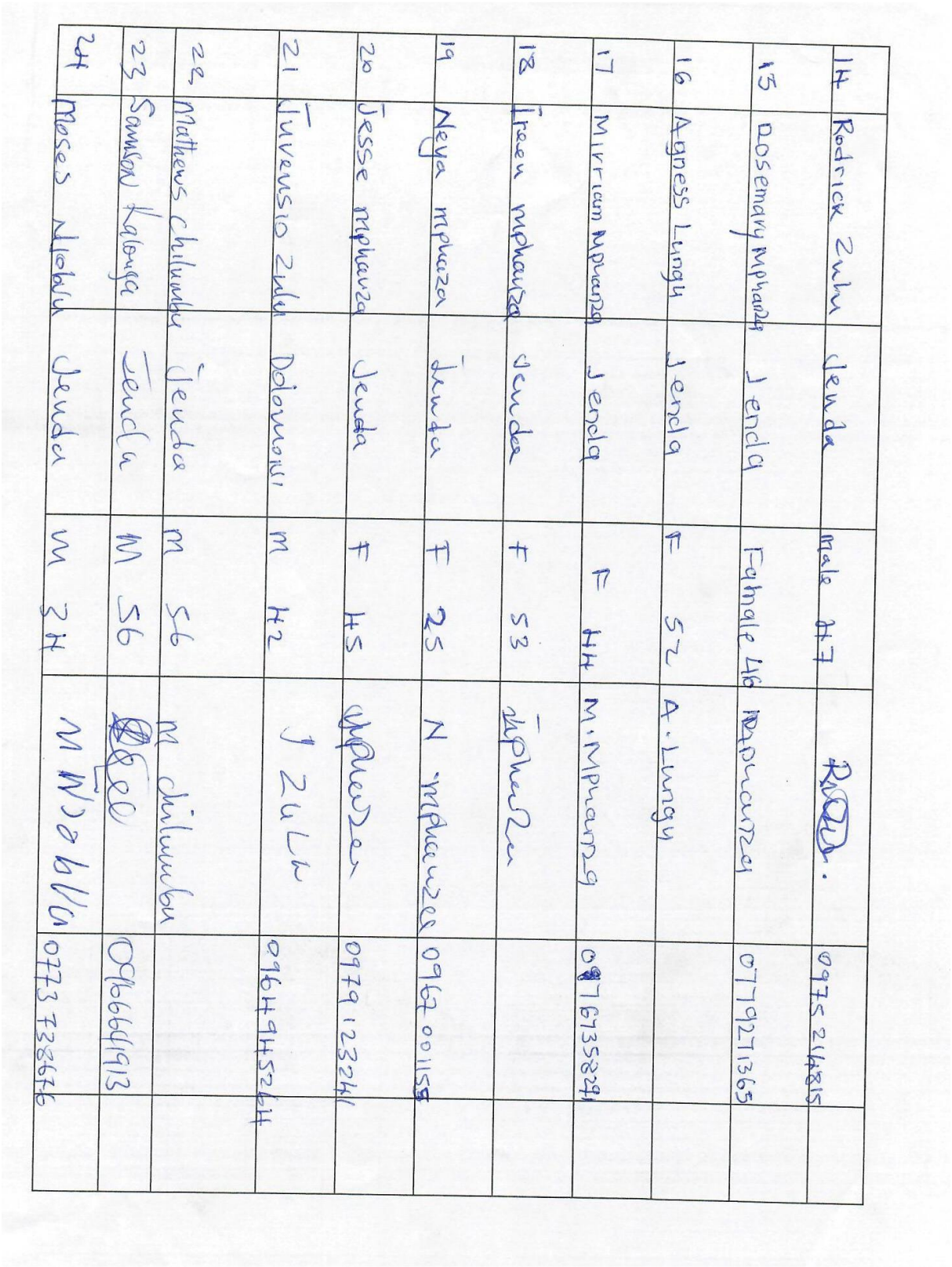
Date: July - August 2024

Location: Vubwi

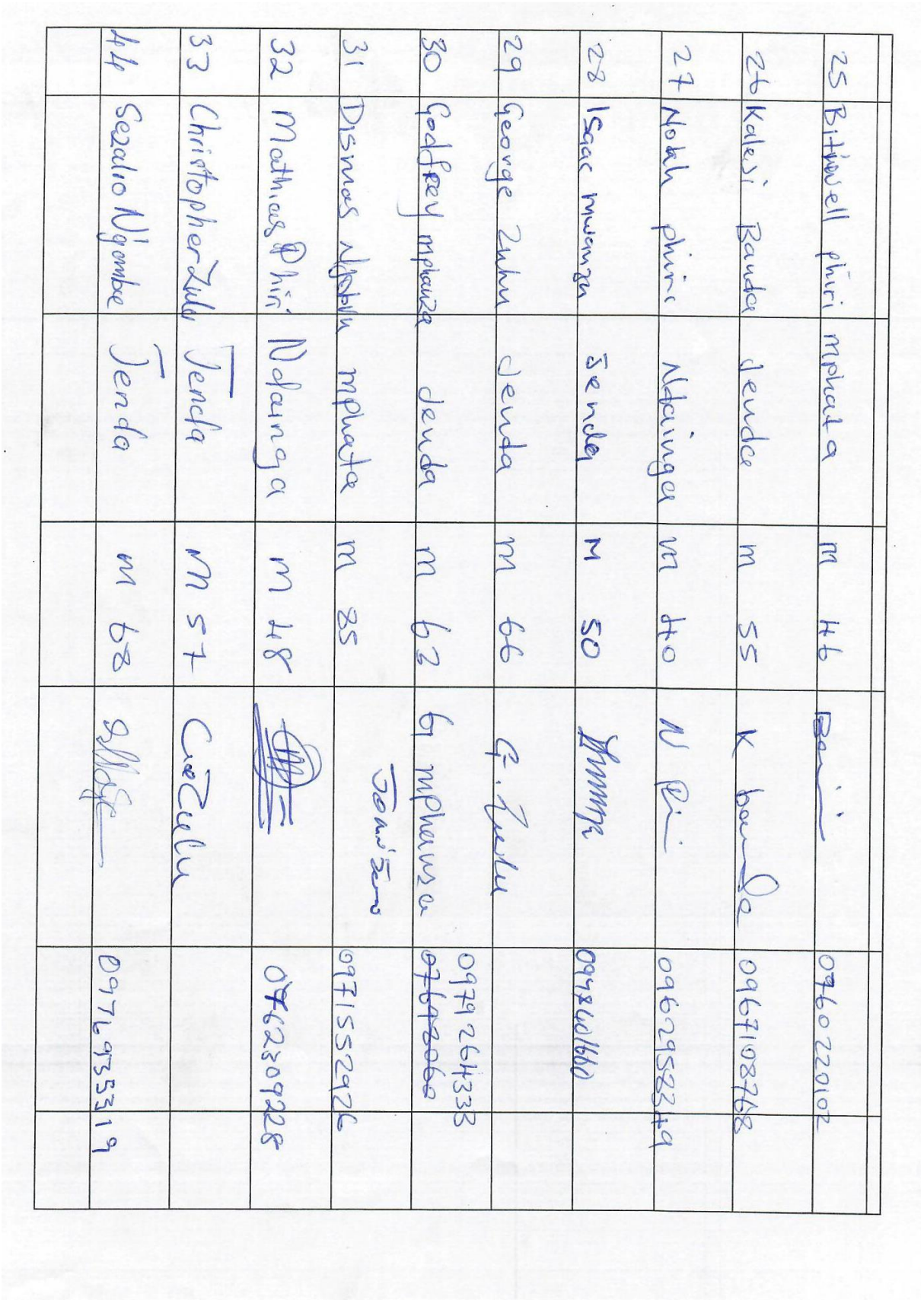
No.	NAME	VILLAGE ~~ORGANISATION/DEPARTMENT~~	GENDER/AGE ~~ROLE/TITLE~~	Signature ~~EMAIL~~	PHONE NUMBER	~~DATE~~
1	OSCAR MPHANZA	JENDA	male 86	MAZA		
2	JAPHET MPHANZA	JENDA	male 29	[illegible]	0761889926	
3	MICHAEL CHILEMBA	JENDA	male 45	M chilemba	0770882254	



4	MOSES BANDA	JENDA	male 59	[signature]	0977589202	
5	WILSON BANDA	KENYNI	male 61	WILSONBANDA		
6	Brighton Zulu	Jenda	male 81	[signature]	0974545510	
7	Falaziya Njobvu	Mphata	female 60	f Njobvu	0771734823	
8	Felix phiri	Jenda	male 45	F phiri		
9	Dingisweyo mphanza	Jenda	male 24	D. mphanza		
10	Rodger Mbewe	Jenda	male 25	R. mbewe	0975375068	
11	Radson Tembo	Dolomoni	male 51	R Tembo	0969181296	
12	Shadreck Mwanza	Jenda	male 26	[signature]	0779410726	
13	Sailas Njobvu	Jenda	male 20	[signature]		



14	Rodrick Zulu	Jenda	male 47	[illegible]	0975 214815	
15	Rosemary Mphanza	Jenda	Fatmale 46	Mphanza	0779271365	
16	Agness Lungu	Jenda	F 52	A. Lungu		
17	Mirriam Mphanza	Jenda	F 44	M. Mphanza	0976735829	
18	Ireen mphanza	Jenda	F 53	Mphanza		
19	Neya mphaza	Jenda	F 25	N mphanza	0967 001155	
20	Jesse mphanza	Jenda	F 45	Mphanza	0979 123241	
21	Juvensio Zulu	Dolomoni	M 42	J Zulu	0964945264	
22	Mathews chilumbu	Jenda	M 56	M chilumbu		
23	Samson Kalonga	Jenda	M 56	[illegible]	0966641913	
24	Moses Njobvu	Jenda	M 34	M Njobvu	0773 738676	



25	Bitwell phiri	mphata	m 46	[illegible]	0760220102	
26	Kalesi Banda	Jenda	m 55	K banda	0967108768	
27	Nokh phiri	Ndainga	m 40	N Phiri	0962958349	
28	Isaac mwanza	Jenda	M 50	[illegible]	0978401660	
29	George Zulu	Jenda	m 66	G. Zulu		
30	Godfrey mphanza	Jenda	m 63	G mphanza	0979264333 ~~07698060~~	
31	Dismas Ngobvu	mphata	m 85	[illegible]	0971552926	
32	Mathias Phiri	Ndainga	m 48	[illegible]	0762309228	
33	Christopher Zulu	Jenda	m 57	C. Zulu		
44	Sezalio Ngombe	Jenda	m 68	[illegible]	0976935319	

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: July - August 2024

Location: Vubwi

Jenda

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	VILLAGE GENDER/AGE	EMAIL	SIGNATURE	PHONE NUMBER	DATE
	Charity Mbozi	Jenda	F	57			0977780	
	Faless Zulu	Jenda	F	37			0978224351	
	Grace Phiri	Jenda	F	38			—	

	Patricia Lungu	Jenda	F	29	P. Lungu	0964958389	
	ELIZABETH MPHANZA	Jenda	F	25	E. mphanza	0777625641	
	HELEN MWALE	Jenda	F	35	H. mwale	0969239909	
	ROSEMARY njobvu	Jenda	F	50	R. njobvu	—	
	Aidah Zulu	Jenda	F	53	Zulu	0975410866	
	SUZEN PHIRI	Jenda	F	54	S. [illegible]	0960949157	
	JOANA MPHANZA	Jenda	F	26	J. Zulu	—	
	DORRIS MPHANZA	Jenda	F	28	D. mphanza	—	
	SALOME MWANSA	Jenda	F	33	S. mwansa	—	
	JESSY Mphanza	Jenda	F	45	J. mphanza	0979123241	
	GRACE MSIMUKO	Jenda	F	35	G. msimuko	0777953515	
	THOKOZILE Zulu	Kafeta	F	40	T. Zulu	0971533935	

SAKA LUNGU	Tenda	F	21	S. Lungu	—	
FLORENCE						
BANDA	Tenda	F	49	F. Banda	—	
ELINA						
PHIRI	Ndainga	F	40	E. Ri	0767355515	
ALICE						
MPHANZA	Tenda	F	43	A. mphanza	0769220761	
ALINESS						
NJOBVU	Tenda	F	51	A. NJOBVU	—	
Charity						
Zulu	Tenda	F	28		0972256853	
CATHERINE						
MBEWE	Tenda	F	45	C. MBEWE	0971475111	
HELEN						
LUNGU	Tenda	F	32	H. Lungu	0765600811 0	
MIRIAM						
MUZIYA	Ndaing	F	43	M. Muziya	0779456065	
Mary						
Phiri	Tenda	F	41	M. Phiri	—	
Dorothy						
Chanza	Ndaingo	F	57	D. CHANZA	0779456065	

11. Makwelelo Community Stakeholder Consultative Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400kV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Makwelelo Primary School
Date: 14.00 2024
Time: 10:00hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (compensations)
- Project benefits and negative consequences

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Godfrey Chileshe (Dr)	GBV/SEA Expert
Willie Kalunga	ESIA Expert
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert

Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	39
Female	36
Total	75

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 KV Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by the Area Headman Peter Shaba of Pashane

Opening Remarks by the Area Headman

The meeting was called to order by Area Headman Peter Shaba who welcomed all the people that had

attended the meeting and commended the Makwelelo community for turning up to participate in the meeting.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP as well as the Consultant GOPA-intec to raise awareness for the Community Members, the traditional leadership and other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

Key Points Discussed

ZESCO Senior Regional Manager Milton Hamoombe:

- Outlined the project's history, including the 2021 Memorandum of Understanding (MoU) between Malawi and Zambia for the 400kV interconnector.
- Stressed the project's aim to enhance power trade, with ZESCO and ESKOM responsible for different portions of the transmission line.
- Provided a brief overview of the project, highlighting its initiation in 2015 with the MoU and its significance for improving power trade.
- The 400kV transmission wayleave would pass where people had already built houses of were using the land to plant hence for consultations with them before implementing that program.

GOPA-intec Presentation:

GOPA-intec RAP Specialist Stella Sakala:

- Emphasized the importance of EIA and RAP processes, mandated by the Environmental Management Act, for project approval.
- Detailed the ESIA/RAP stages, highlighting the need for stakeholder input to ensure environmental and social acceptability.
- Explained the ESIA/RAP process, including route selection, surveying, bush clearing, line pegging, excavation, and tower construction.
- The interconnector will assist with the sharing of power.
- Highlighted the Chipata substation expansion as a key component of the 400KV transmission line project.
- Indicated that three alternative routes were shortlisted
- Explained the purpose of stakeholder meetings as a legal requirement by ZEMA, providing an opportunity for Interested and Affected People (IAPs) to express views, concerns, suggestions, and recommendations before the ESIA Report is finalized.
- Stressed the importance of integrating recommendations and resolutions to ensure environmental and social acceptability.
- Explained the steps to project implementation and explained that to date which started with surveying land and putting pegs.
- Confirmed that the project would need 50 meters in width from the Msekera substation to Nkhoma substation in Malawi for the wayleave, with affected households being compensated.
- An evaluation or census would then be conducted along with the evaluation from the District Agriculture Cordinator's (DACO's) office for compensation
- Even during the planting season, people's crops would be compensated.
  There will be full compensation of people whose property would be destroyed.
- Encouraged the community to utilize the Grievance Redress Mechanism for any dissatisfaction with project implementation.

The meeting underscored the legal, environmental, and social aspects critical to the successful

implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure project success.
was being implemented.

MAKWELELO SCOPING MEETING MINUTES

Name and Institution	Concern	Response/Remarks
Bisalom Tembo from Chief Chinyaku's area	What will be done to ensure that the locals get the unskilled labour jobs	The contractor will be inducted, taken to the chiefs, headmen, councilor and DC to learn more on the legal requirements to employ the locals in the project
Christopher Shaba from Pamshane Village	How many years will it take before the project commences	The response was that the project had already started – with meetings and currently the best alternative routes were being considered
Shawa Cortisone	What will happen if the project passes through farmland	The response was that farming will continue and that the people would continue to use the 50 meters land for ploughing of crops such as sweet potatoes, beans, soya beans, maize and other low-growing crops would be allowed but no crop or plants taller than two meters would be approved. People will not be compensated for grazing land as they will continue using the land for that purpose.

Happeas Mumba	Will there be applications for jobs	The response was that unskilled labour would be hired as required and the land would remain as belonging to the villagers and they can still use it for ploughing.
Charity Zulu from Jenda village	How will the 400KV transmission line benefit the small scale households	The 400kv powerlines would first go the the Msekera substation for possible redistribution
Ngoma Thomas	What if there would be corruption when employing unskilled labour for the unskilled jobs	The response was that would be sorted out by the law.
Mwanza Josephat	Mr. Mwanza asked if bare farm land would be compensated	The response was that bare land would not be compensated but all property destroyed would be paid for.
Edward Shaba From Pashane	Will institutions such as hospitals and schools be destroyed	The response was no as the project would try by all means to avoid the government institutions
Mathias Phiri from Kundanga Village	Mr Phiri advised the community to accept the project for their own benefit. He also called for jobs once the project opens.	The response was that the contractor would be inducted and trained on the labour laws in Zambia which stipulated that the locals should have an upper-hand in things to do with unskilled labour.
Ireen Tembo	Will there be unskilled jobs for women	The response was yes
Mwona Banda	How will the compensation be done	The response was that the compensation would be done through the guidance of

		government valuators as well as the District Agricultural Coordinator's Office (DACO)
Godfrey Banda from the Catholic Church	He commended the project for plans to induct the contractor as well as involving the Chiefs and the traditional leadership to guide the contractor.	The commendation was noted.

Outcome of the Community Consultation meeting

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400KV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: Date

Minutes Confirmed by: D. [illegible] Date 2024/8/4

Position: D. [illegible] [illegible]

Senior Headman / Chairperson

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: July - August 2024 3rd Aug

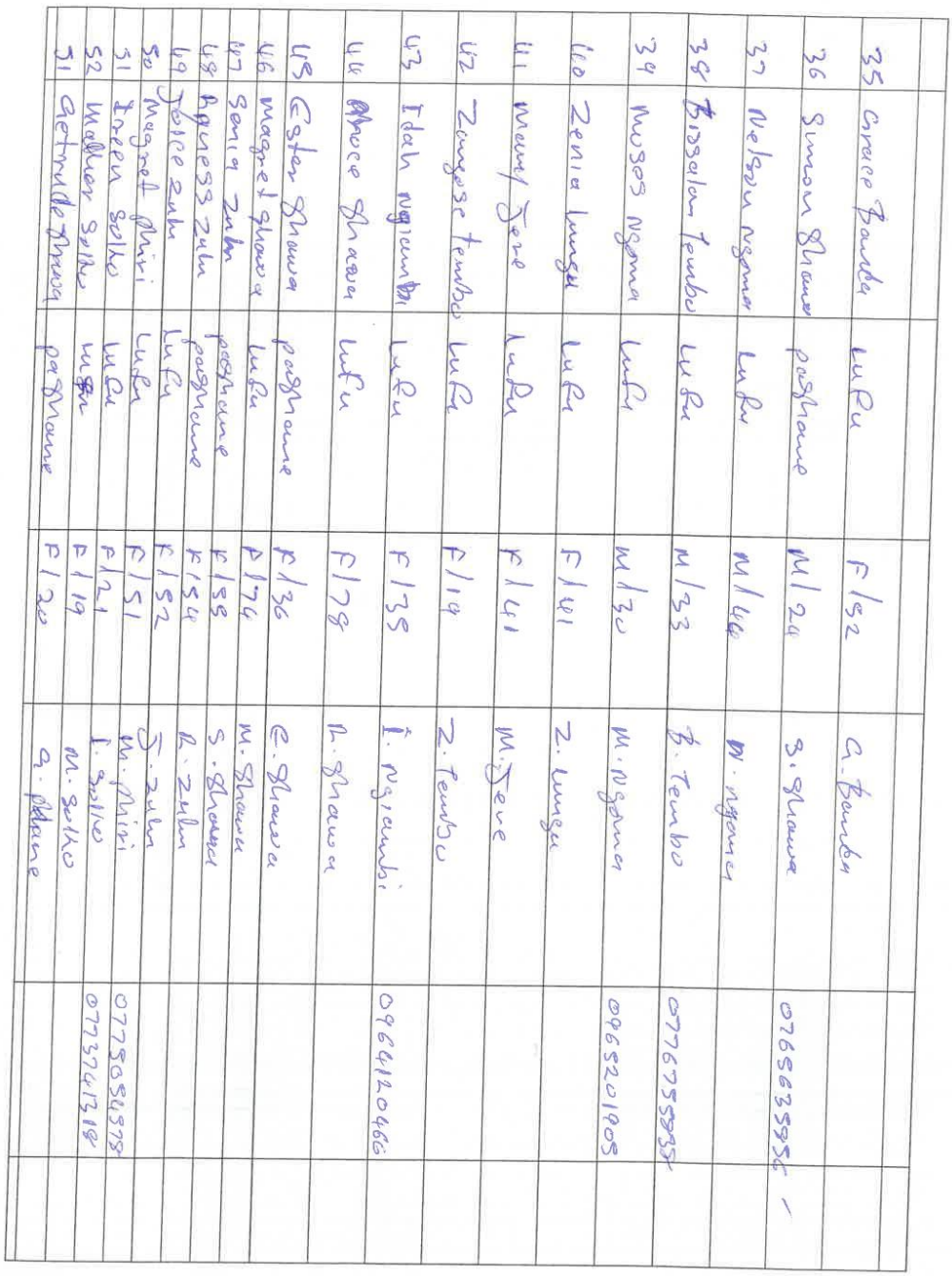
Location: ~~Vubwi~~ Makwelelo Community

No.	NAME	VILLAGE ~~ORGANISATION/DEPARTMENT~~	GENDER/AGE ~~ROLE/TITLE~~	SIGNATURE ~~EMAIL~~	PHONE NUMBER	~~DATE~~
01	Dingayo Shawa	Shane	M / 36	[signature]	0979119602	—
02	CHAILS NTHAKA	Mfunsani	M / 54	C. Nthaka	0979815078	—
03	Tisauke mumbe	Lufulu	F / 79	T. mber	0965669431	-

04	palautina Shawa	Makale/v	F/63	p. shawa		-
5	Fatines chiba	Lufu/v	F/76	F. chiba	0977938595	-
6	Anice NDlovu	Lufu/v	F/56	A. NDLovu	0971115564	-
7	Rabeka mumber	Lufu	F/39	R. mumber	0776813551	
8	Avaness Banda	Lufu	F/80	A. Banda		
9	Alice shawa	pashane	F/68	A. shawa	0776833096	
10	Sestina shawa	pashane	F/38	S. shawa	0968836391	
11	Elina soko	Lufu	F/68	E. soko		
12	Grace phiri	pashane	F/48	G. phiri	0967052803	
13	Esnea chongwe	pashane	F/48	E. chongwe	0972775264	

14	mathar phiri	Lufu/v	F/35	M. Phiri		
15	Judith Shawa	pashane	F/49	J. Shawa	0967048971	
16	Tisauke Zulu	Lufu	F/38	T. Zulu	0	
17	Catherine Banda	Lufu	F/50	C. Banda		
18	Betrice Shawa	Lufu	F/60	B. Shawa	0777602916	
19	Ireen Tembo	Lufu	F/57	I. Tembo		
20	precias Njobvu	Lufu	F/27	P. Njobvu		
21	Memory Njobvu	Lufu	F/30	M. Njobvu		
22	precias Shawa	pashane	F/30	P. Shawa	0973669615	
23	Queen Banda	Lufu	F/30	Q. Shawa	0967221875	
24	Vellina Shawa	pashane	F/47	V. Shawa	0865113359	

25	Million Shawa	pashane	F/43	M. Shawa	0967052386	
26	Roma Zulu	pashane	F/44	R. Zulu		
27	Tisa Banda	pashane	F/43	T. Banda		
28	Adess Shawa	pashane	F/45	A. Shawa	0776680406	
29	Mwaziona Nyoka	pashane	F/49	M. Nyoka	0763448080	
30	Gunico Lunga	pashane	F/59	G. Lunga	0979119602	
31	Rabecca Tembo	pashane	F/19	R. Tembo	0760930112	
32	Phelishas Zulu	pashane	F/19	P. Zulu		
33	Chokis Shawa	Lufu	F/70	C. Shawa		
34	Salafina Banda	pashane	F/34	S. Banda		



35	Grace Banda	Lufu	F/52	G. Banda		
36	Simon Shawa	pashane	M/24	S. Shawa	0765635856	✓
37	Nelson Ngoma	Lufu	M/46	N. Ngoma		
38	Bissalan Tembo	Lufu	M/33	B. Tembo	0776755838	
39	Moses Ngoma	Lufu	M/30	M. Ngoma	0965201905	
40	Zenia Lungu	Lufu	F/41	Z. Lungu		
41	Mary Jere	Lufu	F/41	M. Jere		
42	Zangose Tembo	Lufu	F/19	Z. Tembo		
43	Idah Ngiambi	Lufu	F/35	I. Ngiambi	0964120466	
44	Rhoce Shawa	Lufu	F/78	R. Shawa		
45	Ester Shawa	pashane	F/36	E. Shawa		
46	Magret Shawa	Lufu	F/74	M. Shawa		
47	Senia Zulu	pashane	F/55	S. Shawa		
48	Rgness Zulu	pashane	F/54	R. Zulu		
49	Joice Zulu	Lufu	F/52	J. Zulu		
50	Magret Phiri	Lufu	F/51	M. Phiri	0775054578	
51	Ireen Solko	Lufu	F/21	I. Solko	0773741318	
52	Mather Solko	Lufu	F/19	M. Solko		
51	Getrude Shawa	pashane	F/20	G. Shane		

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List Makwelelo

Date: July - August 2024

Location: Vubwi

No.	NAME	VILLAGE ~~ORGANISATION/DEPARTMENT~~	GENDER/AGE ~~ROLE/TITLE~~		SIGNATURE ~~EMAIL~~	PHONE NUMBER	~~DATE~~
1	ELIJAH MWANZA	LUFU	M	45	[signature]	0963708654	—
2	MABUUTO MUMBA	KAYOOZI FARM	M	50	m. mumba	0966019141	
3	DENNIS MITI	LUFU	M	27	[signature]	0972635304	

4	PHILLIMON ZULU	LUFU	M	38	[signature]	0779489378	
5	GIVEN MITI	LUFU	M	29	[signature]	0968503200	
6	MATHIAS ZULU	PASHANE	M	23	[signature]	0777627848	
7	ISAAC MWANZA	LUFU	M	23	[signature]	0773512319	
8	RODGERS SOKO	LUFU	M	49	R. Soko	0968645054	
9	LASTONE ZULU	PASHANE	M	48	L ZULU		
10	MICHAEL SHAWA	PASHANE	M	31	[signature]	0964412285	
11	MOSES SHAWA	PASHANE	M	62	Moses Shawa		
12	JAMES SHAWA	PASHANE	M	38	J. Shawa	0762718115	
13	EMMANUEL SHAWA	PASHANE	M	40	E. Shawa		

14	FORTSON SHAWA	KANYANJA	M	53	[illegible]	0978250269	
15	GODFREY BANDA	PASHANE	M	60	[illegible]	0779744569	
16	FRACKSON JERE	LUFU	M	68	[illegible]		
17	HAPPY NTHANI	FUNSANI	M	21	nthani	0969405259	
18	THOMAS NGOMA	LUFU	M	54	[illegible]	0961206875	
19	PEPULANI BANDA	LUFU	M	54	P. Banda		
20	GEORGE MOYO	KANYANJA	M	39	[illegible]	0963498416	
21	Billard [illegible]	Kanyanja	M	39	[illegible]	0966810922	
22	JOSPHAT MWANZA	KANYANJA	M	41	[illegible]	0965785207	
23	AMONI ZULU	LUFU	M	40	[illegible]	0965299218	
24	OSWARD SHAWA	PASHANE	M	55	[illegible]	0962191611	

25	MWAONA BANDA	LUFU	M	66	M. Banda	0964974879	
26	JOACKIM PHIRI	DINGENI	M	63	[signature]	0964507747	
27	PETER SHAWA	PASHANE	M	72	P. Shawa	0978320672	
28	EDWARD SHAWA	PASHANE	M	63		[signature]	
29	Abias Mumba	Lufu	M	23	[signature]	0770499777	
30	ELIJAH DAKA	KANYANJA	M	44	DAKA	0965085430	
31	TIMOTHY SHAWA	LUFU	M	32	T. Ch S	0764047209	
32	CHRISTOPHER SHAWA	PASHANE	M	60	Shawa	0961132383	
33	RICHARD BANDA	LUFU	M	47	R Banda	0961190088	
34	MASIYE BANDA	MAKANGILA SECTION	M	64	[signature]	0965699860	

12. Chisiya Community Stakeholder Consultative Meeting held at Mzigawa Primary School

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Mzigawa Primary School - Chisiya
Date: 08 August 2024
Time: 14:30 hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decisionmaking; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under European Investment Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks (compensation)
- Project benefits and negative consequences

1

Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Kandi Shikabi	Chief Environmental Scientist
Milton Hamoombe	Area Manager
Joy Mwaba	Social Specialist
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

SAPP Representative

NAME	POSITION
Nomasonto Mnisi	SAPP Representative

Number of Participants

Male	39
Female	36
Total	75

AGENDA OF THE MEETING

- Call to Order
- Prayer and National Anthem
- Self-Introductions
- Objectives of the meeting
- Overview of the Project by ZESCO
- Presentation by GOPA Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 KV Interconnector Project

(a) To Inform the stakeholder with balanced and objective information to help them understand the project,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) Gather feedback on the information given and ensure that their concerns and desired outcomes are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

Introductory Remarks by the Area Headman Peter Shaba of Pashane

Opening Remarks by the Area Headman

The meeting was called to order by Area Headman Peter Shaba who welcomed all the people that had

attended the meeting and commended the Makwelelo community for turning up to participate in the meeting.

DESCRIPTION OF THE PROJECT

The meeting was held as part of stakeholders' consultation in compliance with the Environmental Management Act No. 12 of 2011 as amended by the Environmental Management (Amendment) Act No. 8 of 2023" read together with Statutory Instrument No. 28 of 1997. The meeting provided an opportunity for ZESCO working with SAPP as well as the Consultant GOPA-intec to raise awareness for the Community Members, the traditional leadership and other Stakeholders on the proposed 400kV transmission line between Chipata and Nkhoma in Malawi.

PROJECT PRESENTATION by ZESCO

Key Points Discussed

ZESCO Senior Regional Manager Milton Hamoombe:

- Outlined the project's history, including the 2021 Memorandum of Understanding (MoU) between Malawi and Zambia for the 400kV interconnector.
- Stressed the project's aim to enhance power trade, with ZESCO and ESKOM responsible for different portions of the transmission line.
- Provided a brief overview of the project, highlighting its initiation in 2015 with the MoU and its significance for improving power trade.
- The 400kV transmission wayleave would pass where people had already built houses of were using the land to plant hence for consultations with them before implementing that program.

GOPA-intec Presentation:

GOPA-intec RAP Specialist Stella Sakala:

- Emphasized the importance of EIA and RAP processes, mandated by the Environmental Management Act, for project approval.
- Detailed the ESIA/RAP stages, highlighting the need for stakeholder input to ensure environmental and social acceptability.
- Explained the ESIA/RAP process, including route selection, surveying, bush clearing, line pegging, excavation, and tower construction.
- The interconnector will assist with the sharing of power.
- Highlighted the Chipata substation expansion as a key component of the 400KV transmission line project.
- Indicated that three alternative routes were shortlisted
- Explained the purpose of stakeholder meetings as a legal requirement by ZEMA, providing an opportunity for Interested and Affected People (IAPs) to express views, concerns, suggestions, and recommendations before the ESIA Report is finalized.
- Stressed the importance of integrating recommendations and resolutions to ensure environmental and social acceptability.
- Explained the steps to project implementation and explained that to date which started with surveying land and putting pegs.
- Confirmed that the project would need 50 meters in width from the Msekera substation to Nkhoma substation in Malawi for the wayleave, with affected households being compensated.
- An evaluation or census would then be conducted along with the evaluation from the District Agriculture Cordinator's (DACO's) office for compensation
- Even during the planting season, people's crops would be compensated.
  There will be full compensation of people whose property would be destroyed.
- Encouraged the community to utilize the Grievance Redress Mechanism for any dissatisfaction with project implementation.

The meeting underscored the legal, environmental, and social aspects critical to the successful

implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure project success.
was being implemented.

Happeas Mumba	Will there be applications for jobs	The response was that unskilled labour would be hired as required and the land would remain as belonging to the villagers and they can still use it for ploughing.
Charity Zulu from Jenda village	How will the 400KV transmission line benefit the small scale households	The 400kv powerlines would first go the the Msekera substation for possible redistribution
Ngoma Thomas	What if there would be corruption when employing unskilled labour for the unskilled jobs	The response was that would be sorted out by the law.
Mwanza Josephat	Mr. Mwanza asked if bare farm land would be compensated	The response was that bare land would not be compensated but all property destroyed would be paid for.
Edward Shaba From Pashane	Will institutions such as hospitals and schools be destroyed	The response was no as the project would try by all means to avoid the government institutions
Mathias Phiri from Kundanga Village	Mr Phiri advised the community to accept the project for their own benefit. He also called for jobs once the project opens.	The response was that the contractor would be inducted and trained on the labour laws in Zambia which stipulated that the locals should have an upper-hand in things to do with unskilled labour.
Ireen Tembo	Will there be unskilled jobs for women	The response was yes
Mwona Banda	How will the compensation be done	The response was that the compensation would be done through the guidance of

Nathan Mwewa from Chikoka 1	Will people be allowed to continue ploughing in the wayleave and will they be compensated for grazing land	The response was that ploughing of crops such as sweet potatoes, beans, soya beans, maize and other low-growing crops would be allowed but no crop or plants taller than two meters would be allowed. People will not be compensated for grazing land as they will continue using the land for that purpose.

Outcome of the Community Consultation meeting

The meeting underscored the legal, environmental, and social aspects critical to the successful implementation of the 400kV transmission line project. Active stakeholder participation was encouraged to address community concerns and ensure the project's success.

Confirmation of Minutes

Minutes prepared by: CHARITY MOONGA-Chamangalo Date 4TH AUGUST, 2024

Minutes Confirmed by: HENRY PHIRI Date 4th August 2024

Position: CHAIRPERSON

SAPP

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA Mzigawa Primary Sch

Attendance List

Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
Maliseni Banda	M 44	D96 farm	0972603845	[signature]
Gerald Banda	M 47	Chikoka	0971414346	[signature]
Banda Andrew	M 56	Chikoka	0972258547	[signature]
Banda Fernando	M 25	Pekete	0975455537	[signature]
Stephen Chisi	M 51	Chikoka	—	[signature]

NAME	GENDER/AGE	VILLAGE	PHONE NO	SIGNATURE
Rabson Nkhoma	M / 21	Pekete	0 —	R. Nkhoma
Wilson Phiri	M / 43	Chikoka	0971413537	W. Phiri
Mbewe Phineus	M / 51	Chikoka	0973318968	P. Mbewe
Jeff Phiri	M / 60	Chikoka	—	G. Phiri
Tobias Banda	M / 46	Chikoka	0978441972	[illegible]
Jairus Phiri	M / 42	Mzigawa	0974856932	[illegible]
James Banda	M / 40	Mzigawa	0979148137	[illegible]
Abraham Zulu	M / 66	Mchilikileni	—	A. Zulu
Filomena Phiri	F / 60	Chikoka 1	—	F. M. Phiri
Tesha Mbewe	F / 25	Chikoka 2	—	T. Mbewe
Nasitazia Banda	F / 50	Chikoka 1	0771402094	N. Banda
Gilibeta Mbewe	F / 33	Chikoka 1		G. Mbewe
Dolofe Banda	F / 28	Chikoka 1		D. Banda
Kosimas Mwanza	M / 26	Chikoka 1		C. MWANZA
Ruth Milanzi	F / 46	Chikoka 2	0977368590	R. Milanzi
Ruth Mbewe	F / 70	Chikoka 2	0974767105	R. Mbewe
Esther Banda	F / 37	Chikoka 1		E. Banda
Christer Bell Mwanza	F / 47	Chikoka 1		C. Mwanza
Salome Mvula	F / 46	Chikoka 1		S. Mvula
Regina Mwale	F / 21	Chikoka 1		R. Mwale
Mery Chisi	F / 61	Chikoka 1		M. Chisi
Elizabeth Mbewe	F / 49	Chikoka 1		E. Mbewe
Maliyana Sakala	F / 53	Kamaila		M. Sakala
Matrona Mbewe	F / 36	Khungwa	0978072501	M. Mbewe
Joyce Sakala	F / 45	Kamaila		J. Sakala
Justina Phiri	F / 52	Chikoka 2	0968335084	J. Phiri
Makulata Mbewe	F / 46	Chikoka 1	0975612499	M. Mbewe
Cathrine Mwale	F / 43	Chikoka 2	0773505269	C. MWALE
Jailos Phiri	M / 34	Chikoka 1		J. Phiri
ELIA NJOBVU	M / 29	Khukhwa		E. NJOBVU

Defulan Banda	M/23	Chikoka 1	0972377138	D. Banda
Pethia Banda	M/27	Chikoka 2		P. Banda
Zakeo Sakala	M/36	Nkhukhwa		Z. Sakala
Kalaba Mwelwa	M/23	Chikoka 1		K. Mwelwa
Daniel Phiri	M/42	Chikoka 2	0972270450	D. Phiri
Samson Mbewe	M/24	Kamaila		S. Mbewe
Benson Phiri	M/62	Chikoka 1		B. Phiri
Royde Phiri	M/21	Chikoka 1		R. Phiri
Emanuel Banda	M/31	Zipala		E. Banda
Julias Banda	M/26	Kagwazina		J. Banda
Mackson Banda	M/48	Chikoka 2		M. Banda
RICHARD MWANZA	M/45	CHIKOKA 2	0776168030	R. MWANZA
LAZALO MWANZA	M/43	KAMAILA 1		[illegible]
Thomas Divelias	M/39	Kamaila		T. Divelias
Patrick Mbewe	M/56	Chikoka 2		P. Mbewe
Macksesyo Mwaza	M/59	Kalikhwembe		M. Mwanza
Maick Banda	M/22	Chikoka 1		M. Banda
Mabvuto Moyo	M/25	Chikoka 2		M. Moyo
Petter Nkhata	M/28	Chikoka 2		P. Nkhata
Suzen Mwale	F.24	Chikaka 1		S. Mwale
Rusy Phiri	F.28	Nkhukhwa		R. Phiri
Jimmy Chisi	M.45	Chikoka 1	0978023303	Chisi
Joyce Phiri	F.20	Chikoka 1		J. Phiri
Kefiline Phiri	F.38	Chikoka 2		K. Phiri
Telesa Mbewe	F.45	Chikoka 2		T. Mbewe
Krala Phiri	F.29	Kamaila		K. Phiri
Judith Banda	F.69	Chikoka 1		J. Banda

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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

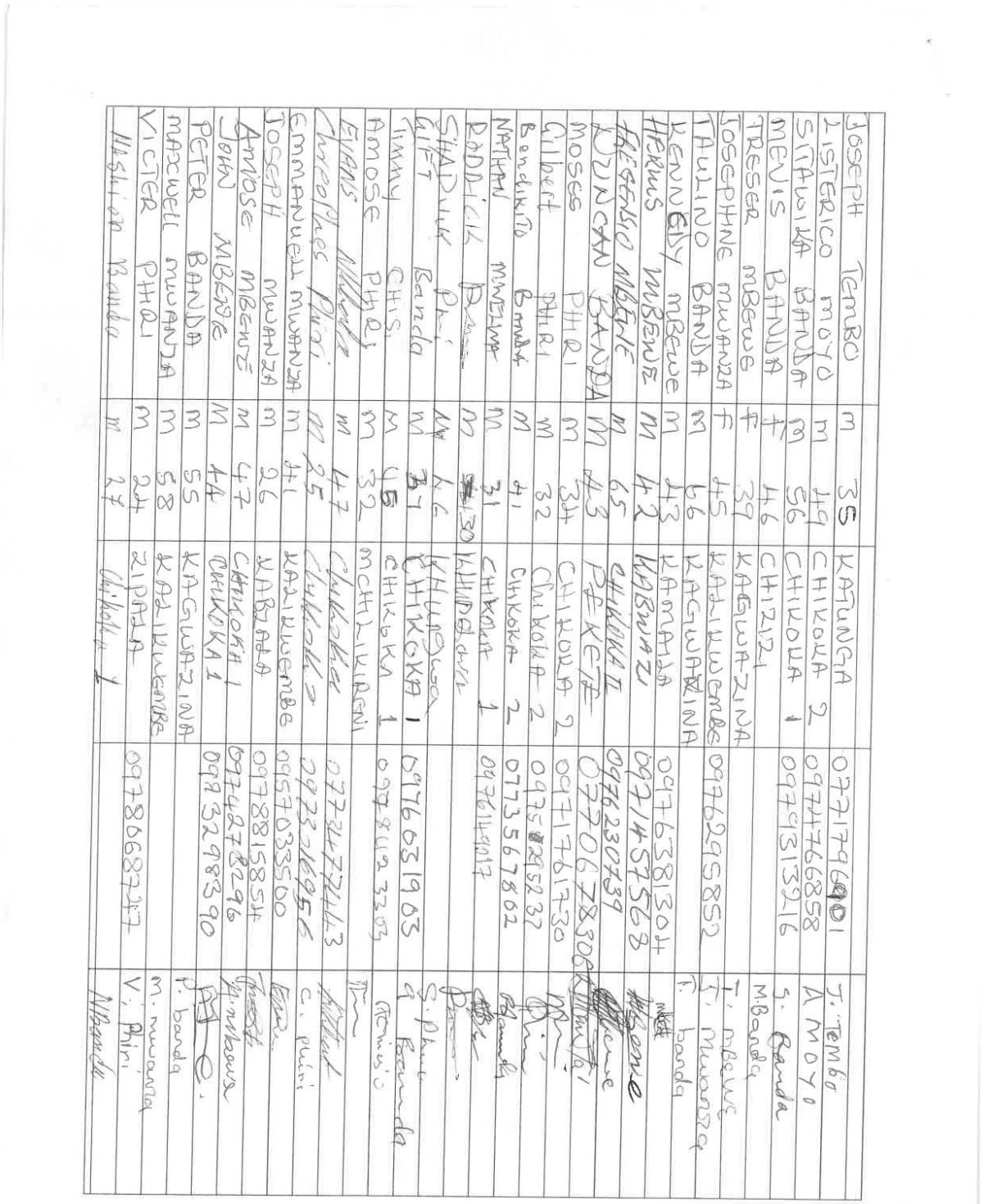
Meeting/Event: Malawi – Zambia ESIA

Attendance List Mzimba Chisyira area Primary School

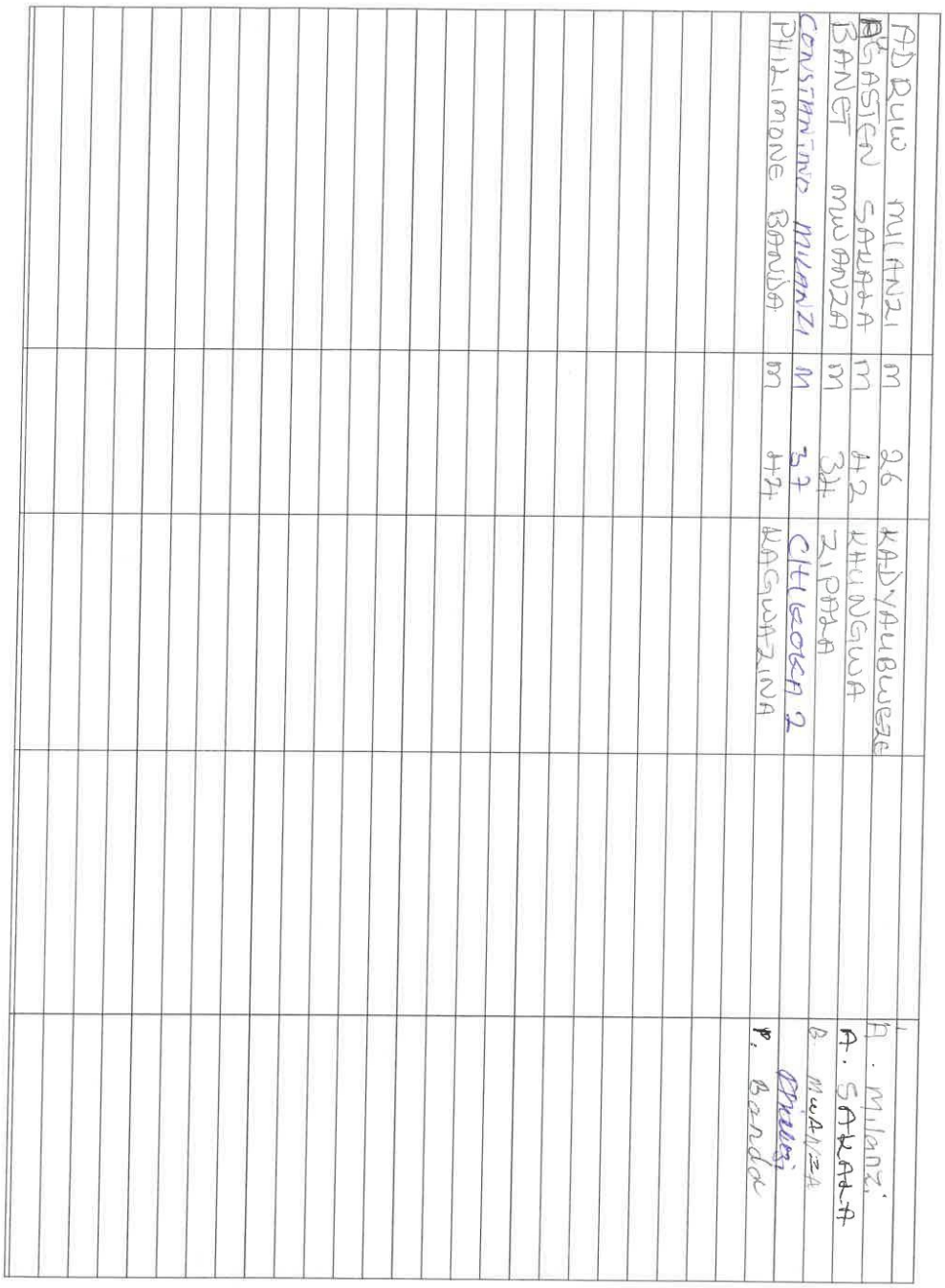
Date: July – August 2024

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	PHONE/EMAIL	SIGNATURE
LEONARD MUSALE	M. 67	CHIPONDA	0976065S	L. musale
PATRICIO TEMBO	M - 69	LOZIO	0976031468	P. Tembo
PATRICK SAKALA	M 84	KACHWAZINA		PSakala
CHONGANI BANDA	M 65	THOMO GWAZA		C. banda
FEDERICO MBEWE	M 66	MABZALA	0979666482	F MBEWE



JOSEPH TEMBO	m	35	KATUNGA	0771796901	J. Tembo
LISTERICO MOYO	m	49	CHIKOKA 2	0974766858	A MOYO
SITAWIKA BANDA	m	56	CHIKOKA 1	0979313216	S. Banda
MEVIS BANDA	F	46	CHIZIZI		M.Banda
TRESER MBEWE	F	39	KAGWAZINA		T. MBEWE
JOSEPHINE MWANZA	F	45	KALIKWEMBE	0976295852	J. Mwanza
TAULINO BANDA	M	66	KAGWAZINA		T. banda
KENNEDY MBEWE	M	43	KAMAILA	0976381304	[illegible]
HERMS MBEWE	M	42	KABWAZI	0971457568	[illegible]
FREGENSIO MBEWE	M	65	CHIKOKA II	0976230739	[illegible]
DUNCAN BANDA	M	43	PEKETE	0770678306	[illegible]
MOSES PHIRI	M	34	CHIKOKA 2	0971761730	[illegible]
Gilbert PHIRI	M	32	Chikoka 2	0975295237	[illegible]
Bendikito Banda	M	41	CHIKOKA 2	0773567802	[illegible]
NATHAN MWELWA	M	31	CHIKOKA 1	0976149017	[illegible]
RODRICK [illegible]	M	30	KHUDELOWA		[illegible]
SHADUK Phiri	M	46	KHUNGWA		S. Phiri
GIFT Banda	M	37	CHIKOKA 1	0976031903	G Banda
TIMMY CHISI	M	45	CHIKOKA 1	0978423303	[illegible]
AMOSE PHIRI	M	32	MCHILIKIRENI		[illegible]
EVANS [illegible]	M	47	Chikoka	0773477443	[illegible]
Chreophes Phiri	M	25	Chikoka 2	0973016956	C. phiri
EMMANUELL MWANZA	M	41	KALIKWEMBE	0957033500	[illegible]
JOSEPH MWANZA	M	26	KABZALA	0978815854	[illegible]
AMOSE MBEWE	M	47	CHIKOKA 1	0974278296	A. mbewe
JOHN MBEWE	M	44	CHIKOKA 1	0973298390	[illegible]
PETER BANDA	M	55	KAGWAZINA		P. banda
MAXWELL MWANZA	M	58	KALIKWEMBE		M. mwanza
VICTER PHIRI	M	24	ZIPALA	0978068747	V. Phiri
Nashion Banda	m	27	Chikoka 1		NBanda



ADRUW MULANZI	M	26	KADYAUBWEZE			
AGASTEN SAUATA	M	42	KHUNGWA			
BANGT MWANZA	M	34	ZIPADA			
CONSTANTINE MULANZI	M	37	CHIBOKA 2			
PHILIMONE BANDA	M	42	NGONWANA			

APPENDIX 3: Photographs of the consultative meetings

Chipata District Development Coordinating Committee Stakeholder Consultative Meeting held at Eastern Comfort Lodge in Chipata

Vubwi District Development Coordinating Committee Stakeholder Consultative Meeting held in the Council Chamber

Kauzu Community Stakeholders Consultative Meeting held at Kauzu Primary School

Katandala Community Stakeholder Consultative Meeting held at Katandala Primary School

Mgabi Community Stakeholder Consultative Meeting held at Mgabi Catholic Church Grounds

Women attending the Feni Community Stakeholder Consultative Meeting held at Chipikula Primary School

Kayeka Community Stakeholders Consultative Meeting

Community Stakeholder Consultative Meeting held at Lunyike Primary School

Mtowe Community Stakeholder Consultative Meeting held at Mtowe Primary School

Community Stakeholder Consultative Meeting held at Makwelelo Primary School

Chipata South Satellite City Community Stakeholder Consultative Meeting held at Jenda Primary School

Chisiya Community Stakeholder Consultative Meeting held at Mzigawa Primary School

APPENDIX 4: Minutes of the scoping disclosure meetings

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Katandala Primary School
Date: 25 November 2024
Time: 10:30 hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the

consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**39**
Female	**51**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order and Welcoming Remarks.

The meeting was called to order by Katandala Primary School Deputy Headteacher Zamiwe Ngulube who welcomed all the people present and called for an opening prayer.

Purpose of the Meeting.

GOPA-intec Country Coordinator, Robam Musonda, outlined the purpose of the meeting, emphasizing its focus on the proposed 400KV interconnector to be constructed between Zambia and Malawi. He noted that international standards require keeping communities informed about the outcomes of consultations, including the scoping meetings held in July and August 2024.

Mr. Musonda elaborated on the three alternative routes presented during the scoping meetings, highlighting that alternative route number 3 was selected as the preferred option. This route begins at the Msekera substation, passes through Chief Chinyaku's area, continues to Mtowe, crosses Chadiza Road, and extends through the Feni area and Mwami Border before entering Malawi. He explained that alternative routes 1 and 2 were not preferred due to their higher impact on people and the environment, including significant disruption to vegetation in hilly areas. In contrast, route 3 minimizes social and environmental impacts by affecting fewer people and traversing flat terrain, thereby preserving the environment.

Addressing the status of Katandala, Mr. Musonda clarified that since the community is not located along the preferred route, its members will not be affected by the project. He encouraged them to continue with their normal lives and routines without concern for displacement or disruption.

Additionally, Mr. Musonda reassured the community that during construction on route 3, there would be no segregation in access to employment opportunities. Local residents, including those from areas not directly affected, are encouraged to register for manual jobs that may become available during the project's implementation.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.

11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

KATANDALA SCOPING MEETINGS DISCLOSURE MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
John Zulu (Mzilikazi Section)	Mr. Zulu asked that since the power transmission line is not passing through Katandala area, will the local people in Katandala still be able to access the power.	The response was that these are high voltage pylons were an interconnector between Malawi and Zambia. The lines were not meant for home consumption but would feed into the national grid for countrywide distribution.
Phillip Zulu from Katandala	Mr. Phiri asked why the meeting was being held in Katandala when the transmission line would pass in another area	The response was that international standards required that the local people are informed about the outcome of the scoping meetings.
Hilda Phiri from Katandala	Ms. Phiri wondered why the project would pass through a different area	The response was that the project was avoiding disrupting many people's lives and that is the reason why a less populated route was selected

Regina Phirifrom Katandala Emmanuel Nyoka from Mzilikazi	Ms Phiri wanted to find out if everyone would be allowed to work when the project starts Mr. Nyoka wanted to find out if people looking for construction jobs would need to camp there	The response was that when the project starts, everyone the area would be free to apply for jobs The response was that people needing jobs would need to go and be present at the site

Key Outcome of the meeting

The key outcome of the scoping disclosure meeting at Katandala Primary School was the confirmation of alternative route number 3 as the preferred option for the proposed 400KV interconnector between Zambia and Malawi, selected to minimize social and environmental impacts. The meeting also clarified that while Katandala would not be directly affected by the project, its residents could participate in employment opportunities during construction. The community's feedback and concerns raised during the scoping meetings were acknowledged and will inform the ESIA studies and project design.

Confirmation of Minutes Zamine Ngulube

Minutes prepared by: Charity Moonga. [signature] **Date** 01/12/24

Minutes Confirmed by: Zamine Ngulube **Date** 01/12/24

Position: Cheurperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Mgabi Catholic Church
Date: 25 November 2024
Time: 15:00hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the

consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**39**
Female	**51**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order and Welcoming Remarks.

The meeting was officially called to order by GOPA-intec Communication Specialist, Charity Moonga, who then invited a participant to lead the opening prayer.
Following the prayer, Headman Mgabi delivered the welcoming remarks. He warmly greeted the community and stakeholders, expressed gratitude to the project team for their continued engagement with the area, and encouraged all community members to actively participate in the discussions.

Purpose of the Meeting.

ZESCO

Zesco Social Specialist Naita Nalumango addressed the key issues raised during the previous scoping meetings. The key issues were as follows:

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

GOPA-intec Country Coordinator, Robam Musonda, explained that the meeting was focused on the proposed 400KV interconnector to be constructed between Zambia and Malawi. He emphasized that, in line with international standards, the community must be kept informed about the outcomes of the scoping meetings held in July and August 2024.

Mr. Musonda outlined the three alternative routes presented during the scoping meetings and identified alternative route 3 as the preferred option for the transmission line. This route begins at the Msekera substation, passes through Chief Chinyaku's area, continues to Mtowe, crosses Chadiza Road, extends through Feni and Mwami Border, and finally enters Malawi.

He explained that routes 1 and 2 were not selected due to their significant social and environmental impacts, including displacement of a larger number of people and potential harm to vegetation in hilly areas. In contrast, route 3 was chosen because it affects fewer people, traverses flatter terrain, and minimizes environmental disruption by preserving vegetation in sensitive areas.

Mr. Musonda further noted that the people of Mgabi, situated along the preferred route, would be directly affected. As a result, the project would maintain ongoing engagement with the community to ensure they are informed and involved in the next steps.

MGABI SCOPING MEETINGS MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Matriano Tembo from Mgabi	Mr. Tembo wanted to know how different the already existing power lines from Chipata to Malawi were, compared to the coming 400kv transmission line	The response was that the voltage for the 400kv would be higher as the existing ones were 330kv lines.
Headman Mgabi	When the project starts, the people of Mgabi should be informed so that they participate	This was noted.

Outcome of the Community Consultation meeting

The meeting provided the community with feedback on the outcomes of the scoping consultations for the proposed 400KV interconnector between Zambia and Malawi. Alternative route 3 was confirmed as the preferred transmission line path due to its minimal social and environmental impact, and stakeholders were reassured of ongoing engagement throughout the project lifecycle. The project team also addressed community concerns, emphasizing fair compensation, job opportunities, and adherence to environmental and social safeguards.

Confirmation of Minutes

Minutes prepared by: Charity Moonga Hinamanjilo

Date 01/12/24

Minutes Confirmed by: LoLesi Mahosi Date
Position:
Hedmni mugabi

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Feni Marketplace
Date: 26 November 2024
Time: 09:30 hrs

Introduction
The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting
The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**54**
Female	**27**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the meeting to order.

The meeting was opened by the Nsingo area ward councilor Frank Phiri, who welcomed attendees and led an opening prayer. The area headman then extended a warm welcome to the ZESCO and GOPA teams, encouraging open interaction with the community.

Purpose of the Meeting.

GOPA- intec Country Coordinator Robam Musonda explained that the meeting was about the 400KV interconnector to be constructed between Zambia and Malawi and the requirement of the international standards was that the community should be kept informed about the outcome of the scoping meetings which took place in July/August 2024.

Preferred Alternative Route

Mr. Musonda elaborated on the three alternative routes presented during the scoping meetings, identifying Alternative Route 3 as the preferred option for the proposed 400KV transmission line between Zambia and Malawi. This route begins at the Msekera substation, passes through Chief

Chinyaku's area, continues to Mtowe, crosses Chadiza Road, extends through the Feni area, and Mwami Border, and ultimately enters Malawi.

He explained that Alternative Routes 1 and 2 were not selected due to their higher social and environmental impacts, which included the displacement of a larger number of people and greater disruption to vegetation. In contrast, Alternative Route 3 minimizes these impacts, affecting fewer people and traversing predominantly flat terrain, thus preserving the vegetation in hilly areas and protecting the environment.

Mr. Musonda emphasized that the Feni community lies along the preferred route and will be directly affected by the project. As such, ongoing engagement and regular updates will be provided to ensure the community remains informed at every stage.

In closing, the Nsingo Ward Councilor encouraged all community members, particularly women and youth, to actively participate in all scheduled project meetings to explore opportunities for involvement and potential benefits.

Mr. Musonda addressed the key issues raised by communities during the previous scoping meetings which took place in July-August 2024.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

SCOPING MEETINGS MINUTES

Name and Institution	Concern or comments	Response/Remarks
Rodgers Mwanza from Feni	Mr. Mwanza commended the project for choosing the area passing through Feni as the alternative route saying the project would greatly benefit the community. He urged the project to continue carrying out stakeholder engagement meetings throughout the process	The comment was noted
Acclell Tembo from Feni Village	Mr. Tembo re-emphasised the need for the project to ensure that the contractors pay the engaged workers fair wages and on time. The project should ensure that the contractor does not run away without paying the local workers	The response was that the workers should never agree to work without being paid. ZESCO and the Consultant GOPA would continue to monitor what was going on in the project site to ensure that workers were not mistreated. The workers were also urged to report all manner of abuse by the contractor.
Mr. Zumani Banda	Mr. Banda reiterated the need to treat the workers well	This was noted.

Key Outcome of the Meeting

The meeting successfully provided feedback to stakeholders on the outcomes of the scoping meetings held in July and August 2024. It confirmed Alternative Route 3 as the preferred path for the proposed 400KV transmission line, selected for its minimal social and environmental impact. The project team addressed community concerns, including fair worker treatment, adequate compensation for affected individuals, and ongoing community engagement throughout the project lifecycle. Stakeholders were encouraged to actively participate in future meetings to maximize project benefits.

Confirmation of Minutes

Minutes prepared by: Charity Moonga - [signature] **Date** 01/12/24

Minutes Confirmed by: FRANK PHIRI [signature] **Date** 01/12/2024

Position: NSINGO WARD COUNCILLOR

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Kayeka – Msadelela Meeting Place
Date: 26 November 2024
Time: 14:30 hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	Environmental Scientist
Naita Nalumango	Social Specialist

Number of Participants

Male	54
Female	27

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. **Calling meeting to order:**
2. **Opening Prayer:**
3. **Opening & Welcoming Remarks:**
4. **Introductions**
5. **Discussion of key issues raised during the Scoping meetings held in July and August, 2024.**
6. **Discussion of the preferred transmission line route selected.**
7. **Plenary (Questions, answers and suggestions**
8. **Closing Remarks**
9. **Closing Prayer**

Calling the Meeting to Order

The meeting was called to order by Nsingo Ward Councilor, Kayeka, who welcomed attendees, led an opening prayer, and facilitated self-introductions of the project team.

Welcoming Remarks

Following the prayer, the councilor invited the area Headman, who extended a warm welcome to the ZESCO and GOPA teams. The Headman encouraged them to engage freely with the community throughout the meeting.

Purpose of the Meeting

GOPA-intec Country Coordinator, Robam Musonda, outlined the purpose of the meeting, focusing on the proposed 400KV interconnector to be constructed between Zambia and Malawi. He emphasized the

importance of adhering to international standards, which require keeping communities informed about the outcomes of consultations, including the scoping meetings held in July and August 2024. Mr. Musonda also addressed the key issues raised during those previous consultations.

Preferred Alternative Route

Mr. Musonda elaborated on the three alternative routes presented during the scoping meetings, emphasizing that Alternative Route 3 was selected as the preferred route for the proposed 400KV transmission line between Zambia and Malawi. This route begins at the Msekera substation, passes through Chief Chinyaku's area, continues to Mtowe, crosses Chadiza Road, extends through the Feni area, and Mwami Border, before entering Malawi.

He explained that Alternative Routes 1 and 2 were not preferred due to their significant social and environmental impacts, including the displacement of a larger number of people and disruption to vegetation. In contrast, Alternative Route 3 minimizes these impacts, affecting fewer individuals and traversing predominantly flat terrain, which helps preserve vegetation in hilly areas and protects the environment.

Mr. Musonda also noted that the people of Kayeka are located along the preferred route and would be directly affected by the project. As a result, he assured the community that they would remain engaged and regularly updated at every stage of the project to address their concerns and ensure their active involvement.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

In closing the meeting Nsingo Ward Councilor, urged all community members, especially the youths and women to ensure that they attend all scheduled meetings of the project to see how they could benefit from it.

SCOPING MEETINGS MINUTES

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Alikanjelo Lungu	Mr. Lungu wanted to find out how community members were going to directly benefit from the project.	This would be communicated later in the project

Outcome of the Community Consultation meeting

1. **Key Outcome of the Scoping Disclosure Meeting**

The primary outcome of the scoping disclosure meeting held on 26th November 2024 was the confirmation of **Alternative Route 3** as the preferred route for the proposed 400 kV transmission line between Zambia and Malawi. This route was chosen due to its minimal environmental and social impacts, as it traverses flatter terrain and affects fewer people. Community members along the route, particularly those in Kayeka, will be directly impacted, and ongoing engagement will be maintained throughout the project's lifecycle to ensure their concerns are addressed.

Confirmation of Minutes

Minutes prepared by: Charity Mooya-Chanda Date 01/12/2024

Minutes Confirmed by: FRANK PHIRI Date 01/12/2024

Position: NSUNSO WARD COUNCILLOR.

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRCT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Council Chamber
Date: 27.11.2024
Time: 09:30hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are scoping disclosure meetings informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under World Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The second round of public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks,
- Project benefits and negative consequences
- Scoping disclosure

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE	
Robam Musonda	Country Coordinator	
Charity Moonga	Communication Specialist	

ZESSCO TEAM

NAME	TITLE
Moses Chansa	Environmental Scientist
Naita Nalumango	EIA Specialist

Number of Participants

Male	54
Female	27

AGENDA OF THE MEETING

- Call to Order
- Prayer
- Self-Introductions
- Objectives of the meeting
- Discussion of key issues raised during the Scoping meetings by ZESCO
- Scoping Disclosure
- Presentation by GOPA
- Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 KV Interconnector Project

(a) To Inform the stakeholder on the preferred route and present them with balanced and objective information to help them understand the project further,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) To give feedback to stakeholders on the concerns and desired outcomes raised during scoping meetings and ensure that that these concerns are fully understood and taken into account and
(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

MEETING AGENDA

Calling meeting to order:
Opening Prayer:
Opening & Welcoming Remarks:
Introductions
Discussion of key issues raised during the Scoping meetings by ZESCO
Scoping Disclosure Presentation by GOPA Plenary Session
Plenary (Questions & Answers, Submission of key issues of concern/ Responses and Remarks)
Closing Remarks
Prayer

Chipata District Council Public Relations Officer

Calling the meeting to order.
The meeting was called to order by Chipata District Council Public Relations Officer Isaac Mulaisho who welcomed the people and later called for an opening prayer.

Welcoming Remarks
After the prayer, Mr. Mulaisho also welcomed the ZESCO and GOPA team to the meeting and urged everyone to freely participate.

Purpose of the Meeting.
GOPA- intec Country Coordinator Robam Musonda explained that the meeting was about the 400KV interconnector to be constructed between Zambia and Malawi and that the meeting was a follow up to the scoping meetings which took place in July/August 2024 over the same project. Mr. Musonda explained the project design and the international standards' requirement for continued stakeholder engagement at each stage of the project. Mr. Musonda also addressed the key issues raised by the DDCC and the communities during the previous scoping meetings which took place in July-August 2024.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people,

especially the vulnerable people (women, aged and disabled).

3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. **Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.**
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public sensitization should be extended to community members.

PREFERRED ALTERNATIVE ROUTE

Mr. Musonda further explained the three alternative routes that were presented during the scoping meetings and highlighted that the preferred route for the proposed 400KV transmission line between Zambia and Malawi would be alternative route number 3, which was commencing from Msekera substation, passing through Chief Chinyaku's area, through to Mtowe, crossing Chadiza road, then Feni area, Mwami Border and then finally into Malawi.

He explained that alternatives line number 1 and 2 were not preferred because many people would be affected. Additionally, vegetation would also be affected and hence the move to select alternative route number 3 where very few people would be affected by the project and since it was more of flat land, vegetation in the hills would not be affected, hence protecting the environment.

He explained a committee would be put in place to monitor the project and ensure that all comments or concerns about the project were addressed. A Grievance Redress Mechanism would also be circulated soon through which all grievances would be channeled.

In closing the meeting, ZESCO Chief Engineer Brian Mumba thanked participants for attending the

meeting explaining that the utility firm likes working with the community adding that the proposed interconnector between Zambia and Malawi was a symbol of cooperation. He explained that Zambia had continued to struggle with a power deficit due to the absence of interconnectors to enable the country import power from neighbouring countries such as Tanzania which had excess power. He explained that the Malawi Zambia interconnector was not a ZESCO thing but it was an investment that would serve Zambians now and in the future.Once the project is done, it would be the success of everyone.

The meeting closed with a prayer from one of the participants.

QUESTIONS/ CONCERNS & RESPONSES

Name and Institution	Concern	Response/Remarks
Lawrence Muzi from Green Nature and Transparency Action Group	Mr. Muzi wanted to know if there was a provision for third parties to be witnesses during the implementation of the compensation plan	ZESCO explained that there will only be consent for compensation as altering the consent plan to include other stakeholders would take long as this has to go through rigorous processes before approval. For this reason, only the consent for compensation will be maintained and one witness, who is a relative of the affected person would be requested to sign.
Annie Zulu from Chipata Chamber of Commerce and Industry	Ms. Zulu wanted to know if the affected people would be given an alternative to cash such as a house built for them to avoid families being left in a much worse situation, especially when some spouses run away with the money	The response was that ZESCO would engage the Ministry of Community Development counsel and monitor the beneficiary affected people so that they use the money received for the intended purpose. The beneficiaries would also be monitored after three months of receiving the money
Naomi Banda From Mary's Meals	Ms. Banda called on the project to ensure that child headed homes also received adequate counseling during the compensation process. She also called for the proper payment of unskilled labour and that minimum wage should be respected	This was noted

Josias Zulu– from Chipata Chamber of Commerce and Industry	Mr. Zulu called for mental health first aid in the implementation of the project to reduce the impact of counseling. Mr. Zulu also wanted to know what provisions had been put in place to ensure that the planted trees actually grow	The mental health first aid submission was noted. For the tree planting, ZESCO would work with Forestry Department and the community to ensure trees planted were nurtured and actually grew
Johnson Silungwe – Masupe Ward Councillor	Mr. Silungwe observed that most projects, especially in Msekera area engaged the people that were below par as some politicians liked to impose workers on contractors. He urged the project not to be infiltrated by politicians but offer jobs on merit	This was noted.
George Mvula from ICOZ	Bishop Mvula urged the project to involve the church in counseling sessions of affected people	This was noted

Key Outcomes of the Consultation meeting :

Conclusion: The meeting concluded with a commitment to continue engaging stakeholders into the final ESIA and RAP reports. The importance of active stakeholder participation and transparent decision-making was reiterated, ensuring that the project aligns with environmental, social, and legal standards.

Signed Charity Moonga - Hinamangha

Secretary

01/12/2024

Signed

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Kauzu Primary School
Date: 27 November 2024
Time: 14:30 hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**26**
Female	**12**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the meeting to order.

The meeting was opened by the Nsingo area ward councilor Frank Phiri, who welcomed attendees and led an opening prayer. The area headman then extended a warm welcome to the ZESCO and GOPA teams, encouraging open interaction with the community.

Purpose of the Meeting.

GOPA- intec Country Coordinator Robam Musonda explained that the meeting was about the 400KV interconnector to be constructed between Zambia and Malawi and the requirement of the international standards was that the community should be kept informed about the outcome of the scoping meetings which took place in July/August 2024.

Preferred Alternative Route

Mr. Musonda elaborated on the three alternative routes presented during the scoping meetings, identifying Alternative Route 3 as the preferred option for the proposed 400KV transmission line between Zambia and Malawi. This route begins at the Msekera substation, passes through Chief

Chinyaku's area, continues to Mtowe, crosses Chadiza Road, extends through the Feni area, and Mwami Border, and ultimately enters Malawi.

He explained that Alternative Routes 1 and 2 were not selected due to their higher social and environmental impacts, which included the displacement of a larger number of people and greater disruption to vegetation. In contrast, Alternative Route 3 minimizes these impacts, affecting fewer people and traversing predominantly flat terrain, thus preserving the vegetation in hilly areas and protecting the environment.

Mr. Musonda emphasized that the Feni community lies along the preferred route and will be directly affected by the project. As such, ongoing engagement and regular updates will be provided to ensure the community remains informed at every stage.

In closing, the Nsingo Ward Councilor encouraged all community members, particularly women and youth, to actively participate in all scheduled project meetings to explore opportunities for involvement and potential benefits.

Mr. Musonda addressed the key issues raised by communities during the previous scoping meetings which took place in July-August 2024.

Calling the Meeting to Order

The meeting was called to order by Kauzu Primary School Headteacher, Mr. K. Sinazongwe, who warmly welcomed attendees and invited a participant to lead the opening prayer.

Welcoming Remarks

Following the prayer, Mr. Sinazongwe extended a heartfelt welcome to the ZESCO and GOPA teams, as well as the community members present. He encouraged everyone to actively participate in the discussions and share their thoughts freely.

Purpose of the Meeting

ZESCO Environmental Scientist, Mr. Moses Chansa, outlined the purpose of the meeting, emphasizing the proposed construction of the 400 kV interconnector between Zambia and Malawi. He explained that the meeting aimed to inform the community about the outcomes of the scoping meetings conducted in July and August 2024. Additionally, Mr. Chansa highlighted that the meeting would address key issues raised by communities and other stakeholders during those earlier consultations, ensuring transparency and continued engagement as the project progresses.

Preferred Alternative Route

Mr. Moses Chansa provided an overview of the three alternative routes presented during the scoping meetings, emphasizing that Alternative Route 3 had been selected as the preferred route for the proposed 400 kV transmission line between Zambia and Malawi. This route begins at the Msekera Substation, passes through Chief Chinyaku's area, continues to Mtowe, crosses the Chadiza Road, proceeds through the Feni area and Mwami Border, and then extends into Malawi.

He explained that Alternative Routes 1 and 2 were not chosen due to their significant social and environmental impacts, which would result in the displacement of more people and greater disruption to vegetation. In contrast, Alternative Route 3 minimizes these impacts by affecting fewer individuals and traversing predominantly flat terrain, thereby preserving vegetation in hilly areas and protecting the environment.

Mr. Chansa noted that the people of Kauzu are situated along the preferred route and would therefore be directly affected by the project. To ensure their concerns are addressed and their

voices heard, he assured the community that they would continue to be engaged and updated at every stage of the project.

Closing Remarks

In concluding the meeting, Kauzu Ward Development Committee Chairman, Mr. Elasto Chirwa, encouraged all community members, particularly the youth and women, to actively participate in upcoming project meetings. He emphasized the importance of staying informed and exploring opportunities to benefit from the project.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

SCOPING MEETINGS MINUTES

Name and Institution	Concern or comments	Response/Remarks
Frederick Zulu from Kauzu	Mr. Zulu wanted to know the exact stage of the project	The project was at the scoping meeting disclosure stage. The project would need ZEMA approval to continue.
	Mr. Zulu also wanted to know how soon the transmission line would pass Kauzu area and whether people should grow their crops normally.	This would be communicated later and people growing maize and other crops could continue as they were not a threat to the project. Those growing trees were however discouraged from planting
Unidentified Community Member	Are you going to connect members of the community to power	This would be done according to the already existing power connection program
Jackson Nyirenda from Kauzu	Mr. Nyirenda urged the project to continue providing the coomuunity with updates about the project	This was noted.

Key Outcomes of the meeting :

The scoping disclosure meeting confirmed Alternative Route 3 as the preferred route for the 400 kV transmission line, addressing community concerns about compensation, employment, and environmental protection, while ensuring ongoing engagement and transparency. Community members were encouraged to actively participate in future discussions to maximize project benefits.

Signed Charity Moonga

Secretary

Signed

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN ZAMBIA AND MALAWI, FROM MSEKERA SUB STATION IN CHIPATA DISTRICT TO NKHOMA SUBSTATION IN LILONGWE.

Venue: Vubwi Council Chamber
Date: 28 November 2024
Time: 10:00hrs

Introduction

The public engagement and consultations were conducted in Chipata and Vubwi Districts and surrounding communities. The focus of public consultations and engagement are scoping disclosure meetings informing stakeholders, gain their views, concerns and values, taking account of public inputs in decision making, influencing project design, obtaining local knowledge, increasing public confidence, improving transparency and accountability in decision making; and conflict reduction. Stakeholder consultations were carried out during the EIA process, to ensure that all stakeholder concerns are incorporated into project planning and implementation. This is in line with the statutory consultation requirements under World Bank environmental and social safeguards policies, as well as the first schedule of the EIA Regulations for Zambia. The second round of public consultations were held at District and village level in Chipata and Vubwi Districts.

Topics of the discussion during consultation were as follows:

Information on the initial Project Planning processes

- Description of the Project
- ESIA processes
- Social and environmental issues/risks,
- Project benefits and negative consequences
- Scoping disclosure

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE	
Robam Musonda	Country Coordinator	
Charity Moonga	Communication Specialist	

ZESSCO TEAM

NAME	TITLE
Moses Chansa	Environmental Scientist
Naita Nalumango	EIA Specialist

Number of Participants

Male	9
Female	6

AGENDA OF THE MEETING

- Call to Order
- Prayer
- Self-Introductions
- Objectives of the meeting
- Discussion of key issues raised during the Scoping meetings by ZESCO
- Scoping Disclosure
- Presentation by GOPA
- Plenary Session
- Closing Remarks

Objective of the Meeting

The specific objectives were to present information on the Proposed Zambia Malawi 400 KV Interconnector Project

(a) To Inform the stakeholder on the preferred route and present them with balanced and objective information to help them understand the project further,

(b) Enable the stakeholders and other communities understand the ESIA Process and the proposed Transmission line alternatives

(c) To give feedback to stakeholders on the concerns and desired outcomes raised during scoping meetings and ensure that that these concerns are fully understood and taken into account and

(d) Collaborate: Partner with communities on the decision-making, including developing alternative solution ideas and choosing the preferred solution together.

COMMENCEMENT OF THE MEETING

MEETING AGENDA

Calling meeting to order:
Opening Prayer:
Opening & Welcoming Remarks:
Introductions
Discussion of key issues raised during the Scoping meetings by ZESCO
Scoping Disclosure Presentation by GOPA Plenary Session
Plenary (Questions & Answers, Submission of key issues of concern/ Responses and Remarks)
Closing Remarks
Prayer

Vubwi District Acting Council Secretary

Calling the meeting to order.
The meeting was called to order by Vubwi District Acting Council Secretary Evarine Mooya who welcomed the participants and later called for an opening prayer.

Welcoming Remarks
After the prayer, Mr. Phillimon Lungu, speaking on behalf of the District Commissioner also welcomed everyone saying the meeting was important as the forthcoming 400kv transmission line would directly affect the livelihoods of the citizens of Vubwi. He explained that the coming of the transmission line would benefit the entire country and urged participants to share correct information with the communities.

Purpose of the Meeting.
GOPA- intec Country Coordinator Robam Musonda explained that the meeting was about the 400KV interconnector to be constructed between Zambia and Malawi and that the meeting was a follow up to the scoping meetings which took place in July/August 2024 over the same project. Mr. Musonda explained the project design and the international standards' requirement for continued stakeholder engagement at each stage of the project. He said that the Msekera substation in Chipata would be expanded to accommodate the transmission line. Mr. Musonda added that the transmission line was being done with the support of the SADC and the project was being done in line with the ZEMA Act and other national and international standards. Stakeholder engagement would continue and suggestions would be incorporated in the project design. Mr. Musonda also addressed the key issues raised by the DDCC and the communities during the previous scoping meetings which took place in July-August 2024.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. **Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.**
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public sensitization should be extended to community members.

PREFERRED ALTERNATIVE ROUTE

ZESCO Environmental Scientist Moses Chansa explained the three alternative routes adding that after thorough consideration, the preferred route for the proposed 400KV transmission line between Zambia and Malawi would be alternative route number 3, which was commencing from Msekera substation, passing through Chief Chinyaku's area, through to Mtowe, crossing Chadiza road, then Feni area, Mwami Border and then finally into Malawi.

He explained that alternatives line number 1 and 2 were not preferred because they had the highest number of properties and structures that would be affected by the transmission line.

Route one and two also had vegetation which would be impacted as the two lines traversed hills and mountains where vegetation was concentrated. The project wanted to avoid cutting of trees as much as possible to avoid destruction of the environment.

He said route three was preferred because it had the least of properties to be impacted and it also had relatively flat land with a few hills that would be affected. He explained that for this reason, all studies would henceforth be concentrated on route three and the project would in a short while visit the site to disclose the details of the Environmental and Social Impact Assessment as well as the mitigation measures to be put in place.

In closing the meeting, Vubwi District Commissioner, Given Sakala thanked everyone for participating in the meeting.

ISSUES RAISED STAKEHOLDERS AND RESPONSES GIVEN

Name and Institution	Issue Raised	Response/Remarks
Noah Phiri	1. Wanted to know which route exactly the project was talking about 2. How many kilometers of the project were in Vubwi	1. ZESCO responded that the route was the 44.3km route from Msekera Substation to Malawi Border 2. The response was that 10km of the project was in Vubwi
Phillimon Lungu	1. Mr Lungu wanted to know where workers should report contractors for maltreatment 2. Will trees such as pine and eucalyptus be compensated for?	1. A Grievance Redress Mechanism was being rolled out through which all grievances would be addressed. Workers will also be encouraged to ensure that they sign contracts with contractors for easy follow up in case they face any challenges. 2. All trees of economic value would be paid for and this will be done through the assistance of the DACO and Forest Department offices who will assist in valuing these trees.
Shadreck Tembo	1. Wanted to know what tonnage of trees will be cut 2. Why don't you also have a database of workers contracts as ZESCO?	1. This will be known at a later time. 2. This would be put into consideration
Prudence Lupupa	Wanted to know if the Forestry department would be engaged	It was explained to him that the department would be engaged

Joseph Matabishi	Wanted to know when the project would commence	It was explained that the project would commence after relevant approvals

Key outcome of the DDCC meeting:
The key outcome of the meeting was the selection of Route 3 as the preferred alternative for the 400KV transmission line, minimizing environmental and social impacts while addressing stakeholder concerns. Stakeholders were assured of continued engagement, fair compensation, local employment opportunities, and the implementation of a Grievance Redress Mechanism to resolve issues during the project. Participants were informed that detailed studies and approvals would precede project commencement.

Close of Meeting and Prayer
The meeting closed with a prayer from one of the participants.

Confirmation of Minutes

Minutes prepared by: Charity Mooga-Kiarangi Date 01/12/2024

Minutes Confirmed by: Date

Position:

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Chisiya Primary School (Mzigawa)
Date: 28 November 2024
Time: 14:30 hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during

scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**40**
Female	**42**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order and Welcoming Remarks.

The meeting was called to order by Headman Kalukwembe who welcomed all the people present and called for an opening prayer.

Purpose of the Meeting.

The ZESCO Environmental Scientist, Mr. Moses Chansa, explained that the meeting was about the 400KV interconnector to be constructed between Zambia and Malawi as well as to inform the community about the outcome of the scoping meetings which took place in July/August 2024. Mr. Chansa said the meeting would also discuss the preferred route the proposed transmission line project.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

PREFERRED ALTERNATIVE ROUTE

Mr. Chansa explained the three alternative routes that were presented during the scoping meetings and highlighted that the preferred route for the proposed 400KV transmission line between Zambia and Malawi would be alternative route number 3, which was commencing from Chipata West Substation in Msekera, passing through Kauzu, Chief Chinyaku's area, through to Mtowe, crossing Chadiza road, then Lunyike, Feni area, Chisiya, Mwami Border and then finally into Malawi.

He explained that alternatives line number 1 and 2 were not preferred because many people would be affected. Additionally, vegetation would also be affected on the hills, and hence the move to select alternative route number 3 where very few people would be affected by the project and less vegetation would be cleared since it passes through flat land most of which is already cleared for agricultural purposes.

Mr. Chansa further explained that the people of Chisiya were along the preferred alternative route 3, and therefore they would be affected by the project and for that reason, they would continue to be engaged and updated at every stage of the project.

In closing the meeting Headman Kennedy Mbewe, urged the project to consider providing electricity to Mzigawa area, including the clinic and the school. He also urged the community to fully participate and support the 400Kv power project. He said affected community members should also use the funds to be received as compensation during the project implementation for the benefit of their families and the children.

MZIGAWA SCOPING DISCLOSURE MEETING MINUTES

Name and Institution	Concern	Response/Remarks
Headman Kungwa	Wanted to find out which month or year the project would commence	The response from ZESCO was that the project would commence immediately the necessary processes were completed such as the ZEMA approval and the procurement process.
Yonah Banda	Called on the project to inform the community where exactly the line would pass so that they prepare themselves	The response was that the project had already started and was being implemented in stages.
Headman Kungwa	The headman recommended continuous awareness creation among the people so that they understand the project better	No structure would be affected in Chisiya but some fields would be affected and ZESCO would be able to establish the exact places where the line would pass after the forthcoming detailed surveys. The information would then be communicated to the affected community members.

Key Outcome of the Community Consultation meeting

The key outcome of the meeting was the confirmation of Route 3 as the preferred alternative for the 400KV transmission line, minimizing impacts on people and vegetation. Stakeholder concerns were addressed, including local employment prioritization, fair compensation, and continuous community engagement throughout the project. Additionally, ZESCO committed to providing updates and ensuring inclusivity and environmental safeguards during project implementation.

Minutes prepared by: Charity Moonga – [illegible] Date 01/12/24

Position: Secretary

Minutes Confirmed by: HENRY PHIRI Date 01/12/24

Position: COUNCILLOR (CHAIRPERSON)

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Mtowe Primary School
Date: 29 November 2024
Time: 10:30 hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during

route selection;
(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**13**
Female	**08**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order

The meeting was officially called to order by Mtowe Primary School Senior Teacher, Ms. Vasty Ndhlovu, who welcomed the participants and invited a community member to lead an opening prayer.

Welcoming Remarks
Following the prayer, the area Headman, Bedansio Ngoma, extended a warm welcome to the ZESCO and GOPA teams. He encouraged open interaction between the teams and the community, emphasizing the importance of collaboration.

Purpose of the Meeting
GOPA-intec Country Coordinator, Mr. Robam Musonda, explained that the meeting served as a follow-up to the scoping sessions conducted in July and August 2024. The primary objective was to provide updates on the proposed 400 kV interconnector project between Zambia and Malawi, ensuring compliance with international standards that mandate keeping the community informed.

Mr. Musonda highlighted key issues raised during the earlier scoping meetings, affirming the project team's commitment to addressing these concerns and integrating them into the project's planning and implementation stages.

Preferred Alternative Route
Mr. Musonda elaborated on the three alternative routes presented during the scoping meetings, underscoring that Alternative Route 3 had been selected as the preferred option for the proposed 400 kV transmission line. This route starts at the Msekera substation, passes through Chief Chinyaku's area, continues to Mtowe, crosses Chadiza Road, extends through the Feni area, and reaches Mwami Border before entering Malawi.

He explained that:

Alternative Routes 1 and 2 were not selected due to their higher impact on a larger number of people and significant environmental disturbances, particularly to vegetation in hilly areas.
Alternative Route 3 minimizes these impacts, affecting fewer individuals and traversing predominantly flat terrain, thereby reducing environmental disruption and preserving vegetation.
Mr. Musonda emphasized that the people of Mtowe, situated along the preferred route, would be directly affected by the project. He assured the community of continued engagement and regular updates at every stage to address their concerns and ensure transparency.

Closing Remarks
In his closing remarks, Headman Ngoma encouraged community members to support the project and to share the information discussed during the meeting with others in the community. He stressed the importance of collaboration, unity, and active participation to foster transparency and maximize the project's benefits for the local population.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the

vulnerable people (women, aged and disabled).

3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

Name and Institution	Concern	Response/Remarks
Paradio Ngoma from Mtowe Village	Mr. Ngoma was concerned about the indiscriminate cutting of trees already existing in the area	This concern was noted
Joseph Lungu from Mtowe Village	Mr. Lungu wanted to know if all villages in mtowe would be given an opportunity to work in the project	The response was that there would be a contractor hiring labour and the traditional leaders and councilors would be involved in the process
Gift Phiri from Mtowe Village	Mr. Phiri wanted to know what would happen to community members who had skills in areas such as carpentry and electrical	The response was that the details would be provided by the contractor once they are given the project
Gabriel Banda from Mtowe Village	Will the people applying for unskilled labour opportunities on the project require certificates?	The response was that details of the requirements would be provided in the near future through the community leaders
Joseph Lungu from Mtowe village	When is the project starting and what will happen if it finds that we have already planted	The response was that stakeholder engagement would continue and crops found in the field upon commencement of the project would be compensated for.

Gift Phiri from Mtowe Village	Will tools for use in the project be provided	The response was that the informationa would be shared at a later date.

Outcome of the Community Consultation meeting

Summary:

The key outcome of the meeting at Mtowe Primary School was the identification and presentation of alternative route number 3 as the preferred option for the Zambia-Malawi 400KV transmission line. This route minimizes the social and environmental impacts by affecting fewer people and avoiding hilly areas, thereby protecting vegetation. Stakeholders were assured of ongoing engagement to address their concerns and provide updates throughout the project's implementation.

The meeting closed with a prayer from a volunteer.

Confirmation of Minutes

Minutes prepared by: Charity Moonga-Phiri Date 01/12/24

Minutes Confirmed by: NDHLOVU VASTY Date 1ST DECEMBER, 2024

Position: CHAIRPERSON

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Lunyike Primary School
Date: 29 November 2024
Time: 14:30 hrs

Introduction
The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting
The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the

consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**71**
Female	**60**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order

The meeting was called to order by Lunyike Primary School Deputy Headteacher, Mr. Bernard Mazyopa, who warmly welcomed attendees and invited a participant to lead an opening prayer.

Welcoming Remarks

Following the prayer, Headman Sunguni extended a heartfelt welcome to the project team and community members, encouraging open participation and active engagement during the meeting.

Purpose of the Meeting

ZESCO Environmental Scientist, Mr. Moses Chansa, outlined the purpose of the meeting, emphasizing the proposed construction of the 400 kV interconnector between Zambia and Malawi. He explained that the meeting aimed to share the outcomes of the scoping meetings held in July and August 2024, address key issues raised by stakeholders, and ensure continued community involvement and transparency throughout the project.

Preferred Alternative Route

Mr. Chansa detailed the three alternative routes presented during the scoping meetings, highlighting that Alternative Route 3 was selected as the preferred option for the proposed 400 kV transmission line. This route starts at the Msekera substation, passes through Chief Chinyaku's area, continues to Mtowe, crosses Chadiza Road, proceeds through the Feni area, and reaches Mwami Border before extending into Malawi.

He explained that Routes 1 and 2 were not selected due to their higher social and environmental impacts, including affecting more people and structures and causing greater disruption to vegetation, particularly in hilly areas. Alternative Route 3, in contrast, minimizes these impacts by affecting fewer communities and traversing predominantly flat terrain, reducing environmental disruption and preserving vegetation.

Mr. Chansa emphasized that compensation for affected individuals would be a priority, with a committee established to oversee the process and ensure fairness. He also encouraged workers to sign formal contracts with contractors to safeguard their rights and facilitate grievance resolution.

Mr. Chansa also noted that the people of Chisiya, situated along the preferred route, would be directly affected. To address their concerns, he assured attendees of continuous engagement and regular updates throughout the project's lifecycle. Additionally, he informed the community that project staff would return after completing the Environmental Impact Assessment to share the findings, explain the project's potential impacts, and outline mitigation measures.

Closing Remarks

In closing, Headman Sunguni commended ZESCO for selecting a route that passes through the Lunyike area, expressing hope that it could bring electricity access to the community in the future. Headman Msolo urged the people of Lunyike to support the project and encouraged those who secure employment during the project to work diligently. He also advised the community to avoid any pilfering activities that might disrupt the project.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the

trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.

7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

Name and Institution	Concern	Response/Remarks
Joel Zulu from Abbelo Village	Mr. Zulu wanted to find out if bare fields would be compensated	The response was that the project would only pay for crops that would be in existence in the field at the time of project implementation
Headman Sunguni	The headman called on people in the community to be prioritized for unskilled labour opportunities	This was noted.
	How will people apply for unskilled labour jobs since they are not educated	The interested workers were encouraged to go to the site, register and if hired, sign contracts with the contractor.
	There was a concern on the mode of payment to workers as most contractors preferred to pay workers by hand hence fueling abuse of workers	The response was that this would be taken into account and ZESCO would communicate to the contractor to ensure that workers are not paid by hand.

Outcome of the Community Consultation meeting

The stakeholder engagement meeting successfully informed the community about the preferred route for the proposed 400KV transmission line, emphasizing route 3 as the least disruptive option. Key concerns raised by stakeholders, including compensation for affected individuals, prioritizing local employment, and ensuring inclusive community involvement, were addressed. Commitments were made to establish a monitoring committee, continue community engagement, and ensure fair compensation and worker protection, fostering transparency and accountability throughout the project.

Minutes prepared by: Charity Moonga - Hiranga Date 01/12/2024

Minutes Confirmed by: BERNARD MAZYOPA Date 01/12/2024

Position: DEPUTY ~~HEADTEACHER~~
(CHAIRPERSON)

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Makwelelo Primary School
Date: 30 November 2024
Time: 14:30 hrs

Introduction

The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting

The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**44**
Female	**33**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order

The meeting was called to order by the Chairperson, Mr. Philemon Zulu, who warmly welcomed all attendees. He then invited a participant to lead an opening prayer.

Welcoming Remarks

After the prayer, Headman Pashana welcomed the project team and community members to the meeting. He encouraged open participation, emphasizing the importance of active engagement in the discussions.

Purpose of the Meeting

ZESCO Social Specialist, Ms. Naita Nalumango, explained that the meeting was focused on the proposed construction of the 400 kV interconnector between Zambia and Malawi. The purpose was to share the outcomes of the scoping meetings held in July and August 2024 and address key issues raised by stakeholders.

Preferred Alternative Route

ZESCO Environmental Specialist Moses Chansa provided an overview of the three alternative routes presented during the scoping meetings. He highlighted that Alternative Route 3 was chosen as the preferred option for the proposed 400 kV transmission line.

This route:

- Starts at the Msekera substation.
- Passes through Chief Chinyaku's area.
- Continues to Mtowe and crosses Chadiza Road.
- Extends through the Feni area and Mwami Border before entering Malawi.

Mr. Chansa explained that Alternative Routes 1 and 2 were not selected due to their significant social and environmental impacts, including displacement of more people, damage to structures, and disruption of vegetation in hilly areas. Route 3, by comparison, minimizes these impacts by affecting fewer communities and following predominantly flat terrain, thereby reducing environmental disruption and preserving vegetation.

He assured attendees that compensation for affected individuals would be a priority, with a committee established to oversee and ensure a fair process. He also encouraged workers to sign formal contracts with contractors to protect their rights and address grievances effectively.

Mr. Chansa noted that the people of Makwelelo are situated along the preferred route and would therefore be directly affected by the project.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.
11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

MAKWELELO SCOPING MEETING MINUTES

Name and Institution	Concern	Response/Remarks
Amon Zulu	When will the project start	When the required processes are completed
Elijah Mwale	Will Makwelelo be connected to the 400kv line	No, because this is a high voltage interconnector which is not meant for local consumption
Shawa CortisoneThomas Ngoma	Will loadshedding reduce	Yes, the whole essence of the interconnector was to improve power trade and reduce loadshedding
Bisalom Tembo	Will you use the same people to work across all areas where the transmission line will pass	The response was that different people would be hired in each area so that all areas benefit
Amon Zulu	Will women find jobs	Yes, there will be opportunities for willing women to work as well

	How will we know that you have started employing	The response was that traditional leaders and councilors would be informed
Ireen Tembo	Won't traditional leaders demand to be paid a consideration amount to register for these jobs	The response was no because as the contractor was the one who would be in charge of hiring and there would be no corruption

Outcome of the Community Consultation meeting

The key outcome of the meeting at Makwelelo Primary School was the identification and presentation of alternative route number 3 as the preferred option for the Zambia-Malawi 400KV transmission line. This route minimizes the social and environmental impacts by affecting fewer people and avoiding hilly areas, thereby protecting vegetation. Stakeholders were assured of ongoing engagement to address their concerns and provide updates throughout the project's implementation.

Confirmation of Minutes

Minutes prepared by: Charity Moonga Date 01/12/24

Minutes Confirmed by: PHILEMON ZULU Date 01/12/2024

Position: BISA ZONO TEMBO

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE SCOPING DISCLOSURE MEETING FOR THE ESIA FOR THE PROPOSED CONSTRUCTION OF THE 400KV LINE BETWEEN CHIPATA WEST SUBSTATION IN ZAMBIA AND NKHOMA SUBSTATION IN LILONGWE, MALAWI.

Venue: Jenda Primary School
Date: 01 ~~August 2024~~ Dec, 2024
Time: 10:00hrs

Introduction
The public scoping meetings were conducted in Chipata and Vubwi Districts and surrounding communities from 29th July to 3rd August 2024. The focus of public consultation meetings was to inform stakeholders, obtaining their views, concerns and suggesting regarding the proposed construction of the 400kV transmission line between Chipata West Substation in Zambia and Nkhoma substation in Lilongwe, Malawi. The views expressed by stakeholders would be incorporated in the development of the Terms of Reference for the ESIA studies, project design and decision-making processes. These consultations were undertaken in line with the statutory requirements under the Environmental Management Act No. 12 of 2011 and the associated ESIA Regulations, Swedfund Environmental and Social Sustainability Policy, European Investment Bank (EIB) Environmental and Social Standards and the World Bank environmental and social safeguards policies.

The views expressed by stakeholders in all the 12 scoping meetings held in the project area were recorded. The purpose of the scoping disclosure meeting was to provide feedback to the stakeholders regarding the key issues raised during the scoping meetings, which will be taken into consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

Objective of the Meeting
The specific objectives of the meeting were to present information on the proposed Malawi – Zambia 400 KV Interconnector Project

(a) To inform the stakeholder on the preferred route and the factors which were considered during route selection;

(c) To give feedback to stakeholders on the views, concerns and suggestions raised during scoping meetings in July and August 2024, which will be taken into consideration in the development of the consideration in the ESIA studies, project design and decision making throughout the project lifecycle.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Moses Chansa	**Environmental Scientist**
Naita Nalumango	**Social Specialist**

Number of Participants

Male	**22**
Female	**10**

PROCEEDINGS OF THE MEETING

Agenda of the Meeting

1. Calling meeting to order:
2. Opening Prayer:
3. Opening & Welcoming Remarks:
4. Introductions
5. Discussion of key issues raised during the Scoping meetings held in July and August, 2024.
6. Discussion of the preferred transmission line route selected.
7. Plenary (Questions, answers and suggestions
8. Closing Remarks
9. Closing Prayer

Calling the Meeting to Order

The meeting was called to order by the Chairperson, Mr. Samson Kalonga, who warmly welcomed all attendees. He then invited a participant to lead an opening prayer.

Welcoming Remarks

After the prayer, Headman Jenda welcomed the project team and community members to the meeting. He encouraged open participation, emphasizing the importance of active engagement in the discussions.

Purpose of the Meeting

ZESCO Environmental Scientist, Mr. Moses Chansa, explained that the meeting was focused on the proposed construction of the 400 kV interconnector between Zambia and Malawi. The purpose was to share the outcomes of the scoping meetings held in July and August 2024 and address key issues raised by stakeholders.

Preferred Alternative Route

Mr. Chansa provided an overview of the three alternative routes presented during the scoping meetings. He highlighted that Alternative Route 3 was chosen as the preferred option for the proposed 400 kV transmission line.

This route:

- Starts at the Msekera substation.
- Passes through Chief Chinyaku's area.
- Continues to Mtowe and crosses Chadiza Road.
- Extends through the Feni area and Mwami Border before entering Malawi.

Mr. Chansa explained that Alternative Routes 1 and 2 were not selected due to their significant social and environmental impacts, including displacement of more people, damage to structures, and disruption of vegetation in hilly areas. Route 3, by comparison, minimizes these impacts by affecting fewer communities and following predominantly flat terrain, thereby reducing environmental disruption and preserving vegetation.

He assured attendees that compensation for affected individuals would be a priority, with a committee established to oversee and ensure a fair process. He also encouraged workers to sign formal contracts with contractors to protect their rights and address grievances effectively.

Mr. Chansa noted that the people of Jenda are not situated along the preferred route and would therefore not be directly affected by the project.

Closing Remarks

In his closing remarks, Headman Jenda expressed gratitude to the community members for attending the meeting. He urged them to continue supporting the project and that the traditional leadership would keep them updated about the project so that those who want to participate in terms of employment can be assisted with adequate information.

ADDRESSED KEY ISSUES RAISED DURING SCOPING MEETINGS.

1. When employing workers on the project, the contractor should give priority to the local people, especially for non-skilled jobs.
2. In some cases, cash compensation for building new houses is not used appropriately. Therefore, the project should consider building new houses for the affected people, especially the vulnerable people (women, aged and disabled).
3. Whatever documents the affected people have to sign, they must be in local language so that they know and understand what they are signing for.
4. Community engagement should continue throughout the project so that stakeholders are kept informed all the time and to enable them to provide input at all stages of the project.
5. Some communities should be provided with electricity as a corporate social responsibility measure. Alternatively, the project can build a school, clinic or staff houses.
6. Forest (vegetation) protection should be emphasised during construction. To compensate for the trees with will be cut, new indigenous should be planted in area which will be identified, not exotic trees.
7. The project should be inclusive to all people in the community, including people with disabilities.
8. All people who going to be affected by the project need to be adequately compensated before being relocated, for houses, shops, crops and fruit trees. Whether have title deeds or not they need to be compensated.
9. Some of the contractors do not care about their workers and they leave the project site at the end of the project without paying the wages to the workers. The Project should ensure that the workers are protected.
10. A small committee of stakeholder of local stakeholders should be established to monitor the implementation of the project to ensure that the commitments made by the project are fulfilled.

11. Health programmes need to be put in place to ensure that there are no HIV/AIDS cross infections between the project workers and members of the community.
12. To avoid accidents among members of the community during construction, public safety sensitization should be extended to community members.

MZIGAWA SCOPING MEETING MINUTES

Name and Institution	Concern	Response/Remarks
Shiyelo Miti	Commended the project team for the feedback on the project	This was noted
	Is the 400KV the same as the already existing one	The response was no as the existing one was a 330KV
Gabriel Mwanza	Where will the line pass from Jenda village	The response was that the line would pass near the Lunyike
	When will adverts for jobs start	Information would be provided in due course through the traditional leadership and the councilors

Outcome of the Community Consultation meeting

Key Outcome of the Jenda Scoping Disclosure Meeting

The Jenda Scoping Meeting successfully addressed key stakeholder concerns regarding the proposed 400 kV Zambia-Malawi interconnector project. **Alternative Route 3** was confirmed as the preferred transmission line route, selected for its minimized social and environmental impacts. Key issues

raised during earlier scoping meetings—such as prioritizing local employment, fair compensation, community inclusivity, and environmental protection—were discussed, with commitments made to address these concerns through ongoing community engagement, stakeholder monitoring, and the establishment of a fair compensation process.

Community members expressed their support for the project, with assurances given about updates on job opportunities and other developments through traditional leadership and local representatives.

Confirmation of Minutes

Minutes prepared by: Charity Mbonga Date 01/12/2024

Minutes Confirmed by: Samson Kalonga Date 01/12/2024

Position: Chairman

APPENDIX 5: Photographs of the scoping disclosure meetings

1. Katandala Community Meeting held on 25 11 2024

2. Mgabi Community Meeting held on 25 11 2024

3a. Feni Community Meeting held on 26 11 2024

3b. Feni Community Meeting held on 26 11 2024

4. Kayeka Community Meeting held on 26 11 2024

5. Chipata District Meeting held in the Council Chamber on 27 11 2024

6. Kauzu Community Meeting held on 27 11 2024

7. Vubwi District Meeting held in the Council Chamber on 28 11 2024

8. Chisiya Community Meeting held on 28 11 2024

9. Mtowe Community Meeting held on 29 11 2024

10. Lunyike Community Meeting held on 29 11 2024

11. Jenda Community Meeting held on 30 11 2024

12. Makwelelo Community Meeting held on 30 11 2024

LOCATION OF ZAMBIA IN AFRICA

LOCATION OF
CHIPATA AND VUBWI DISTRICTS IN ZAMBIA

TANZANIA
NORTHERN PROVINCE
D. R. CONGO
MUCHINGA PROVINCE
LUAPULA PROVINCE
ANGOLA
NORTH WESTERN PROVINCE
Kitwe
COPPERBELT PROVINCE
MALAWI
Chipata
REPUBLIC OF ZAMBIA
EASTERN PROVINCE
CENTRAL PROVINCE
WESTERN PROVINCE
LUSAKA PROVINCE
LUSAKA
MOZAMBIQUE
SOUTHERN PROVINCE
ZIMBABWE
Livingstone
NAMIBIA
BOTSWANA

0 5 10 20 Kilometers

N W E S

GOPA Tech

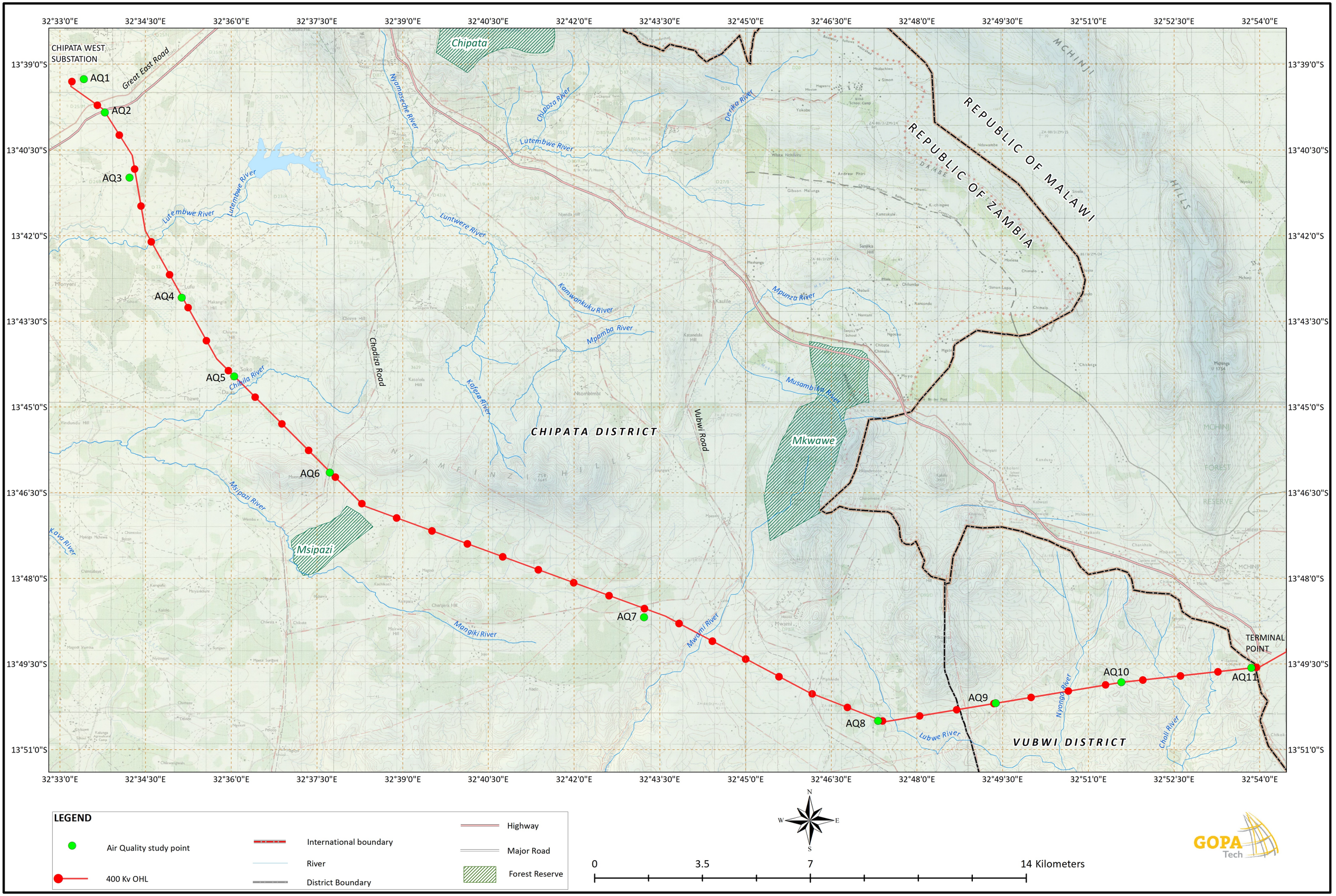
CHIPANGALI DISTRICT
KASENENGWA DISTRICT
Chambizi
Ngonzi
Kukwe
Masupe
REPUBLIC OF MALAWI
Chipata
CHIPATA WEST SUBSTATION
City of Chipata
Mkwawe
Msipazi
400 Kv Line
CHIPATA DISTRICT
VUBWI DISTRICT
CHADIZA DISTRICT
Mzewe North
Mzewe South

LEGEND

- Capital City
- City
- 400Kv Line
- International Boundary
- Forest Reserve
- District Boundary

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) AIR QUALITY POINTS

SCALE 1: 110,000



LEGEND

- Air Quality study point
- 400 Kv OHL
- International boundary
- River
- District Boundary
- Highway
- Major Road
- Forest Reserve

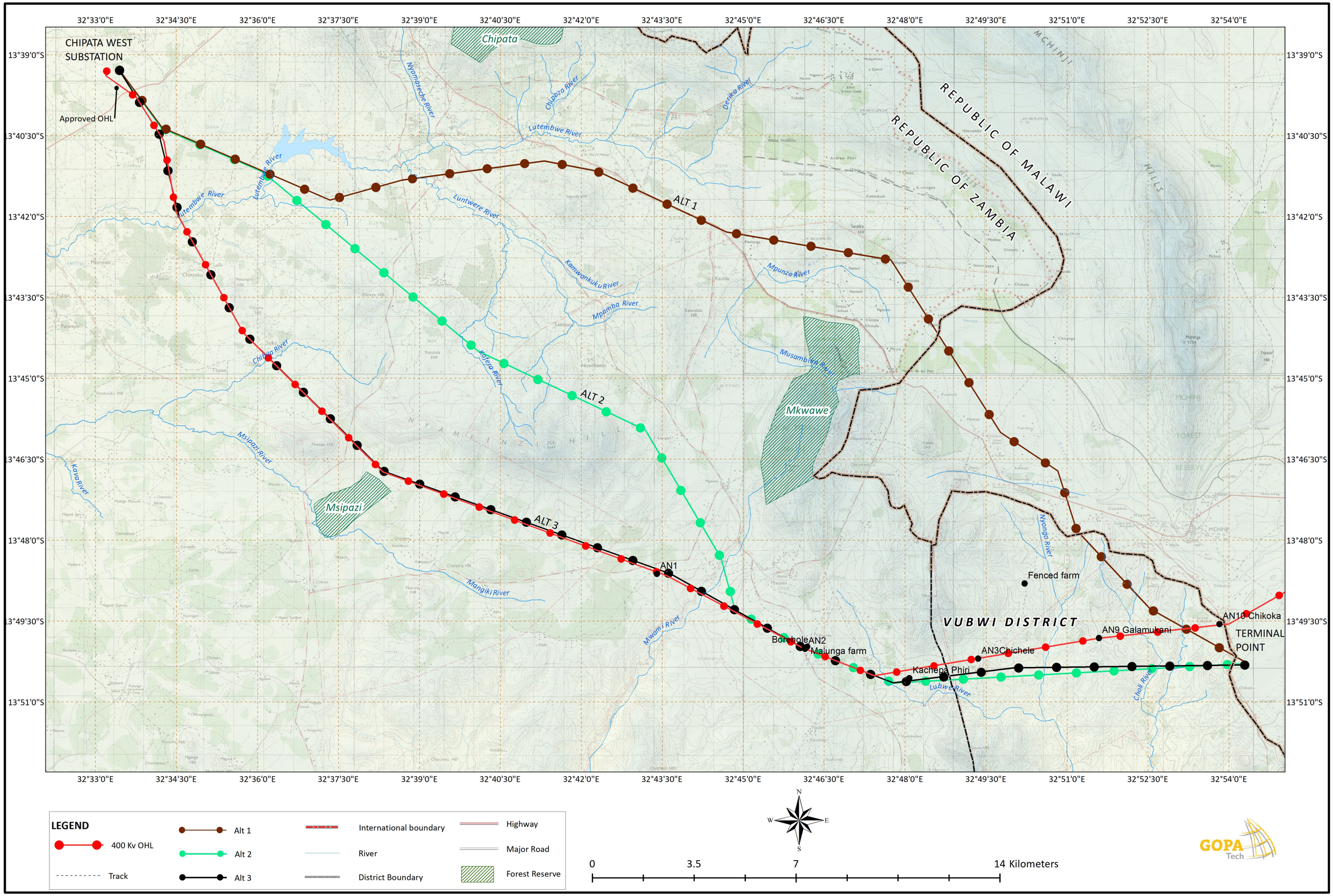
N W E S

0 3.5 7 14 Kilometers

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) ALTERNATIVE AND APPROVED OHL

SCALE 1: 110,000



LEGEND

- 400 Kv OHL
- Track
- Alt 1
- Alt 2
- Alt 3
- International boundary
- River
- District Boundary
- Highway
- Major Road
- Forest Reserve

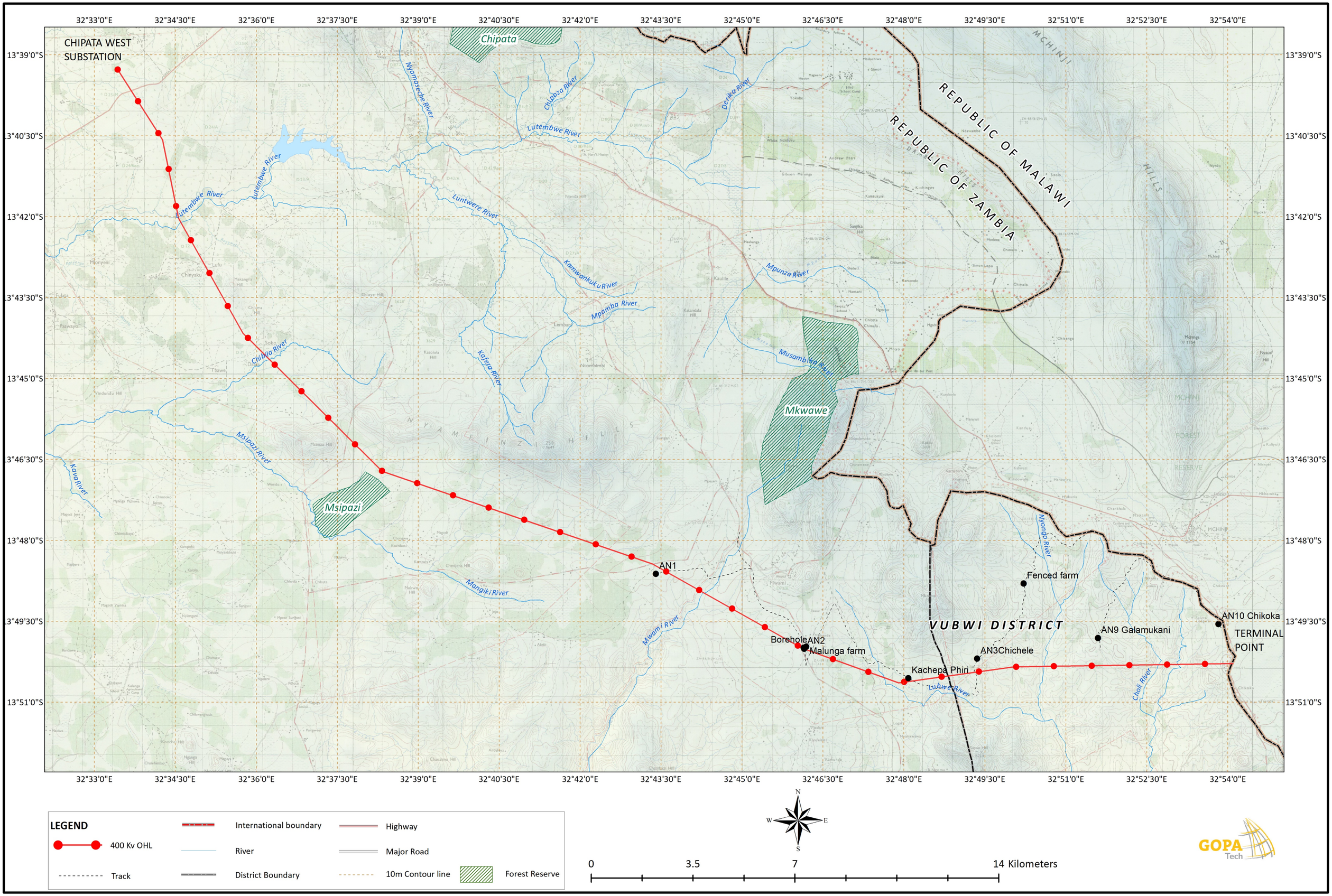
N W E S

0 3.5 7 14 Kilometers

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) HYDROLOGY MAP

SCALE 1: 110,000



LEGEND

- 400 Kv OHL
- Track
- International boundary
- River
- District Boundary
- Highway
- Major Road
- 10m Contour line
- Forest Reserve

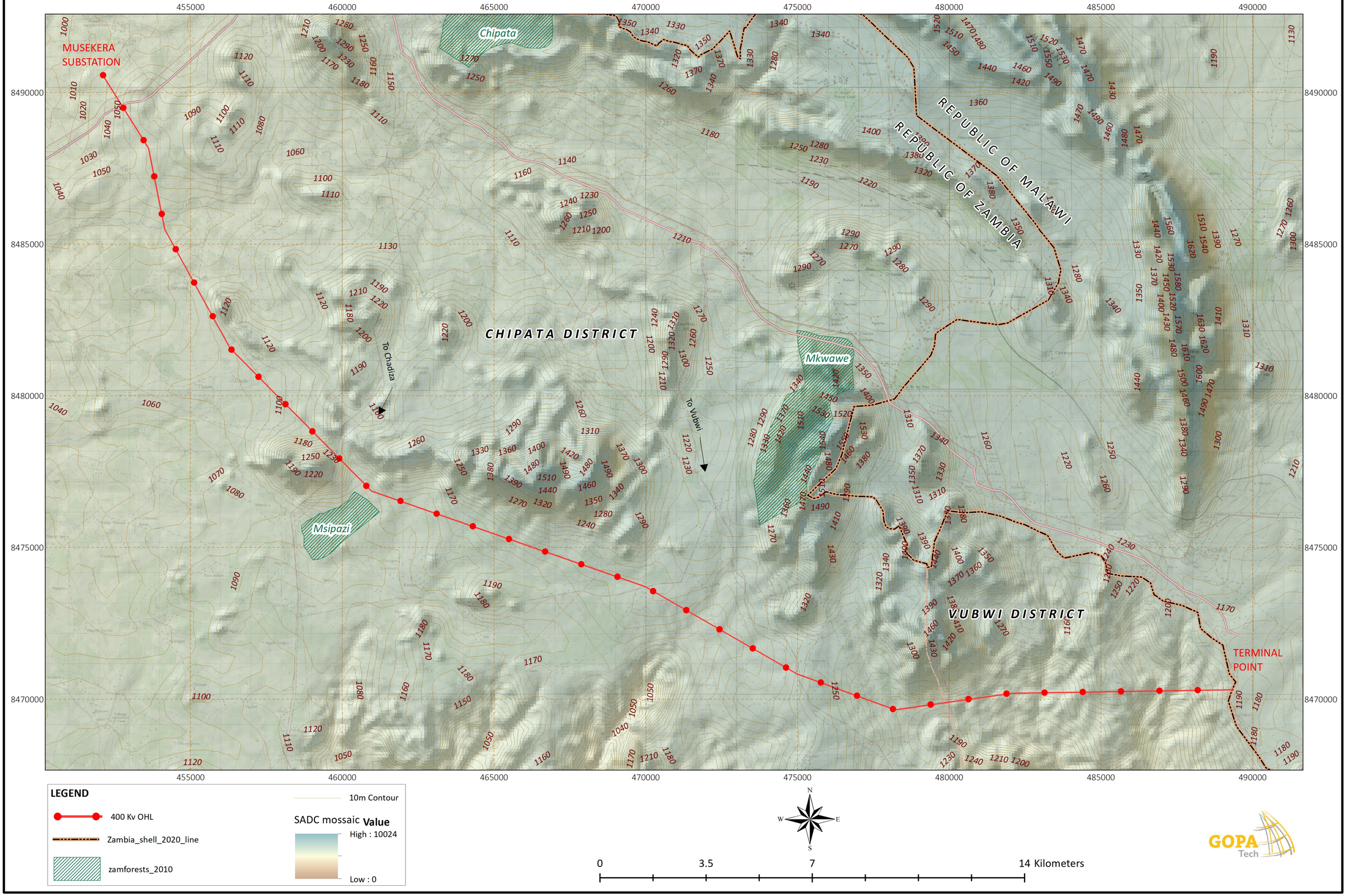
N W E S

0 3.5 7 14 Kilometers

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) LANDSCAPE

SCALE 1: 110,000



LEGEND

- 400 Kv OHL
- Zambia_shell_2020_line
- zamforests_2010
- 10m Contour

SADC mossaic **Value**

High : 10024

Low : 0

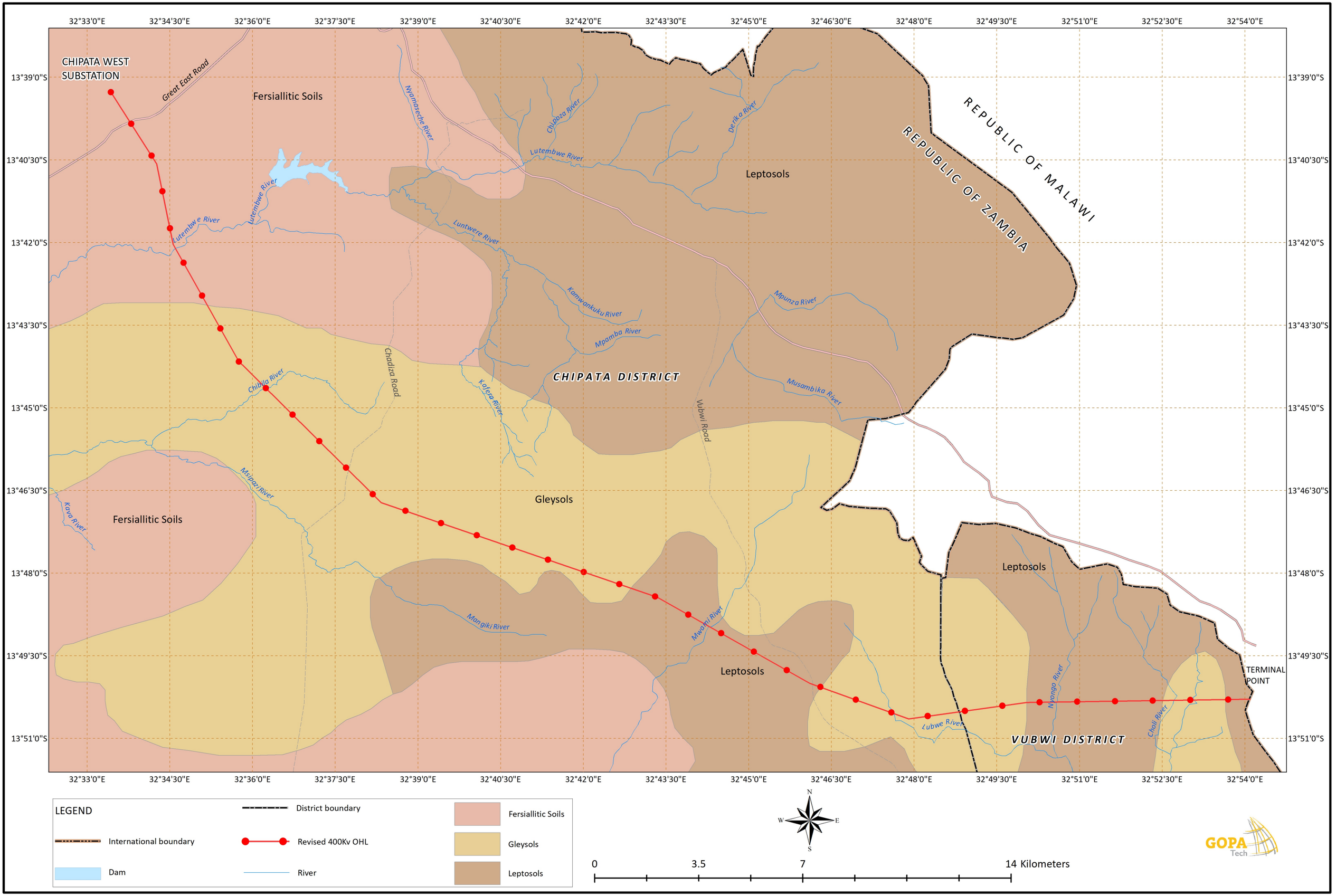
N W E S

0 3.5 7 14 Kilometers

GOPA Tech

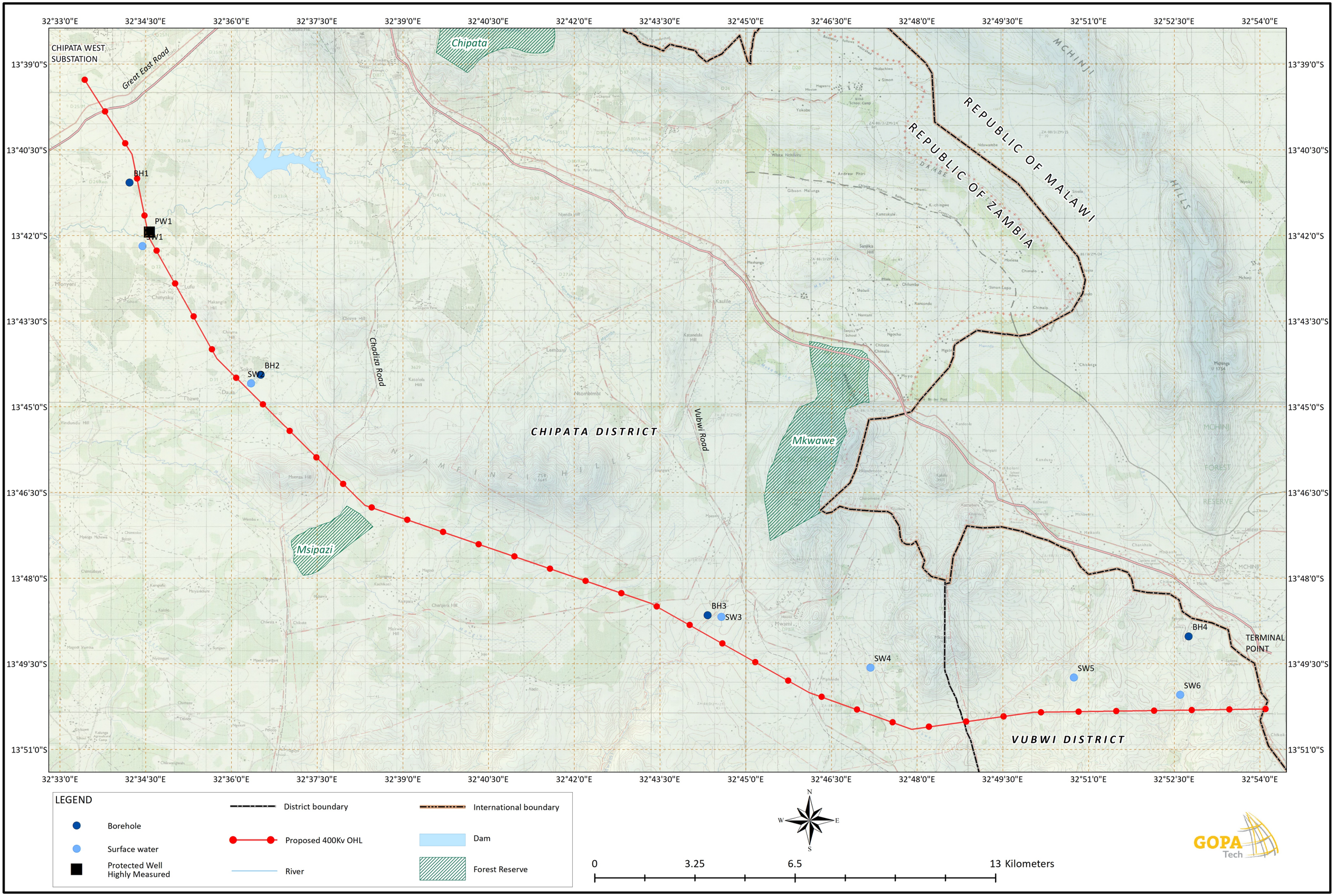
ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) SOIL TYPES

SCALE 1: 110,000



ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) WATER QUALITY HIGHLY MEASURED

SCALE 1: 110,000



LEGEND

- Borehole
- Surface water
- Protected Well Highly Measured
- District boundary
- Proposed 400Kv OHL
- River
- International boundary
- Dam
- Forest Reserve

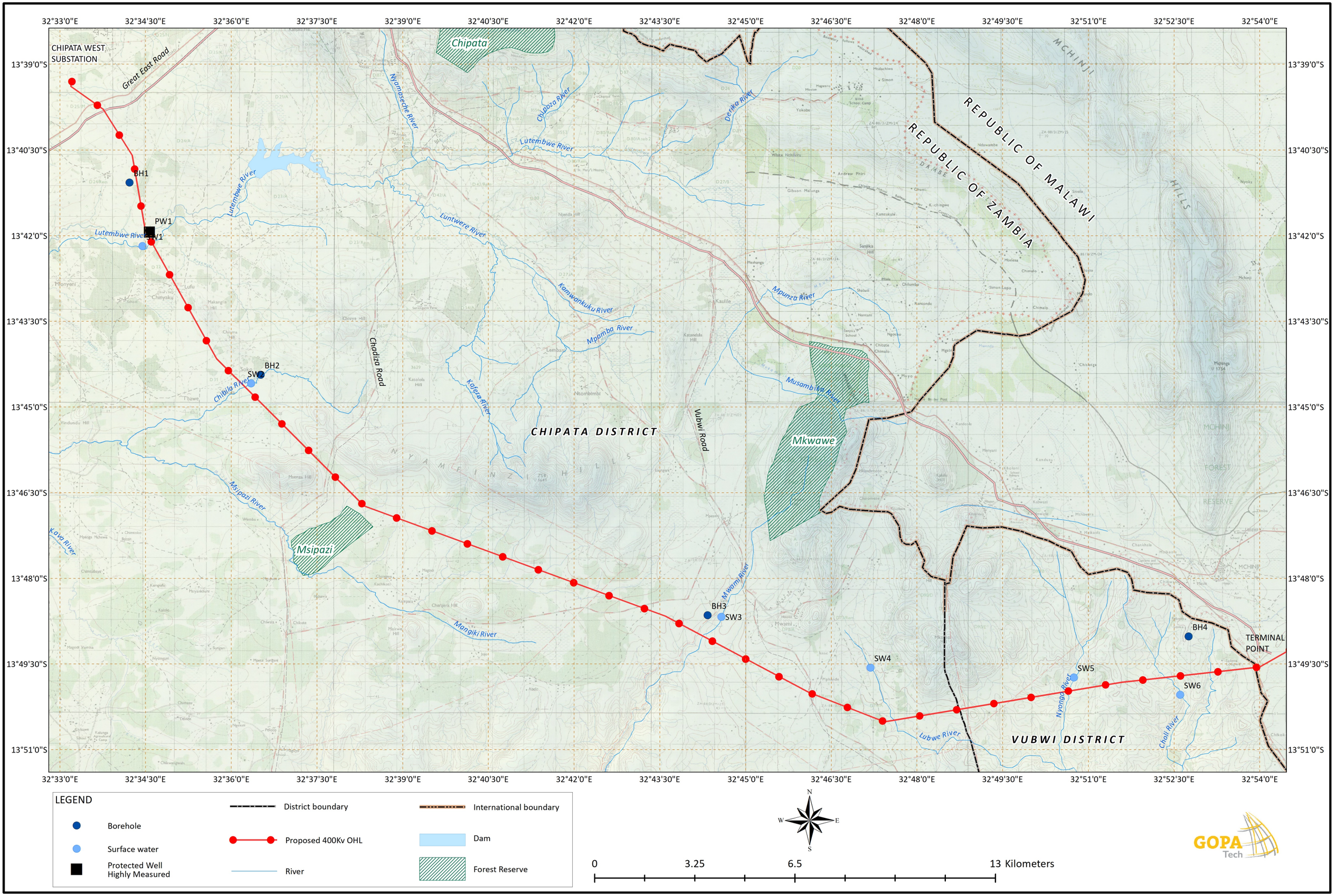
N W E S

0 3.25 6.5 13 Kilometers

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) WATER QUALITY HIGHLY MEASURED

SCALE 1: 110,000



452000 454000 456000 458000 460000

8490000 8488000 8486000 8484000 8482000 8480000

N W E S

CHIPATA WEST SUB STATION

AP01 AP02 AP03 AP04 AP05 AP06

To Chipata city

To Lusaka

VEGETATION PLOT 1

VEGETATION PLOT 2

APOLO DAM

Lutembwe River

CHIPATA DISTRICT

400Kv Zambia OHL

Chibila River

Msipazi River

ESIA FOR ZAMBIA - MALAWI 400KV INTERCONNECTOR PROJECT

VEGETION COVERAGE AREA 1

LEGEND

- 400Kv Over Head Line
- River
- Highway
- Major Road
- Built up area
- Thicket
- Degraded vegetation
- Riverine
- Wooded vegetation
- Agricultural field
- Forest Reserve

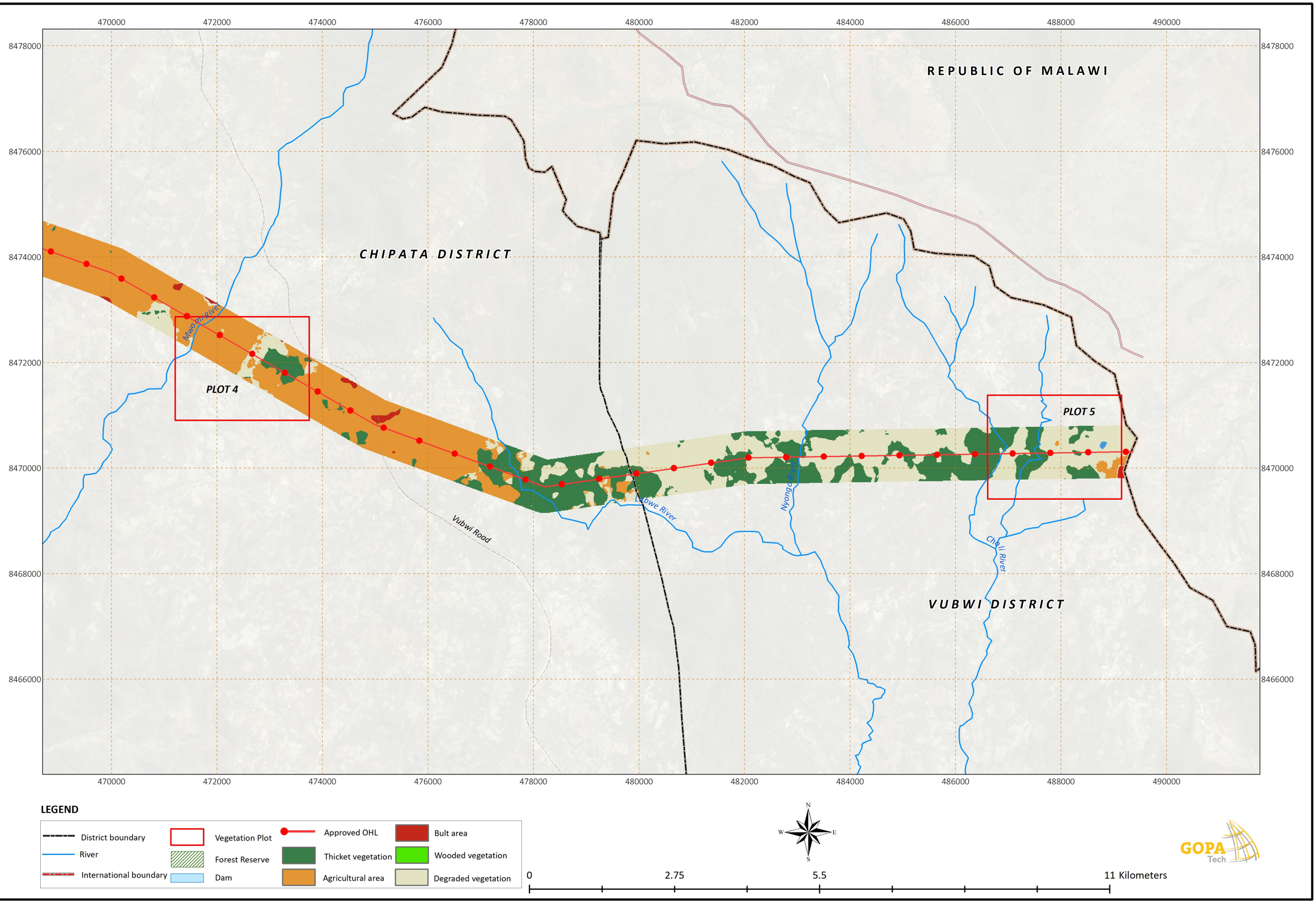
0 1 2 4 Kilometers

COORDINATE SYSTEM: ARC 1950 ZONE 36 S
PROJECTION: UTM (Universal Transverse Mecartor)
DATUM: Arc 1950
Central Meridian: 27. 0000
LATITUDE OF ORIGIN: 0.000
UNITS: Meter

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) CLEARED LAND AND DISTURBED VEGETATION (AREA 3)

SCALE 1: 30,000



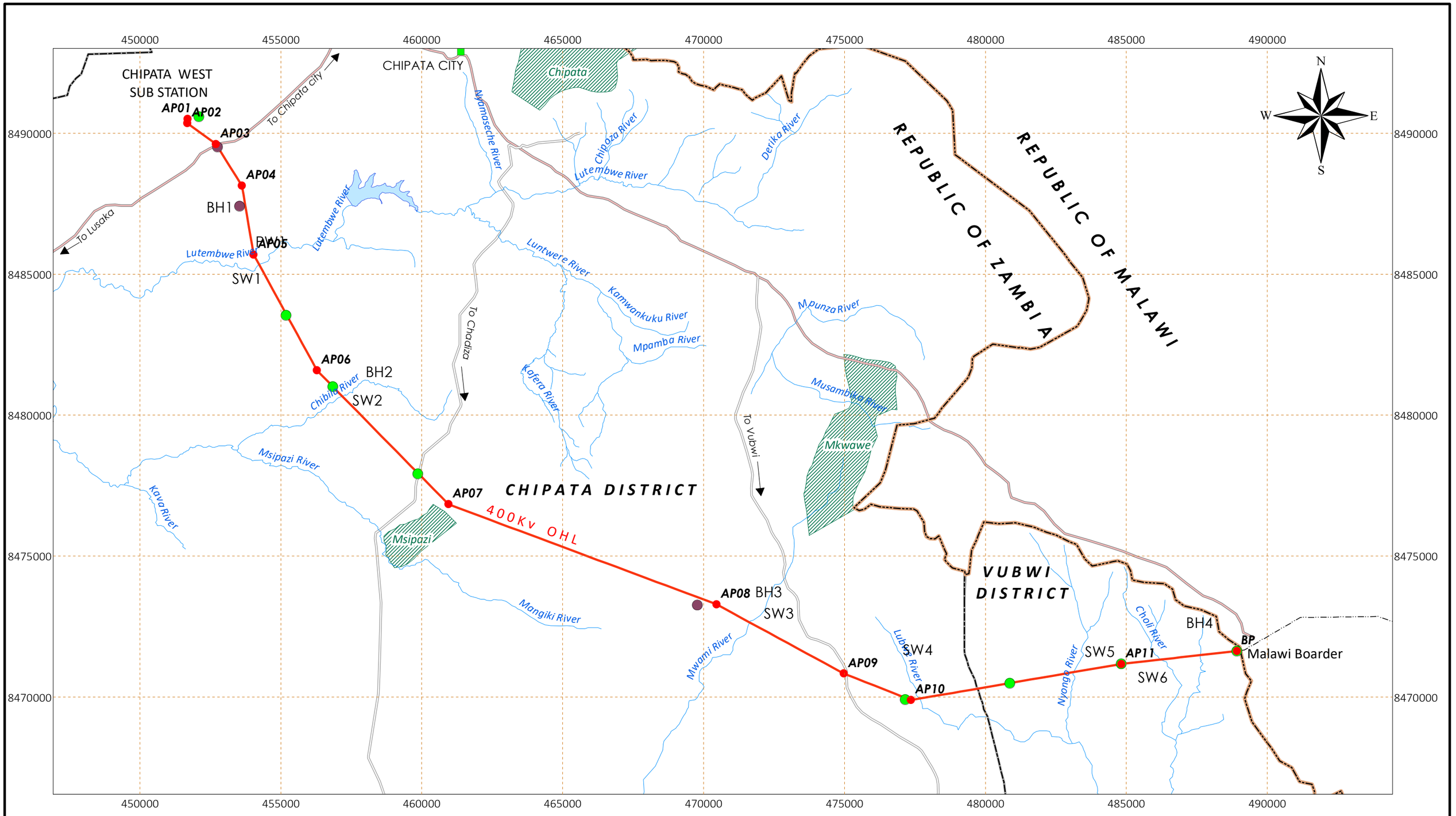
LEGEND

- District boundary
- River
- International boundary
- Vegetation Plot
- Forest Reserve
- Dam
- Approved OHL
- Thicket vegetation
- Agricultural area
- Bult area
- Wooded vegetation
- Degraded vegetation

N W E S

0 2.75 5.5 11 Kilometers

GOPA Tech



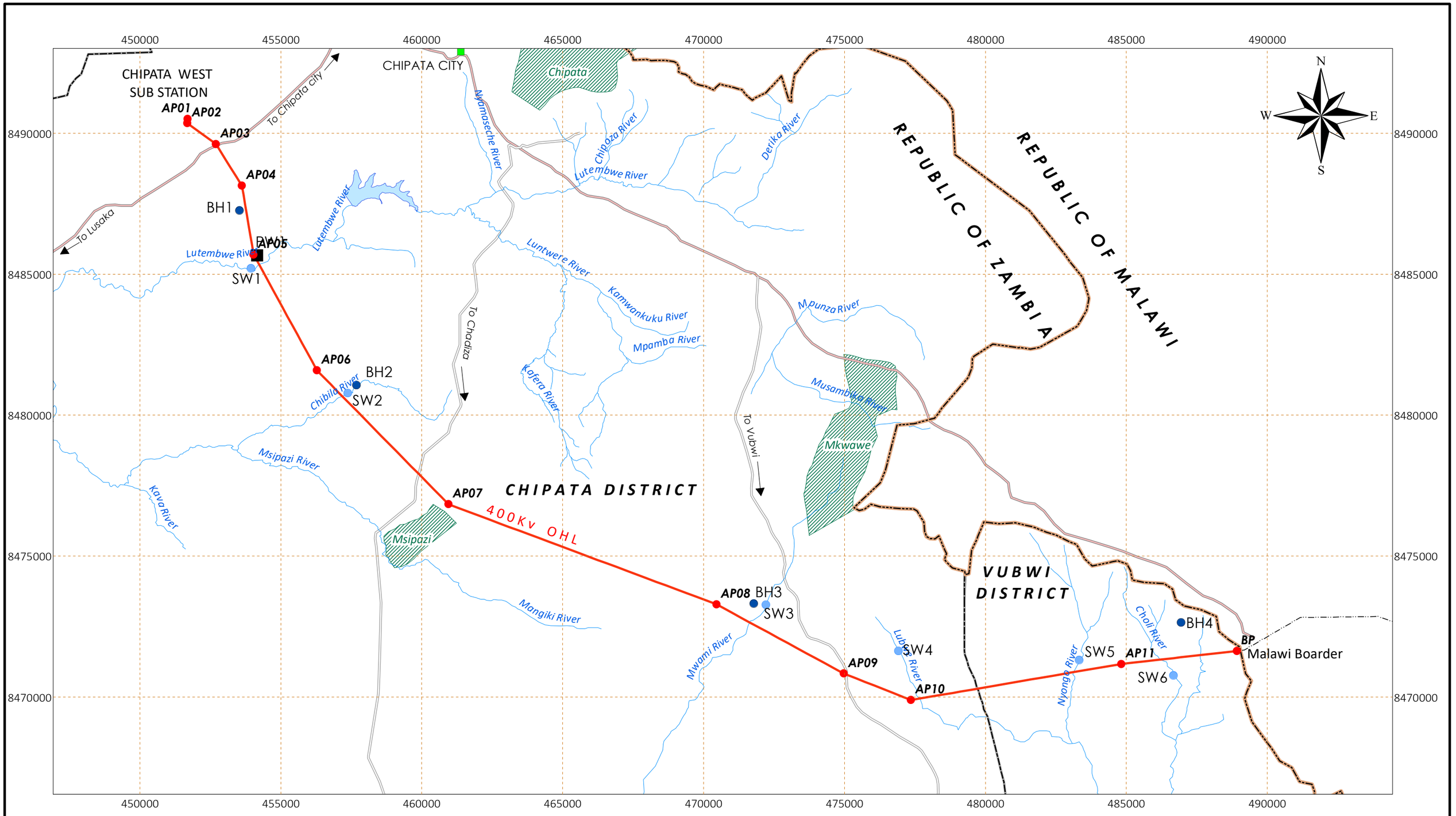
ESIA FOR ZAMBIA - MALAWI 400KV INTERCONNECTOR PROJECT
NOISE QUALITY MAP

LEGEND

- Noise Quality point
- Highest measured
- Provincial Capital
- 400Kv OHL
- Major Road
- Highway
- International boundary
- District Boundary
- River
- Dam
- Forest Reserve

COORDINATE SYSTEM: ARC 1950 ZONE 36 S
PROJECTION: UTM (Universal Transverse Mecartor)
DATUM: Arc 1950
Central Meridian: 27. 0000
LATITUDE OF ORIGIN: 0.000
UNITS: Meter

GOPA Tech



ESIA FOR ZAMBIA - MALAWI 400KV INTERCONNECTOR PROJECT
WATER QUALITY MAP

LEGEND

- Borehole
- Surface water
- Well
- Provincial Capital
- 400Kv OHL
- Major Road
- Highway
- International boundary
- District Boundary
- River
- Dam
- Forest Reserve

COORDINATE SYSTEM: ARC 1950 ZONE 36 S
PROJECTION: UTM (Universal Transverse Mecartor)
DATUM: Arc 1950
Central Meridian: 27. 0000
LATITUDE OF ORIGIN: 0.000
UNITS: Meter

GOPA Tech

450000 455000 460000 465000 470000 475000 480000 485000 490000

8490000 8485000 8480000 8475000 8470000

CHIPATA WEST SUBSTATION

AP01 AP02 AP03 AP04 AP05 AP06 AP07 AP08 AP09 AP10 AP11 BP

Boarder

Great East Road

CHIPATA DISTRICT

Chipata

Nyamasechе River

Chipoza River

Derika River

Lutembwe River

Lutembwe River

Lutembwe River

Luntwere River

Kamwankuku River

Mpamba River

Mpunza River

REPUBLIC OF ZAMBIA

REPUBLIC OF MALAWI

Chibila River

To Chadiza

Kafera River

To Vubwi

Musambika River

Mkwawe

Msipazi River

Kava River

Msipazi

400Kv Zambia OHL

Mangiki River

Mwami River

Lubwe River

VUBWI DISTRICT

Choli River

Nyongo River

N W E S

ESIA FOR ZAMBIA - MALAWI 400KV INTERCONNECTOR PROJECT
VEGETION PLOTS

LEGEND

400 Kv OHL

International boundary

Forest Reserve

10m Contour

SADC mossaic **Value**

High : 10024

Low : 0

COORDINATE SYSTEM: ARC 1950 ZONE 36 S
PROJECTION: UTM (Universal Transverse Mecartor)
DATUM: Arc 1950
Central Meridian: 27. 0000
LATITUDE OF ORIGIN: 0.000
UNITS: Meter

0 3.5 7 14 Kilometers

GOPA Tech

CHIPATA WEST SUBSTATION

AP01 AP02 AP03 AP04 AP05 AP06 AP07 AP08 AP09 AP10 AP11

PLOT 1 PLOT 2 PLOT 3 PLOT 4 PLOT 5

CHIPATA DISTRICT

VUBWI DISTRICT

REPUBLIC OF ZAMBIA

REPUBLIC OF MALAWI

Chipata

Mkwawe

Msipazi

Lutembwe River

Nyamaseche River

Chipoza River

Derika River

Lutembwe River

Lutembwe River

Luntwere River

Kamwankuku River

Mpamba River

Mpunza River

Musambika River

Chibila River

Kafera River

Msipazi River

Kava River

Mangiki River

400Kv Zambia OHL

Mwami River

Lubwe River

Nyongo River

Chali River

BP

Boarder

450000 455000 460000 465000 470000 475000 480000 485000 490000

8490000 8485000 8480000 8475000 8470000

N W E S

ESIA FOR ZAMBIA - MALAWI 400KV INTERCONNECTOR PROJECT
VEGETION PLOTS

LEGEND

- 400Kv Over Head Line
- River
- Highway
- Major Road
- Vegetation Plot
- Dam
- Forest Reserve

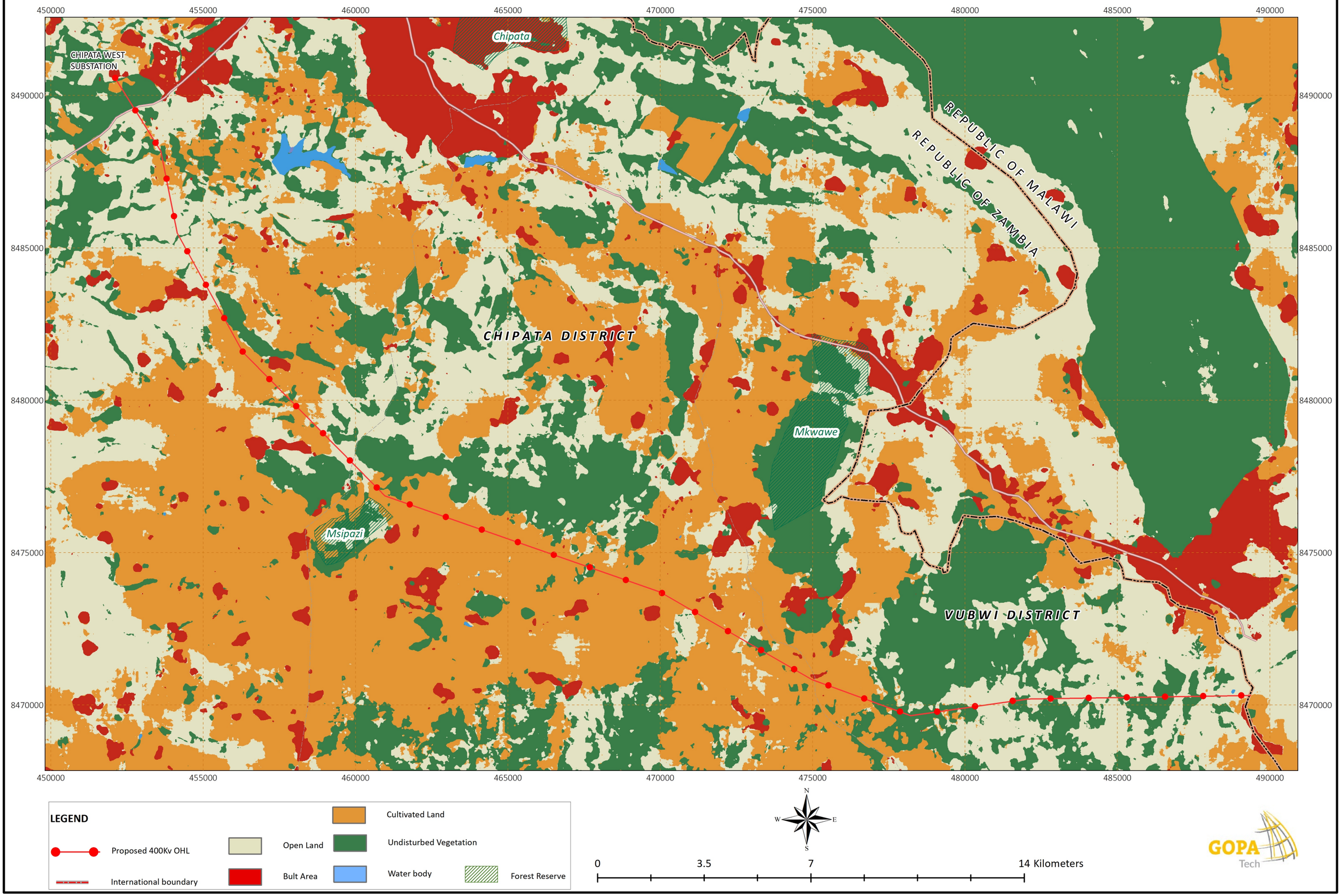
COORDINATE SYSTEM: ARC 1950 ZONE 36 S
PROJECTION: UTM (Universal Transverse Mecartor)
DATUM: Arc 1950
Central Meridian: 27. 0000
LATITUDE OF ORIGIN: 0.000
UNITS: Meter

0 3.5 7 14 Kilometers

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) LAND USE MAP

SCALE 1: 110,000



LEGEND

- Proposed 400Kv OHL
- International boundary
- Open Land
- Bult Area
- Cultivated Land
- Undisturbed Vegetation
- Water body
- Forest Reserve

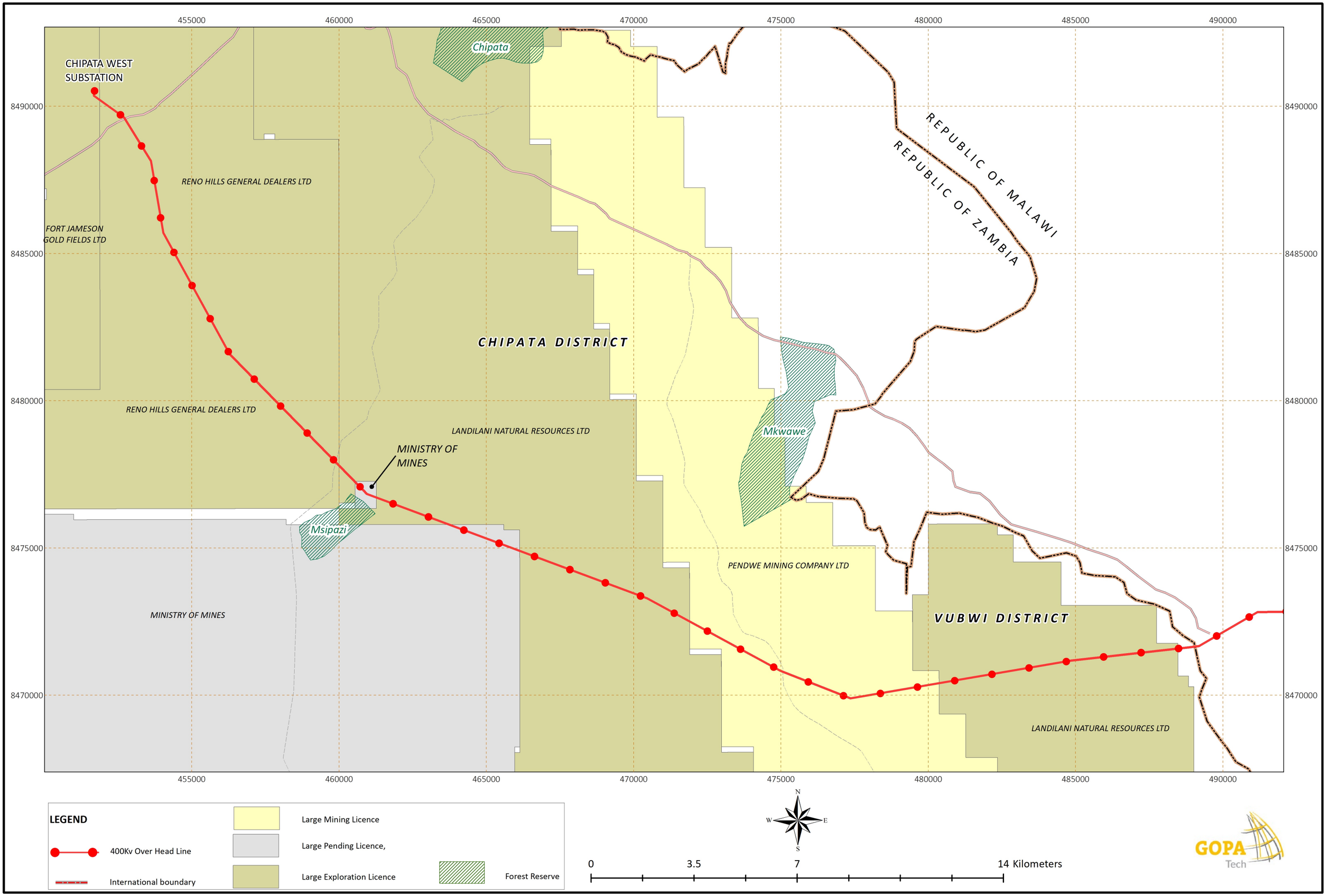
N
W
E
S

0 3.5 7 14 Kilometers

GOPA Tech

ZAMBIA -MALAWI 400KV INTERCONNECTOR PROJECT (ZAMBIAN SIDE) MINING LICENCES

SCALE 1: 110,000



460000 480000 500000 520000 540000 560000 580000 600000

8500000 8480000 8460000 8440000 8420000

CHIPATA WEST
SUB STATION

Chipata

McHinji

400Kv Zambia OHL

Lilongwe

NKHOMA
SUB STATION

400Kv Malawi OHL

ZAMBIA

MOZAMBIQUE

MALAWI

N W E S

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

0 20 40 80 Kilometers

ESIA FOR ZAMBIA - MALAWI 400KV INTERCONNECTOR PROJECT
GENERAL SAMPLE MAP

LEGEND

- Provincial Capital
- 400Kv Over Head Line
- International boundary
- Highway

COORDINATE SYSTEM: ARC 1950 ZONE 36 S
PROJECTION: UTM (Universal Transverse Mecartor)
DATUM: Arc 1950
Central Meridian: 27. 0000
LATITUDE OF ORIGIN: 0.000
UNITS: Meter

GOPA Tech

NOTICE OF PUBLIC MEETINGS

Disclosure for the Environmental and Social Impact Assessment (ESIA) study for the Malawi - Zambia 400 kV Transmission Interconnector Project

ZESCO intends to develop the 46.6km long, 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District, and the Zambia - Malawi border in Vubwi District. This is part of the proposed 188km, Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) and Chipata West 330/132 kV Substation (in Chipata District, Zambia), being developed by both ZESCO and ESCOM, in their respective jurisdictions. The Transmission Line in Zambia covers Chipata and Vubwi Districts.

During implementation, the project will involve excavation works, erection of towers, stringing of conductor, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

As a required under the Environmental Management Act (No. 12 of 2011), read together with the amended Environmental Management Act No.8 of 2023 and Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, an Environmental and Social Impact Assessment (ESIA) study has been undertaken and the draft Environmental and Social Impact Statement (ESIS) and Resettlement Action Plan (RAP) report have been prepared.

ZESCO hereby invites Government agencies, local authorities, traditional leaders, Non-Governmental organisations, affected communities and all interested parties to the ESIA public disclosure meetings to be held in Chipata and Vubwi Districts in the places, dates and time stated below. The purpose of the disclosure meetings is to present the findings of the ESIA study undertaken in the project and enable stakeholders to discuss the findings and provide feedback.

Meeting Details:

DATE	VENUE	TARGET AUDIENCE	District	TIME
8th April 2026	Eastern Comfort Lodge	Chipata DDCC	Chipata	09:30hrs
	Kauzu Primary School	Kauzu community	Chipata	14:30hrs
9th April 2026	Vubwi Council Chamber	Vubwi DDCC	Vubwi	10.00hrs
	Chibwe Village	Chibwe and Lufazi community	Chipata	14:30hrs
10th April 2026	Makwelelo Primary School	Pashane community	Chipata	09:30hrs
	Makangila Primary School	Daula community	Chipata	14:30hrs
11th April 2026	Makwe Primary School	Chiundama, Kachikoti and Jelemani	Chipata	09:30hrs
13th April 2026	Dingeni Ground	Mpande and Pililani community	Chipata / Vubwi	09:30hrs
	Matemba Primary School	Chaoleka, Chibau, Mukaya and Lunda Community	Vubwi	14:30hrs

For further enquiries, please contact the following:

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Chief Environmental Scientist – South
ZESCO Limited
Contact Number: +260 966116090
Email: JMunthali@zesco.co.zm

Mr. Robam Musonda
ESIA/RAP Country Coordinator
GOPA Tech
+260 977783184
robam.musonda64@gmail.com

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

REPORT ON THE ESIA/RAP DISCLOSURE MEETINGS HELD IN CHIPATA AND VUBWI DISTRICTS OF ZAMBIA FROM 8TH TO 13TH APRIL, 2026

1. Introduction

This report covers a series of ESIA and RAP disclosure meetings held for the proposed Zambia-Malawi 400kV Interconnector Project. The meetings were held in Chipata and Vubwi Districts at both district and community levels. Their purpose was to inform local community members, Project Affected Persons (PAPs), traditional leaders, district Government authorities, Non-Governmental Organisation (NGOs) and other local stakeholders about the project's environmental and socio-economic impacts, as well as the proposed mitigation and compensation measures.

The meetings were designed to give an opportunity to the local stakeholders to provide their views and concerns, integrate local input into project planning, and ensure transparency and accountability. This process follows Zambia's EIA Regulations, the Environmental Management Act No. 12 of 2011and Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026).

The information presented to the stakeholders covered the following topics

- Overview of the project
- Potential environmental and socio-economic impacts and mitigation measures
- Compensation principles and entitlements
- Livelihood restoration programmes
- Grievance Redress Mechanism (GRM)

2. Objective of the Meetings

The primary goal of these ESIA/RAP disclosure meetings was to present to the local stakeholders the findings of the ESIA studies in terms of the environmental and social impacts as well as the associated mitigation

measures. The Resettlement Action Plan (RAP) and associated livelihood restoration programme was also presented to the PAPs, traditional leaders, district Government authorities, Non-Governmental Organisation (NGOs) and the local community members. The meetings sought to ensure that affected communities fully understand the impacts of the of the project, their rights, the compensation framework, the available livelihood restoration programmes, and the grievance mechanisms.

The meetings were convened as part of stakeholder consultation requirements under the Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026.

3. Description of the Project

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

4. Project Meetings

4.1. District Coordinating Committee (DDCC) Meetings

Two DDCC meetings were held to engage district-level stakeholders and officials.

Table 1: District Level Meetings Held

Date	District	Venue	Target Audience	Time
8th April 2026	Chipata	Eastern Comfort Lodge	Chipata District Development Coordinating Committee (DDCC) members	09:30hrs
9th April 2026	Vubwi	Vubwi District Council Hall	Vubwi DDCC members	10:00hrs

4.2. Community-Level Meetings

Community disclosure meetings were held in seven locations to carter for the fourteen (14) affected villages across Chipata and Vubwi Districts as follows:

Table 2: Community Level Meetings Held

Date	Venue	Target Audience	District	Time
8th April 2026	Kauzu Primary School	Kauzu Community	Chipata	14:30hrs
9th April 2026	Chibwe Village	Chibwe and Lufazi community	Chipata	14:30hrs
10th April 2026	Makwelelo Primary School	Pashane Community	Chipata	09:30hrs
10th April 2026	Makangila Primary School	Daula Community	Chipata	14:30hrs
12th April 2026	Makwe Primary School	Chiundama , Kachikoti, Jelemani	Chipata	09:30hrs
13th April 2026	Dingeni Ground	Mpande, Pililani	Chipata	09:30hrs

13th April 2026	Matemba Primary School	Chaoleka Chibau Mukaya Lunda	Vubwi	14:30hrs

5. Attendance

The following institutions and individuals attended the meetings

ZESCO Staff

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

District Officials

NAME	POSITION
Mr. Kapembwa Sikazwe	District Administrative Officer - Chipata
Mr. Given Sakala	District Commissioner - Vubwi

Local Community

- **Traditional Leaders -** Local headmen and section chairmen from each community attended the village meetings.
- **Community Members -** Project Affected Persons and residents from the fourteen villages.

Total Attendance: Approximately 779 community members participated in the meetings, including men, women, and youth.

Table 3: Meetings Attendance

Date	Venue	Target Audience	District	Attendance		
				Male	Female	Total
8th April 2026	Eastern Comfort Lodge	Chipata DDCC members	Chipata	20	08	28
9th April 2026	Vubwi District Council Hall	Vubwi DDCC members	Vubwi	17	05	22
8th April 2026	Kauzu Primary School	Kauzu Community	Chipata	56	19	75
9th April 2026	Chibwe Village	Chibwe and Lufazi	Chipata			

		community		43	47	90
10th April 2026	Makwelelo Primary School	Pashane Community	Chipata	74	31	105
10th April 2026	Makangila Primary School	Daula Community	Chipata	107	85	192
12th April 2026	Makwe Primary School	Chiundama, Kachikoti, Jelemani	Chipata	44	12	56
13th April 2026	Dingeni Ground	Mpande, Pililani	Chipata	115	32	147
13th April 2026	Matemba Primary School	Chaoleka Chibau Mukaya Lunda	Vubwi	54	10	64
Total Attendance				**530**	**249**	**779**

6. Key Project Issues Discussed at the DDCC Meetings

The DDCC meetings featured presentations from ZESCO and GOPA experts. These covered project background, technical scope, ESIA methodology, biodiversity impacts, socio-economic impacts, and the Environmental and Social Management Plan (ESMP).

6.1. Presentation by Mr. Ray Kalima (ZESCO – Principal Engineer) – Project Background & Status (This one should come first

Mr. Kalima presented the following key issues

- **Formal Agreements -** The project is built on two Memoranda of Understanding (MoUs): the Inter-Governmental MoU (August 2015, Lusaka) between Zambia and Malawi, and the Inter-Utility MoU between ZESCO (Zambia) and ESCOM (Malawi).
- **SAPP Coordination -** The project is coordinated by the SAPP Project Implementation Unit to ensure smooth execution of feasibility study contract.
- **Project Scope Details -** The total line length is 192.6km of which 46.6km is in Zambia and the rest is in Malawi. The Chipata West Substation in Zambia requires extension to accommodate two bays for the 400kV line, line-connected shunt reactors, two autotransformers (600MVA each), 400kV busbars, and a new control building.
- **Completed Key Deliverables:**
    - Final Draft Technical Feasibility report was completed in November 2025
    - Final Conceptual Design report was completed in January 2026
    - Draft e-bidding documents was shared for review in January 2026
    - Final Draft ESIA/RAP to be completed in April, 2026.
- **Financing Status -** The World Bank has expressed interest in financing the implementation of project.
- **Capacity Building -** Capacity building (for technical feasibility) was undertaken for ESCOM, ZESCO, and SAPP in transmission line designs and environmental management. Capacity Building for the ESIA component was planned for end of April 2026.
- **Next Steps (Institutional) -** ESCOM and ZESCO to set up a joint implementation structure and establish a Joint Development Agreement (JDA) for project management.

6.2. Presentation by Mr. Robam Musonda (GOPA Country Coordinator) – Project Overview & ESIA Methodology (this was the second presentation – swap them)

Mr. Musonda presented the following key issues

- **Project Financing & Context -** The project feasibility studies are financed by Swedfund and is coordinated by the Southern African Power Pool (SAPP). The objective is broader regional integration, allowing electricity trading with other SAPP countries beyond just bilateral trade between Zambia and Malawi.
- **Regulatory Triggers -** The ESIA is legally required because the project involves a transmission line above 220kV and longer than 10km in a non-environmentally sensitive area, as per the Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, First Schedule, Class I(B).
- **International Standards Applied -** Beyond Zambian law, the ESIA explicitly incorporates Swedfund's Policy for Sustainable Development, the European Investment Bank (EIB) Performance Standards, and World Bank Environmental and Social Safeguards.
- **International Conventions Cited -** Zambia is party to several relevant conventions, including the Convention on World Cultural and Natural Heritage (1972), CITES (1993), the RAMSAR and Bonn Conventions, and the Basel Convention (1994).
- **Alternative Routes (3 options) –** Three alternative line routes were considered and Alternative 3 was chosen based on its minimal impacts on settlements, biodiversity, and sensitive habitats.
- **Alternative Tower Technologies -** Three options were considered: tubular steel support, lattice steel tower, and composite tower. The lattice steel tower was selected for its optimal balance of technical performance, cost-effectiveness, and regional compatibility.
- **Baseline Studies Conducted -** Four ESIA baseline studies were undertaken covering environmental aspects (noise, air, water quality), ecology (flora and fauna), socio-economic conditions (health, education, energy, livelihoods), and archaeological and cultural heritage.
- **Stakeholder Engagement Stages -** Consultations were held at specific stages of the ESIA study, including route selection, scoping, scoping disclosure, baseline surveys, and the final ESIA/RAP disclosure.
- **Impact Evaluation Criteria -** The presentation detailed a matrix combining magnitude (duration, spatial extent, reversibility, legal compliance, likelihood) and receptor sensitivity (severe, mild, low) to determine significance (Minor, Moderate, Major, Critical).

6.3. Presentation by Mr. Edwin Matokwani (GOPA Ecology Expert) – Biodiversity, Environmental & Biological Impacts

Mr. Matokwani presented the following key issues

- **Habitat Breakdown (233 hectares within 50m wayleave)**
    - Agricultural fields: 150.5 ha (64.59%)
    - Degraded vegetation: 57.7 ha (24.76%)
    - Wooded vegetation (miombo): 19.2 ha (8.24%)
    - Thicket habitat: 3.5 ha (1.50%)
    - Built-up area: 1.9 ha (0.82%)
    - River crossings: 0.2 ha (0.08%)
- **Key Flora Findings -** The area is dominated by dry miombo woodland with three key genera: *Brachystegia*, *Isoberlinia*, and *Julbernadia*. No rare, endemic, or conservation-sensitive plant species were identified.
- **Key Fauna Findings:**
    - **Mammals (5 species) -** Vervet monkey, African civet cat, common duiker, elephant shrew, African savanna hare. All are classified as Least Concern under IUCN.
    - **Reptiles (4 species) -** Monitor lizard, side-striped chameleon, Mozambique rough-scaled

lizard, and a suspected Pancake Tortoise, which is Critically Endangered under IUCN and protected by Zambia's Wildlife Act. Th Pancake Tortoise requires further investigation.
    - **Amphibians (1 species) -** Bocage's burrowing tree frog (not threatened).
    - **Insects (227 species):** Dominated by ants, beetles, butterflies, termites, and grasshoppers/crickets.
    - **Birds (63 species) -** Includes seed-eaters, insectivores, frugivores, and raptors. No nesting colonies were observed.
- **Critical Habitat Determination -** The project area does not meet the thresholds for Critical Habitat under EIB ESS4 (2022) or World Bank ESS6 (2017). The area is primarily modified landscapes with moderate species richness.
- **Simpson's Diversity Index Results:**
    - Overall project area index: 0.5139 (moderate diversity, dominated by certain taxa)
    - Highest diversity - Insects (0.912), Trees (0.903), Birds (0.894)
    - Lowest diversity - Amphibians (0.0 – single species), Reptiles (0.655)
- **Water Bodies Assessed -** Six water bodies were sampled for water quality assessment: Lubwe River, Chibila Stream, Nyongo Stream, Mwami Stream, Choli Stream, and Lutembwe River. Baseline water quality was within Zambia Bureau of Standards (ZABS) limits.
- **Groundwater -** Five boreholes and wells were sampled for water quality assessment. Water quality was found to be suitable for domestic and livestock use.
- **Potential Environmental and Biological Impacts Identified**

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

6.4. Presentation by Ms. Stella Sakala (GOPA RAP Expert) – Socio-Economic Impact & Resettlement

Ms. Sakala presented the following key issues.

- **Physical Displacement Details**
    - 10 residential structures belonging to 7 households are affected.
    - 14 auxiliary structures affected (kitchens, granaries, toilets, bathrooms, kraals, boreholes, wells).
    - Four institutional assets belonging to three institutions are affected (two churches and one NGO called Amake Teen Organization).
- **Land:** 243.58 hectares of land belonging to 242 households will be affected by the project (230.89 ha along the wayleave and 12.69 ha at the substation)
- **Compensation Principles**

- Full replacement cost for lost assets.
- 25% of land value for restrictions caused by the wayleave.
- Disturbance, land preparation, transitional, and vulnerability allowances are included.
- ***Cash vs. in-kind***: 7 PAPs will receive cash for structures at replacement cost; 242 PAPs will receive cash compensation for land.

Social And Cultural Impacts (in summary)

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose houses are affected by the project
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

All the people whose houses, land, fruit trees, crops and other assets are affected by the project will be adequately compensated.

- **Livelihood Restoration Proposed Activities:** Crop management, livestock improvement, conservation farming, enterprise development, tree planting (agroforestry), and skills training.
- **Grievance Redress Mechanism (5 Tiers):** GRM has been developed to manage complaints, concerns and receive suggestions from the community members. Grievance will be addressed through the following stages:
  - Tier 1: Community Focal Point Persons
  - Tier 2: PIU Grievance Redress Committee
  - Tier 3: District GR Committee
  - Tier 4: Project Steering Committee
  - Tier 5: Arbitration or Courts of Law
- **RAP Budget:** A budget provision has been made to manage compensation and resettlement related issues.

6.5. Presentation by Mr. Robam Musonda (GOPA Country Coordinator) – Environmental and Social Management Plan (ESMP)

Mr. Musonda presented the following key issues:

- **Objectives of the ESMP -** To minimize and manage adverse environmental and social impacts; ensure compliance with Zambian regulations and international standards; define roles, responsibilities, and enforcement mechanisms; promote adaptive environmental and social performance management; and ensure compliance monitoring and reporting.
- **Institutional Roles:**
  - **ZESCO -** Overall accountability and regulatory compliance.
  - **Environmental Expert:** Supervision of mitigation, monitoring, and reporting.
  - **Contractor -** Onsite implementation of all mitigation measures.
  - **Site Manager -** Day-to-day ESMP compliance monitoring.
  - **Financiers -** Compliance monitoring and review of reports.

- **Regulatory Authorities (ZEMA, labour, health) -** Inspections, monitoring, and enforcement.
- **Local Government Agencies -** Compliance monitoring and conflict resolution.
- **Local NGOs -** Compliance monitoring and conflict resolution.
- **Local Communities -** Participation in awareness programmes, reporting concerns, and supporting conservation.

- **Site-Specific Management Plans (9 Plans):** To facilitate the effective implementation of the mitigation measures the following on-site management plans are recommended:
  1. Waste Management Plan
  2. Stormwater Management Plan
  3. Emergency Preparedness and Response Plan
  4. Traffic Management Plan
  5. Spill Prevention and Response Plan
  6. Hazardous Materials Management Plan
  7. Workers Accommodation Management Plan
  8. Community Health and Safety Plan
  9. Chance Finds Procedure

- **ESMP Budget (USD):** The project has a budget provision of $2,308,663.71 for the management of environmental and social issues (including resettlement).
- **Project Viability Statement -** The conclusion stated that most impacts are assessed as minor to moderate, generally temporary, localized, and reversible. It was recommended that the project should proceed to implementation, provided that mitigation commitments are fully implemented. The long-term economic, social, and climate-related benefits significantly outweigh the residual negative impacts.

7. Summary of Community Presentations by Ms. Stella Sakala (RAP Expert)

To suit the participants in the villages, the above-mentioned presentations were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance

- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

8. Community Feedback and Outcomes

Across all 14 villages, community members demonstrated a clear understanding of the project's environmental and socio-economic impacts, compensation framework, and grievance mechanisms. This was evident from the questions and concerns raised during the plenary sessions.

Key issues and common questions and concerns raised by community members across all community meetings included:

A. Land and Compensation Questions

- What will happen if the power line passes between two pieces of land belonging to different owners? How will compensation be shared between the affected persons?
  Response: Affected land for each household has been documented and each household will be compensated based on the size of the affected piece of land.
- Why have some community members been left out of the list of affected households when their neighbours are listed as affected?
  Response: All the affected pieces of land have been documented. Those who have been left out could be outside the wayleave. However, further verification will be made when the line route is fully surveyed and pegged.
- Is the money for compensation going to be enough, especially for those on whose land the towers will sit?
  Response: Those whose land is affected by towers will be compensated for both restricted access and land uptake by the towers.
- Are the contractors going to pay for the land on which they will set up their camps sites?
  Response: The contractor will pay land rentals to the owners for the entire period of land occupation.

B. Employment and Job-Related Questions

- The youths should be given priority on the issue of jobs.
  Response: Youths will be considered for employment.
- Will all communities from the 14 villages be given jobs?
  Response: All the villages will be considered for employment, a few from each village.
- What if contractors come with their own people (workers)? What should we do?
  Response: All unskilled labour will be employed from the local project area. For skilled labour, the contractor is at liberty to employ from any part of Zambia.

C. Safety and Health Questions

- Can cows graze under the pylons or children be allowed to play around there?
  Response: It is safe for animals to graze under the pylons, but children playing under the pylons is not allowed for safety reasons.
- How shall we ensure the safety of children during construction as they will be attracted to watching the project machinery?
  Response: Community safety awareness campaigns will be conducted in all the villages. Parents and schools will also play a role in safeguarding the children.

D. Project and Benefit Questions

- How are community members not directly affected by the project going to benefit from the project?
  Response: ZESCO may consider a Corporate Social Responsibility project to benefit a wider group in the project area.
- When power is connected, are we going to pay anything for domestic connection?
  Response: When the power line is built it will not be possible to make domestic connections because it is a high voltage power line.

E. Questions About Grievances and Documentation

- Can project affected people start opening bank accounts now or wait until construction starts?
  Response: Those who are able can open their bank accounts now. Those who need help can wait for ZESCO's facilitation.
- The spouse requirement for compensation payments (clarification was given that widowed or

unmarried individuals may collect payments alone)

9. Outcome/Conclusion

The ESIA and RAP disclosure meetings held from 8th to 13th April 2026 successfully achieved their objective of informing stakeholders in Chipata and Vubwi Districts about environmental and social impacts and mitigation measures of the proposed Malawi-Zambia 400kV Transmission Interconnector Project.
The meetings were attended by district Government officials, traditional leaders, and community members from fourteen villages.

Community feedback indicated a clear understanding of the project's impacts and mitigation measures. The project is recommended to proceed to implementation, provided that all mitigation commitments are fully implemented.

Minutes of the disclosure meetings with attendance lists are given as appendices to this report.

MINUTES OF ESIA/RAP DISCLOSURE MEETINGS ATTACHED AS APPENDICES

1. Chipata DDCC Meeting
2. Kauzu Community Meeting
3. Vubwi DDCC Meeting
4. Pashane Community Meeting
5. Daula Community Meeting
6. Chiundama Community Meeting
7. Chibwe Community Meeting
8. Dingeni-Mpande Community Meeting
9. Chaoleka Community Meeting

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE CHIPATA DISTRICT DEVELOPMENT COORDINATING COMMITTEEE (DDCC)

Venue: Eastern Comfort Lodge, Chipata

Date: 8 April, 2026 **Time: 10:00hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key District Officials

NAME	POSITION
Mr. Kapembwa Sikazwe	District Administrative Officer
Members of the District Development Coordinating Committee (DDCC)	Heads of Government Department and NGOs.

Number of Participants

Male	20
Female	08
Total	28

AGENDA OF THE MEETING

- **Call to Order**
- **National Anthem**
- **Opening Prayer**
- **Self-Introductions**
- **Opening Remarks**
- **Background Overview of the Project by ZESCO**
- **Project Description & Overview of the ESIA process by GOPA-tech**
- **Environmental and Biological Impacts and Mitigation by GOPA-tech**
- **Socio-Economic Impacts and Mitigation by GOPA-tech**
- **Environmental and Social Management Plan (ESMP) by GOPA-tech**
- **Plenary Session (Discussion)**
- **Closing Remarks**
- **Closing Prayer and National Anthem**

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

OPENING REMARKS

The meeting was called to order at 10:30 hours by the District Administrative Officer, Mr. Kapembwa Sikazwe, followed by a prayer led by the Kapata Ward Councillor. In his opening remarks, Mr. Sikazwe welcomed all participants and encouraged them to actively engage in the proceedings.

Thereafter, the Chairperson called upon ZESCO and GOPA to make presentations.

1. **PROJECT PRESENTATION by ZESCO (Mr. Ray Kalima, Principal Engineer)**

Key Points Discussed:

(a) Project Background

The project involves the construction of a 400kV transmission interconnector line between Chipata West Substation and Nkhoma Substation in Lilongwe approximately 192.6km long, of which 46.6km is in Zambia traversing Chipata and Vubwi districts. The project also involves the extension of Chipata West Substation.

- **Formal Agreements:** The project is built on two MoUs:
    - Inter-Governmental MoU (August 2015, Lusaka) between Zambia and Malawi.
    - Inter-Utility MoU between ZESCO (Zambia) and ESCOM (Malawi).
- **SAPP Coordination:** The project is coordinated by the SAPP Project Implementation Unit to ensure smooth contract execution.

(b) Project Scope Details:

- **Total line length:** 192.6km
- **Chipata West Substation (Zambia):** Requires two bays for the 400kV line, line-connected shunt reactors, two autotransformers (600MVA each), 400kV busbars, and a new control building.
- **Nkhoma Substation (Malawi):** Extension with two bays and line-connected shunt reactors.

- **Completed Key Deliverables (Timeline):**
    - Inception report: May 2024.
    - Final Preliminary report: 6 February 2025.
    - Final Draft Feasibility report: November 2025.
    - Final Conceptual design report: January 2026.
    - E-bidding document template submitted for review: January 2026.
- **Project Status – Financing:** The World Bank has expressed interest in financing the project, which qualifies as a candidate for public financing.
- **Capacity Building:** Capacity building for the Feasibility Study component was undertaken for ESCOM, ZESCO, and SAPP in Transmission Line Designs and Environmental Management. Training for the ESIA component was planned for April 2026.

2. **GOPA Overview (Project Overview & ESIA Methodology) by Robam Musonda – Country Coordinator:**

- **Project Financing & Context:** The project feasibility studies (Technical and ESIA) is financed by Swedfund and falls under the auspices of the Southern African Power Pool (SAPP). The objective is

not just bilateral trade but broader regional integration, allowing electricity trading with other SAPP countries.

- **Regulatory Triggers:** The ESIA is legally required because the project involves a transmission line above 220kV and longer than 10km in a non-environmentally sensitive area, as per the Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026 (First Schedule, Class I(B)).
- **International Standards Applied:** Beyond Zambian law, the ESIA explicitly incorporates:
    - Swedfund's Policy for Sustainable Development.
    - European Investment Bank (EIB) Performance Standards.
    - World Bank Environmental and Social Safeguards
- **International Conventions Cited:** Zambia is party to conventions considered relevant, including:
    - Convention on World Cultural and Natural Heritage (1972).
    - CITES (1993) for endangered species trade.
    - RAMSAR and Bonn Conventions on wetlands and migratory species.
    - Basel Convention (1994) on hazardous waste transboundary movement.
- **Alternative Routes (3 options):** Three alternative line routes were considered and Alternative 3 was chosen despite being slightly longer and less accessible, because it had **minimal impact on settlements, biodiversity, and sensitive habitats**.
- **Baseline Studies Conducted:** The ESIA methodology included four specific baseline studies:
    - Environmental (noise, air, water quality).
    - Ecological (flora and fauna).
    - Socio-economic (health, education, energy, livelihoods, etc).
    - Archaeological and cultural heritage.
- **Stakeholder Engagement Stages:** Consultations were held at specific milestones: Route Selection, Scoping, Scoping Disclosure, Baseline Surveys, and now ESIA/RAP Disclosure.
- **Impact Evaluation Criteria (Detailed):** The presentation detailed a matrix combining **Magnitude** (duration, spatial extent, reversibility, legal compliance, likelihood) and **Receptor Sensitivity** (severe, mild, low) to determine **Significance** (Minor, Moderate, Major, Critical).

3. Presentation by Edwin Matokwani: Biodiversity, Environmental & Biological Impacts

- **Habitat Breakdown (233 hectares within 50m wayleave):**
    - Agricultural fields: **150.5 ha (64.59%)** – dominant land use.
    - Degraded vegetation: **57.7 ha (24.76%)** – second largest.
    - Wooded vegetation (miombo): 19.2 ha (8.24%).
    - Thicket habitat: 3.5 ha (1.50%).
    - Built-up area: 1.9 ha (0.82%).

- River crossings: 0.2 ha (0.08%).

- **Key Flora Findings:** Dominated by dry miombo woodland with three key genera: *Brachystegia*, *Isoberlinia*, and *Julbernadia*. No rare, endemic, or conservation-sensitive plant species were identified.
- **Key Fauna Findings:**
  - **Mammals (5 species):** Vervet monkey, African civet cat, common duiker, elephant shrew, African savanna hare. All are Least Concern (IUCN).
  - **Reptiles (4 species):** Monitor lizard, side-striped chameleon, Mozambique rough-scaled lizard, and a **suspected Pancake Tortoise (Critically Endangered – CR)** under IUCN and protected by Zambia's Wildlife Act.
  - **Amphibians (1 species):** Bocage's burrowing tree frog (not threatened).
  - **Insects (227 species):** Dominated by ants, beetles, butterflies, termites, grasshoppers/crickets.
  - **Birds (63 species):** Includes seed-eaters, insectivores, frugivores, raptors. No nesting colonies observed.

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

4. Presentation by Stella Sakala: Socio-Economic Impact & Resettlement (RAP)

(a) **Socio-Economic Baseline Summary**: based on the 222 households who were interviewed.

- **Land tenure:** 86% customary tenure.
- **Poverty indicators:** High food insecurity (Jan–Mar); households with less than 2 meals/day; no assets/livestock; no/irregular income.
- **Income:** 97% of households earn less than ZMW 3,000/month; 88% earn between ZMW 500–3,000. Female-headed households concentrated in lowest brackets.
- **Education:** Low education (primary level) for 222 PAHs; early school drop-out; distance and transport costs affect continuation.
- **Energy access:** 94% have no grid access; rely on solar lanterns.
- **Water access:** 80% rely on boreholes and hand pumps.

(b) **Impact Assessment and Mitigation:**

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose houses are affected by the project
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

All the people whose houses, land, fruit trees, crops and other assets are affected by the project will be adequately compensated.

(c) **Compensation Principles (Detailed):**

- Full replacement cost for lost assets (structures and full land uptake at the substation and on tower locations).
- 25% of land value for restrictions caused by the wayleave.
- Disturbance allowance, land preparation allowance, transitional allowance, vulnerability allowance.
- Cash vs. in-kind: 7 PAHs for the 10 dwelling structures and 14 ancillary structures (cash at replacement cost); 242 PAHs for land (cash).

(d) **GBV Mitigation – Specific Measures:**

- Engage a GBV Specialist/Service Provider for implementation, monitoring, and response.
- Mandatory Code of Conduct signed by all workers.
- **Compensation protocol:** All household compensation payments made in presence of both spouses (husband and wife) to promote transparency and equity.

(e) **Livelihood Restoration Proposed Activities:** Crop management, livestock improvement, conservation farming, enterprise development, tree planting (agroforestry), skills training.

(f) **Grievance Redress Mechanism (GRM):** The GRM management has 5 Tiers (stages) as follows:

1. Community Focal Point Persons.
2. PIU Grievance Redress Committee.
3. District GR Committee.
4. Project Steering Committee.
5. Arbitration / Courts of Law.

- **RAP Budget:** A budget provision has been made to facilitate the implementation of the Resettlement Action Plan.

5. Presentation by Robam Musonda: Environmental and Social Management Plan (ESMP)

- **Objectives:**
    - Minimize and manage adverse environmental and social impacts.
    - Ensure compliance with Zambian regulations and international standards.
    - Define roles, responsibilities, and enforcement mechanisms.
    - Promote adaptive environmental and social performance management.
    - Facilitate monitoring and reporting.
- **Institutional Roles (Detailed):** The project will be implemented in collaboration with other institutions who perform various roles for the success of the project. Such institution includes Government departments, regulatory authorities, financiers, consultants and NGOs
- **List of Site-Specific Management Plans:** To facilitate the effective implementation of the mitigation measures the following on-site management plans are recommended:
    1. Waste Management Plan (liquid/solid, hazardous/non-hazardous).
    2. Stormwater Management Plan (diversion channels, settlement ponds).
    3. Emergency Preparedness and Response Plan (site-specific actions).
    4. Traffic Management Plan (minimise disruption, safety for road users/pedestrians/cyclists).
    5. Spill Prevention and Response Plan (soil, surface/ground water; includes prohibited materials).
    6. Hazardous Materials Management Plan (selection, handling, storage, disposal).
    7. Workers Accommodation Management Plan (standards for living conditions).
    8. Community Health and Safety Plan (risks from staff interaction, traffic, emissions, accidents).
    9. Chance Finds Procedure (actions for cultural heritage/archaeological finds).
- **Monitoring Programme Components:** Includes parameter/activity, location, means of monitoring, compliance indicator (threshold limit), frequency, corrective actions, and supervision responsibility.

ESMP Budget: A budget provision has been made to facilitate the implementation of the recommended mitigation measures.

Conclusion – Project Viability Statement: Most of the impacts are assessed as minor to moderate, generally temporary, localized, and reversible, Therefore, it was recommended that the project should proceed to implementation provided that mitigation commitments are fully implemented. Long-term benefits (economic, social, climate-related) significantly outweigh residual negative impacts.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
ZESCO Transmission Engineer	How are the 242 seasonal farmers being taken care of – is it possible to take care of them without any delays	The project will allow these farmers to continue with their farming and all these families will be compensated at the prevailing market prices at the beginning of project implementation. Compensation for land will be for restricted access and for full uptake at the substation and on tower locations.
Sikazwe Kapembwa – Chipata District Administration Officer	How are you valuing the land belonging to the Project Affected Households – is the Chipata local authority involved because lay persons may not fully understand the value of their land.	The Project is working with Ministry of Agriculture to assess the fruit trees and crops. For the assessment of structures, the project is using qualifies valuation surveyors.
Sikazwe Kapembwa – Chipata District Administration Officer	We propose that the Local authority is involved when compensating the affected households to facilitate fairness and transparence in the process and avoid the affected persons coming back to the council to complain that they were underpaid	The submission was noted
Gladys Ngwenyama from CBTA	When is the project going to commence.	ZESCO responded that the project has started and preliminary studies have been done and the construction phase is expected to commence in 2027, subject to

		the procurement of financing, and will run for 22 months.
Mathews Kachali - Councilor for Kapata Ward	Will there be a possibility of the project partnering with the private sector?	There are chances in the energy sector under the Open Access initiative where the private sector can trade using ZESCO infrastructure. This can be done even at domestic level where one is not just a consumer but a p electricity producer supplying power to others.
Mathews Kachali - Councilor for Kapata Ward	Will the construction of the extension works at the substation take place in 18 or 22 months, since the substation and the power line have different timelines	The construction works at the substation and the 400KV transmission line will run concurrently and will be completed in 22 months.
Kapembwa Sikazwe	Are the steps taking place in Zambia the same ones taking place in Malawi in terms feasibility and environmental studies?	Both sections (Malawi and Zambia) are moving at the same rate to ensure that both sides are commissioned at the same time to avoid waiting and loss of time and business. The SAPP is running both project components.
Mathews Kachali - Councilor for Kapata Ward	Since Zambia only has 46Km, how are we going to finish at the same time with Malawi which has over 100km stretch	The project will be managed in such a way that construction works are completed at the same time on both sides.
Kapembwa Sikazwe	The issue of signage at the construction sites will need to be addressed especially when it comes to little children who may not understand the meaning of this signage	This was noted

Kapembwa Sikazwe	The issue of local people being subjected to harsh conditions and operating without employment contracts in unhealthy environments, especially the youth, will need to be addressed as it is not good. We need credible contractors who will respect the local people and national labour laws.	This was noted
Kapembwa Sikazwe	We want this project to empower the local people	This was noted

Outcome of ESIA/RAP Disclosure meeting: The stakeholder engagement meeting successfully disclosed the ESIA and RAP findings (in terms of impacts and mitigation) for the Zambia-Malawi 400kV project and the key commitments including fair and adequate compensation to the affected households.

Figure 1: Chipata DDCC members following the proceedings of the meeting

The participants commended the project for the continuous stakeholder engagement and hoped that the consultation will continue in all the phases of the project.

Signed

Charity Moonga

Secretary

Signed

Mr. Kapembwa Sikazwe

Chairperson

SAPP

ZESCO

Powering The Nation

GOPA Tech

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List

Date: April 2026 / 08

Location: Chipata/Vubwi DDCC Meeting

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	NRC/EMAIL	PHONE NUMBER	DATE
1	KAPISTRAN KAPINDULA	MoA	EMO	163481/18/1 kapistran2020@gmail.com	0973057067	08-04-26
2.	ONOLINA ZULU	PAAC	Chairperson	104213/55/1 zuluonolina589@gmail.com	~~0973 [illegible]~~ 0973464331	08-04-26
3.	GLADYS NGWENYAMA	C.B.T.A	Member	247948/66/1 gladysngwenyama2@gmail.com	0977313909	8/4/26

4	Madika Khunga	OOP(SD)	Officer	405622/16/1	0979641137	08/04/26
5	SIKAZINDU JAMES	MINISTRY OF FISHERIES & LIVESTOCK	DFLCO	207677/48/1 jamessikazindu@yahoo.com	207677/48/1	08/04/26
6	MOSES CHANSA	ZESCO	SENIOR ENVIRONMENTAL SCIENTIST	145448/34/1 MChansa2@zesco.co.zm	0973757138	08/04/26
7.	JEMMA. K. BBALO	ZESCO	PRINCIPAL SOCIAL OFFICER	300729/73/1 jemma.bbalo@zesco.co.zm	0973620157	08/04/26.
8	SIMON PHIRI	FORESTRY	FRG	306110/51/1 simonphiri d2@gmail.com	0976503306	08/04/26
9	SUSAN KALABA	Department of Labour	ASST. LABOUR OFFICER	713951/11/1 Kalabasue@gmail.com	0977430686	08/04/26
10	MALAMA MWAPE	NATIONAL ASSEMBLY OF ZAMBIA - CHIPATA CENTRAL	PROFESSIONAL ASSISTANT	519176/52/1 mwape4@gmail.com	0977265169	08/04/26
11	DANIEL A M BEWEWE	ZAMBIA METEOROLOGICAL DEPARTMENT	DISTRICT METEOROLOGICAL OFFICER	149065/56/1 mbewedanie106@gmail.com	0979441975	08/04/26
12	Charity Moonga	Gopa-Tech	Comms Consultant	112314/18/1 moongacharity10@gmail.com	0977780059	08/04/26
13	Pauline Mdema	Chipata City Council	ASS Director City Planning	308002/66/1 paulinensofna@gmail.com	0979746763	08/04/26

14	SARAH PEPALA	MOE-DEBO	PLANNER	241789121 1 Sarahpepala@yahoo.com	0977263820	08/04/26
15	MATHEWS KACHALI	CHIPATA CITY COUNCIL (KAPATA WARD)	AREA WARD COUNCILLOR	457088/52/1 mathewskachali02@gmail.	0978457088	08/04/26
16	SILUNGWE M. JOHNSTONE	AREA CLLR MAMBE	CHIPATA City Council	Stone.silungwe@gmail.com	0971201080	4
17	RICHARD MWEWA	ZESCO	G-ENGINEER TRANS PLANN	richard.mwewa@zesco.co.zm	0971955167	08/04/26
18	JOSEPH CHILONGO	ZESCO	CHIEF ENGINEER TRANSMISSION INFRASTRUCTURE ZESCO	jmchilongo@zesco.com	0971586D2	08/04/26
19	NORMAN SIAME	DISTRICT ADMIN	DISTRICT COORDINATOR	286801/42/1 normansiame@gmail.com	0975905477	08/04/26
20	KAPEMBWA SIKAZWE	DISTRICT ADMIN	DAO	2720447/57/1 sikazwe_1978@yahoo.co.uk	0978231962	08/04/26
21	Ndoyo Chulu	INSPECTOR RESIDENT				
22	RAY KALIMA	PRINCIPAL ENGINEER	ZESCO	raykalima@zesco.zm	0979885[illegible]	08/04/26
23	MOSES MBUZI	C.C.C CLLR	KANJALA	mosesmbuzi114@gmail.com	0974229088	08/04/26

24	Roban Musonda	GOPA-Tech	Country Coordinator			
25	Edwin Matokwani	GOPA-Tech	Ecology Expert			
26	Stella Sakala	Gopa-Tech	Rap Specialist			
27.	Benson Kabungo	Gopa-Tech.				
28	George Mubeta	ZESCO				

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE KAUZU COMMUNITY, CHIPATA

Venue: Kauzu Primary School

Date: 8 April, 2026 **Time: 15:40hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert

Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Timothy Nyirenda	Section Chairman
Sinazongwe	School Headteacher
Grevazio Banda	Kondwelani section Chairman
Steven Daka	Uweka Section Chairman
Winford Msoni	Lutembwe Section Chairman
Mabvuto Mawerere	Chikondano Section
Maliseni Banda	Mazala Section
Adam Banda	Ziko nibantu

Number of Participants

Male	56
Female	19
Total	75

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

OPENING REMARKS

The meeting was called to order at 15:30 hours by the Ward Development Committee Chairman Elasto

Chirwa, followed by a prayer. In his opening remarks, Mr. Chirwa welcomed all participants and encouraged them to actively participate in the meeting. He encouraged community members to listen carefully, ask questions, and express any concerns regarding the project. He emphasized that the meeting was an opportunity for the community to understand how they would be affected and what support they would receive.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Thomas Majula from Umodzi Section - Kauzu	What will happen to those of us outside the wayleave – how are we going to benefit from the project especially in line with rural electrification	The project will bring in the 400KV interconnector to make more electricity available, thereby making it possible for organisations like the Rural Electrification Authority (REA) to tap in and connect rural communities.
Jackson Nyirenda from Umodzi	Is the project going to allow the community to plant maize in the wayleave	Growing of maize and other low height crops will be allowed, but planning of fruit trees and building of housed in the wayleave is not allowed
Pickson Nyirenda from Umodzi	Are the identified 41 vulnerable households within the 242 affected persons households or they are an addition?	The 41 are coming from the 242 affected persons. The 41 are the most vulnerable project affected persons with some being terminally ill, the elderly, widows, widowers, poverty stricken and divorced, etc
Mabvuto Mawerela from Chikondano Section	Can the community register for jobs anywhere along the project line?	The community members will be free to work along the project line as long as they are recorded in the village register, are hardworking and disciplined and the contractor is agreeable to work with them.

Loiwe Sakala from Umodzi Section	If there is a water well along the project line, can we continue using that well?	The project is cautious about exposing people to the project line and that is why the community is encouraged to stay away from such wells as possibilities of accidents may not be ruled out. Compensation will be paid for all the wells located in the wayleave so that new wells are constructed to provide water.
Steven Daka from Uweka Section	What benefit are we going to get from the project as members of the community	The community was encouraged to work with ZESCO to benefit from its Corporate Social Responsibility programmes that may be implemented under this project.
Gift Banda from Uweka Section	What will happen in the event that you bought land and because of the coming of the project, the seller is now claiming it back	The law is clear that once you sell land, you cannot change your mind. T Before paying compensation, ZESCO will go on the ground to carry out investigations on any disputed land transactions along the project line in order to verify ownership.
Grace Kamanga from Uweka	Is it true that only those people who were interviewed previously are the only ones that will have access to jobs	The interviews conducted during the socio-economic survey were not for employment purposes. Interviews for employment will be conducted by the contractor when construction works commence.
Grevazio Banda from Kondwelani Section	Are you going to help us with crops for planting under this project	As part of the Livelihood Restoration Programme, the project will work with the Ministry of Agriculture to distribute inputs

		for a few crops for planting in affected communities.
Margaret Chirwa	I heard that in your project documentation, my land remains unknown when I am available	The land was documented under your son, Dr. Chirwa, who sent someone to represent him and the issue was resolved.

Outcome of the Community Consultation meeting:

The Kauzu community disclosure meeting successfully informed the community about the ESIA and RAP findings for the Zambia-Malawi 400kV Interconnector Project, with the community appreciating the project's expected positive and vegative impacts. Critically, the project team secured community understanding by providing commitments that compensation will be paid to the affected household before construction commences, a 5-tier Grievance Redress Mechanism is available to manage complaints, a Livelihood Restoration Programme will support affected households, and GBV mitigation measures will be implemented in compliance with national and international environmental and social safeguards.

Figure 1:Kauzu Community members participate in the meeting

Closing Remarks

Mr. Chirwa thanked the GOPA and ZESCO teams for the detailed presentation. He urged community members to remember the information sharedThe meeting was closed with a prayer at 17:07 hours.

Signed

Charity Moonga

Secretary

Signed

ELASTO CHIRWA

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: 8 April 2026 Kanzu Community

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
CHASILE SHANZI	F	KANZU	411323/11/1	C. Shanzi
			0979259487	

EVELYN ZULU	F	KAUZU	355714/52/1 0976949266	E. zulu
RACHAEL BANDA	F	KAUZU	537177/52/1 0973415261	R BANDA
GRACE KAMANGA	F	KAUZU		GKamanga
RUTH BANDA	F	KAUZU	623[illegible]/52/1 0968634901	R. Banda
CHARITY NGOMA	F	KAUZU	455250/52/1 0970677553	C.Ngoma
ELNA BAKA	F	KAUZU	659030/55/1 0963135735	E. JERE
RUTH SAKALA	F	KAUZU	507245/52/1 0975253022	R. SAKALA
LOWE SAKALA	F	KAUZU	364670/52/1 0979147744	
Sara Lungu	F	KAUZU	0770844322	S. Lung

GRACE DAKA	F	KAUZU	0974862408 320201/52/1	G.Daka
MARGARET CHIRWA	F	KAUZU	096376267 124437/53/1	MChirwa
BEAUTY PHIRI	F	KAUZU	0965046161 517846/52/1	B. Phiri
GIFT BANDA	F	KAUZU	0977491440 701845/52/1	G. Banda
MONICA BANDA	F	KAUZU	0979706150 398916/51/1	M. Banda
FELISTUS PHIRI	F	KAUZU	0 //	F. PHIRI
KHOZA JAMES	M	KAZU	455477/52/1 0765666337	
THOMAS MAJULA	M	KAUZU	0977663905	

JACKSON NYIRENDA ~~A MKANDAWIRE~~	M ~~M~~	KAUZU KAUZU	NRC 103898/51/1 0975300535	[signature]
A-MKANDAWIRE	M	KAUZU	093237664 192513/52/1	[signature]
WINFORD MSONI	M	KAUZU	317983/52/1 0978308616	[signature]
NELSON PHIRI	M	KAUZU	417251/52/1 =	[signature]
KENNEDY NJOVU	M	KAUZU	//	[signature]
TITUS JUNGU	M	KAUZU	528567/52/1 0974813204	[signature]
ADAM BANDA	M	KAUZU	528842/52/1 0974247359	[signature]

MAXWELL MWALE	M	KAUZU	707552/52/1 0979092365	
PETER MIKE	M	KAUZU	218530/52/1 0767876391	
WILLIAM BANDA	M	KAUZU	—	W. BANDA
CHARITY MOOSA	F	GOPA	0977789059 112314/18/1	C.M.M
STELLA S SAKALA	F	GOPA	0977600480 207430/16/1	
~~EDWIN~> MATOKWANI	M	GOPA	0978214322 153930/71/1	

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: 8 April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
DAMASEKE NALI	M	KAUZU	640215/52/1 0766160409	

PETER CHILINDA	M	MPETA	659044/52/1 0966344969	P. CHILINDA
JOHN ZULU	M	NGOCHO	722465/52/1 0777166039	J ZULU
BAZARE ZULU	M	MTALIMANJA	592311/52/1 0967851694	
BONIFACE PHIRI	M	LUTEMBWE		B. PHIRI
SOSTEN ZULU	M	KONDOWELANI	419884/52/1 0963883746	
Gravazio Banda	M	KONDOWELANI	320897/52/1 0963675862	
BITON KANYINJI	M	CHIKONDANO	241757/51/1	
PICKSON NYIRENDA	M	UMOZI	144341/51/1 0976561230	
~~FH~~ FILIUS CHALO JERE	M	LIWEKA	144069/66/1 0975071529	

MICHEAL JERE	M	CHIKONDANO		
MALISENI BANDA	M	MAZALA	259294/52/1 0973811125	M. Banda
HENRY ZULU	M	ZIKO NI BANTHU	105634/55/1 0973056461	
MARTIN ZULU	M	UMOZI	593155/52/1 0777306565	M Zulu
STEPHEN DAKA	M	UWEKA	332247/52/1 0979397190	S. Daka
TIMOTHY NYIRENDA	M	UMOZI	626482/52/1 0572444365	
PHILIPO MBEWE	M	ZIKO NI BANTHU		P. MBEWE
AMOSE MBEWE	M	ZIKO NI BANTHU	708207/52/1 0979073792	A. Mbewe

MORRIS BANDA	M	UMOZI	659935/5211 0966535399	
THOMAS CHONDOONDA	M	UMOZI	487915/5211 0962564288	
GIFT ZULU	M	KONDWELANI	522968/5211 0979958681	
MULENGWA CHIBWE	M	UMOZI	282343/64/1 0969139207	
MABVUTO MAWELERA	M	CHIKONDANO	469985/5211 0972604623	
ZIYESA PHIRI	M	KONDWELANI	0776512821	Z. PHIRI
LOTTIE KAZYOKA LUNGU	M	UWEKA	621812/5211 0765391965	

TRANSI BIOZULU	M	UMOZI	283068/5411 0770750686	
PHILIMONI PHIRI	M	LUTEMBWE	0570429439	P. Phiri
GREVAZIO BANDA	M	KONDWELANI	658991/5211 0769172190	Banda
CLEMENT ZULU	M	KONDWELANI		CZulu
CHARLES MWANZA	M	LUTEMBWE	602734/10/1 0961342085	
JOHN BANDA	M	UWEKA	658938/5211 0776180573	JBN
SOLOMON ZULU	M	KONDWELANI	423125/5211 0973416846	SZulu
CHIWEMBU KUMWENDA	M	ZIKO NI BANTHU	638408/5211 0778979725	C Kumwenda
KAZEMBE BANDA	M	UWEKA	297585/5211 0779228935	K. Banda
SINAZONGWE RESELIAN	M	KAUZU SCH	0979866671 0955555841	Sinazongwe
			184997/73/1	

CHIRWA ELASTO K	M	UWEKA	315243/521/ 0773803604	
Roban Musonda	Copa Tech			
Benson Kabungo	Copa Tech			
Moses Chanda	ZESCO			
George Mubeta	ZESCO			
Ray Kalona	ZESCO			
Joseph Chilonga	ZESCO			
Richard Mucesh	ZESCO			
Jemma, K, Bbalo	ZESCO			

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE VUBWI DISTRICT DEVELOPMENT COORDINATING COMMITTEEE (DDCC)

Venue: EL-Shaddai Lodge, Vubwi

Date: 9 April, 2026 **Time: 11:00 hours**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator

Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key District Officials

NAME	POSITION
Mr. Given Sakala	District Commissioner
Members of the District Development Coordinating Committee (DDCC)	Heads of Government Department and NGOs.

Number of Participants

Male	17
Female	5
Total	22

AGENDA OF THE MEETING

- Call to Order
- National Anthem
- Opening Prayer
- Self-Introductions
- Opening Remarks
- Background Overview of the Project by ZESCO
- Project Description & Overview of the ESIA process by GOPA-tech
- Environmental and Biological Impacts and Mitigation by GOPA-tech
- Socio-Economic Impacts and Mitigation by GOPA-tech
- Environmental and Social Management Plan (ESMP) by GOPA-tech
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer and National Anthem

Opening Remarks

The District Commissioner, Mr. Given Sakala, officially opened the proceedings at 11:00 hours. A prayer was then offered by Mr. Moses Chansa. In his welcoming address, Mr. Sakala urged all attendees to take an

active role in the discussions and assured them that their contributions would be valued. Thereafter, the Chairperson called upon ZESCO and GOPA to make presentations.

1. **PROJECT PRESENTATION by ZESCO (Mr. Ray Kalima, Principal Engineer)**

Key Points Discussed:

(a) Project Background

The project involves the construction of a 400kV transmission interconnector line between Chipata West Substation and Nkhoma Substation in Lilongwe approximately 192.6km long, of which 46.6km is in Zambia traversing Chipata and Vubwi districts. The project also involves the extension of Chipata West Substation.

- **Formal Agreements:** The project is built on two MoUs:
    - Inter-Governmental MoU (August 2015, Lusaka) between Zambia and Malawi.
    - Inter-Utility MoU between ZESCO (Zambia) and ESCOM (Malawi).
- **SAPP Coordination:** The project is coordinated by the SAPP Project Implementation Unit to ensure smooth contract execution.

(b) Project Scope Details:

- **Total line length:** 192.6km
- **Chipata West Substation (Zambia):** Requires two bays for the 400kV line, line-connected shunt reactors, two autotransformers (600MVA each), 400kV busbars, and a new control building.
- **Nkhoma Substation (Malawi):** Extension with two bays and line-connected shunt reactors.

- **Completed Key Deliverables (Timeline):**
    - Inception report: May 2024.
    - Final Preliminary report: 6 February 2025.
    - Final Draft Feasibility report: November 2025.
    - Final Conceptual design report: January 2026.
    - E-bidding document template submitted for review: January 2026.
- **Project Status – Financing:** The World Bank has expressed interest in financing the project, which qualifies as a candidate for public financing.
- **Capacity Building:** Capacity building for the Feasibility Study component was undertaken for ESCOM, ZESCO, and SAPP in Transmission Line Designs and Environmental Management. Training for the ESIA component was planned for April 2026.

2. **GOPA Overview (Project Overview & ESIA Methodology) by Robam Musonda – Country Coordinator:**

- **Project Financing & Context:** The project feasibility studies (Technical and ESIA) is financed by Swedfund and falls under the auspices of the Southern African Power Pool (SAPP). The objective is not just bilateral trade but broader regional integration, allowing electricity trading with other SAPP countries.
- **Regulatory Triggers:** The ESIA is legally required because the project involves a transmission line above 220kV and longer than 10km in a non-environmentally sensitive area, as per the Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026 (First Schedule, Class I(B)).
- **International Standards Applied:** Beyond Zambian law, the ESIA explicitly incorporates:
    - Swedfund's Policy for Sustainable Development.
    - European Investment Bank (EIB) Performance Standards.
    - World Bank Environmental and Social Safeguards
- **International Conventions Cited:** Zambia is party to conventions considered relevant, including:
    - Convention on World Cultural and Natural Heritage (1972).
    - CITES (1993) for endangered species trade.
    - RAMSAR and Bonn Conventions on wetlands and migratory species.
    - Basel Convention (1994) on hazardous waste transboundary movement.
- **Alternative Routes (3 options):** Three alternative line routes were considered and Alternative 3 was chosen despite being slightly longer and less accessible, because it had **minimal impact on settlements, biodiversity, and sensitive habitats**.
- **Baseline Studies Conducted:** The ESIA methodology included four specific baseline studies:
    - Environmental (noise, air, water quality).
    - Ecological (flora and fauna).
    - Socio-economic (health, education, energy, livelihoods, etc).
    - Archaeological and cultural heritage.
- **Stakeholder Engagement Stages:** Consultations were held at specific milestones: Route Selection, Scoping, Scoping Disclosure, Baseline Surveys, and now ESIA/RAP Disclosure.
- **Impact Evaluation Criteria (Detailed):** The presentation detailed a matrix combining **Magnitude** (duration, spatial extent, reversibility, legal compliance, likelihood) and **Receptor Sensitivity** (severe, mild, low) to determine **Significance** (Minor, Moderate, Major, Critical).

3. **Presentation by Edwin Matokwani: Biodiversity, Environmental & Biological Impacts**

- **Habitat Breakdown (233 hectares within 50m wayleave):**

- Agricultural fields: **150.5 ha (64.59%)** – dominant land use.
- Degraded vegetation: **57.7 ha (24.76%)** – second largest.
- Wooded vegetation (miombo): 19.2 ha (8.24%).
- Thicket habitat: 3.5 ha (1.50%).
- Built-up area: 1.9 ha (0.82%).
- River crossings: 0.2 ha (0.08%).

- **Key Flora Findings:** Dominated by dry miombo woodland with three key genera: *Brachystegia*, *Isoberlinia*, and *Julbernadia*. No rare, endemic, or conservation-sensitive plant species were identified.
- **Key Fauna Findings:**
  - **Mammals (5 species):** Vervet monkey, African civet cat, common duiker, elephant shrew, African savanna hare. All are Least Concern (IUCN).
  - **Reptiles (4 species):** Monitor lizard, side-striped chameleon, Mozambique rough-scaled lizard, and a **suspected Pancake Tortoise (Critically Endangered – CR)** under IUCN and protected by Zambia's Wildlife Act.
  - **Amphibians (1 species):** Bocage's burrowing tree frog (not threatened).
  - **Insects (227 species):** Dominated by ants, beetles, butterflies, termites, grasshoppers/crickets.
  - **Birds (63 species):** Includes seed-eaters, insectivores, frugivores, raptors. No nesting colonies observed.

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

4. **Presentation by Stella Sakala: Socio-Economic Impact & Resettlement (RAP)**

- **Socio-Economic Baseline Summary**: based on the 222 households who were interviewed.

- **Land tenure:** 86% customary tenure.
- **Poverty indicators:** High food insecurity (Jan–Mar); households with less than 2 meals/day; no assets/livestock; no/irregular income.
- **Income:** 97% of households earn less than ZMW 3,000/month; 88% earn between ZMW 500–3,000. Female-headed households concentrated in lowest brackets.
- **Education:** Low education (primary level) for 222 PAHs; early school drop-out; distance and transport costs affect continuation.
- **Energy access:** 94% have no grid access; rely on solar lanterns.
- **Water access:** 80% rely on boreholes and hand pumps.

- **Impact Assessment and Mitigation:**

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose houses are affected by the project
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

All the people whose houses, land, fruit trees, crops and other assets are affected by the project will be adequately compensated.

- **Compensation Principles (Detailed):**
  - Full replacement cost for lost assets (structures and full land uptake at the substation and on tower locations).
  - 25% of land value for restrictions caused by the wayleave.
  - Disturbance allowance, land preparation allowance, transitional allowance, vulnerability allowance.
  - Cash vs. in-kind: 7 PAHs for the 10 dwelling structures and 14 ancillary structures (cash at replacement cost); 242 PAHs for land (cash).
- **GBV Mitigation – Specific Measures:**
  - Engage a GBV Specialist/Service Provider for implementation, monitoring, and response.
  - Mandatory Code of Conduct signed by all workers.
  - **Compensation protocol:** All household compensation payments made in presence of both spouses (husband and wife) to promote transparency and equity.

- **Livelihood Restoration Proposed Activities:** Crop management, livestock improvement, conservation farming, enterprise development, tree planting (agroforestry), skills training.
- **Grievance Redress Mechanism (GRM):** The GRM management has 5 Tiers (stages) as follows:
    1. Community Focal Point Persons.
    2. PIU Grievance Redress Committee.
    3. District GR Committee.
    4. Project Steering Committee.
    5. Arbitration / Courts of Law.
- **RAP Budget:** A budget provision has been made to facilitate the implementation of the Resettlement Action Plan.

5. Presentation by Robam Musonda: Environmental and Social Management Plan (ESMP)

- **Objectives:**
    - Minimize and manage adverse environmental and social impacts.
    - Ensure compliance with Zambian regulations and international standards.
    - Define roles, responsibilities, and enforcement mechanisms.
    - Promote adaptive environmental and social performance management.
    - Facilitate monitoring and reporting.
- **Institutional Roles (Detailed):** The project will be implemented in collaboration with other institutions who perform various roles for the success of the project. Such institution includes Government departments, regulatory authorities, financiers, consultants and NGOs
- **List of Site-Specific Management Plans:** To facilitate the effective implementation of the mitigation measures the following on-site management plans are recommended:
    1. Waste Management Plan (liquid/solid, hazardous/non-hazardous).
    2. Stormwater Management Plan (diversion channels, settlement ponds).
    3. Emergency Preparedness and Response Plan (site-specific actions).
    4. Traffic Management Plan (minimise disruption, safety for road users/pedestrians/cyclists).
    5. Spill Prevention and Response Plan (soil, surface/ground water; includes prohibited materials).
    6. Hazardous Materials Management Plan (selection, handling, storage, disposal).
    7. Workers Accommodation Management Plan (standards for living conditions).

8. Community Health and Safety Plan (risks from staff interaction, traffic, emissions, accidents).
9. Chance Finds Procedure (actions for cultural heritage/archaeological finds).

- **Monitoring Programme Components:** Includes parameter/activity, location, means of monitoring, compliance indicator (threshold limit), frequency, corrective actions, and supervision responsibility.

ESMP Budget: A budget provision has been made to facilitate the implementation of the recommended mitigation measures.

Figure 1: ZESCO Engineer Ray Kalima (front) makes a presentation to Vubwi DDCC members

Conclusion – Project Viability Statement: Most of the impacts are assessed as minor to moderate, generally temporary, localized, and reversible, Therefore, it was recommended that the project should proceed to implementation provided that mitigation commitments are fully implemented. Long-term benefits (economic, social, climate-related) significantly outweigh residual negative impacts.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Antonella Banda from Vubwi Town Council	It is good to notice that most of the impacts on both social and economic front have been addressed and that agricultural land will be compensated for.	This was noted with an additional explanation that the project affects land which is located within the 50m wayleave only.
Shadreck Tembo from Ministry of Water Development and Sanitation	How are you going to protect underground water sources with regard to tower foundations during construction?	The tower foundations are generally not deep enough to affected underground water, except in places with high water tables. Appropriate construction methods will be employed to avoid any pollution.
Shadreck Tembo from Ministry of Water Development and Sanitation	Since the transmission line is crossing the Lutembwe River, how are you going to prevent siltation	Long span towers will be used at river crossings to avoid disturbing the stability of the river banks.

Outcome of the Community Consultation meeting: The stakeholder engagement meeting successfully disclosed the ESIA and RAP findings for the Zambia-Malawi 400kV project in terms of the environmental and social impacts and the associated mitigation measures.

Closing Remarks

GOPA Country Coordinator, Robam Musonda, thanked everyone for their attendance and participation.

The meeting closed with a prayer at 13:30hrs

Signed

Charity Moonga

Secretary

Signed for / Mr. Given Sakala

District Commissioner

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA

Attendance List VUBWI DDCC

Date: 9th April 2026

Location: Chipata/Vubwi DDCC Meeting

No.	NAME	ORGANISATION/DEPARTMENT	ROLE/TITLE	NRC/EMAIL	PHONE NUMBER	DATE
01	LYSON LUNGU	OOP (SD)	EXECUTIVE OFFICER	242259/10/1	0978455554	09/04/26
02	GEORGE MAPOSA	Zampost	ACTING POSTMASTER	109707/55/1	0975701093	09/04/26
03	ALISTALIKO DOROTA	N.A.2	PROFESSIONAL ASSISTANT	156493/55/1 listalikodorota@gmail.com	0979125812	09/04/26

VUBWI DDCC

NAME

04	CHIBBANDULA ESTELLY	AGRICULTURE	Ag DIRECTOR	248601/73/1 jessiechibbs@gmail.com	0976904477	09-04-26
05	MBITA MUZIYA	VUBWI TOWN COUNCIL	ELECTRICAL ENGINEER	545502/10/1 mbitahawk@gmail.com	0974684100	09/04/26
06	ANTONELLA BANDA	VUBWI TOWN COUNCIL	Ag SENIOR HEALTH INSPECTOR	294290/10/1 mbozibanda@gmail.com	0974100714	09/04/26
07	SHADRECK TEMBO	Ministry of Water Development & Sanitation	District Water Development Officer	fegurssonshadrach@gmail.com	0976832567	09/04/26
08	Dr. DAVID MWEEMBA	MFL	DFLC	301379/74/1 mweembu70@gmail.com	0978644738	09/04/26
09	DOKOWE PATRICIA	MINISTRY OF EDUCATION	STANDARD OFFICER - ODL	102795/56/1 Patriciachirwa30@g.mail.com	0979076090	09/04/26
	Stella S Sakala	GOPA	RAP Expert	Stellasakala04@gmail.com	0977600480	9/04/26
10.	Charity Moonga	GOPA	Communication Specialist	moongacharity10@gmail.com	097778 0059	9/04/26
11	EDWIN MATOKWANI	GOPA	ECOLOGY EXPERT	edmatokwani@gmail.com	0978214322	9/04/26
12.	RAY KALIMA	ZESCO	PRINCIPAL ENGINEER TRANS-PROJS	raykalima@zesco.co.zm	0979839611	9/04/26

VUBWI DDCC

13	JOSEPH CHILONGO	CHIEF ENGINEER TRANSMISSION PROJECTS ZESCO	CHIEF ENGINEER TP	jmchilongo@zesco.co.zm	0952000046 0979158612	09/04/26
14	Robam Musonda					
15	Given Sakala	District ~~Administration~~	District Commissioner		0973243144	09/04/26
16.	Norman Ngedwa	Vubwi Town Council	Chief Planner			09/04/26
17.	George Mubela	ZESCO				
18	Jemma K. Bbalo	ZESCO				
19.	Moses Chansa	ZESCO				
20	Richard Mwewa	ZESCO				
21	Benson Kaburgo	Copa-Tech				
22	Chandy Sakala	Copa-Tech				

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE CHIBWE & LUFAZI COMMUNITY

Venue: Chibwe Village Ground

Date: 9 April, 2026 **Time: 16:30hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert

Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Simbane Chibwe	Headman Chibwe
Dickson Sikanyika	Headman Lufazi
Induna Maulau	Induna

Number of Participants

Male	43
Female	47
Total	90

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

Opening Remarks

Headman Chibwe called the meeting to order at 16:30 hours after which a prayer was given. In his welcoming address, Headman Chibwe urged everyone present to take an active role in the discussions. He advised community members to pay close attention, pose questions, and voice any worries they had concerning the project. He stressed that this gathering represented a chance for the community to learn about how the project would affect them and what assistance would be provided.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District

as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases

- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Dickson Sikanyika – Headman Lufazi	What type of work will be available on the project during construction?	General duties jobs such as bush clearing, slashing, digging, etc, will be available for community members while specialized jobs such as welding, carpentry, and engineering jobs will be done by experts.
Howard Phiri from Nsolo Village	Did all the 242 affected people register from the Chibwe village	When surveyors visited the project line, they went through all homes where the line will pass and took note of all the project affected people and the affected assets along the whole line, and not just Chibwe village
Alistaliko Jere	Will I be there when the project people start removing the trees identified in my field as being in the wayleave, to ensure that all the fruit trees which are removed are documented.	Yes, affected persons will be allowed to be there when trees are being removed from their fields.
Agness Jere	Who will write the names of people that will be employed	The headmen will work with the contractor to identify members of the community to carry out the required works. It was mentioned that the number of people to be employed will be determined by the Contractor.

Johnson Banda	When is the contract starting	Most likely in 2027, subject to the procurement of financing.

Outcome of the Community Consultation meeting:

The Chibwe and Lufazi community disclosure meeting successfully informed the community about the ESIA and RAP findings for the Zambia-Malawi 400kV Interconnector Project. The project team secured community understanding by providing assurances that compensation will be paid to the affected households, a 5-tier Grievance Redress Mechanism is available for complaints, a Livelihood Restoration Programme will support affected households, and GBV mitigation will be implemented in compliance with national and international environmental and social safeguards.

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Figure 1:RAP Specialist Stella Sakala makes a presentation to the Chibwe Community

Closing Remarks

Headman Chibwe thanked the GOPA and ZESCO teams for their informative presentation and information shared with the community.

The meeting concluded with a prayer at approximately 17:45 hours.

Signed Cinamanyolo

Charity Moonga

Secretary

Signed S Chibwe

Simbam Chibwe

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

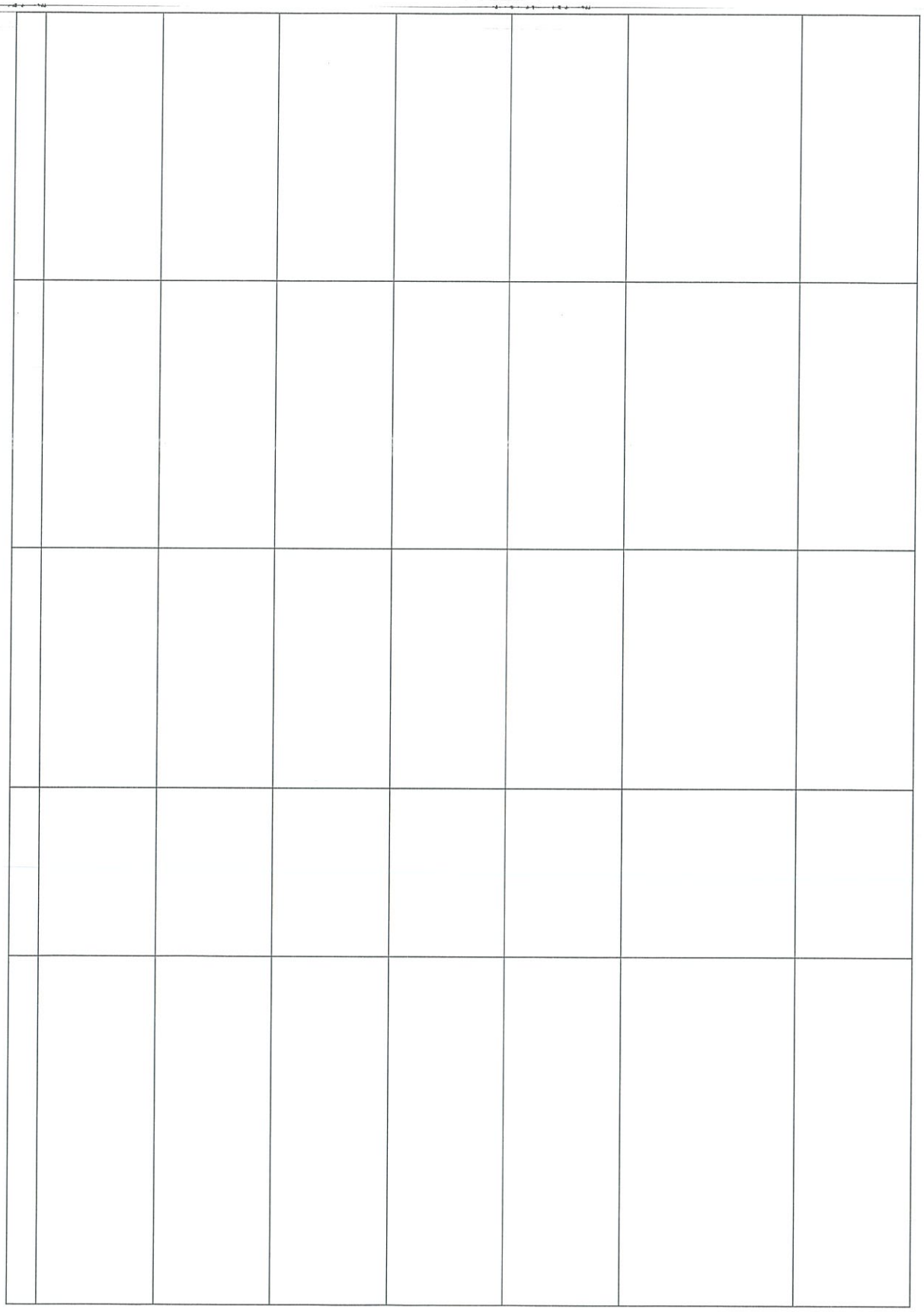
Location: Chipata/Vubwi

Chibwe Village (Lufazi)

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Japhet Lungu	M 21	Lufazi	756669/52/1 0977687236	

Patrick Muhau	M/26	Lufazi	762412/52/1 0772601209	P. MUHAU
Alfred Chileshe	M/26	"	~~122573/14/~~ 0779886523	NRC: 127325/14/1 ~~[illegible]~~
Frank Phiri	M/33	Msoro/Chibwe	626396/52/1 0975971117	[illegible]
Simon Banda	M/43	Chibwe	0775056185	Saimon B
Charles Zulu	M/58	Msoro/Chibwe	429801/52/1 0770711289	[illegible]
Ernest Zulu	M/23	Msoro/Chibwe	855014/52/1 0570051580	E. Zulu
Alick Mathotho	M/45	Msoro/Chibwe	494199/52/1 0979306079	A mathotho
Mathias Bandan	M/35	Msoro/Chibwe	599802/52/1 0775053588	M BANDA
Enock Jere	M/27	Msoro/Chibwe	775138/52/1 0970704819	[illegible]

Winston Banda	M/72	Chibwe	0978603301	* Winston Banda
Fanson Zulu	M/27	Lufigi	756927/52/1 0778042629	* L Zulu



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Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

Chibwe Village
(Lufazi)

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
John Ingwe	M/63	Maulawo	330053152110974740586	John Ingwe

AMOS MSHANGA	M/44	NSOLO	0977281216	
Malaki MSHANGA	M/28	NSolo	0976957666	
NATHAN PHIRI	M/28	NSolo	0777[illegible]50	
EDWARD BANDA	M/58	Chibwe	0972283239	E BANDA
MORIS ZULU	M/33	NSOLO	0771644008	M Zulu

RABSON Banda	M/40	CHIBWE	567801/52/1 0776262308	
KEZIAS MBEWE	M/58	CHIBWE	681564/52/1	K. Mbewe
JOSON BANDA	M/29	CHIBWE	662387/51 0770125867	J. Banda
YOHANE MBEWE	M/38	CHIBWE	681232452/1	Y. Banda.
CHIPILILO MBEWE	M/48	CHIBWE		C. Banda
STAZIO BANDA	M/34	CHIBWE	598816/52/1 0774143251	S. Banda.
MUSA NYIRENDA	M/28	NSOLO	0972724838	M. Nyi. DA.
Howard Phiri	M/29	Nsolo	681481/52/1 0770436351	

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026 (9th) Chibwe Village

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
RUTH ~~et~~ MILI	F	NSOLO		0773935546

Janet Chibwe	f	chibwe		0972463671
Ester phiri	f	nsolo	691225/5211	0750117133
mercy Daka	f	nsolo	100057/611	0973558875
Alina chisi	f	chibwe		057-

Justina Solho	F 29 years	chibwe	0771734865	J. Solho
Lusiya mbewe	F/ 63 years	Chibwe	0975445023	L. mbewe
Karen njobvu	F / 22 years	nsolo	0772559831	K. njobvu
florence phiri	F / 23 years	nsolo	0571563112	
christine mayele	F / 44 years	nsolo		
winnfridan banda	F / 21 years	nsolo		
Reina zulu	F/ 40 y	chibwe		
Alice mbewe	F / 63	chibwe		

Janipher banda	f / 23 y	chibwe	0777532056	J. Banda
Alice ngombe	f / 47 years	chibwe	0976258581	
Alice zulu	f / 24 years	nsolo		
Elizabath banda	f / 48 years	nsolo	0979642766	
Esnart mabotho	f / 33 years	chibwe	0972373367	
Florence Tembo	f / 54 years	nsolo	0977825355	
Elizabath phiri	f / 35 years	nsolo	0777825	E Phiri

Joseph simaonga	m / 20 years	nsolo		
Sandara phiri	f / 26 years	chibwe	07714172	
Janet chibwe	f / 20 years	chibwe	0972463671	J. chibwe
Esther phiri	F/24	NSolo	0770112133	E'Phiri
Thandiwe phiri	f / 28	nsolo	0976774828	Tmw
Ruth miti	f / 20 years	nsolo	0773935540	R. miti
mercy daka	f / 23	nsolo	0973555875	M DAKA
Georgina nyirenda	F / 43	nsolo	0570765333	G. nyirenda
Thandiwe mshanga	f / 48	chibwe		
Hilldah nyambi	f / 41	chibwe	0570948017	H. N

Sylvia mshanga	F / 27 years	nsolo	0777734689	S mshanga
misozi banda	F / 39 years	nsolo	0974-94291	
misozi chibwe	F / 30 y	chibwe	0572728994	
Romance Zulu	F / 22 years	chibwe	0779052778	R. Zulu
Ethle chibwe	F / 35 years	chibwe	0777006056	G. chibwe
babra banda	F / 24 years	nsolo	0774610165	b. bamy.
Esther mbewe	F / 53 years	chibwe		
mary phiri	F / 60 years	chibwe		
Jesi phiri	F / 50 years	chibwe	0777518260	J Phiri
Agness Jere	F / 53 years	mauiawo	0978029135	A Jere

Leah Solho	f / 42 years	nsolo	0772594490	L. Solho
mikkiaum chibwe	f / 43 years	nsolo	0975445109	m. chibwe
Enelesi chapata	f / 102 years	chibwe		
Sarah mshanga	f / 55 years	nsolo		
Wayileki phiri	f / 48 years	nsolo		
Sekiinda lungu	f / 36 years	nsolo		
John phiri	m / 55	nsolo	0976865460	
Herod mshanga	m / 52 years	nsolo	0770111407	H. mshanga

NAME	GENDER / AGE	VILLAGE	NRC / PHONE	SIGNATURE
JACOB PHIRI	m	CHIKOKA	0979530361	J. P
RICHARD ZULU	m	SOLO	0975550547	R ZULU
HENRY BANDA	m	CHIBWE	097[illegible]	H B
WEKUZANI ZULU	m	SOLO	—	W. Z
DANIEL ZULU	m	SOLO	0775856588	D. Z
JOSEPH ZULU	m	SOLO	0572467[illegible]	J. Zulu
GIFT MBEWE	m	CHIBWE	[illegible] 0972389[illegible]	G Mbewe
GEORGE LUNGU	m	SOLO	—	G. L.

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE PASHANE COMMUNITY, CHIPATA

Venue: Makwelelo Primary School

Date: 10 April, 2026 **Time: 10:30hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator

Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Headman Lufu	
Induna Pashane	
Induna	

Number of Participants

Male	74
Female	31
Total	105

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

OPENING REMARKS

Headman Pashane officially opened the gathering at 10:30 hours and led those present in an opening prayer. He called upon all attendees to participate actively in the deliberations. He emphasized that this meeting offered an important opportunity for the village to understand the project's potential effects (both positive and negative) and the type of support that would be provided to the affected households.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District

as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases

- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Nelson Ngoma from Lufu Village	What will happen if village headmen bring their relatives from elsewhere to come and take over our jobs	Headmen were cautioned against such acts. That is nepotism and is against the Law.
Precious Shawa from Pashane	The Lufu community always gets more people to work whenever opportunities for work arise in community projects, what will be done to ensure equity under this project in terms of access to available jobs?	It was recommended that there is equity in the access to all jobs in the community. There will be transparency in the employment process to ensure that all the affected villages benefit.
Whited Daka	Will skills training be for only those affected by the project	Yes, and those unable to take up these skills training programmes, like the elderly, will be encouraged to choose family members to replace themselves.
Amon Zulu from Lufu	What will be the qualifications of being given those jobs under the project	All able-bodied and hardworking community members will be eligible for employment.
Amon Zulu from Lufu	What should we do if the Headmen demand for goats and other livestock or even charge us money to enlist us for employment.	There will be transparency in the employment process to ensure that all the affected villages benefit. The headmen were cautioned against such corrupt practices.
Moses Ngoma from Lufu Village	What if some contractors come with their own workers	If the workers they bring are not specialized workers, the issue should be

		reported through the provided Grievance Redress Mechanism. All the unskilled workers will be employed from the project area.
Nason Miti from Lufu Village	The project officers should have been the ones to enlist community members for jobs to avoid corruption.	This was noted. The best approached will be decided at implementation stage.
Michael Shawa from Pashane village	Some affected people were not given some documents	Those affected were advised to remain after the meeting to check for their names.
Whited Daka Junior from Lufu village	What if the person writing names for jobs only writes names of their relatives	The Contractor will be the one that will write names for jobs. Village headmen and the leadership will only to verify on who belongs to the community. There will be transparency in the employment process to ensure that all the affected villages benefit. The headmen were cautioned against such corrupt practices.
Evelyn Jere from Lufu Village	Measures should be put in place to ensure that contractors do not engage in corruption through the headmen over the issue of jobs	This was noted. There will be transparency in the employment process to ensure that all the affected villages benefit. The headmen were cautioned against such corrupt practices.
Whited Daka Junior from Lufu village	Will our suggestions be addressed on time under the GRM	Yes, the GRM has set up processes for quick resolution of queries
Sign Shawa from Lufu Village	Since the maize in the fields is now ready for harvesting, can't the project start now	The community will be informed about the commencement of project implementation at the appropriate time.

Outcome of the Community Consultation meeting:

The Pashane community disclosure meeting successfully informed local residents, traditional, and Project Affected Persons about the ESIA and RAP findings for the Zambia-Malawi 400kV Interconnector Project. Critically, the project team secured community understanding by providing assurances that compensation will be paid before any displacement occurs, a 5-tier Grievance Redress Mechanism is available for the management of project related complaints, a Livelihood Restoration Programme to support affected households, and GBV mitigation measures will be implemented in full compliance with national and international environmental and social safeguards.

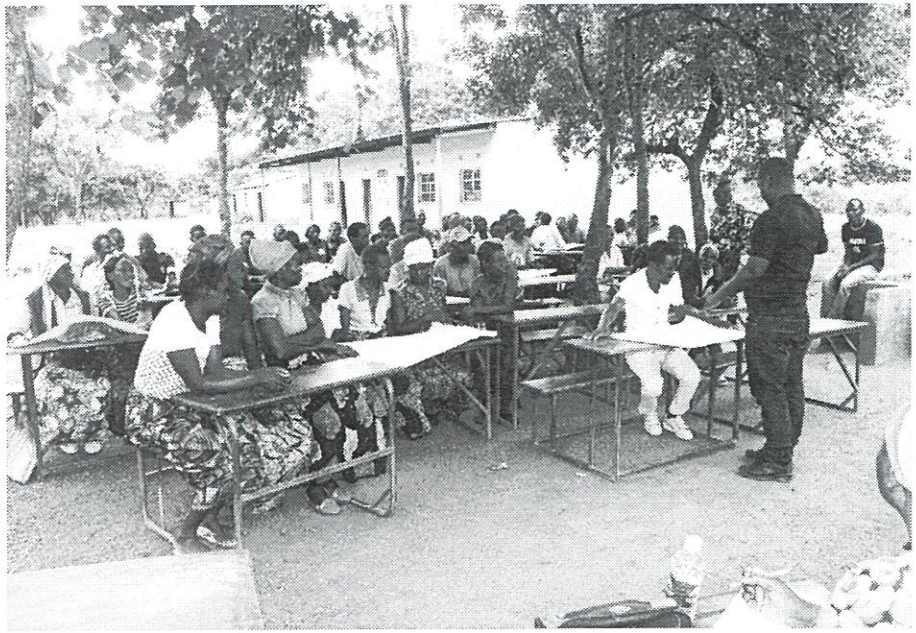


Figure 1: ZESCO Senior Wayleave Officer George Mubela explains the Project Line route to the Pashane Community members

Closing Remarks

Headman Pashane expressed gratitude to the GOPA and ZESCO teams for their comprehensive presentation. He advised community members to retain the

information shared, especially concerning compensation procedures and the grievance mechanism. He urged anyone with remaining concerns to make use of the GRM channels. The meeting ended with a closing prayer at approximately 12:45 hours.

Signed

Charity Moonga

Secretary

Signed

Mwaona Banda

Chairperson

Induna Lufu

Pashana Village - 10/04/25

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

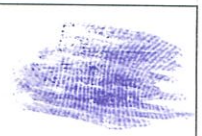
Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: 8th April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Isaac Banda	Mel 44	Lugu	482099/52/1 077162965	IBanda

Emmanuel Shawa	M/35	Pashane	TBA	
Tyson Phiri	M/28	Lugu	596066/10/1 0770870293	
Thokozile Tere	M/31	Lugu	TBA 0776435 37	Tere
Moses Shawa	M/64	Pashane	337949/52/1	
Laston Zulu	M/46	Pashane	520813/52/1	
Rodgers SOKO	M/51	Lugu	438404/52/1 0777557113	R. KOSO
Moses Ngoma	M/32	Lugu	697688/52/1 077736094 ~~096 077077~~	
Bonface Mzyeche	M/50	Lugu	446755/52/1 0977942756	
Tesinawo Phiri	M/50	Pashane	410743/52/1	

Peter Tembo	M/32	Pashane	659537/52/1	
Gift Zulu	M/33	Lufu	627960/52/1, 0761921228	Gzulu
Acklas Phiri	M/29	Pashane	655833/52/1 0976226388	
Amon Zulu	M/42	Lufu	~~xxx~~ 522815/52/1, 0965299218	
Kenny Tembo	M/30	Lufu	659531/52/1, 0971321400	
Edward ~~Shawa~~ Kem	M/16	Pashane	n/a 0977404755	~~f/Shawa~~
Samson Shawa	M/38	Pashane	559031/52/1, 0978585380	S SHAWA
Mathews Miti	M/22	Lufu	75-9940/52/1 -	Mmiti

Nelson Ngoma	M/38	Lufu	578727/52/1 0972547200	N Ngoma
Donald Banda	M/21	Lufu	769527/52/1 0764249194	D Banda
Joseph Lungu	M/21	Lufu	816128/52/1 0770588012	J Lungu
Edwin Nyangulu	M/26	Lufu	0779486741	
Loyce Njobvu	F/29	Lufu	578552/52/1 0977938595	R. Njobvu
Zenia Lungu	F/42	Lufu	512732/52/1 0775646279	Z. Lungu
Lucas Phiri	M/27	Lufu	659288/52/1	L P

Nason Miti	M/56	Lufu	413318/52/1	NASAN
Robert Mulenga	M/27	Lufu	769280/52/1 0974771240	[illegible]
Esther Shawa	F/38	Pashane	527715/52/1 0773167767	E. Shawa
Sosten Banda	M/24	Lufu	769503/52/	S. BANDA
Jackson Banda	M/55	Lufu	0967349515	[illegible]
Rabecca Tembo	F/23	Pashane	758103/52/1 0769745599	R TEMBO
Moses Mbewe	M/20	Lufu	0768925097	M. WILIMA
Christopher Moyo	M/20	Lufu	828337/52/1 0570893516	C MOYO
Mishoro Lungu	M/43	Lufu	493193/52/1 0969950164	M LUNGU
Moses Shawa	M/20	Pashane	7BA	[illegible]

Dickson Lungu	M/62	Lufu	TBA	
Lingson Lungu	M/72	Lufu	282010/52/1 0763388389	
Redson Shawa	M/65	Pashane	333571/52/1 0771566593	
Lingson Moyo	M/38	Yashukeni	516815/52/1 0967759753	
Gibson Shawa	M/21	Pashane	815318/52/1 0963393997	
Dalisa Daka	M/24	Lufu	759882/52/1 —	
Jacob Ndovu	M/25	Lufu	769200/52/1 0972151977	
Blessings Mwanza	M/25	Lufu	769283/52/1 0574501011	
K/HYPED Daka	M/29	Lufu	692945/52/1 0964422506	
Morris Daka	M/25	Lufu	759862/52/1 0963191722	

Gift Daka	M/35	Lufu	54912/54/1 0770836185	G. Daka
Alfred Lungu	M/26	Lufu	142055/59/1 0775572949	Alfredgi
Precious Shawa	F/31	Pashane	312563/101 0973669615	Shawa
Lydia Similitani	F/53	Pashane	176808/71/1 0776234 02	Lsimilitani
Veronica Shawa	F/20	Pashane	823850/52/1 0770151616	V shawa
Jennipher Shawa	F/25	Pashane	759684/52/1 0972547971	J Shawa
Joyce Zulu	F/54	Lufu	~~423792/52/1~~ 423792/52/1	JZULU
Liviness Shawa	F/65	Lufu	NA	
Goliath Shaba	M/67	Pashane	260990/52/1 0965383011	Goliath Shawa
George Shawa	M/27	Pashane	659291/52/1 0765465653	

Kennedy Njobvu	M/58	Lufu	390414/52/1 0972151977	
Lomandingo Zulu	F/44	Kalonge	479797/52/1	L ZULU
Naomi Shawa	F/20	Pashane	—	N. Shawa
Lumbiwe Lungu	F/54	Lufu	385338/52/1 0763449027	L. Lungu
Esther Lungu	F/60	Lufu	326655/52/1 0960579142	E. Lungu
Ringson Lungu	M/25	Lufu	0973255483	R Lungu
Whitehead Lungu	M/27	Lufu	735480/52/ 0763674174	W Lung
Rickson Lungu	M/27	Lufu	639095/52/1 0774421847	L wngu
Mike Shawa	M/23	Lufu	759874/52/1 0570688222	M Shawa
Stephen Zulu	M/20	Lufu	— 0779142478	

Grace Phiri	F/47	Pashane	165090/63/1 0967052803	G. PHIRI
Judith Shawa	F/49	Pashane	422671/52/1 0967049971	J Shawa
Lazarous Miti	M/58	Lufu	579044/52/1 0967218008	L. MITI

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026 (10th) Pashane Village

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Nyembezi Jere	F / 42	LUFU	460467/52/1 0770492386	N. Jere

NAME	GENDER	AGE	VILLAGE	NRC/ PHONE NO	SIGNATURE
FATINES ZULU	F	78	ZAMBEZI	155331/52/1 0767 469084	FZulu
EVELYN JERE	F	47	LUFU	457305/52/1 0763 447864	E Jere
Sarafina BANDA	F	35	PASHANE	578700/52/1 0975606562	—
RUTH TEMBO	F	49	PASHANE	111350/56/1 0762876065	R Tembo
ESTER Shawa	F	33	PASHANE	579050/52/1 0977373532	E. Shawa
LILIAN NGOMA	F	72	PASHANE	294465/62/1 —	
Abbaty TEMBO	M	25	LUFU	769435/52/1 0776806268	A. Tembo
VELINA Shawa	F	48	PASHANE	451496/52/1 0967113369	V. Shawa
MWAZIONA NYOKA	F	52	PASHANE	419523/52/1 0973899219	M. NYOKA

NAME	GENDER / AGE		VILLAGE	N.R.C / PHONE Nº	SIGNATURE
AGNES SHAWA	F	47	PASHANE	473646/52/1 0776680406	Agnes
MISOZI NJOVU	F	42	PASHANE	578682/52/1 0975~~85~~58549	M.NJOVU
Charity ZULU	F	39	LUFU	561199/52/1 0761339945	C. ZULU
SHADRECK MBEWE	M	39	JAHADI FARM	0962977062 543865/52/1	
clala zulu	f	37	Lufu	0777909831 554392/52/1	C ZULU
Rabecca MUMBA	F	39	LUFU	558583/52/1 0776813581	R.MUMBA
FULACKSON Jere	M	~~42~~ 42	LUFU	~~753356~~/. 237783/52/1 0769242158	F. Jere
Stephen Shawa	m	58	peshawe	387668/52/1 —	Shawa

NAME	GENDER / AGE		VILLAGE	N.R.C / PHONE No	SIGNATURE
BANDA LUPIJA BRIGHTON S.	M.	78	LUFU	164768/52/1 0972370063	
MAVUTO JERE	M.	20	LUFU	775044/52/1 0773919232	
MBEWE ISAAC	M.	35	CHIKHAZIKA	— 0978186904	
JAPHET JERE	M.	42	LUFU	540284-52/1 0765633545	
Charles - Mzeeche	M	59	Lufu	393612/52/1 0979342206	
TRYSON SAKALA	M.	66	LUFU	306654/52/1 0978621354	
SAIN Banda	M	43	PASHAWE	0970702087 105151/58/1	

NAME	GENDER	AGE	VILLAGE	NRC PHONE NO	
SAIMO Shawa	M	55	PASHANE	431647/52/1 0969578738	S. Shawa
MARKO SHAWA	M	51	PASHANE	457498/52/1 —	Mar
JESCAR LUNGU	F	61	LUFU	0977493881	J. L
Charity Mbewe	F	33	LUFU	572345/52/1 0977630350	C. Mbewe
MWIAONA BANDA	M	68	LUFU	272176/52/1 0962974879	M Banda
ELVIS MELITO	M	32	LUFU	233480168/1 0973723533	E. MELITO
WINDSON SHAWA	M	42	pashane	578773/52/1 0960750703	
George Shawa	M	22	Pa Shane	826718/52/1 0763447145	
Windson Shawa	M	30	Pashane	661244/52/1 0960572613	WShawa
SIME Shawa	M	32	Pashane	0775040714	Shw

NAME	GENDER	AGE	VILLAGE	NRC/ PHONE NO	SIGN
Mathews Shawa	M	43	Pashane	457391/52/1	M Shawa
Sandford Shawa	M	35	Pashane	578575/ 52/1	S. SHAWA
Michael Mzyece	M	34	Lufu	562851/ 52/1	~~MAA~~
Davison Zulu	M	46	Pashane	458474/ 52/1	D Zulu
Isaac Banda	M	44	Lufu	482099/52/1	IBanda

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE DAULA COMMUNITY, CHIPATA

Venue: Daula Village Meeting Place

Date: 10 April, 2026 **Time: 14:05hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert

Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Headman Daula	Headman
Headman Mkosi	Headman

Number of Participants

Male	107
Female	85
	192

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

Opening Remarks

Headman Daula called the meeting to order at 14:05 hours after which a prayer was given by a volunteer. He urged everyone present to take an active part in the discussions. He stressed that this meeting provided a valuable opportunity to the community members to learn about the project's possible impacts (positive and negative) and the kind of assistance that would be provided.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.

- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Abdon Soko from Mkosi village	When is the project starting	The project has already started, but actual construction work will begin in 2027, subject to the availability of funds.
Christopher Mbewe from Nyungwa village	Are you giving out any more documentation? Are you registering more people who may be affected by the project?	Yes, the project is giving out documentation relating to the grievance redress mechanism. Forms for lodging in complaints are currently being distributed. All the affected people have been identified and documented already. However, there is a possibility of more people getting affected during construction and they will be compensated.
Mathias Chulu	How will the jobs be distributed along the project	The contractor, with the support from the headmen, will determine how people will be employed across all villages affected by the project.

Outcome of the Community Consultation meeting:

The Daula community disclosure meeting successfully informed local residents and Project Affected Persons about the ESIA and RAP findings for the Zambia-Malawi 400kV Interconnector Project. The project team secured community understanding by providing assurances that compensation will be paid to the affected households, a 5-tier Grievance Redress Mechanism is available for complaints, a Livelihood Restoration Programme will support affected households, and GBV mitigation measures will be implemented in compliance with national and international environmental and social safeguards.

Figure 1: Daula Community members participating in the meeting

Closing Remarks

Headman Mkosi expressed gratitude to the GOPA and ZESCO teams for their detailed presentation. He advised community members to remember the information shared, especially concerning compensation procedures and the grievance mechanism. He urged anyone with remaining concerns to make use of the GRM channels. The meeting ended with a closing prayer at approximately 16:00 hours.

Signed Charity Moonga

Charity Moonga

Secretary

Signed Geotex Moyo

Geotex Moyo

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Daula - 10th April, 2026

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: 10th April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
ROSAH ZULU	F	MAZONGA	517093/52/1 0979499038	E. Zulu
PEVIS MANANZA	F	DAULA	517091/52/1	
Richard Tembo	M	Mazonga	351995/ 52/1	R. Tembo

MONICA ZULU	F	MARONGA	0970333430	M. Zulu
ESTHER BANDA	F	MKOSI	572191/52/1 0975466737	E. Banda
LILIAN PHIRI	F	KAIMFWA	240132/71/1 0770729792	L. PHIRI
ODRY ZULU	F	DAKA	0979050346	O. Zulu
DONATRA MWANZA	F	DAKA	823209/52/1 0972803768	D. MWANZA
PATRICIA MBEWE	F	DAKA	554352/52/1	P. Mbewe
JUSTINA BANDA	F	DAKA	661311/52/1	J Banda
CATHERINE PHIRI	F	KAIMFWA	224867/53/1	C. Phiri
FLORENCE ZULU	F	MKOSI	0770763660	F. ZULU
ROSEMARY DAKA	F	MKOSI	817074/52/1	R. Daka

ESTHER NKHOMA	F	MKOSI		E. Nkhoma
MAURINE MOYO	F	KAIMFWA	0573852686	M Moyo
MALISELA MOYO	F	KAIMFWA	0573852686	M. Moyo
KENNEDY ZULU	M	MAZONGA	927655/52/1	K. ZULU
FLORENCE JERE	F	PAULA	512356/52/1	F. Jere
JAMES ZULU	M	MAZONGA		J. Zulu
Jason Soko	M	Mkosi	661748/ 52/1	J. Soko

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Daula - 10th April, 2026

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Banda Gabriel	M/45	Nyungwa	517633/52/1	

Soko Laulent	m/71	mKosi	270847/52/1	L. Soko
Luwya Evaristo	m/59	Daula	364608/52/1	[illegible]
Mwale Albert	m/55	Kaifwa		[illegible]
Soko Ulani	m/85	MKosi	179838/52/1	W. Soko
BANDA Vincent	M/57	mtoule	403090/52/1	Banda
Soko Bornface	M/51	MKosi	845050/52/1	B. Soko
Dominic Tembo	M/34	MKOSI	603801/52/1	Tembo
Loydi Tembo	m/45	Daula	0972373304	[illegible]
Posylia Tembo	m/32	Daula	635514/52/1	P Tembo

Franco Banda	m/41	Daula	522440/52/1	F. Banda
ZULU AUGUSTINE	m/29	MKOSI	158966/57/1	
Godfrey SOKO	m/52	MKOSI	429737/52/1	G. Soko
Banda Kingsley	m/38	Daula	554227/52/1	K. Banda
PHIRI STEVENSIO	M/29	MKOSI	661711/52/1	
JERE ELIAS	M/45	MKOSI	554255/52/1	E. Jere
JERE ALLAN	m/42	MKOSI	490719/52/1	
CHULU MARIAS	m/43	Daula	471968/52/1	

SOKO ABRAHAM	m/74	MKOSI		A SOKO
BANDA LAMECK	m 34	DAULA	613936/52/1	L. BANDA
BANDA MATHEWS	m 40	Daula	554229/52/1	
ZULU RICHARD	M/20	MKOSI	0970886871	
SOKO Robert	m/21	MKOSI	0775678556	R SOKO
JUNSIA SOKO	m/20	MKOSI	813154/52/1	J. SOKO
Banda Collins	m/22	Daula	186374/52/1	C. Banda

SAKALA MIKE	M/46	MKOSI	795728/55/1	Sakala
LUNGU YOLONIMO	M/27	LAIFWA	759076/52/1	
Mwale Jeremia	M/19	Kaufwa	0778447525	
TEMBO DISLAS	M/48	MPOWE	175576/52/1	
ZULU TERESIO	M/67	MKOSI	276065/52/1	T. Zulu
Stephen Shawa	M/59	pashawe	387668/52/1	
Tadeo Soko	M/63	MKOSI	329725/52/1	T. Soko
GIFT DAKA	M/42	MKOSI	131352/56/1	G. DAKA
GRevi shawa	M/27	MKOSI	0973460578	G Shawa
Dismas	M/27	mpowe	0570783395	

NG'OMBE GASTON	m/23	KAYEKA	722675/52/1	G. Ngiombe
Aaron Tembo	m/23	mkosi	806099/52/1	A. Tembo.
John Pks	M/41	Mtowe	548428/51/1	[illegible]
LYTONE MBEWE	M/56/	MKOSI	239015/51/1	[illegible]
ZULU DORILA	f/61	mkosi		
SOKO Rodar	f/55	mkosi		
SOKO GERUDE	f/48	mkosi	491970/52/1	
SOKO EMERIA	f/64	Lulu	327600/52/1	E. Soko
ZULU MARTILDA	f/48	DAULA		
TEMBO ANASTAZIA	f/60	MAZONGA	386874/52/1	A Tembo

BANDA BRIDGET	f/33	KAIFWA	57206/52/1	B. Banda
PHIRI VERONICA	f/46	MTONGE	554050/52/1	V Phiri
NGOMA MARTHA	f/23	MAZONGA	759099/52/1	M: Ngoma
Ngoma caroline	F/26	Mazonga	659432/52/1	C. Ngoma
MAYO JOSEPH JERE CHARLES	m/35	KOMBE	572149/52/1	J. Mayo
CHRISTOPHER MBEWE	M 54	NYUNGWA	417300/52/1	C/Mbewe
Lungu Augustino	m/62	KOMBE	334313/52/1	A. Lungu
Lungu ALFONSO	m/68	Kombe	28735/52/1	
BANDA TIYAKHE	f/42	MKOSI		
Zulu RECHOR	f/45	MKOSI		

SOKO FALASINA	f/45	MKOSI	285773/52/1	F. Soko
TEMBO FRIDAH	f/42	MKOSI	–	
MWILA MOUREEN	f/54	KAIFWA	206685/68/1	M. Mwila
BANDA STEPHEN	M/44	PYUNGWA	477151/52/1	S Banda
LUNGU AARON	M/50	KOMBE	460414/52/1	[illegible]
PAULO PHIRI	M/39	KOMBE	554331/52/1	[illegible]
MOYO LEONISA	f/42	MTOWE	554127/52/1	[illegible]
LUNGU FRANCISCO	M/58	KOMBE	397507/52/1	F Lungu
Petronella Zulu	f/36	MKOSI	554207/52/1 0974295312	[illegible]
Martha Zulu	f/34	MKOSI	628288/52/1	M. Zulu
LOIZIYO SOKO	M/	MKOSI	—	L. SOKO

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Dawla 10th April, 2026

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
JONAS MUTI	M	AKOMBE	677695/52/1	J.M

NJOBVU PETER	M	KOMBE	661671/52/1	N.P
ZUNOBIA NJOBVU	F	NJUNGWA	491432/52/1	Z.P
AGATHA MOJO	F	KOMBE	478416/52/1	A.M
TABITA LUNGO	F	KOMBE	889008/10/1	T.N
MOJO VERONICA	F	NJUNGWA	305209/52/1	M.V
ZOZO GILBETTER	F	LUNGENI	567402/52/1	Z.G
SHAWA POLOSPELINA	F	NJUNGWA	2348'8/52	S.P
MARGARITA BANAN	F	KAIMFWA	592640/52/1	M.B
LETESHA LUNGO	F	KOMBE	477120/52/1	L.L

TEMBO OSCAR	M	MAZOMGA	554235/52/1	TO
DAMIANO TEMBO	M	MATOWE	758892/52/1	D.T
MATHOTHO GETRUDE	F	KOMBE	375711/52/1	M.G
MOOD JANE	+	DAULA	572229/52/1	MJ
SOKO JACOB	M	MUKOSI	630711/52/1	SJ

Powering The Nation

Dunda – 10th April, 2026

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
BENARD JERE	M/59	MK651		B. JERE

JOSEPH BANDA	M/60	DAULA	383707/52/1	
LAMECK BANDA	M/75	DAULA	208261/52/1	L Banda
PAUL MOTO	M/44	KAIFWA	430952/52/1	
PITO SOKO	M/41	MKOSI	461821/52/1	P Soko
BRIAN MBEWE	M/18	MKOSI	0975377673	
PETER SOKO	M/30	MKOSI	659518/52/1	
STAINCY TEMBO	M/24	DAULA	077681489/	S TEMBO
EMMANUEL SOKO	M/50	MKOSI	490949/52/1	E SOKO
BEAUTFUL MWAKE	F/19	KAIFWA	827293/52/1	B MWAKE

SYVIA SOKO	F/19	DAULA	0777951236	S. SOKO
LILIAN BANDA	F/20	DAULA	0978628249	L. Banda
ANTHONY SHANDA	M/20	MKOSI	0572590222 ~~0771966033~~	A. Shanda
LONTIA MBEWE	F/25	Kaifwa	735314/52/1	L. MBEWE
ROYCE TEMBO	F/45	DAULA	0971499415	R. Tembo
MAUREEN CHULU	F/20	DAULA	0975462434	M. Chulu
JUSTINA NJOBVU	F/19	MKOSI	824105/321	J. NJOBVU
CLEMETINA ZULU	F/52	MKOSI	0970582453	C Zulu

TASILA ZULU	F/19	MKOSI	0970260865	[illegible]
JOELEX MOYO	M/28	DAULA	364987/5211 ~~3946~~	G. moyo
SANDFOLO SOKO	M/54	MKOSI	414734/5211	S. SOKO
GABRIEL NGOMA	M/43	MAZONGA	---	G. NGOMA.
PHIRIPO MOYO	M/57	KAIKWA	0773709955	P. MOYO

Powering The Nation

Daula – 10th April, 2026

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
REGINA SOKO	F/31	MKOSI		R SOKO

ROYCE SOKO	F/30	MKOSI	0777611707	R Soko
DONASIANA SOKO	F/52	MKOSI	-	D. Soko
HELLEN TEMBO	F/39	DAULA	-	H Tembo
DOROTH PHIRI	F/54	MTOKE	0762716355	D. Phiri
Grace DAKA	F/22	MKOSI	0978807557	G. DAKA
MAGADALENA NGOMA	F/62	MKOSI	0972250381	M
RUTH MWANZA	F/25	KAIFXA	0978570109	R. Mwanza
EMELDA MOYO	F/45	KAIFXA		-
MARTHA DAKA	F/21	DAULA	907556/521	M. DAKA

BEATRICE SOKO	F/26	DAULA	717705/52/1	B. Soko
MILIAM BANDA	F/29	MKOSI	807525/52/1	M. Banda
CHRISTINE MBEWE	F/SS	KAIFWA	397383/52/1	C. MBEWE
ALICE ZULU	F/48	MKOSI	0975376905	A ZULU
ELINA CHIRWA	F/42	MKOSI		-
ULITA PHIRI	F/38	MKOSI	0770673429	-
MACKRINA LUNGU	F/18	KAIMFWA	0973765318	M. Lungu
EASTHER BANDA	F/SO	KAIFWA	0977750256	E. Banda

REGINA BANDA	F/78	MKOSI	159810/52/1	—
SIMON SOKO	M/24	MKOSI	758969/52/1	S. SOKO
MAIKO SOKO	M/58	MKOSI	414733/52/1	SOKO
TANGANANI MBEWE	M/43	MKOSI	479169/52/1	
LUNGU FEBBY	F/35	MKOSI	554240/52/1	Flugu

Daula - 2026/04/10

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Lawrence Ngoma	M/21	M' Kosi	807602/52/1 0972463323	

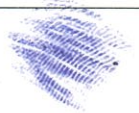
Agatone Moyo	M/23	Daula	759013/52/1 0770736190	
Michael Moyo	M/36	Daula		M. Moyo
Bernard Mwale	M/33	Kaimfwa	613935/52/1 0773103737	
Martin Mwale	M/25	Kaimfwa	767334/521 0771560822	M. mwale
Elijah Banda	M/21	Daula	733789/52/1 0770641395	E. Banda
Kelvin Mwale	M/40	Kaimfwa	554231/52/1 0970727895	K mwale
Kennedy ~~Ennedy~~ Tembo	M/23	Daula	759018/52/1 0775898 87	
Charles Soko	M/21	Mkosi	799017/521/1 0977328386	C Soko
Innocent Soko	M/20	Mkosi	0775814655	I: Soko

Francis Soko	M/21	M'Kosi	0773770182	F. Soko
Pililani Mbewe	M/22	M'Kosi	758940/52/1 0778005611	P Mbewe
Kelvin Chulu	M/22	Daula	759025/52/1 0773181719	
Lucas Soko	M/33	M'Kosi	630112/52/1 0772381270	L Soko
Kolonalio Soko	M/43	M'Kosi	554087/52/1	C. Soko
Agripina Miti	F/46	Kombe	480620/52/1 0777194927	
Sylvester Chulu	M/35	Daula	572210/52/1 0973460432	S. Chulu
Pearson Tembo	M/20	M'Kosi	832169/52/1 0775104824	P. Tembo

Chagan So Mwale	M/41	Kaingwa	554386/52/1 0977539742	C Mwale
Joseph Banda	M/30	Daula	635194/52/1 0975376831	J: Banda
Jackson Soko	M/63	M'Kosi	349741/52/1 0979544691	JS Soko
Matsiku Chulu	M/34	Daula	572209/52/1 0970837766 (Grandma)	M Chulu
Charles Tere	M/39	Lufu	59371452/1 -	C TERE
Aubrey Mbewe	M/34	Daula	- 0779533387	
Victor Moyo	M/25	Daula	698616/52/1 0971499404	

Vincent Tembo	M/ 27	Daule	0976811679 ~~0976816167~~9	V Tembo
Cephas Nkhoma	M/ 25	Daule	0971631232	C. Nkhoma
Paul Banda	M/ 23	M'Kosi ~~Makangila~~	0975462434	
Jacob Mabvuto Zulu	M/ 47	Mazonga	512340/52/1	
William Soko	M/ 22	M'Kosi	0771211755	W. Soko
Tobias Zulu	M/ 37	M'Kosi	0571931138	T. Zulu
Lawrence Mbuto	M/ 46	M'Kosi	490574/52/1 0970633611	L. Mbuto
Alex Mwale	M/ 65	Kaimtwa	382043/52/1 0572127805	[illegible]
Andrew Soko	M/ 23	M'Kosi	759049/52/1 0775679017	Andrew Soko

Vincent Soko	m/28	M'Kosi	603223/52/1 0770479082	~~V Soko~~
Dismas Daka	m/24	Mwongesi	662785/52/1	
Evelyne Phiri	~~F~~ M/63	Daula	323403/52/1	E. Phiri
Emeldah Lungu	F/26	Daula	0975378261 735583/52/1	E. Lungu
Josephine Msoni	F/35	Daula	578979/52/1 0970839361	J. Msoni
Mary-Grace Phiri	F/65	M'Kosi	312234/52/1 0773060293	M.G Phiri
Leah Zulu	F/33	M'Kosi	633622/52/1 0772408095	L. Zulu
Rita Jere	F/44	M'Kosi	554241/52/1 0973137211	L. Jere
Tryness Lungu	F/~~18~~ 18	M'KOSI	875491/52/1 0574500526	T. Lungu
Alida Chisi	F/29	M'Kosi	661805/52/1 0772618576	A. Chisi

OLIVER Lungu	~~M~~ 48 / 58	MIKASI	383959 / 521 / 0772609897	
Mandaleng Lungu	F /	Mtowa	201572 / 521 /	
Vivian Moyo	F / 35	Daula	554345 / 521 /	
Mary Ngoma	F / 55	Mazonga	275576 / 33 / 0774813539	m. ngoma

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE CHIUNDAMA, KACHIKOTI & JELEMANI COMMUNITY

Venue: Makwe Primary School

Date: 12 April, 2026 **Time: 10:50hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert

Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Laison Zulu	Headman Chiundama

Number of Participants

Male	44
Female	12

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

Opening Remarks

The meeting began at 10:50 hours with a prayer from a volunteer and Headman Chiundama welcoming everyone present. He urged all participants to take an active role in the meeting.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers,

stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution/Village	Questions & Answers, submission of key issues of concern	Response/Remarks
Lyford Banda from Kachikoti Village	What happens when power line passes along the farm boundary affecting both me and my neighbor?	Each household will be compensated according to the extent of land affected that belongs to the respective household.
Saili Zulu from Chiundama Village	What if a contractor reduces the agreed contract sum (monthly salary) at the end of the month	Such issues should be reported under the laid down grievance procedure code. The Labour offices in Chipata and Vubwi will also be available to handle such cases.
Robert Mushanga from Kachikoti Village	ZESCO came earlier and counted the trees in my field but the counted trees are not appearing on the disclosure form, what should I do?	A verification will be conducted by ZESCO after a detailed line survey and pegging.
Edith Mbewe from Yonke Village	Can cows graze under the pylons or children be allowed to play around there	Animals can graze under the power line, but children are not allowed to play under the power line for safety reasons. Parents and school authorities have an important role in sensitizing children of safety issues.
Saili Zulu	I wish to recommend that you remember the youths in the communities on the issue of jobs	The Contractor will be guided on the requirement to employ community members, especially the youths.

Masautso Tembo from Wanga Village	There is a tendency by headmen to practice favoritism in job allocations, what will be done about this issue	The main role of the headmen will be to identify people belonging to the community and advising the Contractor on the same. Headmen will not have the power to employ but rather to just identify the community members with the potential to be employed.
Masautso Tembo from Wanga Village	What type of people will access skills trainings	Skills training will be for the project affected persons but those who are too old or too vulnerable will be allowed to choose family members to be trained in their place.
Peter Zulu from Yonke	As fathers, how are we going to protect girl children when there is an influx of people due to the project.	Parents were urged to work together in ensuring that girl children were protected from sexual abuse and exploitation during project implementation. The project will implement programmes aimed at protecting the girl child.
Harrison Kwenda from Chiundama	How are we going to benefit as community members who are not affected by the project	Jobs and business opportunities will be available.
Auxensio Njobvu	How are we going to control our wives' expenditure once we allow them to start working	Couples were advised to continuously work together in improving livelihoods in homes. They should budget together.
Malizani Phiri from Chiundama	When power is connected, are we going to pay anything	The 400kv power line will be used as an interconnector between Malawi and Zambia and not for domestic use because it is high voltage.

		To connect power for domestic use, community members will be required to apply to ZESCO for connection and will be required to pay prescribed connection fees.
Community member	Can project affected people start opening bank accounts now	Those who are able can starting opening their bank accounts. Those who are not able, can wait for ZESCO facilitation.
Saili Zulu	I am happy that this meeting has taken place and we all as community members have learnt a lot. I thank you all so much for organizing this meeting.	This was acknowledged

Outcome of the Community Consultation meeting:

The community consultation meeting successfully achieved its objective of disclosing the ESIA and RAP findings to the communities of Chiundama, Kachikoti, and Jelemani. The community demonstrated a clear understanding of the project's socio-economic impacts, compensation framework, and grievance mechanisms, as evidenced by the thoughtful questions and concerns raised during the plenary session.

Figure 1: RAP Specialist Stella Sakala makes a presentation to the Chiundama Community

Closing Remarks

Headman Chiundama thanked the GOPA and ZESCO teams for the information shared. He urged community members to take the forthcoming employment opportunities seriously. He further encouraged couples to use wisely the compensation funds to be paid by the project.

The meeting was closed with a prayer at 12:30 hours.

Signed ----------

Charity Moonga

Secretary

Signed ----------

Laison Zulu

Chairperson

SAPP

ZESCO
Powering The Nation

GOPA Tech

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: 11th April 2026

Location: Chipata/Vubwi

Chiundama Communities
(Kachikoti/Jelemani)

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
PETER ZULU	M/1977	YONKE	0977499764 487531/52/1	

EDITH MBEWE	F / 1965	KACHIKOTI ~~YONKE~~	0779744340 333419/52/1	E. Mbewe.
OZIPA ZULU	F / 1947	0977628519 WANGA	0977628519 186254/52/1	
VICTOR NDJOBVU	M / 1993	0976794703 KACHIKOTI	587644/52/1	V. Ndjobvu
BETZECE PHIRI	F / 1974	YONKE	0976213109 437296/52/1	
VELEDIAN TEMBO	F / 1995	WANGA	0970709168 643742/52/1	V. Tembo
PETER ZULU	M / 2002	CHIUNDAMA	0972392445 807117/52/1	P. Zulu
HENRY ZULU	M / 1984	YONKE	0971180325 517503/52/1	H Zulu
JUSTINA PHIRI	F / 1974	MAGODI	0977980226 427028/52/1	
BLACKSON ZULU	M / 1940	MAGODI	0971479487 126986/66/1	

TELESA NGOMA	M 1963	KACHIKOTI	0773952075I 177071/52/1	T. Ngama
MOSES LUNGA	M 1974	MAGODI	0976540330 436902/52/1	M LUNGA
LUSIANO NGOMA	M 1960	KACHIKOTI	0978802035 314772/52/1	
SHUQO LUNGA	M 1955	YONKE	0975377833 295132/52/1	
ABRAM LENGWE	M 1987	KACHIKOTI	0976230154 572349/52/1	ALENGWE
GAGOO PHIRI	M 1970	YONKE	0776168385 823536/52/1	
ALICK LUNGA	M 1993	YONKE	0770821322 656112/52/1	A-LUNGA
MASAUSO TEMBO	M 1975	WANGA	0973006613 435021/52/1	M Tembo

STANLY ZULU	m / 1962	CHIUNDAMA	0977630117 337584/52/1	
JOHN ZULU	m 2002 ~~725467/5~~	YONKE	0777488961 725467/52/1	
ROBERT MSHANGA	m / 1972	KALAYE	0974746959 421300/52/1	R. Mshanga
PETER TEMBO	m / 1957	WANSA	0777962697 236809/52/1	
RICHARD DAKA	m / 1966	CHITIMZA	0772601144 382307/52/1	R. Daka
PHILLIP NYOMA	m / 1972	KACHIKOLI	0777572551 424308/52/1	P. Nyoma
GIFT NKHOMA	m / 1986	CHIUNDAMA	0971072290 567179/52/1	G. Nkhoma

AGNESS LUNGU	F/1976	MAGOBI	0976840330 436902/52/1	
PRISCA TEMBO	F/1992	CHIUNDAMA	0771552524 591555/52/1	P. TEMBO
CHARITY MSHANGA	F/1975	KAMPALA		
VIOLET MAIHOIHO	F/1989	WANGA	0775677972 572343/52/1	V. MAIHOIHO
GEORGINA PHIRI	F/1968	MAGOBI	0977502493 379982/52/1	G. PHIRI
LILIAN NSOBVU	F/1969	KACHIKOTI	0977625651 681123/52/1	L. NJOVU
AZESI LUNGU	F/1945	WANGA	0776165158 127767/52/1	
ISAACK LULU	M/1980	CHIUNDAMA	0972764722 387150/52/1	I. Lulu
STEFANO LULU	M/1968	TONGE	0999967497 387306/52/1	S. LULU
ANDREW NGULUBE	M/1945	TONGE	0977474450 171956/51/1	

ARITON ZULU	M/1961	CHILUNDAMA	0970195460 337475 /52/1	
FRANK ZULU	M/2002	CHILUNDAMA	0977192413 443116/51/1	F. Zulu
EDSON ZULU	M/1953	CHILUNDAMA	0970754185 234257/52/1	E. Zulu
YOTAM LUNGU	M/1973	YONKE	0776071216 425961/52/1	Y. LUNGU
JOSEPH ZULU	M/1984	JUNGUJANI	0972749442 139701 /56/1	J. Zulu
RICHARD PHIRI	M/1976	CHILUNDAMA	0770355485 349837/52/1	
RAPHAEL NYONI	M/1983	CHILUNDAMA	0572059416 514934 /52/1	R. NYONI
EPHRAM LUNGU	M/1980	YONKE	0777727132 681423/52/1	E. LUNGU
LUCUS ZULU	M/1979	YONKE	0777309373 513302/52/1	L. Zulu

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List Chundama Communities (Kachikoti/Jelenani)

Date: 1th **April 2026**

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
ISAAC ZULU	M / 96	CHUNDAMA	387150/52/1 0972764722	I Zulu

NAME	GENDER/AGE SG	VILLAGE	NRC / PHONE	SIGNATURE
STAFANO ZULU	M	YONKE	387306/521 0999967497	S ZULU
ANDREW NGULUBE	M/81	YONKE	171956/51/1 097474450	ANDRE ngu
ZULU FRANK	M/24	CHUNDAMA	443116/51/1 0977192413	F. ZULU

NAME	GENDER / M/F AGE 72	VILLAGE	NRC / PHONE 234257/5211 0970755418	SIGNATURE
EDSON ZULU		CHUNDAMA		E. Zulu

NAME	GENDE AGE	VILLAGE	NRC/PHONE	SIGNATURE
YOTAMU LUNGU	S2/M	YONKE	425961/82/1 0776071216 ~~0772404772~~	Y LUNGU

NAME	GENDE AGE	VILLAGE	NRC/ PHON	SINGNATURE
RICHARD PHIRI	M/65	CHUNDAMA	0770355435 349837/52/1	

NAME	SEX/AGE	VILLAGE	NRC/PHONE	SIGNATURE
ZULU ABITON	M/65	CHUNDAMA	337475/52/1 0970195460	
ZULU ABITON	M/65	CHUNDAMA		
ZULU ABITON	M/65			
ZULU ABITON	M/65			
ZULU ABITON	M/65			
ZULU ABITON	M/65			
ZULU ABITON	M/65			
ZULU ABITON	M/65			
ZULU ABITON	M/65			

NAME	SEX/AGE	VILLAGE	NRC/PHONE	SIGN
NYONI RAPHAEL	M/41	CHUNDAMA	514934/52/1 0572059416	

NAME	SEX/AGE	VILLAGE	NRC/PHONE	SIGN
LUNGU EPHRAIM	M/~~F~~ 30	YONIKE	681423/52/1 0777727132	E LUNGU

NAME	SEX/AGE	VILLAGE	NRC/PHONE	SIGN
ZULU LUKAS	M/47	YONKE	513302/52/1 0777309373	L. ZULU
"	"			

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE MPANDE & PILILANI COMMUNITY

Venue: Dingeni Ground

Date: 13 April, 2026 **Time: 10:20hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert

Edwin Matokwani	Ecology Expert
Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Timothy Nyirenda	Section Chairman
Sinazongwe	School Headteacher
Grevazio Banda	Kondwelani section Chairman
Steven Daka	Uweka Section Chairman
Winford Msoni	Lutembwe Section Chairman
Mabvuto Mawerere	Chikondano Section
Maliseni Banda	Mazala Section
Adam Banda	Ziko nibantu

Number of Participants

Male	115
Female	32
Total	147

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

OPENING REMARKS

The meeting was called to order at 10:20 hours by the Headman Dingeni, followed by a prayer. In his opening remarks, the Headman welcomed all participants and urged them to actively participate in the meeting deliberations. He emphasized that the community had waited for the project to commence for a long time

and the meeting was an opportunity for the community to understand how they would be affected and what support they would receive.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.

- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.
- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Victor Kaunda from Benja Village	Will it be safe for women to go to the bank	Both men and women were free to go to the bank. However, Community members were urged to be careful to avoid being robbed.
Patel Ngoma from Isaac Village **Shadrech Malunga from Dingeni**	How come some of us have been skipped as not being affected by the proposed power line when our neighbours are affected?	People with such complaints were advised to be patient and wait for the detailed line survey and pegging to facilitate verification as to whether they are affected or not.
Dedansio Mbewe from Chichele village	Will all communities from the 14 villages benefit from employment opportunities provided by the project?	The final decision will be made by the contractor, but measures will be put in place to ensure that all the affected communities benefit from employment opportunities to be provided by the project.
Charles Nyoka from Chaoleka Village	Are the contractors going to pay for the land on which they will set up their camps?	Yes, the contractor will need to pay for all the temporal camps that will be set up in communities. Payment will be made to the land owners.
Charles Nyoka from Chaoleka Village	Are the members of the community going to be paid by the contractor if they help out in setting up the camp.	Yes, the contractors will need to pay all workers for the work done.

Alex Katumpi from Isaac Community	How come our friends in nearby field were given project documents and some of us were not given.	The 242 project affected persons were given the documentation by surveyors after thorough investigations on the line route. If you were not given the papers, it may mean that you are not affected.
Headman	Does the contractor have the power to employ people from outside the affected communities?	Yes, especially for specialized jobs such as engineering.
Headman Dingeni	Called on community members to use the remaining project time to acquire skills so that they may be considered when project implementation commences.	This was noted
Christopher Njobvu	Since there are no roads in Pililani, where will ZESCO pass the poles.	The contractor will construct assess roads along the power line to facilitate easy movement of construction equipment and materials. These access roads will also benefit local people, including the people of Pililani village.

Outcome of the Community Consultation meeting:

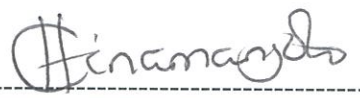
The community consultation meeting successfully achieved its objective of disclosing the ESIA and RAP findings to the Dingeni community, with participants demonstrating engagement through questions and concerns raised during the plenary session.

Closing Remarks

Figure 1: Headman Dingeni addresses the Community during the meeting

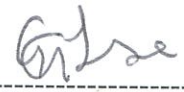
Headman Dingeni thanked the GOPA and ZESCO teams for the information shared. He urged community members to use the remaining project time to acquire skills so they may benefit from the employment opportunities to be provided by the project.

The meeting closed at 11:35 hours with a prayer.

Signed 

Charity Moonga

Secretary

Signed 

GEMEDUNU JERE

Chairperson

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

Dingeni Communities (Pililani/Chadele Mpande

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Alice Phiri	F	Intongeni	184824/58/1 0973499377	A. Phiri
Margret Chipeta	F	Isaac	311764/52/1 0973257344	M. Chipeta

Elina Moyo	F	Benjamin	416733/52/1 0779498774	
Sarajina Zulu	F	Benjamin	662587/52/1	
Honester Banda	F	Intongeni	311978/52/1 0974723367	
Dorice Mbewe	F	4	662220/52/1 0772380947	D. Mbewe
Brenda Nyambi	F	Isaac	762476/52/1 0776784108	B. Nyambi
Naomi Phiri	F	Benjamin	209280/55/1 ~~0956~~ 0975561074	N. Phiri
Enias Tembo	M	Indaba	110089/55/1 0977106180	E. T.
Violet Chimbu	F	Isaac	180261/55/1 0979468953	V. chimbu
Monica Kaunda	F	Benjamin	425744/52/1 0974638524	M. Kaunda

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

Diogeni Communities
(Pililani/Chichele)
Mpande

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
ELEXANDAH KAIMBI (KATUMBI)	M	ISAAC	436180/5211 0777842552	Katumbi
PATRICK Zulu	M	Benjamin	681541/5211	P. ZULU

VICTOR KAUNDA	M	BENJEMAN V/G	424475/52/1	V. KAUNDA
Boeniface ABENE	M	KACHIKOTO J	210781/61/1 097476246	[signature]
PHILLIMON MOYO	M	BENJEMAN V/G	396050/52/1 0775484161	P. Moyo
Alikanselo PHIRI	M	ISAAC V/S	396173/52/1 0979499888	[signature]
PHIRI William	M	DINGENI V/G	359985/52/1 0974913892	[signature]
Yohane Miti	M	ISaac	260443/52/1 —	Y.M
Didansio Tembo	M	CHINKHWAGWA	0770520766 298633/52/1	D. Tembo
George Tembo	M	INTHONGENI	NRL 598646/52/1 0973308383	[signature]
KINGS NZONZI	M	INTHONGENI	677086/52/1 0975904105	K-NZONZI

WILIANI NZONZI	M	INTHONGENI	54[illegible]13/52/1 0776430658	WZ
SOTHINI JERC-	M	BINGENI	548693/52/1 0979499852	
UEMAS BANDA	M	INDABA	332146/52/1 0975362252	J. Banda.
Solomon Chilumbo	m	inthongeni	184822/58/1 0972055902	
DICKSON NYAMBI	M	Fsaac	455727/52/1 0970659205	D.N
MELEKIYAS TEMBO	m	Isaac	756786/52/1 0974181813	M. T
Joseph Tembo	m	INTHONGEN	719095/52/1 0570315208	[illegible]
Enekiko Njovu	M	Benjeman	724474/52/1 0977504678	

Musa Katumbi	M	ISAAC	756797/52/1 0771356813	Mkatumbi
Shadreck Mahunga	M	Dingeni	270886/52/1 0977375629	S.M
Tobias Chirwa	M	Inthongeni	756634/52/1 0776818730	T
Geofry Mbewe	M	Benjeman	472251/52/1 0774277489	G.M
Limbikani Mwale	M	Isaac	655336/52/1 0772740721	LM
Ezekiel Ziwa	M	Isaac	756784/52/1 0974664638	E.Z
Peter Nzonzi	M	Inthongeni	598613/52/1 0779934100	P.N.

Charles Nyoka	m	Chaoleka	396015/52/1 0977252718	
Levison Mphande	m	Inthongeni	205031/52/1 0974723941	
Wilson Nyoka	m	Chichele	591799/52/1 0979565668	
Richard Nyambi	m	Isaac	0976969885 417221/52/1	R.N
Zondi Mwale	m	Isaac	0978603093	Z.M
Amos Nyambi	m	Isaac	0977255086	A.N.
Yona Lulu	m	Benjeman	0972646635	Y.L.
Albart Miti	m	Isaac	611172/52/1 0977820915	
Leonard Tembo	m	Isaac	762488/52/1 0972745820	L.T.
Eneliko Soko	m	Inthongeni	856041/52/1 0976742614	E.S.

Jennipher Banda	F	Dingen	684858/52/1 ~~0976883170~~	Banda
Susan Tembo	F	Benje	473274/52/1 ~~0954387126~~	S bo.
Dingile Mbewe	F	Inthongen	532561/52/1	
Stelia Lungu	F	Ithongen	725995/52/1	Lungu
Fitima Phiri	F	Benje	374621/52/1	F. Phiri
Evelyn Banda	F	Dingeni	532418/52/1	E. Banda
Esther Zulu	F	Inthongeni	540121/52/1	E. Zulu
Yokobetti Phiri	F	Dingeni	396041/52/1	Phiri
Allifosina Phiri	F	Chinemba	238582/52/1	A. Phiri
Rosemary mPhande	F	Inthongen	396188/52/1	R. mPhande

Cecilia Phiri	F	Inthongen	532181/52/1	C. Phiri
Kilala Jere	F	Inthongen	314055/52/1	K. Jere
Onolcita Phiri	F	Indaba	303291/52/1	O. Phiri
Naomi Sakala	F	Inthongen	661918/52/1	N. Sakala
Rita Phiri	F	Inthongen	396012/52/1	R. Phiri
Royce Moyo	F	Benje	756648/52/1	R. Moyo
Christina Banda	F	Dingeni	270253/52/1	C. Banda
Vestina Phiri	F	Indaba	166180/52/1	V. Phiri
Mary Soko	F	Benje	0972331784	M. Soko
Snepher Sakala	F	Inthongen	154898/58/1	S. Sakala

Getrude ng'ombe	f	Bende	45689/521	G. ng'ombe

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026

Location: Chipata/Vubwi

Dingeri Communities (Pililani & Chichele) Mpande

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Esther Phiri	F/ 59	Dingeri	0974746890 396008/52/1	E.phiri
Anthony Tembo	m/22	chichele	188216/52/1	Done

Didensio Ndlovu	M/28	pilirani	0776704420 173667/5811	[illegible]
Given Phiri	m/38	pilirani	0978824989 579523/5211	[illegible]
James phiri	m/36	pilirani	-0978008482 -611082/5211	Phiri
Adlias soko	m/30	Chichole	-0978391227 -633184/5211	Asoko
Felix phiri	m/20	pilirani	-0978008517 -750584/5211	FPiri
Telemi Zulu	m/34	Lndaba	-0970361682 -334337/6611	J Zulu
mathews nyambi	m/21	Bende	-0771669724 -756725/5211	[illegible]
Chalo Ndobvu	m/48	pilirani	-0971066330 -455258/5211	
Nyambe mketisi	m/32	Kanyelele	-0974723724 -680739/5211	

Peter Ndobvu	m/50	pilirani	-0970920521 -448129/52/1	P. Ndobvu
Venansio Lungu	m/33	Taulani	-0973499204 -611003/52/1	V. Lungu
Triverio Zulu	m/21	Taulani	-0978312833 -855032/52/1	T. Zulu
Seveliano maposa	m/23	Taulani	-0775421906 -750534/52/1	S. Maposa
Daliso soko	m/25	Taulani	-0974724211 -750553/52/1	D. soko
steven nyambi	m/24	Isaac	-0978577236 -757205/52/1	S. Nyambi
Tembo christopher	m/28	Isaac	-0976070895 -679217/52/1	Tembo
Elidah mwale	m/20	Bende	-0962914390[illegible] -855317/52/1	J. Mwale

Godfrey lungu	m/22	Jaulani	-0779233889 -855627/52/1	[signature]
Googe Zulu	m/21	Indaba	-0771681435 -830539/52/1	G. Zulu
Lawrence mwale	m/21	Indaba	-0571185801 -756855/52/1	L. Mware
ROJD CHILUMBO ~~MANGANI~~ ~~PHIRI~~	M/71 ~~M/60~~	INDABA ~~DINGENI~~	163338/64/1 0978427969 ~~396356/52/1~~	~~[illegible]~~
MANGANI PHIRI	M/60	DINGENI	396356/52/1 0972166735	Phiri Mangani
Lucas phiri	m/30	Isaac	-0972545687 -598651/52/1	[signature]
Fredric Tembo	m/56	Bende	-0771565080 -396820/52/1	F. [signature]

Adamson mwanza	m/28	Bente	-632416/52/1 -0973970133	[illegible]
Jerad nyambi	m/50	Bente	-0978445348 484409/52/1	G. nyambi
Matias nyoni	m/52	Isaac	-0974724399 -433979/52/1	nyoni
Edward moyo	m/30	Bente	-0976716268 -405331/16/1	[illegible]
Henry phiri	m/50	Indaba	-0971755084 -454226/52/1	[illegible]
patrick Lembo	m/55	Kachule	-0776059996 -410061/52/1	[illegible]
Joseph mwale	m/48	Indaba	-525671/52/1	J. mwale
Jackson mwale	m/5[illegible]	Kachule	-0976452796 -436784/52/1	J. MWALE
Edward phiri	m/51	Kachule	-0773092886 -445297/52/1	
Sevelian phiri	m/65	Indaba	-495474 52/1	S. Pm.

Emmanuel soko	m/28	Isaac	-0973910640 -662545/52/1	[illegible]
Bob Nzonzi	m/34	Inthongeni	-0973202164 -598614/52/1	[illegible]
Maeksensio nyambe	m/54	Isaac	-521930/32/1	M. nyambe
Manose Tele	m/35	Dingeni	-575652/52/1 -0571199793	J [illegible]
James moyo	m/35	Bende	-0974756 40 -567331/52/1	J Moyo
Raiford nyambi	m/30	Isaac	-0970665160 -662503/52/1	R. nyambi
Solomon Kaunda	m/36	Bende	-0776813420	S. Kaunda
Willard njobvu	m/24	Bende	-0974663837 -724472/52/1	W. njobvu
Bernard moyo	m/51	Bende	-0971212041 -454597/52/1	B. Moyo
David Lukhelo	m/48	Indaba	-0977631538 -463316/52/1	[illegible]

Jordan phiri	m/29	Isaac	-0978008317 -540122/52/1	[signature]
peter mwale	m/34	Indaba	-0772596033 -598739/52/1	P. Mwale
John mwale	m/53	Indaba	-0775481597 -249727/55/1	[signature]
Harison miti	m/32	Indaba	-0970555144 -233632/52/1	[signature]
Isaac mwula	m/48	Mphande	-0774067308 -119120/14/1	[signature]
Jonathan mwanza	m/34	Bende	-0975003756 -395689/52/1	[signature]
John nyambi	m/44	Isaac	-0771565089 -494549/52/1	
pataleo nyama	m/65	Isaac	-0776160942 -364545/52/1	P. Nyama
Fredrick Malunga	m/37	Dingen	-0976211456	[signature]
JONATHAN PHIRI	M/35	INTHONGENI	0974195763	[signature]
PHILIMON. NJOBUK	M/48	BENJI	0779494155 69	P. Nobuk

LOIZIO TEMBO	M - 56	KACHULE	396578/52/1 0571199847	[signature]
GEOFFREY TEMBO	M - 34	KACHULE	598723/52/1 0773739698	[signature]
Jonathan Mwale	m - 28	KACHULE	677476/52/1 0776208339	J. mwale
Markson Mwale	m - 30	KACHULE	662381/52/1 0978027663	M. mwale
Peter Tembo	M - 25	Benjamin	197418/55/1 0970575506	[signature]
ANDREW TEMBO	M - 50	JAULANI	436702/52/1 0776813471	[signature]
OSTEN TEMBO	M/75	KACHULE	205036/52/1 0770011366	[signature]
~~NGOZO ABEL~~	~~M/40~~	~~INDABA~~	~~605696/52/1~~ ~~0972[illegible]309~~	[signature]
MOSES PHIRI	M/	INDABA	532565/52/1 0978008402	M: phiri
MASAUSO NGOZO	M/	INDABA	532451/51/1 0573706254	M NGOZO

ENELIKO NJOBU	M/ 55	BENJE	420404/5211 0778566865	
SEVELINO ZULU	M/ 52	KAMUSDA	—	
ABEL NYOZO	M/ 5C	INDABA	605696/5211 0972735309	
FRANCIS KATUMBA	M/ 19	ISAAC	839827/5211 0778566833	
TEMBO NESTORY	M/ 56	INDABA	396116/5211	

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

MINUTES OF THE ESIA/RAP DISCLOSURE MEETING FOR THE CHAOLEKA, MUKAYA, CHIBAU & LUNDU COMMUNITY

Venue: Matemba Primary School

Date: 13 April, 2026 **Time: 14:45hrs**

Introduction

These stakeholder engagement meetings were conducted in Chipata and Vubwi Districts to present the findings of the Environmental and Social Impact Assessment and the Resettlement Action Plan to the stakeholders, gather their views and concerns, and incorporate local input into the ESIA and RAP reports. The meetings also aimed to improve transparency and accountability, in compliance with Zambia's EIA Regulations and international best practice.

Objective of the Meeting

The primary objective of this ESIA/RAP Disclosure meeting was to formally present the findings of the Environmental and Social Impact Assessment and the Resettlement and Compensation Action Plan to the local stakeholders, ensuring transparency and accountability in line with the Zambian EIA regulations, The Environmental Management Act No. 12 of 2011 and The Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, and international best practice. Specifically, the meeting aimed to inform stakeholders about the project's potential environmental and social risks and benefits, disclose the proposed mitigation measures and Resettlement Action Plan, and provide a platform for stakeholders to raise concerns, ask questions, and offer feedback to be incorporated into final ESIA and RAP reports.

ATTENDANCE

GOPA CONSULTANCY TEAM

NAME	TITLE
Robam Musonda	Country Coordinator
Stella Sakala	RAP Expert
Edwin Matokwani	Ecology Expert

Benson Kabungo	GIS/RS Specialist
Charity Moonga	Communication Specialist

ZESSCO TEAM

NAME	TITLE
Joseph Chilongo	Chief Engineer – Transmission
Ray Kalima	Principal Engineer
Richard Mwewa	G-Engineer Trans Planning
Jemma K. Bbalo	Principal Social Officer
George Mubela	Wayleave Officer
Moses Chansa	Environmental Scientist

Key Community Leaders

NAME	POSITION
Timothy Nyirenda	Section Chairman
Sinazongwe	School Headteacher
Grevazio Banda	Kondwelani section Chairman
Steven Daka	Uweka Section Chairman
Winford Msoni	Lutembwe Section Chairman
Mabvuto Mawerere	Chikondano Section
Maliseni Banda	Mazala Section
Adam Banda	Ziko nibantu

Number of Participants

Male	54
Female	10

AGENDA OF THE MEETING

- Call to Order
- Opening Prayer
- Self-Introductions
- Opening Remarks by a traditional leader
- Background Overview of the Project
- Socio-Economic Impacts and Mitigation
- Plenary Session (Discussion)
- Closing Remarks
- Closing Prayer

OPENING REMARKS

The meeting was called to order at 14:45 hours by Headman Mukaya, after which a prayer was given by a volunteer. In his opening remarks, Headman Mukaya thanked all participants for coming to the meeting and urged the local community to freely participate.

DESCRIPTION OF THE PROJECT

The project involves the construction of a 46.6km long 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District as part of the proposed Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) to Chipata West 330/132 kV Substation (in Chipata District, Zambia). During implementation, the project involves excavation works, erection of towers, stringing, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

PROJECT PRESENTATION

Key Points Discussed:

Presentation by Stella Sakala – RAP Expert: Environmental and Socio-Economic Impact and Mitigation Measures

To suit the participants in the villages, environmental and social impacts were summarized into one presentation and was delivered in Chi-chewa, the main local language in the project area. The presentation covered environmental and social impacts and the associated mitigation measures. The following topics were covered during the community presentations:

7.1. Project Overview

- 400kV and 46.6km long traversing Chipata and Vubwi.
- Extension of Chipata West Substation.

7.2 Potential Environmental and Biological Impacts Identified

Potential environmental and biological impacts and associated mitigation measures discussed include the following:

- Vegetation loss and habitat modification due to vegetation clearing along the power line corridor (46.6km long x 50m wayleave) which will be affected animals, birds reptiles and amphibians in the project area.
- Avifauna (bird) Collision Risks particularly in the segment of the OHL corridor between 19km and 28km from the Chipata West Substation, which is a known migratory pathway for Abdim's Stork (Ciconia abdimii)—a species seasonally observed across the Eastern Province
- Soil erosion and land degradation
- Water quality and aquatic habitat disturbance
- Air quality disturbance
- Noise pollution and vibration

7.3. Key Socio-Economic Impacts Identified

Potential social impacts and associated mitigation measures discussed include the following:

- Population influx into the project area in search of employment and business opportunities.
- Land tenure and landuse disturbance as the power line passes through agricultural areas.
- Relocation of 7 households whose 10 houses and 14 ancillary structures are affected.

- Employment opportunities and boost to the local economy
- Disturbance of agriculture production and livelihoods. 242 households have their land affected.
- Increased Risk of HIV/AIDS & other communicable diseases
- Disturbance to road traffic and transport
- GBV Risks
- Disturbance to cultural heritage sites

7.3. Proposed Livelihood Restoration Programme (LRP)

A percentage of the RAP budget has been allocated to the LRP, which includes

- Crop management for restoring agricultural plots and productive assets
- Livestock improvement measures
- Conservation farming for PAPs losing agricultural land
- Enterprise development for PAPs losing business income
- Tree planting (agroforestry and forestry)
- Support for vulnerable households
- Skills training

7.4. Grievance Redress Mechanism (GRM) – 5 Tiers

The project has established a 5-tier GRM that is accessible, transparent, and timely.

The five tiers are

- Tier 1: Community Focal Point Persons
- Tier 2: PIU Grievance Redress Committee
- Tier 3: District GR Committee
- Tier 4: Project Steering Committee
- Tier 5: Arbitration or Courts of Law

Submitting grievances

- Person-to-person communication with community representatives
- Direct engagement with affected households

7.5. ESMP Budget –

The community members were informed that there was a provision in the project budget for the implementation of all the mitigation measure which have been recommended in this project.

DISCLOSURE MEETING PLENARY

Name and Institution	Questions & Answers, submission of key issues of concern	Response/Remarks
Tedazio Banda from Mukaya	What will happen on the issue of ensuring the safety of the children when project implementation machinery arrives in the community	Community safety awareness campaigns will be conducted. Parents will also be required to take care of the children in order to prevent any accidents
Isaac Mbewe from Mukaya	Is the money for compensation going to be enough especially for those people on whose land the tower concrete blocks will sit	Affected households will be compensated for restricted access to land as well as for land uptake at tower positions.
Raphael Mbewe from Siliya Village **Moses Chilumbu from Chaoleka**	Why have some community members been left out of the line route when they are neighbours to some affected projected affected persons	Those who have been left out may not be affected. However, this will be verified after a detailed line survey and pegging.
Fred Mbewe from Chipwaya Village	What if contractors come with their own workers during construction, what is ZESCO going to do?	The contractor will definitely come with their own people in various specialties such as engineers and other specialized jobs but general duties work will be the preserve of the local communities. This will be included the contractor's contract.
Claudio Mushanga	What if your wife dies before you receive the money – who should you go with to ZESCO/the bank to collect the money since it is a requirement to go with your spouse	Once your spouse is deceased, you can go to obtain the money alone and this applies to even people who are not married. They are free to collect the money as

		individuals. If one loses a spouse, appropriate documentation should be obtained from the hospital or the headmen.

Outcome of the Community Consultation meeting:

The community consultation meeting successfully achieved its objective of disclosing the ESIA and RAP findings to the Chaoleka, Mukaya, Chibau, Lundu and other surrounding communities, with participants demonstrating a clear understanding of the project's socio-economic impacts, compensation framework, and grievance mechanisms as evidenced by the questions raised during the plenary session. The community expressed eagerness to participate in the project, where possible.

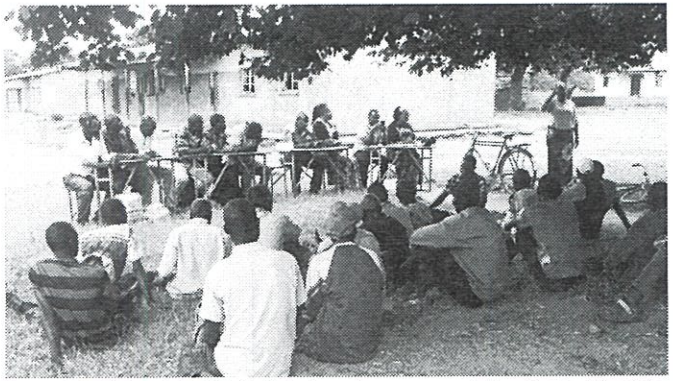


Figure 1:RAP Specialist Stella Sakala makes a presentation to the Chaoleka Community members during the meeting

Closing Remarks

Headman Mukaya thanked the GOPA and ZESCO teams for the information provided to the community adding that the community in the area was eager to participate in the project in any way possible.

The meeting was closed with a prayer at 15:45 hours.

Signed

Charity Moonga

Secretary

Signed

HEADMAN MUKAYA

Chairperson

SAPP

ZESCO
Powering The Nation

GOPA Tech

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026 (13th) Chaoleka, Mukaya, Chibau & Lundu (Matemba Communities)

Location: Chipata/Vubwi

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Patrick Zulu	M	Chaoleka	0777[illegible]1'97	P. Zulu
Charity Moonga	F	Gopa-Tech	0977780059	[illegible]

CRODIO MSHANGA	M	MKAYA	0779425897	C mshanga
pro phiri	M	MFowe	0572884727	P phiri
Chrwtopher mbewe	M	Mkaya	180201/55/1 0972549698	C mbewe
Paul Tembo	M	Loyizio	209229/55/1 0771693122	P. Tembo
ARNOLD ZULU	M	Mkaya	209358/55/1 0973603760	A. ZULU
Godfrey mshanga	M	Mkaya	180592/55/1 0772826339	G. mshanga
Charles Phiri	M	Chaoleka	243286/55/1	C. Phiri
Peter Tembo	M	Loyizio	209230/55/1 0774085116	P. Tembo
Mathias mbewe	M	Loyizio	180144/55/1	M mbewe

Aucksentio Chilumbu	M	Chaoleka	0974253339	
Moses Chilumbu	M	Chaoleka	0770070505	
Stella Zulu	F	Chaoleka	0775915453	S. Zulu
Sulvester Chilumbu	M	Chaoleka	0772831418	S. Chilumbu
Jennipher Phiri	F	Loizio	0770148059	J. Phiri
EZEL mShanga	F	mKaya	158346/55/1	E. mShanga
Steven mShanga	M	mKaya	0979256409	S-mShanga
Lufina Zulu	F	mKaya	0779164651	L. Zulu

Florence Mushangwe	F	Mkaya	0775680076	F. Mshangwe
Sara Daka	F	Mkaya	0977253109	S. Daka
Fredrick Mbewe	M	Chipwanga	0978537601	F. Mbewe
Yelesani Chitumbu	M	Chaoleka	173075/55/1	Y. Chitumbu
Ashpot	M	Chaoleka	0771680564	ML
John Chitumbu	M	Chaoleka	0773100782	J. C

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

Meeting/Event: Malawi – Zambia ESIA RAP Community Disclosure Meeting

Attendance List

Date: April 2026 (13th)

Location: Chipata/Vubwi

Chaoleka, Mukaya, Chibau & Lundu Communities Matemba

NAME	GENDER/AGE	VILLAGE	NRC/PHONE	SIGNATURE
Tobias Tembo	M	Chaoleka	280235/5411 0771434010	

ZENAS CHILUMBU	M	Chaoleka	129095/55/1 0977285459	Chilumbu
GELARD Banda	m	Chaoleka	180387/55/1	G. Banda
James Tembo	m	MKaya	0975327702	Tembo
MShanga Alick	M	MKaya	0976285559	A. MShanga
Goodson Nyirenda	M	Chaoleka		GNyirenda
JEPHULEOLU PHIRI	M	CHIWAU	0975201509	
Federiko Zulu	M	Mkaya	0775679757	
JACOB ZULU	M	CHIWAU	0974510349	
DANIEL Zulu	M	MKAYA		

Emmanuel Mbewe	m	Mkaya	0974869742	E. Mbewe
Joyce Phiri	F	Lozio	0775679784	J. Phiri
Lozio Tembo	m	Mkaya	0972781109	L. Tembo
Edwin mbewe	m	Mkaya	0918049035	E. mbewe
Isaac mbewe	m	Mkaya	0974793059	
Elias Banda	m	Chaoleka	~~0572444872~~	E. Banda.
Steven Banda	m	Chaoleka	0572444872	S. Banda
Thodazio Banda	m	Chipwanya	0773704715	T. Banda.

Gibison Mbewe	m	Chipwanya	0978996275	G. Mbewe
Martin Mphanza	m	Chaoleka		M. Mphanza.
Steven Tembo	m	Chaoleka		S. Tembo.
Stephen Mbewe	m	Chibau	0976590823	S. Mbewe
Pontina Banda	m	Balon	0772070906	P. Banda.
EVANS MWANZA	m	MKAYA	0971672068	
Trasizio Longwe	m	Lundu		T. Longwe
Samson Phiri	m	Chaoleka	0978504262	S. Phiri
Kumbukani Phiri	m	Mkaya	0760586862	
PHIRI MAKG	M	CHAOLEKA MATEMBA WARD COUNCILLOR	0777510842	

Stella S Sakala	F	GOPA	207430/16/1 0977600480	
Edwin Matakwani	M	GOPA	153930/71/1 0978214322	
EMMA K. BBALO	f	ZESCO	300725/73/1 0973620157	
MOSES CHANDA	M	ZESCO	097875738	

	Role/Title	NAME		mobile No		
1.	HEADSMAN DINGEN	JERE GEMEZULU		0977725195		
2.	HEADMAN KACHULE	NATHANIEL TEMBO		0772232248		
3.	HEADMAN ISAAC	FRANCISCO PHIRI		0975090714		
4.	HEADMAN BENTE	PHILIMON MOYO		0775484101		
5.	HEADMAN PIRILANI MPHANDE	CHRISTOPHER NJOBVU		0775679674		
6.	MPHANDE	EZEKIEL MPHANDE		0976610158		
7.	INDUNA	CHISONI TEMBO		0779729852		
8	CHAOLEKA	NYOKA CHARLES		0977252718		

NOTICE OF PUBLIC MEETINGS

DISCLOSURE FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

ZESCO intends to develop the 46.6km long, 400kV interconnection transmission line between Chipata West 330/132kV Substation, in Chipata District, and the Zambia - Malawi border in Vubwi District. This is part of the proposed 188km, Malawi – Zambia 400kV Transmission Interconnector Project which will connect Nkhoma 400/132kV Substation (in Lilongwe, Malawi) and Chipata West 330/132 kV Substation (in Chipata District, Zambia), being developed by both ZESCO and ESCOM, in their respective jurisdictions. The Transmission Line in Zambia covers Chipata and Vubwi Districts.

During implementation, the project will involve excavation works, erection of towers, stringing of conductor, extension of Chipata West Substation and installation of associated electrical equipment, and testing and commissioning.

As required under the Environmental Management Act (No. 12 of 2011), read together with the amended Environmental Management Act No.8 of 2023 and Environmental Management (Environmental Impact Assessment) Regulations, Statutory Instrument No. 3 of 2026, an Environmental and Social Impact Assessment (ESIA) study has been undertaken and the draft Environmental and Social Impact Statement (ESIS) and Resettlement Action Plan (RAP) report have been prepared.

ZESCO hereby invites Government agencies, local authorities, traditional leaders, Non-Governmental organisations, affected communities and all interested parties to the ESIA public disclosure meetings to be held in Chipata and Vubwi Districts in the places, dates and time stated below. The purpose of the disclosure meetings is to present the findings of the ESIA study undertaken in the project and enable stakeholders to discuss the findings and provide feedback.

Meeting Details:

DATE	VENUE	TARGET AUDIENCE	District	TIME
8th April 2026	Eastern Comfort Lodge	Chipata DDCC	Chipata	09:30hrs
	Kauzu Primary School	Kauzu community	Chipata	14:30hrs
9th April 2026	Vubwi Council Chamber	Vubwi DDCC	Vubwi	10.00hrs
	Chibwe Village	Chibwe and Lufazi community	Chipata	14:30hrs
10th April 2026	Makwelelo Primary School	Pashane community	Chipata	09:30hrs
	Makangila Primary School	Daula community	Chipata	14:30hrs
11th April 2026	Makwe Primary School	Chiundama, Kachikoti and Jelemani	Chipata	09:30hrs
13th April 2026	Dingeni Ground	Mpande and Pililani community	Chipata / Vubwi	09:30hrs
	Matemba Primary School	Chacheka, Chibau, Mukaya and Lunda Community	Vubwi	14:30hrs

For further enquiries, please contact the following:

Mr. Jack Munthali
Chief Environmental Scientist – South
ZESCO Limited
Contact Number: +260 966116090
Email: JMunthali@zesco.co.zm

Mr. Robam Musonda
ESIA/RAP Country Coordinator
GOPA Tech
+260 977783184
robam.musonda64@gmail.com

INVITATION FOR BIDS (IFB)

TENDER NO.RDA/CE/ONB/001/2026: TENDER FOR THE CONSTRUCTION OF MBESUMA BRIDGE OVER CHAMBESHI RIVER IN MUCHINGA PROVINCE OF ZAMBIA

The Road Development Agency (RDA) has received an allocation of financing for various road works from the Government of the Republic of Zambia and wishes to apply a portion of these funds to cover eligible payments for the **Construction of Mbesuma Bridge over Chambeshi River in Muchinga Province.**

The RDA now invites sealed bids from eligible Bidders for the **Construction of Mbesuma Bridge over Chambeshi River in Muchinga Province.**

The scope of work will include among other things:

1. Flow diversion, temporary works and earthworks;
2. Construction of a 144m long, 4 span, concrete bridge with in-situ concrete deck slab on pre-cast pre-stressed concrete beams and substructure composed of piled foundations;
3. The roadway is 8m wide with 1.2m walkways either side;
4. Construction of 1600m of approach embankment: 300m on the Chinsali side and 1300m on the Isoka side. The embankment height on the approach is approximately 4m high.
5. Upgrading of approximately 20km of road to bituminous standards, from Mbesuma Bridge towards Isoka District.

The RDA now invites bids from eligible and qualified bidders, who are registered with the Engineering Institution of Zambia and National Council for Construction (NCC) in Category R or C, Grades 1 or 2, for the Construction of Mbesuma Bridge over Chambeshi River in Muchinga Province. Bidding will be conducted through Open National Bidding Procedures in accordance with Section 39 of the Public Procurement Act No.8 of 2020 as amended. Bidding is open to both citizen and local bidders; however, local bidders shall be required to partner with citizen bidders as required by Section 39 (3) of the Public Procurement Act No.8 of 2020 as amended.

The bidding documents can be accessed from the e-GP system through the ZPPA website (www.zppa.org.zm) and the RDA website (www.rda.org.zm).

The RDA will conduct a site visit on **Tuesday 31st March, 2026** and bidders are requested to meet at Office of the Regional Manager, RDA Regional Offices, Muchinga Province at **09:00 hours local time**. A pre-bid meeting will be held to address and clarify any issues raised by bidders. The location and timing of the pre-bid meeting will be determined by the RDA following the site visit. Bidders are encouraged to familiarize themselves with the project site.

Bidders are invited to submit their bids for the Construction of Mbesuma Bridge over Chambeshi River in Muchinga Province**.** Bids must be accompanied by either a Bid Security of not less than **2% of the Bid Sum or a Bid Securing Declaration Form**.

All bids must be submitted via the e-GP platform no later than **10:30 hours on Friday, 17th April, 2026**. The **bid opening** shall take place through the e-GP system on **Friday 17th April, 2026 at 11:00 hours local time.**

LATE SUBMISSIONS WILL NOT BE ACCEPTED and will be automatically disqualified by the system.

Mr. Silas Simweleba
Chief Procurement Manager
For / Director and Chief Executive Officer
ROAD DEVELOPMENT AGENCY

First Date of issue: **Thursday 19th March, 2026**

NOTICE OF PUBLIC MEETINGS

DISCLOSURE FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) STUDY FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

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ZESCO hereby invites Government agencies, local authorities, traditional leaders, Non-Governmental organisations, affected communities and all interested parties to the ESIA public disclosure meetings to be held in Chipata and Vubwi Districts in the places, dates and time stated below. The purpose of the disclosure meetings is to present the findings of the ESIA study undertaken in the project and enable stakeholders to discuss the findings and provide feedback.

Meeting Details:

DATE	VENUE	TARGET AUDIENCE	District	TIME
8th April 2026	Eastern Comfort Lodge	Chipata DDCC	Chipata	09:30hrs
	Kauzu Primary School	Kauzu community	Chipata	14:30hrs
9th April 2026	Vubwi Council Chamber	Vubwi DDCC	Vubwi	10.00hrs
	Chibwe Village	Chibwe and Lufazi community	Chipata	14:30hrs
10th April 2026	Makwelelo Primary School	Pashane community	Chipata	09:30hrs
	Makangila Primary School	Daula community	Chipata	14:30hrs
11th April 2026	Makwe Primary School	Chiundama, Kachikoti and Jelemani	Chipata	09:30hrs
13th April 2026	Dingeni Ground	Mpande and Pililani community	Chipata / Vubwi	09:30hrs
	Matemba Primary School	Chaoleka, Chibau, Mukaya and Lunda Community	Vubwi	14:30hrs

For further enquiries, please contact the following:

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ZESCO

Powering The Nation

Our Ref: P&P/ESD-S/414/2026

23 March 2026

The District Commissioner
CHIPATA DISTRICT

Dear Sir

REQUEST TO CONVENE A SPECIAL DISTRICT COORDINATING COMMITTEE MEETING FOR FOR THE DISCLOSURE OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY AND RESTTLEMENT ACTION PLAN OUTCOMES FOR THE PROPOSED MALAWI – ZAMBIA 400kV TRANSMISSION INTERCONNECTOR PROJECT

The above caption refers.

The Governments of Zambia and Malawi, under the auspices of the two electricity utilities ZESCO Limited and ESCOM, intend to develop the 190.6km, Malawi – Zambia 400kV Transmission Interconnector.

The proposed Malawi – Zambia 330/400kV Transmission Interconnector Project will connect between Nkhoma 400/132kV Substation in Lilongwe, Malawi and the Chipata West 330/132 kV Substation, in Chipata, Zambia. This will facilitate power trade between the two countries and the Region, thereby supporting economic and social development.

Pursuant to the foregoing, ZESCO Limited conducted an Environmental and Social Impact Assessment (ESIA) study for the 46.6km portion of the Transmission Line in the Zambian jurisdiction. This is in compliance with the requirements of the Environmental Management Act (EMA) No.12 of 2011 and Statutory Instrument No. 3 of 2026 – The Environmental Impact Assessment Regulations.

The ESIA process requires that full disclosure of the ESIA findings be undertaken to key stakeholders, to ensure that it adequately addresses any anticipated impacts and/or risks. It is in this regard that ZESCO Limited, requests your office to facilitate convening a disclosure meeting with the Chipata District Development Coordinating Committee (DDCC) scheduled for **Wednesday, 8 April 2026** at **09:30hrs** at **Eastern Comfort Lodge.**

IDC Industrial Development Corporation
A member of the IDC group of Companies

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Great East Road, P.O. Box 33304,
Lusaka-Zambia

+260-211-361111

zesco@zesco.co.zm

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23 March 2026

The District Commissioner
CHIPATA DISTRICT

REQUEST TO CONVENE A SPECIAL DISTRICT COORDINATING COMMITTEE MEETING FOR FOR THE DISCLOSURE OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY AND RESTTLEMENT ACTION PLAN OUTCOMES FOR THE PROPOSED MALAWI – ZAMBIA 400kV TRANSMISSION INTERCONNECTOR PROJECT

Please note that additional meetings are proposed to be held in communities along the line route as per schedule of meetings below in Chipata District.

DATE	VENUE	TARGET AUDIENCE	DISTRICT	TIME
8th April 2026	Eastern Comfort Lodge	Chipata DDCC	Chipata	09:30hrs
	Kauzu Primary School	Kauzu community	Chipata	14:30hrs
9th April 2026	Chibwe Village	Chibwe and Lufazi community	Chipata	14:30hrs
10th April 2026	Makwelelo Primary School	Pashane community	Chipata	09:30hrs
	Makangila Primary School	Daula community	Chipata	14:30hrs
11th April 2026	Makwe Primary School	Chiundama, Kachikoti and Jelemani	Chipata	09:30hrs
13th April 2026	Dingeni Ground	Mpande community	Chipata	09:30hrs

We look forward to your continued support in pursuit of National development.

Yours faithfully
ZESCO LIMITED

pp **FRANCIS NAMAKANDA**
DIRECTOR – PLANNING AND PROJECTS

CC: The Town Clerk, Chipata City Council
Managing Director, ZESCO Limited
Country Coordinator, GOPA-Intec
Head – Environment, ZESCO Limited
Senior Manager – Transmission Planning, ZESCO Limited
Senior Area Manager – Chipata, ZESCO Limited

FN/*bmm/ks/nn*

ZESCO

Powering The Nation

Our Ref: P&P/ESD-S/415/2026

23 March 2026

The District Commissioner
VUBWI DISTRICT

Dear Sir

REQUEST TO CONVENE A SPECIAL DISTRICT COORDINATING COMMITTEE MEETING FOR FOR THE DISCLOSURE OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY AND RESTTLEMENT ACTION PLAN OUTCOMES FOR THE PROPOSED MALAWI – ZAMBIA 400kV TRANSMISSION INTERCONNECTOR PROJECT

The above caption refers.

The Governments of Zambia and Malawi, under the auspices of the two electricity utilities ZESCO Limited and ESCOM, intend to develop the 190.6km, Malawi – Zambia 400kV Transmission Interconnector.

The proposed Malawi – Zambia 330/400kV Transmission Interconnector Project will connect between Nkhoma 400/132kV Substation in Lilongwe, Malawi and the Chipata West 330/132 kV Substation, in Chipata, Zambia. This will facilitate power trade between the two countries and the Region, thereby supporting economic and social development.

Pursuant to the foregoing, ZESCO Limited conducted an Environmental and Social Impact Assessment (ESIA) study for the 46.6km portion of the Transmission Line in the Zambian jurisdiction. This is in compliance with the requirements of the Environmental Management Act (EMA) No.12 of 2011 and Statutory Instrument No. 3 of 2026 – The Environmental Impact Assessment Regulations.

The ESIA process requires that full disclosure of the ESIA findings be undertaken to key stakeholders, to ensure that it adequately addresses any anticipated impacts and/or risks. It is in this regard that ZESCO Limited, requests your office to facilitate convening a disclosure meeting with the Chipata District Development Coordinating Committee (DDCC) scheduled for **Thursday, 9 April 2026** at 1**0:00hrs** in the **Council Chamber.**

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23 March 2026

The District Commissioner
VUBWI DISTRICT

REQUEST TO CONVENE A SPECIAL DISTRICT COORDINATING COMMITTEE MEETING FOR FOR THE DISCLOSURE OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY AND RESTTLEMENT ACTION PLAN OUTCOMES FOR THE PROPOSED MALAWI – ZAMBIA 400kV TRANSMISSION INTERCONNECTOR PROJECT

Please note that additional meetings are proposed to be held in communities along the line route as per schedule of meetings below in Vubwi District.

DATE	VENUE	TARGET AUDIENCE	DISTRICT	TIME
9th April 2026	Vubwi Council Chamber	Vubwi DDCC	Vubwi	10.00hrs
13th April 2026	Dingeni Ground	Pililani community	Vubwi	09:30hrs
13th April 2026	Matemba Primary School	Chaoleka, Chibau, Mukaya and Lunda Community	Vubwi	14:30hrs

We look forward to your continued support in pursuit of National development.

Yours faithfully
ZESCO LIMITED

FRANCIS NAMAKANDA
DIRECTOR – PLANNING AND PROJECTS

CC: The Council Secretary, Vubwi Town Council
Managing Director, ZESCO Limited
Country Coordinator, GOPA-Intec
Head – Environment, ZESCO Limited
Senior Manager – Transmission Planning, ZESCO Limited
Senior Area Manager – Chipata, ZESCO Limited

FN/*bmm/ks/nn*

AIR QUALITY AND NOISE ASSESMENT REPORT

ZAMBIA

APR 2025

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

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Executive Summary

As part of the environmental baseline studies for the Malawi-Zambia 400 kV Power Transmission Interconnector Project, air quality and noise assessments were conducted along the 44 km Zambian segment of the corridor, spanning the districts of Chipata and Vubwi. The objective was to establish current environmental conditions and identify potential risks to human health and ecological receptors in advance of construction activities.

Air Quality Monitoring

Air quality sampling was carried out from April 3 to 11, 2025, across eleven strategically located points (AQ1–AQ11). Measurements were taken during both morning (08:00–12:00) and afternoon (13:00–18:00) sessions in 15-minute intervals, for a minimum of 30 minutes per point. The monitored parameters included:

- Particulate Matter ($PM_{2.5}$, PM_{10})
- Nitrogen Dioxide (NO_2)
- Sulphur Dioxide (SO_2)
- Carbon Monoxide (CO)
- Formaldehyde (HCHO)
- Total Volatile Organic Compounds (TVOC)
- Meteorological variables (O_2, CO_2, humidity, wind direction, draft)

All measured values were found to be within acceptable limits as defined by the World Health Organization (WHO) and the Zambia Environmental Management Agency (ZEMA). Slightly elevated TVOC and particulate levels were observed in areas near community settlements and agricultural fields, but still remained below threshold levels. Wind data showed a predominant direction toward the northwest, with low average draft speeds (~0.12 m/s), suggesting limited natural dispersion during stagnant conditions.

Noise Monitoring

Noise monitoring was conducted concurrently at eleven noise sampling points (NSP1–NSP11) during daytime hours. Key indicators included minimum ambient levels, maximum baseline levels, and modelled predicted construction noise peaks. Average baseline noise levels ranged from 36–43 dB(A), typical of rural and peri-urban settings, and well below ZEMA's daytime limit of 85 dB(A).

Summary

The results confirm that current air and noise conditions along the corridor are compliant with regulatory standards. However, due to low wind speeds, the presence of nearby receptors, and anticipated construction activities, there is a moderate risk of localized environmental impacts. These findings provide a robust baseline for impact prediction and support the design of effective mitigation strategies, including dust control, noise buffering, and targeted community engagement to minimize disruption during project implementation.

However, modelled noise levels considering construction activities (e.g., tower drilling, equipment use) predicted temporary spikes of up to 93 dB(A) at sites such as NSP3, NSP7, and NSP10, indicating potential short-term exceedances during peak activity periods. A noise dispersion illustration further emphasized that high-frequency construction noise may significantly impact zones within 100–300 meters from active sites.

A Gaussian plume model was used to illustrate potential dispersion of emissions during construction, reinforcing the need for localized control in downwind communities.

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ABBREVIATIONS

MOR ----------Morning
Aft …… Afternoon
NSP…… Noise Sampling Point
AQ……..Air Quality
PM……..Particulate Matter

1. Introduction

1.1 Background

The Malawi-Zambia 400kV Power Transmission Interconnector is a transformative regional infrastructure initiative aimed at enhancing power exchange, reliability, and energy security within the Southern African Power Pool (SAPP). The project involves the development of a 400 kV high-voltage transmission line stretching approximately 188 kilometres, connecting Chipata West in Zambia to Malawi's national grid. This interconnector is a critical component in facilitating electricity trade between member states and strengthening regional energy integration.

The Zambian segment of the line spans approximately 44 kilometres, passing through both rural and peri-urban areas within the Eastern Province. This area includes a diverse mix of land uses, including agricultural zones, scattered settlements, and natural vegetation.

As part of the Environmental and Social Impact Assessment (ESIA) process, comprehensive ambient air quality and environmental noise assessments were conducted along the Zambian corridor. These studies are essential for establishing baseline environmental conditions and ensuring compliance with regulatory and international standards, particularly those prescribed by the Zambia Environmental Management Agency (ZEMA), the International Finance Corporation (IFC) Performance Standards, and the World Health Organisation (WHO) air quality guidelines.

This report provides detailed insights into the monitoring methodology, pollutant and noise level analysis, and overall environmental performance relative to applicable thresholds. The findings will inform mitigation planning and environmental management strategies throughout the project's construction and operational phases, supporting both local environmental stewardship and regional energy connectivity goals.

1.2 Objectives of the Assessment

The objective of this assessment was to establish a comprehensive environmental baseline for ambient air quality and noise along the 44-kilometre Zambian segment of the proposed Zambia–Malawi 400 kV transmission line. This baseline will serve as a reference point for evaluating potential environmental impacts associated with the construction and operational phases of the project.

Specifically, the assessment aimed to:

1. Determine existing ambient air quality and noise levels along the proposed transmission line corridor, with particular focus on areas near settlements, schools, water sources, and other sensitive receptors.

2. Identify potential exposure risks to local communities from dust, gaseous pollutants, and environmental noise during future project activities.
3. Assess compliance with applicable environmental standards and guidelines, including:

- The Zambia Environmental Management Agency (ZEMA) air quality and noise thresholds
- International Finance Corporation (IFC) Performance Standards
- World Health Organisation (WHO) recommended limits

4. Pinpoint environmental hotspots or high-sensitivity zones where construction activities may require targeted mitigation.
5. Inform the development of site-specific mitigation measures and environmental management plans to reduce potential adverse impacts during project implementation.

1.3 Site Description

The Zambian section of the Malawi-Zambia 400 kV transmission line runs from the new Chipata West Substation in eastern Zambia and extends to the Malawi border, following a generally south-easterly route. The corridor begins west of Chipata town and proceeds southeast through Chipata District into Vubwi District, terminating at the international boundary where the line will connect to Malawi's network. Along its path, the line initially heads south from Chipata West, then gradually turns eastward toward Vubwi, traversing a mix of gentle plateau terrain and Low-relief hilly landscape to eastern Zambia. The elevation is relatively uniform with a minor decline approaching the border, as the land gently slopes down toward Malawi. Overall, the corridor's orientation is north-west to south-east, reflecting the alignment from Chipata toward western Malawi.

1.4 Site Location

The Malawi-Zambia 400 kV Interconnector Project is located in Eastern Province, Zambia, covering approximately 44 kilometres from the Chipata West Substation to the Malawi border- Figure 1. The transmission line passes through Chipata and Vubwi Districts, following a generally southeasterly direction across predominantly rural and agricultural landscapes.

The corridor avoids major urban centres and supports regional energy connectivity by linking Zambia's grid with Malawi's. It is a key component of the broader initiative under the Southern African Power Pool (SAPP) to enhance cross-border electricity trade and reliability.

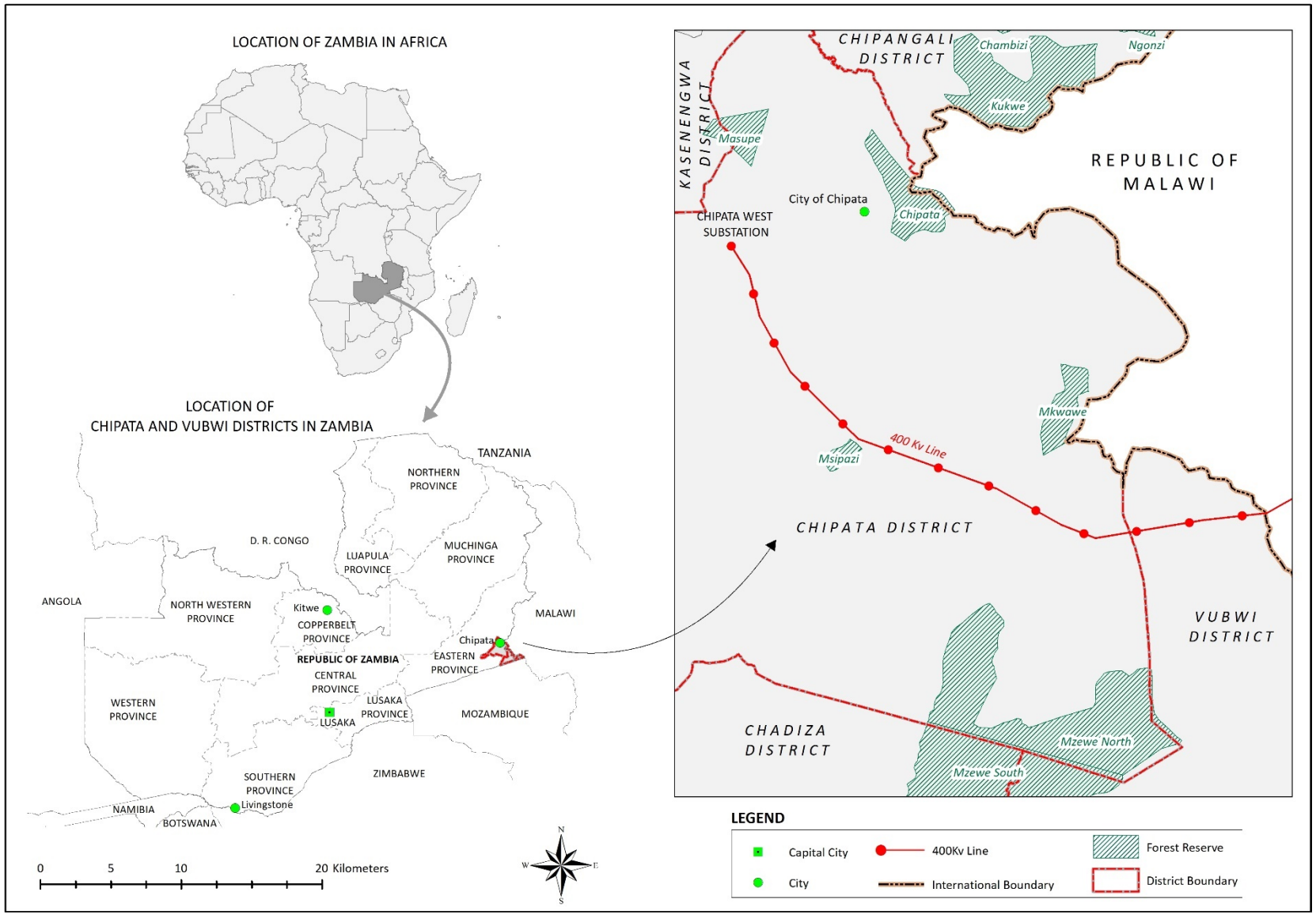

Figure 1:Location Map

2. Methodology for Air Quality and Noise Assessment

2.1 Air Quality Assessment

2.1.1 Sampling Strategy

Air quality monitoring was conducted using a short-term, location-based sampling approach, aligned with international best practices and adapted to the specific characteristics of the Malawi-Zambia 400 kV Interconnector corridor. Monitoring was performed at selected points along the 44 km Zambian route, using 15-minute interval readings over 30-minute minimum sessions to capture representative data during both morning and afternoon periods.

Sampling was coordinated with noise monitoring schedules to optimize field logistics and spatial consistency.

2.1.2 Instruments Used for Environmental Monitoring

The baseline environmental assessment utilized a set of portable, field-calibrated instruments. **A multi-gas analyser** was used to monitor key air quality parameters including nitrogen dioxide (NO_2), sulphur dioxide (SO_2), carbon monoxide (CO), and wind draft . Additionally, a multi-parameter weather and environmental meter was employed to record supporting data such as temperature, relative humidity, and total volatile organic compounds (TVOCs), and formaldehyde. All instruments were suitable for rural field conditions and aligned with international standards for environmental monitoring.

2.1.3 Quality Assurance and Quality Control (QA/QC)

Instrumentation Calibration and Maintenance:

To ensure the accuracy and reliability of air quality and noise data, all monitoring instruments were calibrated in accordance with manufacturer specifications. Calibration was performed as follows:

Self Calibration

Air Quality Monitors:

- Gas Analyzers (CO, SO_2, NO_2): Performed automatically every 5 minutes before and after each monitoring session.
- Particulate Matter Monitors (PM_{10}, $PM_{2.5}$): Calibrated using zero and span filters before each deployment.
- Formaldehyde and Volatile Organic Compound (VOC) Detectors: Performed automatically every 5 minutes before and after each monitoring session

Noise Monitoring Instruments:

- Sound Level Meters: Calibrated with a precision sound calibrator at 94 dB and 114 dB, before and after each monitoring period.

Factory Recalibration

All air quality and noise monitoring instruments used during the assessment are subject to regular calibration to ensure data accuracy and reliability. These instruments have been calibrated before and are recalibrated annually at the manufacturer's facility (Factory Recalibration). This ensures that they maintain precision and comply with international standards.

Calibration Validity: Certified for **one year** from the **calibration date**.

Calibration Records: Calibration certificates are maintained and attached as an **appendix to this report**.

2.1.4 Site Selection

Sampling points were strategically selected based on refer to Figure 2:

- Proximity to emission sources (roads, potential construction zones).
- Sensitive receptors, including schools, settlements, and community, Public spaces (markets, playgrounds, gathering areas).
- Ecologically sensitive areas, such as vegetation zones and river crossings.
- Topography and meteorological conditions, to assess pollutant dispersion.
- Accessibility and safety, ensuring field team security.

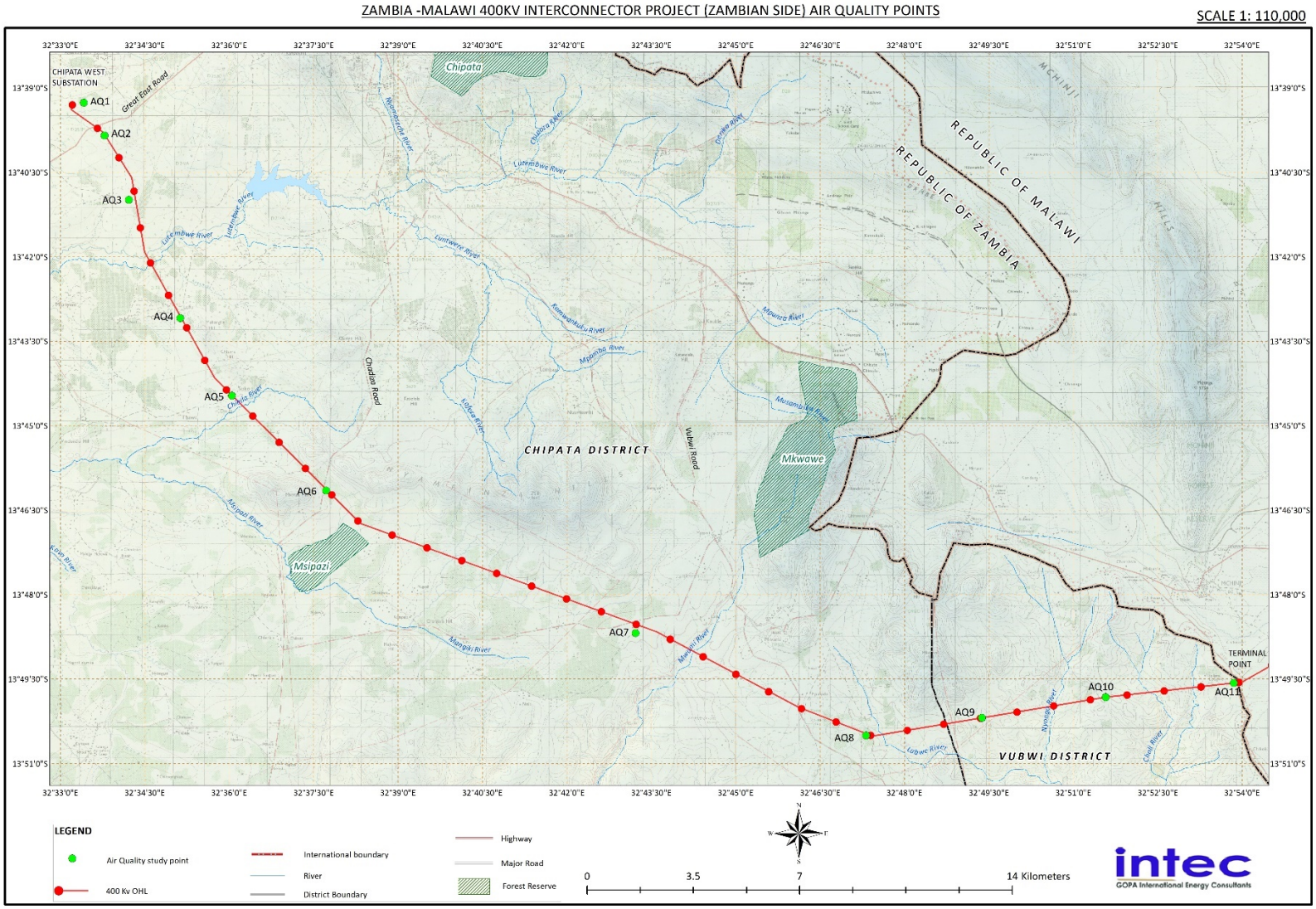

Figure 2: Sampling Points

2.1.5 Parameters Monitored

Measured pollutants - Table 1 included:

Table 1: Measured Pollutants

Parameter	Unit	ZEMA Limit	IFC Limit	Justification
Particulate Matter (PM10)	µg/m³	100 (24h)	50 (annual) / 150 (24h)	Dust from earthworks, transport
Particulate Matter (PM2.5)	µg/m³	50 (24h)	25 (annual) / 75 (24h)	Finer combustion particles
Sulphur Dioxide (SO_2)	µg/m³	125 (24h)	20 (24h)	Emissions from equipment
Nitrogen Dioxide (NO_2)	µg/m³	200 (1h)	200 (1h)	Vehicle emissions
Carbon Monoxide (CO)	mg/m³	10 (8h)	10 (8h)	Combustion from machinery
Total Suspended Particulates (TSP)	µg/m³	230 (24h)	n/a	Dust from site activity
Formaldehyde (HCHO)	mg/m³	Not specified	0.5 (8h)	Indoor/outdoor emissions, construction material off-gassing
Total VOCs (TVOC)	mg/m³	Not specified	0.5 (8h)	Paints, solvents, vegetation, fuel vapors
Wind Speed & Direction	m/s / °	-	-	For dispersion modelling
Temperature	°C	-	-	Influences pollutant behaviour
Relative Humidity	%	-	-	Supports meteorological data and influences pollutant dispersion

2.1.6 Standards Used

Results were assessed against:

- ZEMA Ambient Air Quality Standards
- WHO Global Air Quality Guidelines
- IFC Performance Standards for Air Quality

2.2 Environmentally Sensitive Receptors

The Malawi-Zambia 400 kV Interconnector traverses approximately 44 kilometers of land in Eastern Zambia, cutting across Chipata and Vubwi Districts. The corridor intersects a variety of environmental and social settings, including villages, agricultural land, watercourses, and forest margins. The identification of sensitive receptors—both ecological and human—is essential to ensure impacts are minimized, particularly within 500 to 1000 meters of the transmission line and its associated activities.

2.2.1 Human Settlements and Public Facilities (500–1000 m Risk Buffer)

- The project corridor passes within 500 to 1000 meters of several villages and community infrastructure, including:
- Chinyauku, Kauzu, Chibwe, Chichele,Galamukani, Daula, and Chikoka
- Schools (Kauzu Primary, Makangila School) serving rural populations.
- These community facilities are considered sensitive receptors due to their function and the presence of vulnerable groups and learning environments (children).
- Exposure to noise, dust, and vibration, particularly during construction, could impact health, learning environments, and public well-being.

2.2.2 Interconnector Crossing Points

The line intersects multiple infrastructure and natural features, each posing unique sensitivities:

- **Road Crossings:**

  - Great East Road (T4) near Chipata West Substation
  - Chipata–Chadiza Road
  - Rural access tracks serving local communities

- **River and Stream Crossings:**

  - Lutembwe River
  - Nyongo River
  - Mwami River
  - Lubwe River
  - Chibila River

These points are sensitive due to erosion potential, risk of sedimentation, and the need to maintain safe and unobstructed access for both communities and the project team.

2.2.3 Community Water Sources

- Groundwater sources such as Well 1 (Mwanza) and BH2 (Makangila), as well as a few boreholes, that lie within close proximity of the corridor.
- Communities rely on these for drinking, domestic, and agricultural use, making them highly sensitive to pollution, runoff, or disturbance from construction works.
- Surface water bodies crossed by the line serve multiple villages and are integral to livelihoods and local ecosystems.

2.2.4 Agricultural Land and Customary Use Zones

- The corridor crosses through active farmlands, mostly under customary tenure, used for subsistence farming.
- These lands are sensitive receptors as they support local food security and income, and may be temporarily or permanently affected by project activities.
- Soil disturbance, dust deposition, and access disruption can reduce productivity if not properly managed.

2.2.5 Ecological and Forest Edge Areas

- Though the project avoids core forest reserves, it passes near ecologically significant areas, including:
  - Msipazi and Mkwawe Forest Reserves.
  - Regenerating woodlands and natural thickets along stream corridors.
- These are sensitive due to potential habitat disturbance, tree clearing, and fire risks, Especially during dry seasons.

2.2.6 Low-Activity Zones and Baseline Control Areas

- Remote and sparsely populated sections of the corridor were used as baseline sampling locations for air and noise quality.
- These quiet zones are sensitive to even short-term construction disturbances, which could skew monitoring or affect local ecosystems.

2.2.7 Why This Matters

Understanding the type and proximity of sensitive receptors enables:

- Site-specific mitigation planning.
- Buffer zone design (such as taking precautionary measures or limiting noise or dust within 500–1000 m of sensitive sites).
- Construction scheduling to avoid high-impact periods near schools or clinics.
- Focused stakeholder engagement with affected communities.

2.3 Purpose of the Methodology

This methodology ensures that environmental baselines for air and noise quality are accurately established near sensitive human and ecological receptors. The data supports future monitoring, informs impact mitigation strategies, and ensures compliance with both national regulations and international environmental standards.

3. Environmental Baseline Conditions

3.1 Climate

The transmission corridor between Chipata and Vubwi lies within the Eastern Plateau Agro-ecological Zone of Zambia, and is characterized by a distinctly seasonal tropical climate, comprising wet and dry periods that significantly influence environmental conditions, land productivity, and hydrological dynamics.

Rainfall is highly seasonal, with the wet season spanning from November to March. Peak precipitation typically occurs in January, averaging around 250 mm - Figure 3, and contributes to surface water recharge, including replenishment of streams, shallow wells, and soil moisture critical for vegetation and agriculture. Conversely, from May to October, rainfall declines sharply, reaching near zero levels between June and August. This prolonged dry season results in significant water stress, especially in shallow water bodies and areas with limited groundwater retention.

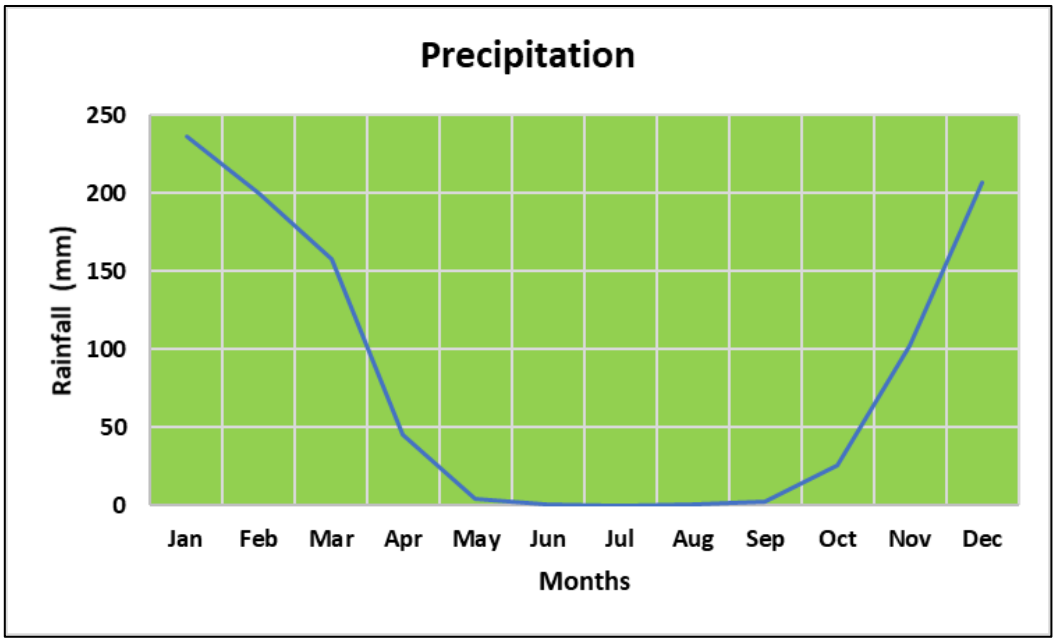

Figure 3: Precipitation

Temperatures are moderately warm throughout the year but exhibit distinct seasonal variability. During the first half of the year (January–June), average temperatures remain around 24–26°C, supporting moderate evapotranspiration. However, in the latter dry season months, particularly September and October, temperatures rise sharply to 32–34°C, coinciding with peak evapotranspiration rates that can exceed 105 mm/month - Figure 4. This intensifies soil moisture loss and places additional pressure on water resources, vegetation, and agricultural output.

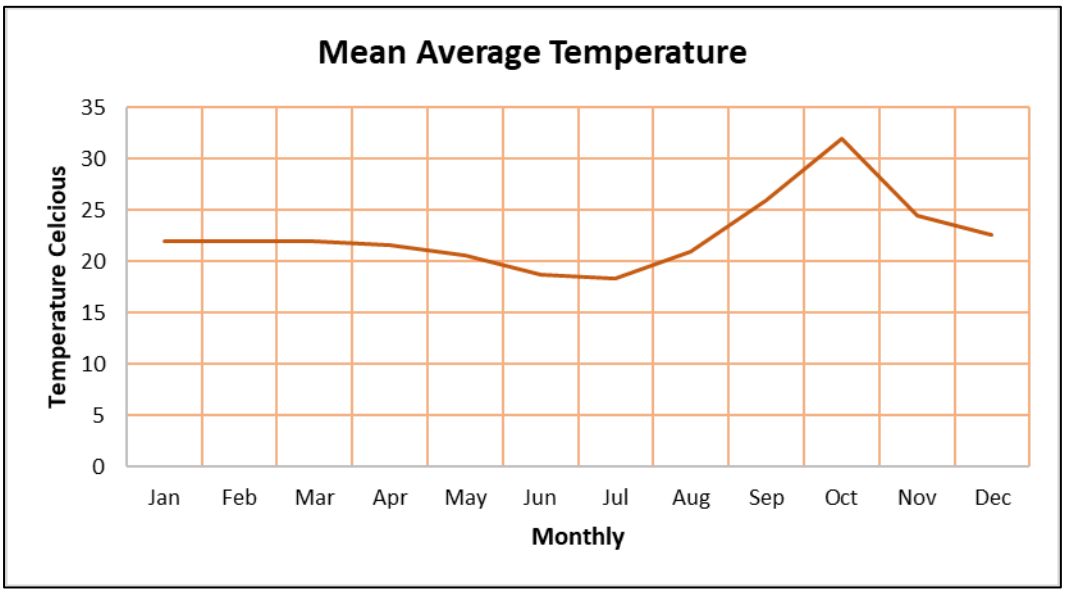

Figure 4: Temperature information

Collectively, the climatic pattern indicates that **January to March** provides favourable environmental conditions for **natural regeneration** and water resource recovery, while the period from June to September represents a critical window of water scarcity. During this time, temperature-driven evapotranspiration continues even in the absence of rainfall, elevating the risk of drought stress, particularly for rural communities relying on surface water, shallow wells, and rainfed agriculture.

Given this seasonal imbalance, sustainable resource management—including, buffer zone vegetation retention, and construction-phase water conservation measures—will be vital to maintaining ecosystem function and supporting community resilience along the Chipata–Vubwi interconnector corridor.

3.2 Land Cover Land Use

The **Malawi-Zambia 400 kV interconnector corridor**, particularly the 44 km stretch between Chipata West and the Malawi border, passes through a landscape that has undergone significant land cover transformation over the past three decades (1992–2022). The corridor predominantly traverses areas of **rainfed cropland, shrubland, and mosaic natural vegetation**, with notable transitions from **forested land to agriculture -** Figure 5 **and** Figure 6. A substantial portion of broadleaved deciduous forest has been converted to rainfed agricultural land, indicating ongoing agricultural expansion within the project area.

Despite this change, large tracts of shrubland and mixed natural vegetation remain intact along portions of the corridor, especially in less densely populated or less accessible areas. The persistence of these land covers suggests pockets of relatively undisturbed or regenerating habitat, which may hold ecological significance. Isolated transitions to irrigated cropland and small pockets of urban growth are also evident, particularly near rural service centres and access roads.

The land cover dynamics along the corridor highlight the pressures of land use intensification, particularly from agriculture, and the need to balance development with environmental sustainability. These changes have direct implications for the interconnector project, particularly in terms of right-of-way clearing, soil stability, dust generation, and potential encroachment into sensitive zones. Careful planning and vegetation management will be essential to mitigate the impacts of land cover change during construction and ensure the corridor supports both energy transmission and sustainable land use.

Summary

The interconnector corridor from Chipata West to Vubwi primarily traverses a rural agricultural landscape, interspersed with patches of woodland, regenerating forest, and bushland thickets. The route begins in cleared farmland near Chipata West and passes through subsistence fields and villages, with miombo regeneration zones and forest-farm mosaics appearing mid-route, especially around Chinyaku and Chichele. In its southern section, the line intersects a protected forest reserve, indicating the presence of ecologically sensitive habitat. While much of the area is customary land with cultivated plots, it also includes secondary woodlands and savanna, reflecting a mixed-use landscape with both human and ecological value.

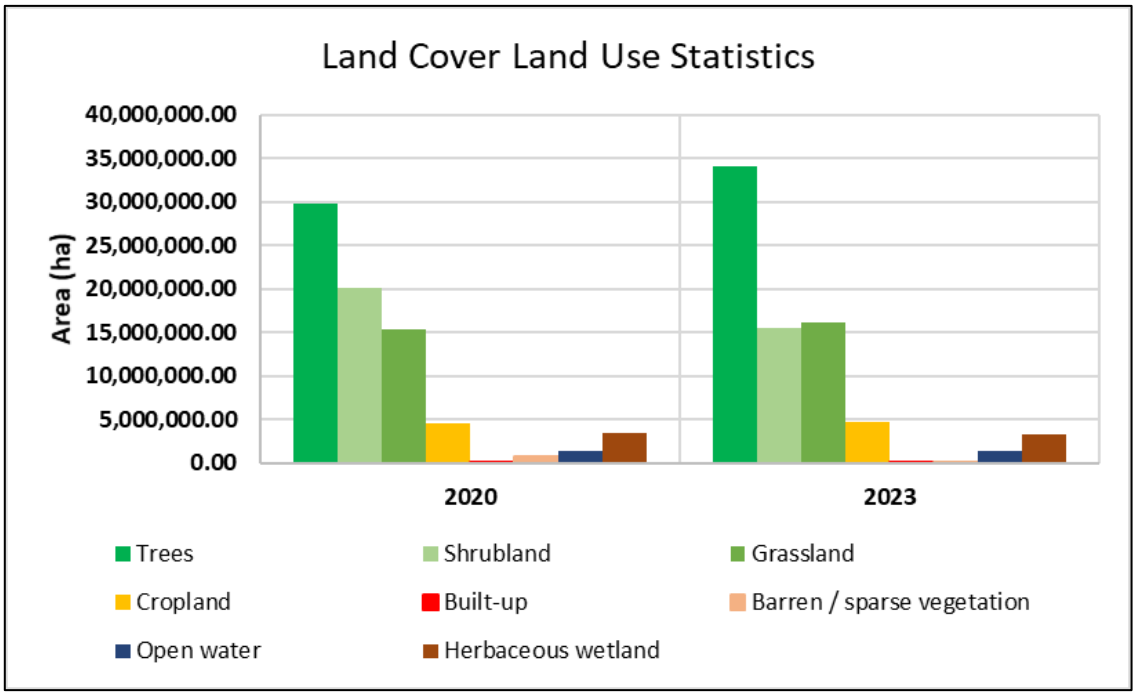

Figure 5: Land Use - Land Cover

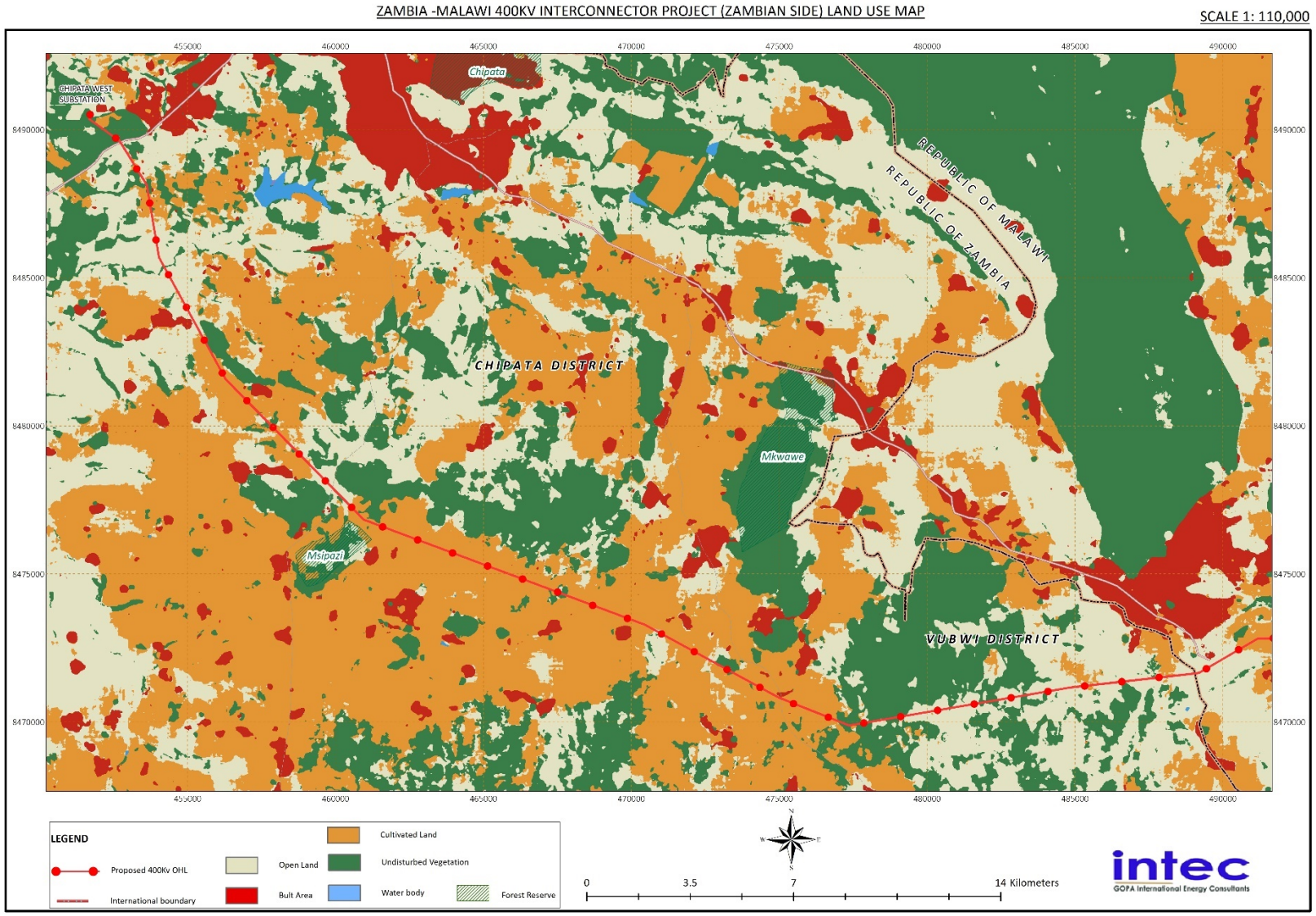

Figure 6: Land use Land Cover map

3.3 Air Quality Monitoring Assessment Locations

As part of the baseline environmental assessment, eleven air quality monitoring points (AQ1–AQ11) were established along the Malawi-Zambia 400 kV interconnector corridor. Sites were strategically positioned to reflect a mix of on-site activities, nearby communities, and environmental features, including schools, rural settlements, and regenerating forest zones. Most locations, such as AQ1 (ZESCO Substation), AQ4 (Chinyauku), and AQ5 (Daula Village), were positioned directly on-site, while others like AQ3 (Kauzu Primary School) and AQ10 (Galamukani) were placed within 40–130 meters of community areas Table 2. This distribution ensured representative data on potential air quality impacts near **sensitive receptors and along the transmission corridor**.

Table 2Description of the sampling Points

Site Code	Description	Coordinates		Distance from Activity	Community Nearby
		Latitude	Longitude		
AQ1	Near ZESCO substation - Chipata West	-13.654374	32.557004	0 m (on-site)	Yes, 471 m on the East side
AQ2	Great East Road (Leeward)	-13.664082	32.563096	0 m (on-site)	No
AQ3	Kauzu Village (near Kauzu Primary)	-13.683094	32.570319	130m	Yes
AQ4	Chinyauku (clustered rural Huts) village settlements	-13.718171	32.585565	0 m (on-site)	Yes
AQ5	Daula Village (Access road)	-13.741106	32.600861	0 m (on-site)	Yes
AQ6	Chadiza road (Cross Point)	-13.769164	32.628706	0 m (on-site)	No
AQ7	Chibwe Village (Scattered rural huts nearby)	-13.811408	32.7204	88 m	Yes
AQ8	Near regenerating Forest Zone and farms	-13.84166	32.78863	0 m (on-site)	Yes
AQ9	Chichele village (Forest and Farms)	-13.820545	32.83565	105 m	No
AQ10	Galamukani village	-13.821777	32.862824	40 m	yes
AQ11	Chikoka Village	-13.823116	32.877842	0 m (on-site)	yes

3.4 Gaseous Pollutants Baseline Observations

Baseline ambient air quality monitoring was conducted between April 3 and 11, 2025, along the 44 km Zambian section of the proposed Malawi-Zambia 400 kV interconnector. Sampling was carried out during two daily periods—morning (08:00–12:00 hrs) and afternoon (13:00–18:00 hrs)—using 15-minute intervals for a minimum of 30 minutes per session at each of the eleven monitoring points (AQ1–AQ11). Key pollutants monitored included **Sulphur Dioxide (SO_2), Nitrogen Dioxide (NO_2), Carbon Monoxide (CO), Formaldehyde (HCHO), and Total Volatile Organic Compounds (TVOC) -** Table 3**.** Across all sites, SO_2 and CO were not detected (ND), while NO_2 values remained well below WHO and ZEMA thresholds, with occasional low-level detections near active community areas. HCHO and TVOC concentrations were present at variable levels but remained within acceptable WHO 8-hour exposure limits. The results indicate normal background air quality conditions across the corridor, with no exceedances recorded during the monitoring period.

3.5 Ambient Gaseous Composition

As part of the baseline air quality monitoring, ambient gaseous composition was measured at various sampling points along the interconnector corridor. The measured oxygen (O_2) concentrations ranged from 20.4% to 21.0%, aligning with typical atmospheric levels. Carbon dioxide (CO_2) concentrations ranged between 0.04% and 0.45% across the sites. These measurements provide supporting background data on the general air composition in the project area - Table 4.

3.6 Particulate Matter and TVOC Baseline

Baseline measurements of Particulate Matter ($PM_{2.5}$ and PM_{10}) and Total Volatile Organic Compounds (TVOC) were collected across all air quality monitoring locations. $PM_{2.5}$ values ranged from 2.1 to 5.7 µg/m³, while PM_{10} ranged from 3.6 to 9.4 µg/m³. TVOC concentrations varied between 0.008 and 0.172 mg/m³ - Table 5. These values were recorded across a range of land cover types, including open areas, community zones, and cultivated sites.

Table 3: Measured values onsite

Monitoring Period	April 3 - 11, 2025															
Time Range	Morning Each Day: 08:00 - 12:00 hrs; Afternoon: 13:00 - 18:00 hrs; Monitoring was conducted in 15-minute intervals for a minimum duration of 30 minutes per session															
Parameters	POLLUTANTS															Remarks
	Sulphur Dioxide			Nitrogen Dioxide (NO_2)			Carbon Monoxide			Formaldehyde (HCHO)			TVOC			
WHO	20 µg/m³ (per 24 hours)			120 µg/m³ (per hour)			30 mg/m³ (per hour)			0.5 mg/m³ (8 hours)			0.5 mg/m³ (8 hours)			
ZEMA	350 µg/m³ (per hour)			400 µg/m³ (per hour)			30 mg/m³ (per hour)									
	Measured average Values															
Time	Morn	Aft	Avg	Morn	Aft	Avg	Morn	Aft	Avg	Morn	Aft	Avg	Morn	Aft	Avg	
Sampling Point																
AQ1	ND	ND	ND	2	ND	1.5	ND	ND	ND	0.011	0.009	0.01	0.058	0.035	0.047	Normal
AQ2	ND	ND	ND	8	3	5.5	ND	ND	ND	0.02	0.009	0.029	0.08	0.038	0.059	Normal
AQ3	ND	ND	ND	ND	3	1.75	ND	ND	ND	0.01	0.016	0.013	0.043	0.063	0.053	Normal
AQ4	ND	ND	ND	8	ND	4.25	ND	ND	ND	0.007	0.008	0.008	0.008	0.033	0.021	Normal
AQ5	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	0.03	0.02	0.032	0.12	0.08	Normal
AQ6	ND	ND	ND	10	ND	5.25	ND	ND	ND	0.008	0.014	0.011	0.035	0.06	0.047	Normal
AQ7	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0073	0.03	0.019	0.03	0.097	0.064	Normal
AQ8	ND	ND	ND	2.5	4	3.25	ND	ND	ND	0.015	0.01	0.013	0.037	0.056	0.046	Normal
AQ9	ND	ND	ND	18	5.25	11.63	ND	ND	ND	0.015	0.017	0.016	0.06	0.08	0.07	Normal
AQ10	ND	ND	ND	2.3	1.3	1.82	ND	ND	ND	0.014	0.04	0.027	0.056	0.172	0.114	Normal
AQ11	ND	ND	ND	1.5	1.67	1.58	ND	ND	ND	0.013	0.016	0.015	0.053	0.07	0.062	Normal

Table 4: Measured Ambient Levels

Gas	Standard (%)	Measured Ambient Gaseous Composition (%)										
		AQ1	**AQ2**	**AQ3**	**AQ4**	**AQ5**	**AQ6**	**AQ7**	**AQ8**	**AQ9**	**AQ10**	**AQ11**
Oxygen (O_2)	21	20.5	20.7	21	20.8	20.9	20.5	20.5	20.8	20.4	20.5	20.9
Carbon Dioxide CO_2	0.04	0.45	0.2	0.04	0.4	0.1	0.2	0.4	0.04	0.4	0.2	0.04
Humidity		46	58	60	44	49	47	35	42	37	44	38
Draft		0.22	0.064	0.028	0.169	0.084	0.08	0.044	0.02	0.446	0.024	-0.003
wind Direction		NW	SE, NW	NNW	NW	NW	NW	NW	NW	NW	NW	SW
Remarks	O_2 21.0: 20.4 – 21.0 Normal atmospheric range CO_2 ~0.04: 0.04 – 0.45 Slight elevations near settlements											

Table 5: Particulate Matter measured

Monitoring Period		April 3 - 11, 2025							
Time Range		Morning Each Day: 08:00 - 12:00 hrs; Afternoon: 13:00 - 18:00 hrs; Monitoring was conducted in 15-minute intervals for a minimum duration of 30 minutes per session							
Air Quality Standards		PM 2.5 (µg/m3)			PM 10 (µg/m³)			AQI	Remarks
U.S EPA	Good	0 - 15.4			0 -54			0 - 50	
	Moderate	15.5 - 40.4			55 - 154			51 - 100	
	Unhealthy for sensitive Groups	40.5 - 65.4			155 - 254			101 - 150	
	Unhealthy	65.5 - 150.4			255 - 354			151 - 200	
	Very Unhealthy	150.5 - 250.4			355 - 424			201 - 500	
	Hazardous	250.5 - 500.4			425 - 604			301 - 500	
WHO		25			50				
ZEMA		15 (12 months)			70 (24 hours)				
Time		Morning	Afternoon	Average	Morning	Afternoon	Average		
Sampling Points									
AQ1		2.1	5	3.6	3.6	8.5	6.1	13	Normal
AQ2		2.7	2.6	2.7	4.2	4.2	4.2	12	Normal
AQ3		2.6	3.9	3.3	4.3	6.6	5.5	15	Normal
AQ4		5.6	5.7	5.7	9	9.4	9.2	16	Normal
AQ5		3.7	5.2	4.5	6	8.5	7.3	18	Normal
AQ6		3	2.9	3	4.8	4.6	4.7	16	Normal
AQ7		2.6	4	3.3	4.4	7.1	5.6	11.3	Normal
AQ8		2.1	2.9	2.5	3.7	4.5	4.1	15	Normal
AQ9		4.6	4	4.3	7.3	6.6	7	16	Normal
AQ10		4.2	2.9	3.6	6.8	4.9	5.6	17	Normal
AQ11		2.8	3.1	3	5	8.9	7	18	Normal

4. Results and Discussions

The baseline air quality assessment focused on a range of gaseous and particulate pollutants, as well as supporting environmental parameters, to characterise atmospheric conditions along the Malawi-Zambia 400 kV interconnector corridor.

4.1 Particulate Matter ($PM_{2.5}$ and PM_{10})

The concentrations of $PM_{2.5}$ ranged from 2.1 to 5.7 µg/m³, while PM_{10} ranged from 3.6 to 9.4 µg/m³ - Figure 7. All values were well within both WHO (15–45 µg/m³) and ZEMA (15–70 µg/m³) reference limits. However, slightly elevated values were observed at AQ4, AQ5, AQ10, and AQ11, which are situated near community settlements, access roads, cleared vegetation zones, and cultivated areas - Figure 11, indicating localized dust and particulate generation from human and land-use activities. Despite these variations, compliance was maintained across all sites, and no health-risk thresholds were exceeded.

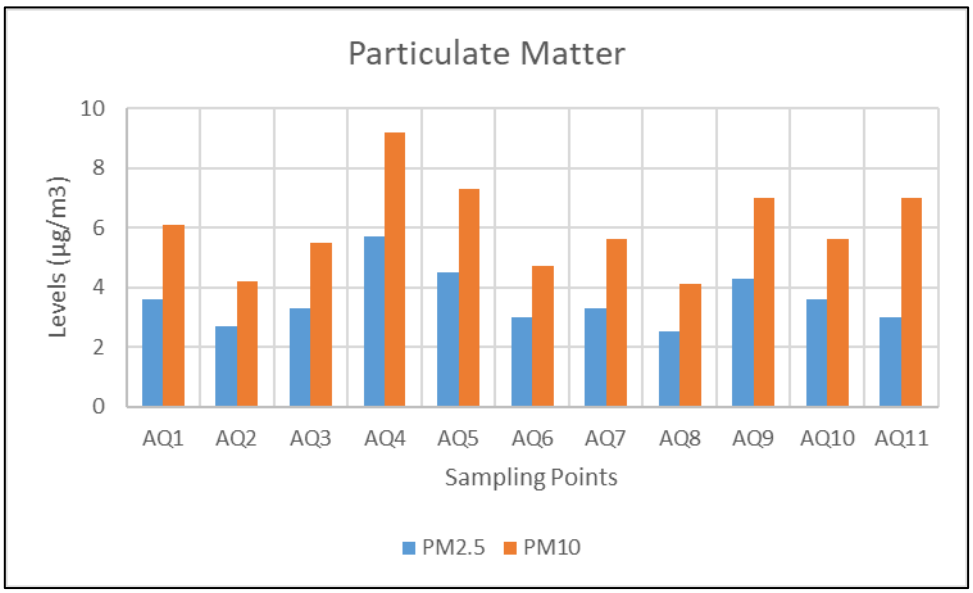

Figure 7: Measured Particulate Matter

4.2 Nitrogen Dioxide (NO_2)

Measured NO_2 concentrations ranged from non-detectable (ND) to 18 µg/m³ - Figure 8, remaining significantly below both the WHO guideline of 120 µg/m³ (1-hour average) and the ZEMA limit of 400 µg/m³. Detectable values were primarily recorded at sites near settlements or traffic routes, suggesting limited but present sources of combustion, such as vehicular activity or domestic burning.

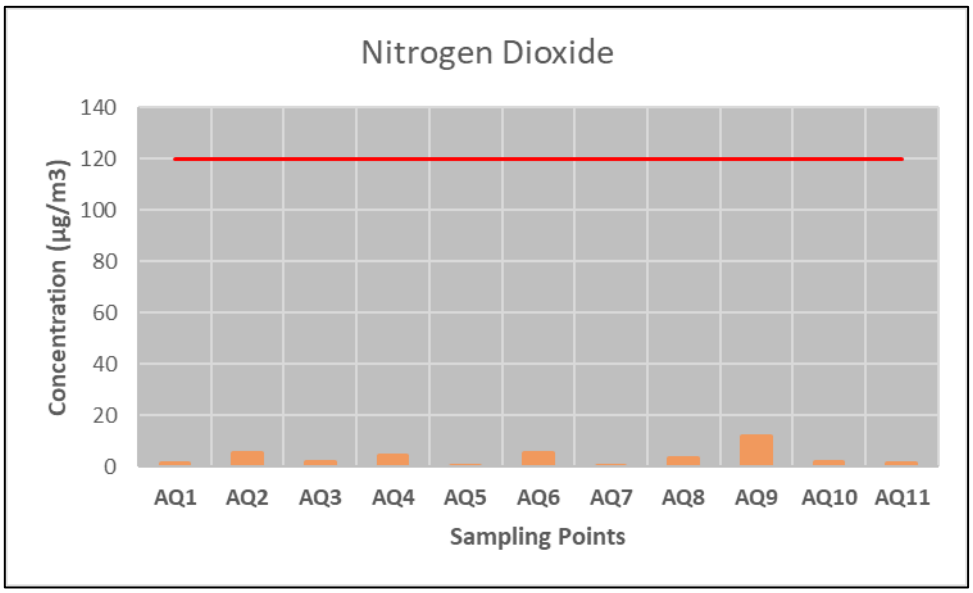

Figure 8: Nitrogen Dioxide measured

4.3 Formaldehyde (HCHO) and Total Volatile Organic Compounds (TVOC)

HCHO levels ranged from 0.007 to 0.04 mg/m³, while TVOC concentrations ranged from 0.008 to 0.172 mg/m³ - Figure 9, with the highest value recorded at AQ10. All readings remained within the WHO reference limit of 0.5 mg/m³ (8-hour exposure), with most sites reporting values below 10% of the allowable threshold. Slightly elevated TVOC levels at some sites may reflect proximity to human activity, fuel use, or vegetation emissions - Figure 10.

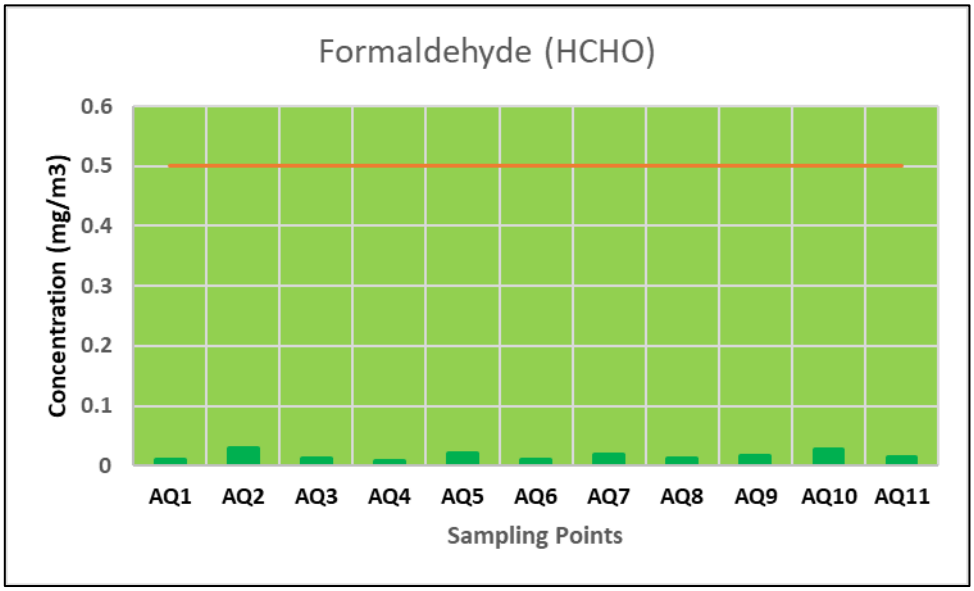

Figure 9: Formaldehyde measured

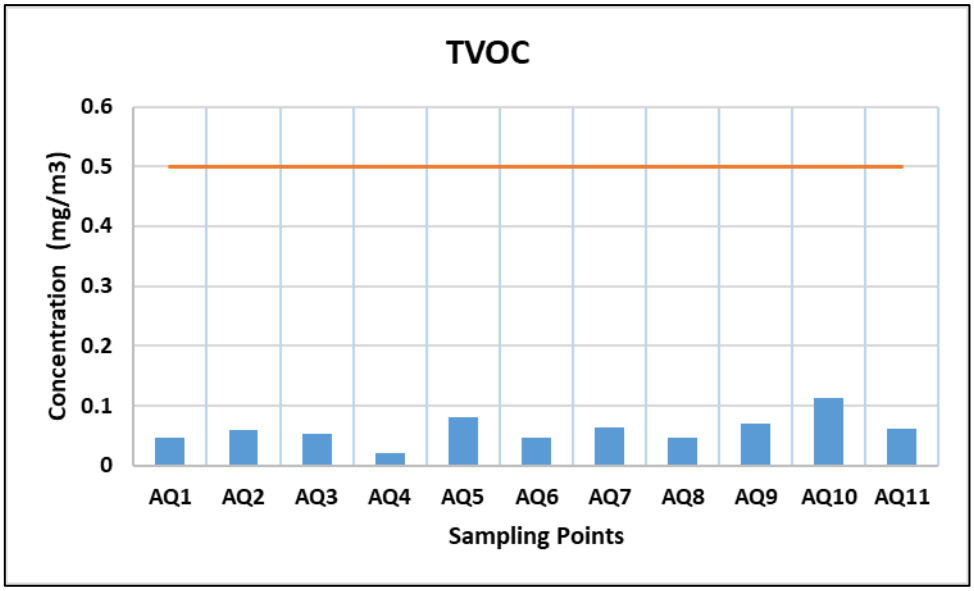

Figure 10: TVOC

4.4 Sulphur Dioxide (SO_2) and Carbon Monoxide (CO)

Both SO_2 and CO were consistently not detected across all monitoring points, suggesting an absence of significant combustion or industrial emissions within the study area at the time of monitoring.

4.5 Ambient Gaseous Composition (Informational)

Measured oxygen (O_2) concentrations ranged from 20.4% to 21.0%, consistent with natural atmospheric levels. Carbon dioxide (CO_2) concentrations ranged from 0.04% to 0.45%, with slightly elevated values near AQ1 and AQ2, likely due to localized vehicular or biological activity. These values remain within acceptable short-term exposure levels and are provided for contextual reference rather than compliance evaluation.

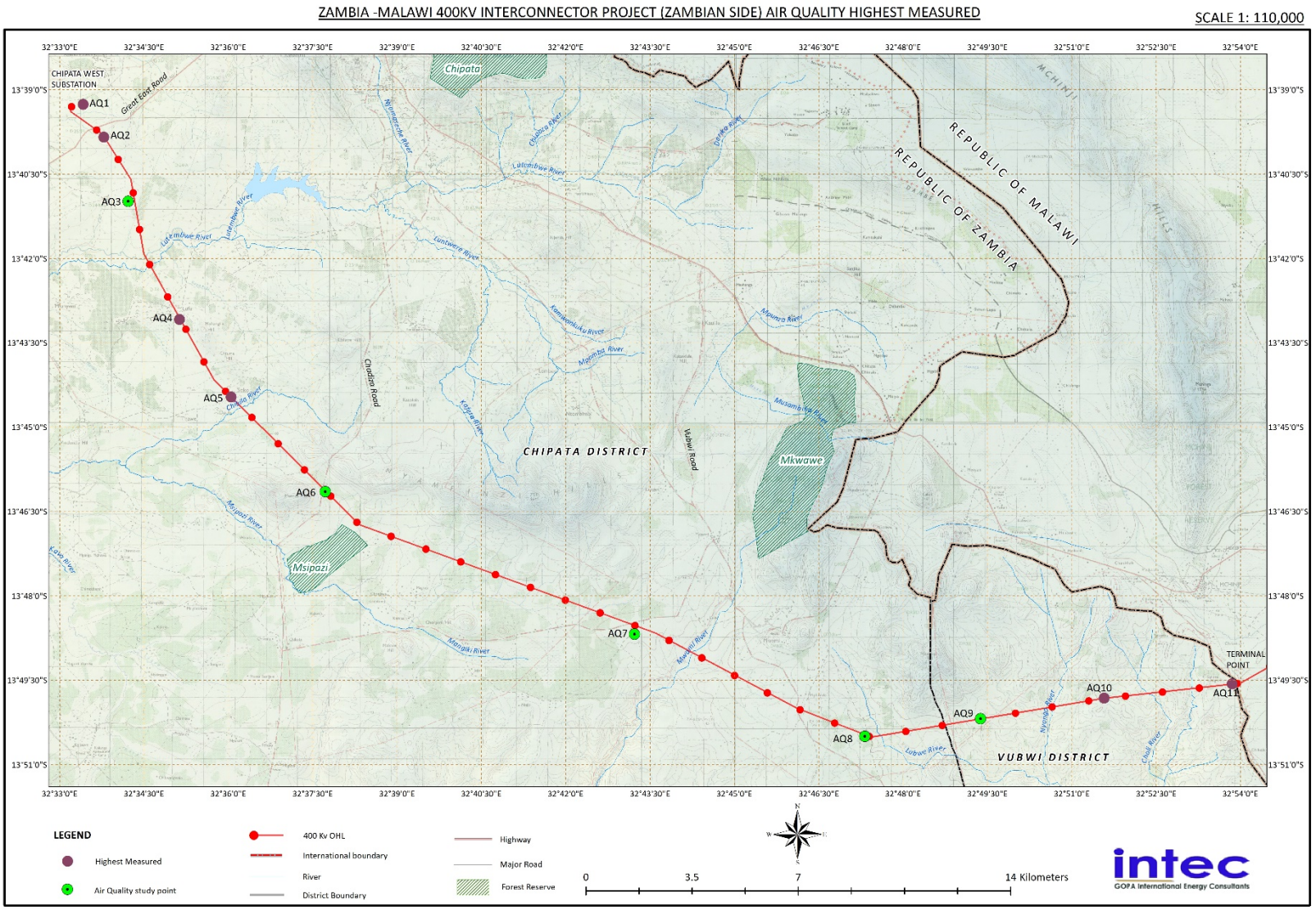

Figure 11: Sampled points with relatively high measured values

4.6 Wind Dispersion Model – Malawi-Zambia 400 kV Interconnector Corridor

A dispersion model was developed using ambient wind and draft data collected from air quality monitoring stations (AQ1–AQ11). The **average wind speed (draft)** across all stations was calculated as approximately **0.12 m/s.** This low average wind speed is typical of early morning and late afternoon conditions in rural Eastern Zambia and suggests limited **natural pollutant dispersion**, reinforcing the importance of localized emissions management during construction.

4.6.1 Wind Rose Interpretation

The wind rose chart below illustrates the frequency and direction of air movement across the monitoring corridor:

- Prevailing wind direction is from the Northwest (NW), observed consistently across most sites.
- A few stations (such as AQ2 and AQ11) showed secondary wind directions such as Southeast (SE) and Southwest (SW).

Most draft speeds fall within the 0.0–0.4 m/s range, confirming light wind conditions with low dispersion potential - Figure 12.

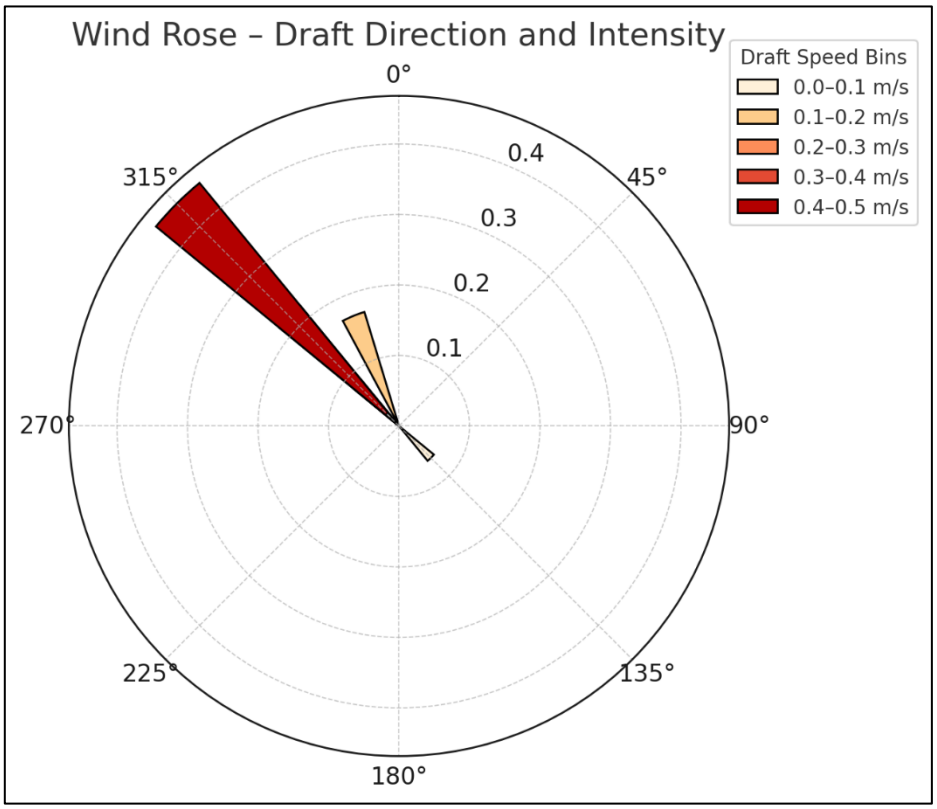

Figure 12: Wind-Rose

4.6.2 Implications

- Pollutants or dust generated during **construction may linger near source areas** under low wind or calm conditions, reducing natural dispersion.
- Mitigation measures, including dust suppression, regulated fuel-burning activities, and equipment maintenance, are critical to reduce localized air quality impacts near communities and sensitive receptors.
- Construction planning should take wind direction into account, particularly during high-emission activities. Given the predominant wind direction is toward the northwest, villages and receptors located northwest of work zones may be downwind and should be prioritised for protective measures such as buffering, activity scheduling, or real-time air quality monitoring.

4.7 Illustrative Gaussian Plume Dispersion Model

The **Gaussian plume model** simulates how a pollutant (such as dust or emissions) might disperse from a point source (such as construction works/equipment or fuel combustion) along the Malawi-Zambia 400 kV interconnector corridor under the assessed conditions onsite - Figure 13.

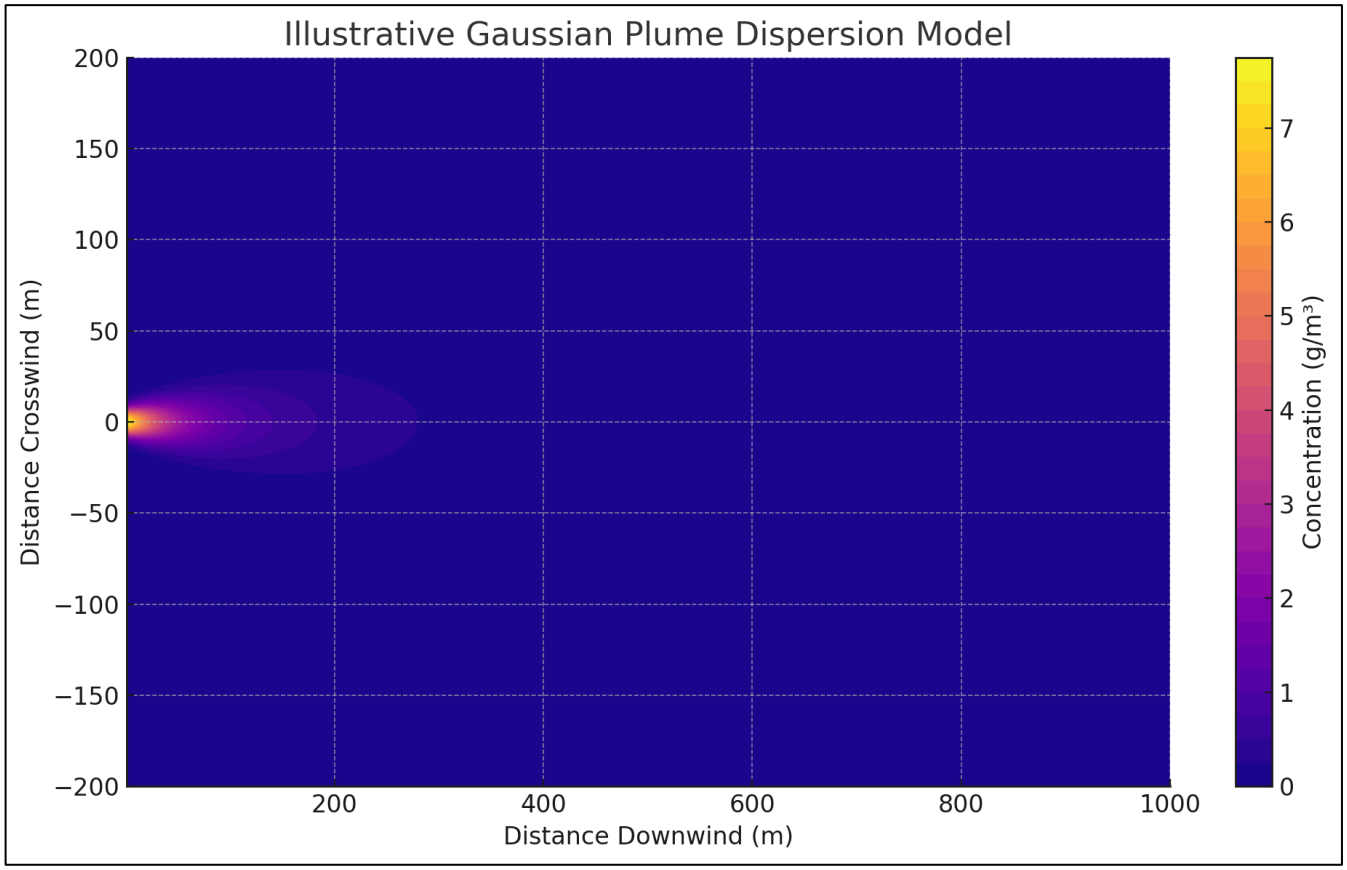

Figure 13: Gaussian Model

4.7.1 Interpretation

This model illustrates that under the assessed prevailing conditions onsite (with the site average of ~0.12 m/s), emissions may accumulate near the source and travel farther downwind before dissipating. This highlights the need for:

- Emissions control near sensitive receptors
- Proper placement of high-emission activities
- Use of buffer zones downwind of construction zones (such as to the NW).

With considerations of the low wind speeds, the concentration decreases slowly, meaning pollutants may remain concentrated within the first 200–300 meters, especially under calm and stable conditions — unless stronger winds or mixing occur.

The model confirms that **dispersion under low wind speed onsite is poor**, and pollutants **would not spread far**; instead, they would remain **concentrated close to the emission points.**

5. Air Quality Summary

Baseline ambient air quality monitoring was conducted from April 3–11, 2025, along the 44 km Zambian stretch of the proposed Malawi-Zambia 400 kV interconnector. A total of eleven monitoring locations (AQ1–AQ11) were assessed during morning and afternoon periods, using 15-minute intervals for a minimum of 30 minutes per session.

The assessment focused on key pollutants including Particulate Matter ($PM_{2.5}$ and PM_{10}), Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Carbon Monoxide (CO), Formaldehyde (HCHO), and Total Volatile Organic Compounds (TVOC), alongside ambient O_2 and CO_2 levels for contextual understanding.

All monitored values for PM, NO_2, HCHO, and TVOC were within ZEMA and WHO guideline limits, indicating compliance across all sites. SO_2 and CO were not detected, suggesting minimal combustion-related emissions during the monitoring period. Slightly elevated PM and TVOC levels were observed at select sites (AQ4, AQ5, AQ10, and AQ11), located near settlements, farmland, or cleared vegetation, though still within safe exposure thresholds. Measured CO_2 concentrations peaked at 0.45% in a few locations (such us, AQ1 and AQ2), reflecting localized activity but remaining within normal short-term atmospheric ranges.

Overall, the findings confirm that baseline air quality along the corridor is within acceptable environmental and health standards, with no exceedances detected. These results provide a reliable reference for future impact assessments and construction-phase monitoring.

6. Noise Baseline Assessment

6.1 Baseline Overview

Noise monitoring was conducted at selected locations along the 44 km Zambian section of the Malawi-Zambia 400 kV Interconnector corridor to establish baseline ambient sound levels prior to construction. All measurements were taken during daytime hours, in accordance with the ZEMA environmental noise guideline, which sets a maximum allowable limit of 85 dB(A).

The following key acoustic metrics were recorded at each monitoring point:

- Minimum dB(A): Represents the lowest recorded sound level, indicating background quiet periods in the area.
- Maximum dB(A): Captures the highest sustained sound level during the monitoring period.
- Peak dBC: Identifies short-term, high-frequency noise spikes, typically caused by passing vehicles, machinery, or other transient sources.

These baseline measurements provide a reference for evaluating any future noise impacts associated with project construction and help identify potential noise-sensitive areas along the corridor.

6.1.1 Noise Pollution Assessment

6.1.1.1 Approach

Noise levels were recorded using short-term measurements (15–60 minutes), three times daily at 06:00, 12:00, and 18:00 hrs, in accordance with WHO environmental noise guidelines.

6.1.1.2 Instrument used

A **digital sound level meter** was the primary instrument used onsite to measure ambient noise levels in decibels (dB), capturing both average (LAeq) and peak (Lmax and dBC) sound values during baseline assessments.

6.1.1.3 Site Selection

Noise monitoring locations were selected similar to the Air Quality monitoring points and in addition to capture - Figure 14:

- Exposure at noise-generating sources.
- Impact on sensitive receptors such as residential areas, schools, and health facilities.
- Quiet baseline zones for comparative analysis.
- Topographic and vegetative influences on noise propagation.

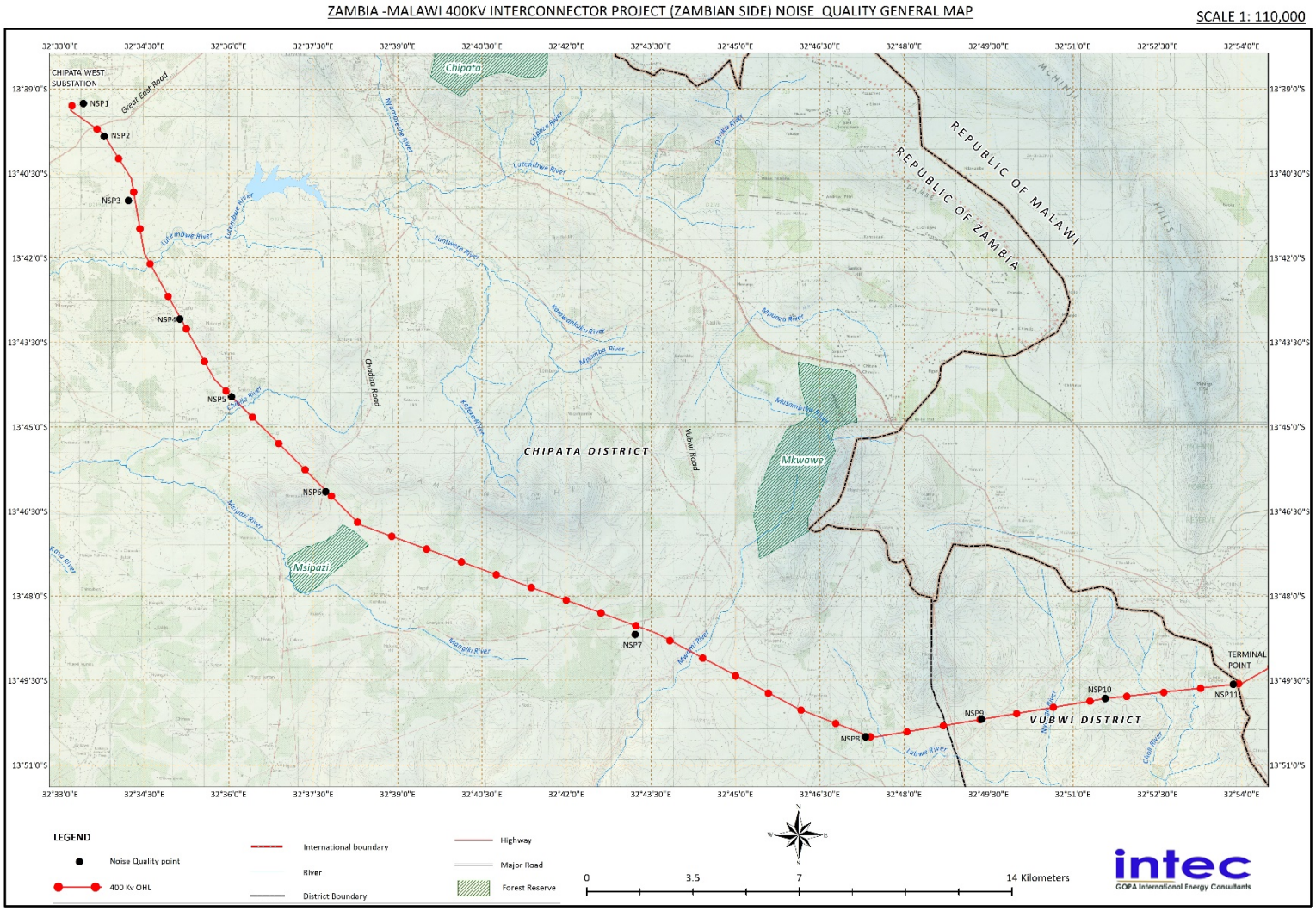

Figure 14: Noise Sampling Points

6.1.1.4 Safety Measures

- No night monitoring in remote areas.
- Equipment was safeguarded during field sessions.
- Schedules were structured to prevent fatigue and ensure data integrity.

6.1.1.5 Standards Used

In the absence of ZEMA-specific limits, assessments followed WHO noise exposure guidelines, which provide thresholds for community and occupational settings.

6.2 Results Summary

All average values were under 60 dB(A), indicating quiet to moderately quiet ambient conditions, particularly in rural and forested areas.

Transient noise peaks of up to 97 dB(C) were recorded at NSP2, NSP3, and NSP7, likely associated with passing vehicles, local machinery, or brief human activity - Figure 15 and Table 6. These events were momentary and not continuous.

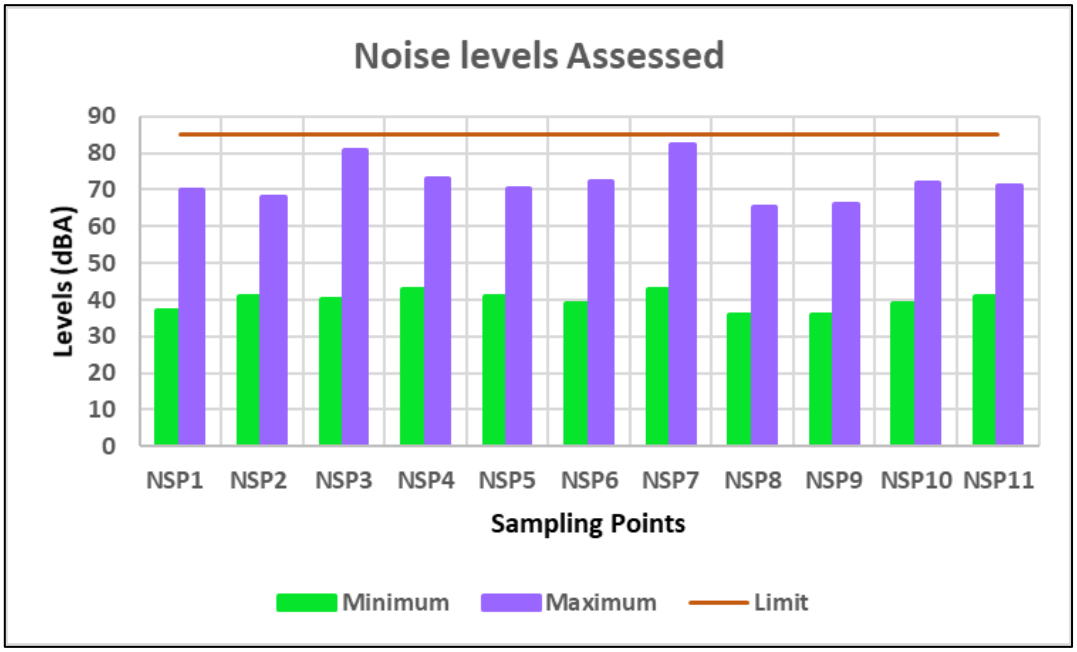

Figure 15: Measured Noise Levels

Table 6: Measured Noise Levels

Noise Level Standard Limits	NOISE							Remarks
	Minimum			Maximum			Average	
Duration	30 minutes			30 minutes			8 hours	
ZEMA	The maximum limit for the reference duration is 85 (dB) A							
	Measured average Values - 15 minutes Intervals							
	Morning	Afternoon	Average	Morning	Afternoon	Average		
NSP1	37	36	37	70.2	70	70	53.2	Within limits, peak 80 dBc background freq
NSP2	41	40.3	41	97	38	68	55	Within limits, peak 83 dBc background freq
NSP3	43.3	37	40.2	97	64.4	81	61	Within limits, peak 89.8 dBc background freq
NSP4	43	42	43	86	60	73	58	Within limits, peak 90.2 dBc background freq
NSP5	45	37.1	41	68.3	72.3	70.3	56	Within limits, peak 90 dBc background freq
NSP6	39	38	39	75.1	69.4	72.3	56	Within limits, peak 85 dBc background freq
NSP7	48	38.2	43	84	80.4	82.2	63	Within limits, peak 97 dBc background freq
NSP8	37	35.1	36	64.5	66.2	65.4	51	Within limits, peak 81 dBc background freq
NSP9	36	35	36	70	61	66	51	Within limits, peak 85 dBc background freq
NSP10	38	39.1	39	63.2	81	72.1	56	Within limits, peak 84 dBc background freq
NSP11	40	42.2	41	68	73	71	56	Within limits, peak 78 dBc background freq

6.3 Noise Monitoring Results and Compliance with IFC Standards

The noise monitoring data presented above were also assessed against the International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines, which specify noise limits for both daytime and nighttime environments:

- Daytime Limit: 55 dB(A) (07:00 – 22:00 hours)
- Nighttime Limit: 45 dB(A) (22:00 – 07:00 hours)

Observations and Compliance:

- The majority of recorded noise levels were within the IFC daytime limit of 55 dB(A) for an 8-hour average, indicating general compliance during regular working hours.
- However, some maximum noise levels exceeded 55 dB(A) during the daytime, with peaks reaching as high as 97 dB(A). This is significantly above the acceptable limit for the daytime period.
- Nighttime noise levels also have the potential to exceed the 45 dB(A) threshold, as indicated by the recorded noise levels during the afternoon and morning periods. This suggests that without adequate noise control measures, noise levels during nighttime could surpass acceptable limits, posing a risk of noise pollution in sensitive nighttime periods.
- Despite this potential, it is important to note that most, if not all, project activities will be limited to daytime hours. As a result, the potential impact of elevated noise levels during nighttime is expected to be minimal.
- Peak values (dBc) were recorded but remained within safe exposure limits, indicating that while average values are concerning, extreme peaks are not consistently hazardous.

6.4 Discussion of Results

The noise baseline assessment reveals that the Malawi-Zambia 400 kV interconnector corridor currently experiences low background noise levels, with minimum recorded sound levels ranging from 36 to 43 dB(A) across the monitoring points. These values are consistent with conditions typical of rural and peri-urban environments, where natural sounds and limited human activity dominate. All measurements remained well below the ZEMA daytime guideline of 85 dB(A) and complied with IFC general environmental noise standards.

While the general noise environment is quiet, transient noise peaks were recorded at a few sites, with maximum A-weighted levels reaching up to 97 dB(A) at NSP7, and similar peaks observed at NSP2 and NSP3 - Figure 16. Corresponding peak dBC values—used to capture short bursts of low-frequency, high-intensity sound—also registered up to 97 dBC. These brief spikes were attributed to passing vehicles, livestock activity, and music from nearby bars or communal events, particularly

in areas near settlements.

Despite these momentary increases, such events were not sustained and occurred intermittently, with average ambient levels remaining below 60 dB(A) across all sites. This indicates that communities along the corridor are not exposed to prolonged elevated noise levels under current conditions.

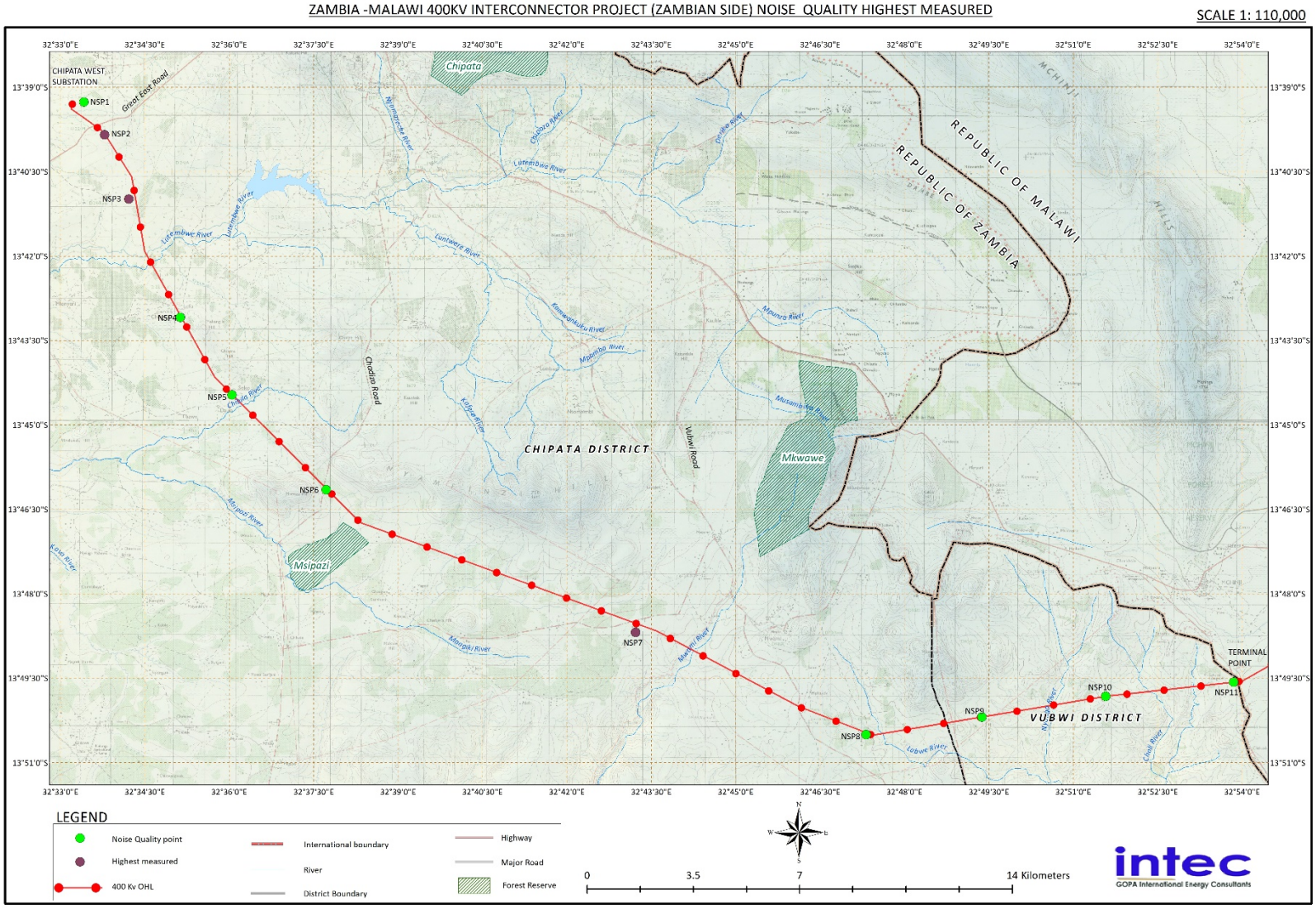

Figure 16: Measured Points with relative high levels

6.5 Modeled Noise Levels Including Transmission Tower Construction Activities

To estimate potential noise impacts during the construction phase of the Malawi-Zambia 400 kV Interconnector, predictive modeling was carried out using existing baseline noise levels and assumptions based on typical tower construction activities. Predicted construction noise peaks (illustrated in red) account for an estimated increase of 2–10 dBA at selected high-impact sites - Figure 17: Modelled or Projected Noise Levels with construction. These projections are informed by common sources such as drilling, piling, concrete mixing, and generator use, which are expected to introduce intermittent high-frequency sounds during peak construction periods.

This modeled data provides a forward-looking scenario to support proactive planning and targeted mitigation where sensitive receptors are located near construction zones.

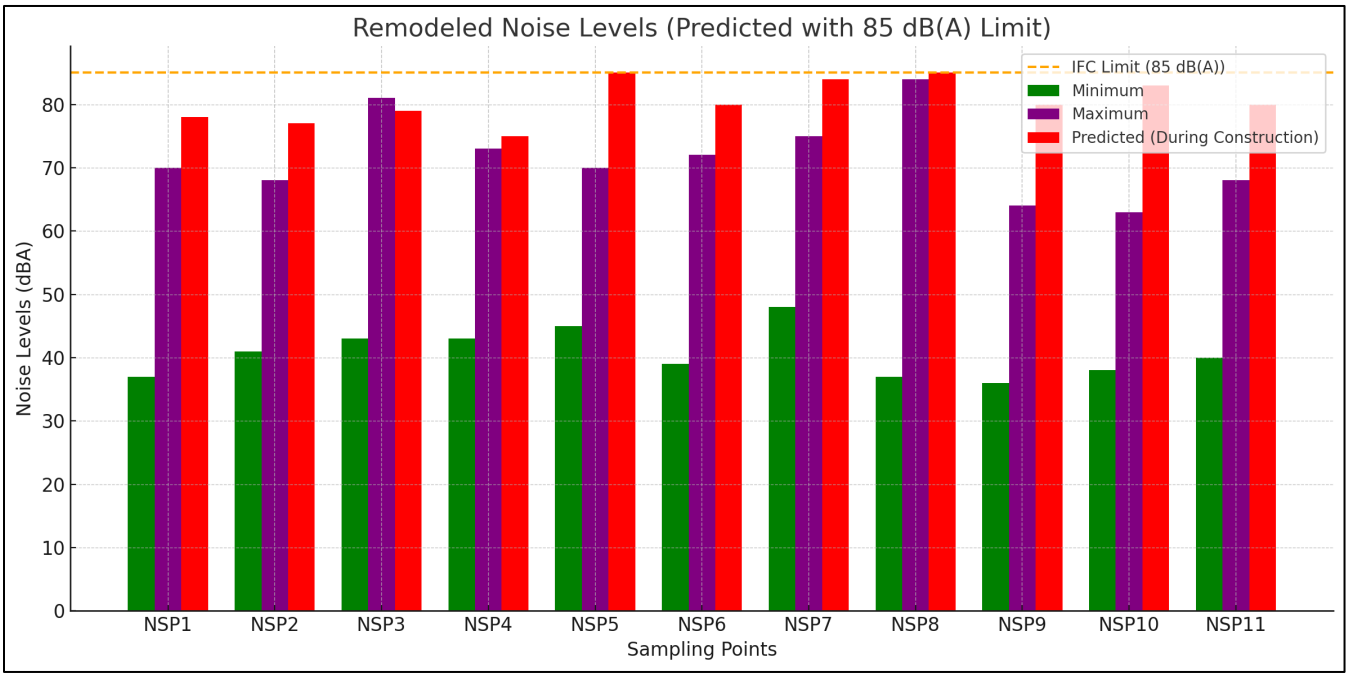

Figure 17: Modelled or Projected Noise Levels with construction

6.6 Illustrative Noise Dispersion – Transmission Tower Construction

The visual illustration above depicts a conceptual model of noise dispersion from transmission tower construction activities. It demonstrates how sound levels decrease with distance from the source, forming concentric zones of high (orange), moderate (purple), and low (blue) intensity. The scale at the bottom shows that construction-related noise may extend up to 500 meters, with the most significant impacts occurring within the first 100–300 meters - Figure 18: site illustrative Noise dispersion.

This visual aligns with the modeled noise data, which showed that predicted construction noise levels could increase by 2–10 dBA at several sampling points. In particular, sites such as NSP3, NSP7,

and NSP10 may temporarily exceed ZEMA's 85 dBA daytime limit due to equipment such as drills, concrete mixers, and excavators.

The image reinforces the importance of establishing buffer zones, implementing timely construction scheduling, and placing mitigation measures near sensitive receptors such as schools, homes, and community centers within the impact radius.

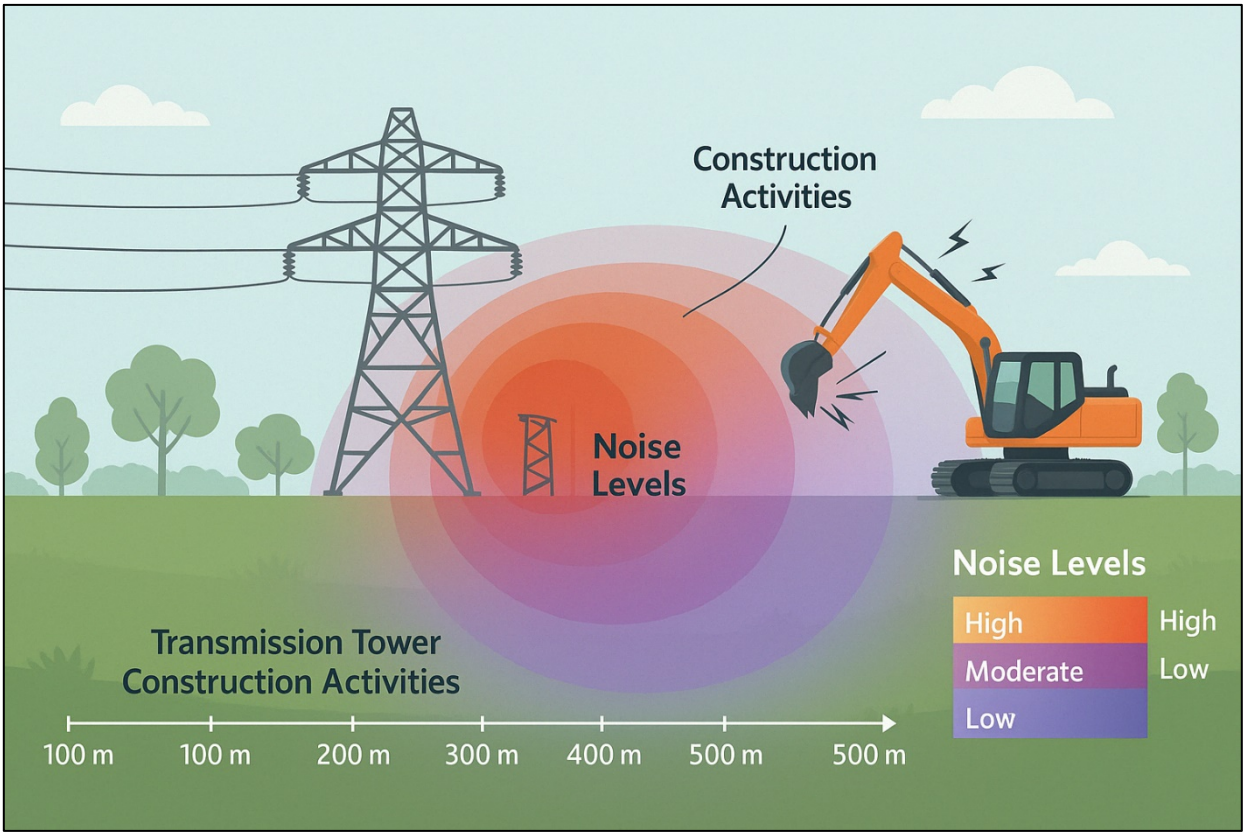

Figure 18: site illustrative Noise dispersion

In summary, the baseline data confirms that the noise environment is low-impact, with only short-duration high-frequency events occurring in isolated areas. This baseline provides a reliable reference for future comparisons and will be instrumental in identifying the need for noise mitigation during construction, especially near sensitive receptors such as schools, and residential areas.

6.5 Conclusion

The baseline noise survey conducted along the 44 km Zambian section of the Malawi-Zambia 400 kV Interconnector Project corridor provides a comprehensive understanding of the existing acoustic environment within the project's area of influence. The assessment has determined that the ambient noise levels across surveyed points fall within acceptable thresholds set by both the Zambia Environmental Management Agency (ZEMA) and the International Finance Corporation (IFC) Performance Standards.

Measured minimum background noise levels ranged between 36 dB(A) and 43 dB(A), indicating a predominantly quiet, rural acoustic profile typical of undeveloped or low-density residential areas. These values are significantly below the IFC and ZEMA daytime limit of 85 dB(A), demonstrating that the pre-project sound environment is minimally affected by sustained anthropogenic noise sources.

However, short-duration peak levels of up to 97 dB(A) and 97 dBC were recorded at selected monitoring sites (notably NSP2, NSP3, and NSP7). These spikes were observed to be transient in nature and primarily associated with localised community activities, including passing vehicular traffic, domestic animal movement, and intermittent music or public announcements from nearby establishments or gatherings. Such fluctuations are not indicative of chronic noise pollution but rather reflect episodic disturbances common in rural settings.

The data collected during this baseline study is vital for future comparison, especially during the construction and operational phases of the transmission line. By establishing a clear understanding of the natural acoustic environment prior to project implementation, the survey enables the identification of any significant deviations from baseline conditions, thereby informing adaptive noise management strategies and ensuring compliance with applicable environmental and social safeguards.

In summary, the current noise environment along the project corridor is largely undisturbed, and the observed acoustic conditions provide a suitable baseline against which future noise impacts—if any—can be measured and managed effectively.

6.6 Mitigation measures / Recommendations

To preserve the current low-noise environment and minimize potential impacts during construction, the following recommendations are made:

1. Implement Noise Control Measures:

- Limit high-noise activities (Such as piling, heavy machinery use) to daytime hours and avoid proximity to schools, clinics, and residential zones.
- Use well-maintained equipment and install mufflers or silencers on machinery where feasible.

2. Establish Buffer Zones:

- Maintain safe operational distances between high-noise sources and sensitive receptors, particularly near areas identified with previous peaks (e.g., NSP2–NSP3, NSP7).

3. Monitor Construction Noise:

• Conduct periodic noise monitoring during construction at baseline locations to detect exceedances and implement corrective actions if needed.

4. Community Communication:

• Inform nearby communities of planned noisy activities, provide grievance channels, and ensure disturbances are minimized during rest or school hours.

5. Worker Protection:

• Equip construction personnel working in high-noise areas with appropriate hearing protection and enforce occupational safety protocols.

Appendix: Photos

Air Quality and Noise measurements being conducted at Chadiza road cross point

Air Quality and Noise measurements being conducted at Kauzu Village near the school (lt) and Near Great East Road (rt)

Air Quality and Noise measurements being conducted Near Great road (lt) and Substation (rt)

Air Quality Instruments being used onsite

Air Quality Readings onsite Particulate matter meter(lt) and Gas meter (rt) and behind

Air Quality measurements being taken

Appendix : Calibration information

Calibration Certificate

Calibration Certficate Number: ENV-160824-MPC20-210722409

Date of Issue: 16-08-2024

Date of Calibration: 16 August 2024

Instrument Calibrated: PCE-MPC 20 (Particulate Counter)

Instrument Serial No.: 210722409

Audit Results — Zero Calibration

PARAMETER	Zero Prior Adjustment	Calibrated Value
2.5um	105	0.00
10wm	65	0.00

Audit Results — Span Measure Calibration

PARAMETER	Measure Prior Adjustment	Target Value	Calibrated Values
2.5um	33	20	20
IOum	127	100	103

Environmental Data

Initial Temperature / 18.8°C	Final Temperature /23.2° C
Initial Pressure / mmHg 845	Final Pressure / mmHg 845
Initial Humidity / 30%	Final Humidity / 33%

The values in this certificate are correct at the time of calibration. Subsequently, the accuracy of the instrument will depend on such factors as the care executed in handling and use of the instrument, and the frequency of use. Re-calibration should be scheduled annually to ensure that the instrument's accuracy remains within the desired limits. The above instrument has been serviced and verified as per the manufacturers operation manual and operation procedure.

Next Calibration Due Date: 15 August 2025

Verified and Approved:

Dillan Bannister

Workshop Manager

envirocon instrumentation
environmental and occupational hygiene instruments Pty Ltd
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CALIBRATION CERTIFICATE

Customer: Wasambo Enterprises

Instrument Serial Number: M02A020559703

Product Name: QRAE 3

Calibration Date: 23 October 2024

Reference Number: 2024-073802

CALIBRATION GASES

Gas Standard Mixed Gases Disposable Cylinder	Cylinder#	Lot/ Certificate/ Cylinder#
Carbon Monoxide	50ppm	100SG210511AF
LEL	50%	
Oxygen	18%	
Sulphur Dioxide	5ppm	100SG220627AF

TEST RESULT

Sensors	CO (ppm)	LEL (%)	O2 (%)	SO2 (ppm)
Zero Gas	0	0	0	0
Span Gas	50	50	18	5

This instrument has been calibrated using valid calibration gases and Instrument manual operation procedures.

T. Mashile

Approved by

CERTIFICATE OF CALIBRATION

ISSUED BY **Cirrus Research plc**

DATE OF ISSUE 22 January 2024 CERTIFICATE NUMBER **164771**

Cirrus Research plc
Acoustic House
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United Kingdom

Approved signatory
R.Woodall
Electronically signed:

R.Woodall

Sound Level Meter : IEC 61672-3:2006

Instrument information

Manufacturer:	Cirrus Research plc
Model:	CR:831C
Serial number:	D22867FF
Class:	1
Firmware version:	04.01

Notes:

Test summary

Date of calibration: 22 January 2024

The calibration was performed respecting the requirements of ISO/IEC 17025:2017.
Periodic tests were performed in accordance with procedures from IEC 61672-3:2006.

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2002 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002 and because the periodic tests of IEC 61672-3:2006 cover only a limited subset of the specifications in IEC 61672-1:2002.

Notes

This certificate provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results within this certificate relate only to the items calibrated. The reported expanded uncertainty is based on a

Ecological Survey Report

ZAMBIA

FEB 2025

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

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Executive Summary

Overview of the Ecological Survey Objectives and Scope

The ecological survey for the Malawi-Zambia 400kV Interconnector Project was conducted to assess biodiversity along the proposed transmission corridor, characterize species composition across multiple taxa, and establish a comprehensive baseline for environmental conditions. The study covered five survey plots, strategically positioned along the 44 km Zambian section of the transmission line at approximately 4.5 km intervals, with slight adjustments to Plot 5 due to accessibility constraints. These plots were selected to capture variations in vegetation structure, land-use patterns, and species distribution across the corridor.

Objectives of the Ecological Assessment

The key objectives of the ecological survey were to:

- Characterize species composition, diversity, and habitat conditions across various taxa, including trees, grasses, birds, insects, mammals, reptiles, and amphibians.
- Assess habitat structure and evaluate the extent of natural and modified environments along the transmission corridor.
- Identify species of conservation significance, ensuring alignment with IUCN Global Conservation Status and Zambian National Protection Regulations for flora and fauna.
- Analyze ecological interactions among species, their habitat preferences, and potential factors influencing biodiversity patterns.
- Establish a robust baseline dataset for future monitoring and environmental management.

The study employed a multi-disciplinary approach, integrating field surveys, spatial mapping, and community-based biodiversity assessments. Internationally recognized ecological methodologies were applied to ensure data reliability and scientific accuracy.

Summary of Key Findings Across Biodiversity Groups

Vegetation and Habitat Conditions

The total surveyed area covered 466.33 hectares, categorized as:

- 241.57 hectares (51.8%) comprising cleared or modified land, largely influenced by human activities such as agriculture, settlements, and infrastructure development.

- 224.76 hectares (48.2%) consisting of disturbed yet ecologically functional vegetation, supporting various flora and fauna.

Tree species were dominated by *Brachystegia boehmii, Julbernardia paniculata*, and *Uapaca kirkiana*, characteristic of Miombo woodlands. Tree density varied across plots, ranging from 351.1 to 502.2 trees per hectare, reflecting variations in vegetation structure and disturbance levels.

The tree biodiversity index for the surveyed area was 0.9336, indicating a well-distributed yet moderately diverse woodland ecosystem.

Grassland Composition and Diversity

Grass species exhibited moderate-to-high diversity, with dominant taxa including:

- *Aristida stitata*
- *Hyparrhenia hirta*
- *Eragrostis lehmanniana*

Grass biodiversity indices ranged from 0.6115 to 0.8118, showing spatial variation in species richness across the surveyed plots.

Bird Diversity and Observations

A total of 324 birds from diverse taxonomic groups were recorded. Key observations include:

- Sparrows, waxbills, doves, and storks were among the most frequently recorded species.
- The overall bird biodiversity index was 0.9230, suggesting high species evenness and distribution.
- Abdim's Stork *(Ciconia abdimii),* a migratory species listed as Least Concern (LC) under the IUCN Red List, was recorded in Plots 3 and 4, highlighting the importance of the area as a potential stopover site.

Insect Populations and Diversity

The survey identified 227 insect species, with key groups including:

- Ants (Harvester Ant, Argentine Ant, Sugar Ant)
- Termites
- Beetles

The insect biodiversity index was 0.9098, indicating relatively high species diversity. Notably, the presence of pollinators such as butterflies, sweat bees, and mantids underscores the ecological importance of grassland and woodland habitats.

Wildlife and Community Insights

Mammal, reptile, and amphibian observations were limited, though community interviews confirmed the presence of:

- Small antelopes, rodents, and hares
- Predatory mammals such as hyaenas
- Monitor lizards and tortoises

Reptile diversity was low, with only nine individuals recorded across all five plots. Amphibian presence was also minimal, with Bocage's Burrowing Tree Frog identified in Plot 4.

Conservation Significance of Identified Species

The screening of recorded species against IUCN Global Conservation Status and Zambian National Protection Regulations revealed:

- Most mammals, birds, and reptiles observed were common species, with no records of highly threatened or endemic taxa.
- Abdim's Stork *(Ciconia abdimii)* was the only migratory bird identified, reinforcing the need for habitat preservation in stopover zones.
- *Pericopsis angolensis* (Near Threatened, IUCN) was the only tree species of conservation concern identified in the study.
- The Pancake Tortoise *(Malacochersus tornieri)* was classified as Vulnerable (IUCN) and legally protected under Zambian law, emphasizing its conservation significance.

The ecological survey for the Malawi-Zambia 400kV Interconnector Project provides a comprehensive baseline assessment of biodiversity along the transmission corridor. The findings highlight moderate species diversity, with variations in species richness influenced by habitat structure, land-use patterns, and human disturbance. While no endemic or highly threatened species were recorded, the presence of species protected under Zambian law and globally classified as Near Threatened or Vulnerable underscores the ecological importance of maintaining habitat integrity.

The data collected in this survey will serve as a critical reference point for future environmental monitoring and biodiversity conservation planning.

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Acronyms and Abbreviations

CBD	Convention on Biological Diversity
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act
EP	Equator Principles
EIA	Environmental Impact Assessment
ESCOM GRZ	Electricity Supply Corporation of Malawi Government of the Republic of Zambia
HIV/AIDS	Human Immuno Virus/Acquired Immuno Deficiency Syndrome
HSE	Health Safety and Environment
IBA	Important Bird Area
IFC	International Finance Corporation
WARMA	Water Resource Management Authority
SAPP	Southern African Power Pool
SHE	Safety Health and Environment
SI	Statutory Instrument
ToR	Terms of Reference

ZEMA	Zambia Environmental Management Agency
ZESCO	Zambia Electricity Supply Corporation

1. Introduction

1.1 Background of the Project

The Malawi-Zambia 400kV Interconnector Project is a regional power transmission initiative jointly undertaken by ZESCO Limited of Zambia and ESCOM of Malawi. The project aims to strengthen energy cooperation, enhance regional electricity trade, and improve the reliability of power supply within the Southern African Power Pool (SAPP). This initiative aligns with regional energy policies aimed at fostering economic growth and sustainability through improved energy infrastructure.

The interconnection project involves the construction of a 400kV high-voltage transmission line that will link the Chipata West 330/132 kV Substation in Zambia with the Nkhoma 400/132 kV Substation in Malawi, covering an approximate distance of 188 kilometers. Of this, 144 kilometers of the transmission line will be located in Malawi, while 44 kilometers will traverse Zambia through Chipata and Vubwi Districts.

This project is being implemented under an Inter-Governmental Memorandum of Understanding (IGMoU) signed between the Governments of Zambia and Malawi, which provides the legal and policy framework for cross-border electricity trade. Additionally, an Inter-Utility Memorandum of Understanding (IUMoU) was signed between ZESCO and ESCOM, facilitating technical coordination and operational alignment between the two national power utilities.

As part of the Environmental and Social Impact Assessment (ESIA) process, this Ecological Survey Report has been prepared to document the biodiversity status and potential ecological impacts along the proposed transmission line corridor, particularly focusing on the Zambian segment of the project.

1.2 Justification for the Ecological Survey

The ecological integrity of the project area is crucial to biodiversity conservation and sustainable development. Given that the transmission line traverses Miombo woodlands, agricultural lands, and semi-fragmented ecosystems, the project could potentially impact faunal and floral species along the corridor. Therefore, this ecological survey was conducted to:

- **Assess the biodiversity** across various taxa, including vegetation, mammals, birds, reptiles, amphibians, and insects.
- **Evaluate habitat conditions**, including canopy cover, tree density, and species dominance.

- **Identify key environmental concerns** such as habitat fragmentation, species displacement, and potential threats to biodiversity.
- **Provide scientific** data that informs mitigation strategies and conservation recommendations within the ESIA framework.

This report integrates field observations, biodiversity indices, and local ecological knowledge to ensure a comprehensive evaluation of the environmental conditions.

1.3 Objectives of the Ecological Survey

The **primary objectives** of the ecological survey were:

1.Biodiversity Assessment:

Identify flora and fauna species within the project corridor.

Assess the ecological significance of recorded species.

Quantify species dominance and distribution using Simpson's Biodiversity Index.

2.Habitat Condition and Land Use Evaluation:

Determine the extent of habitat modification caused by land use activities.

Assess the percentage of intact versus degraded ecosystems.

Document evidence of wildlife corridors and human-wildlife interactions.

3.Impact Assessment and Conservation Planning:

Identify potential ecological risks posed by the project.

Propose biodiversity conservation measures and habitat restoration strategies.

Recommend environmental management practices aligned with national and international conservation policies.

1.4 Scope and Limitations

Scope of the Study

This ecological survey covered a 44-kilometer corridor along the Zambian side of the transmission line. The study area was further divided into five (5) survey plots, each measuring 5 km², strategically selected to capture diverse habitat types and species richness.

Key Survey Components:

- **Vegetation assessment** (species composition, canopy cover, tree density).

- **Mammal, bird, reptile, amphibian, and insect diversity surveys**.
- **Habitat integrity assessment**.
- **Application of Simpson's Biodiversity Index** to quantify biodiversity trends.
- **Community-based biodiversity insights** (gathered through structured interviews and questionnaires).

Limitations and Challenges

Despite comprehensive survey efforts, several challenges were encountered:

- **Habitat Loss & Fragmentation**: Some areas had undergone agricultural expansion and deforestation, affecting species presence.
- **Seasonal Variations**: The timing of the survey influenced species detectability, particularly for migratory birds, reptiles, amphibians and certain insect populations.
- **Accessibility Constraints**: Certain sections of the project corridor were difficult to access due to terrain, lack of access roads and land use restrictions.
- **Community Awareness Gaps**: While local insights were valuable, some communities lacked detailed knowledge of less conspicuous species.

2.0 Study Area Description

2.1 Geographic Location and Extent

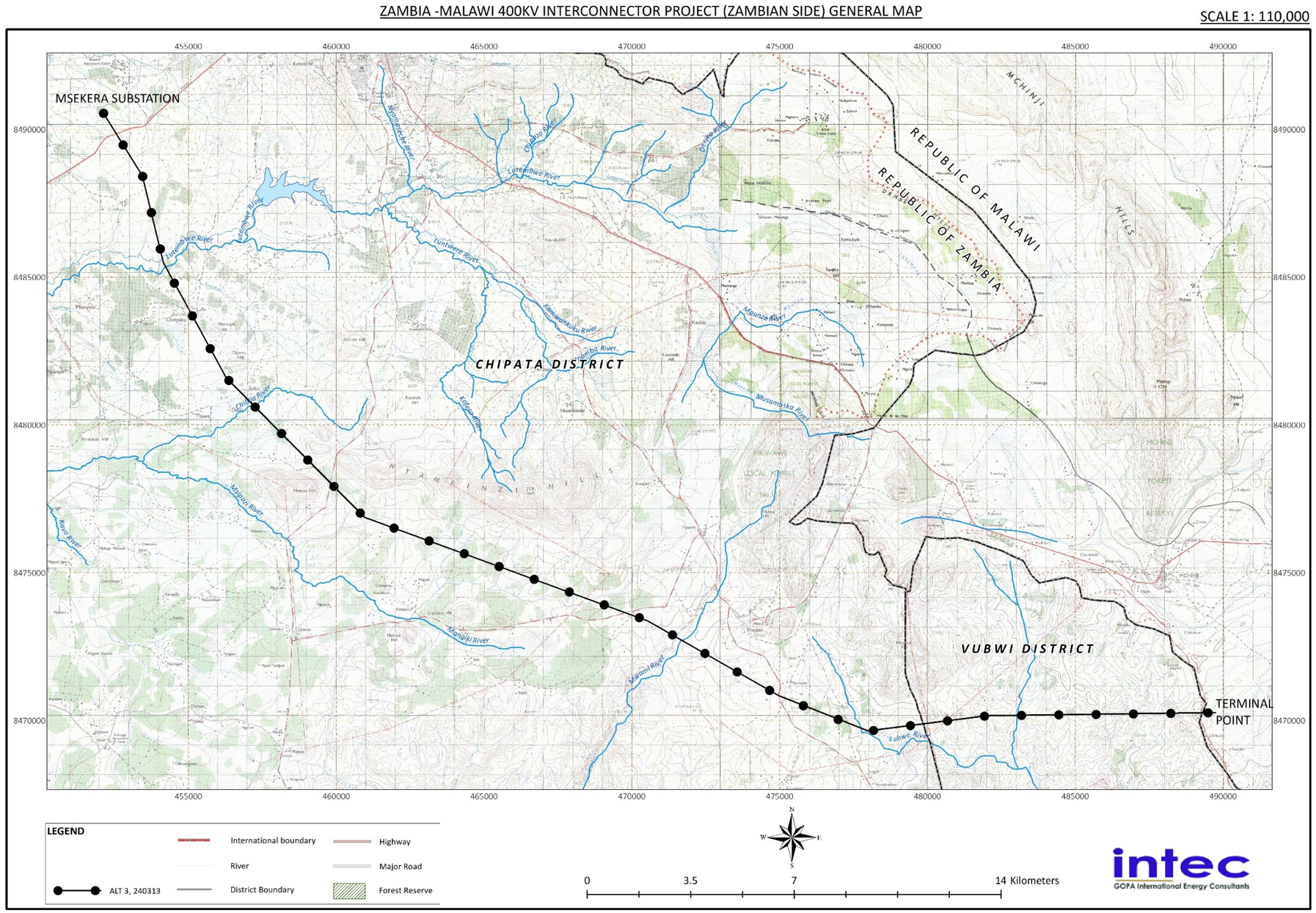


Figure 1: Map Showing the Malawi-Zambia 400kV Transmission Interconnector

The Malawi-Zambia 400kV Transmission Interconnector project area is geographically situated in eastern Zambia, traversing the Chipata and Vubwi Districts. The transmission corridor spans 44 km within Zambian territory, connecting to the larger regional interconnector that extends into Malawi. The coordinates defining the project area range between latitude 13°39'7.626"S to 13°50'50.673"S and longitude 32°33'27.619"E to 32°54'18.967"E.

The study area is predominantly rural, characterized by a mosaic of agricultural lands, miombo woodlands, seasonal watercourses, and scattered settlements. The project corridor intersects various ecologically significant landscapes, requiring careful consideration of environmental impacts on biodiversity, natural habitats, and water resources.

2.2 Habitat Types and Land Use

The study area comprises a mix of natural and anthropogenic landscapes, with the dominant land uses including:

Miombo Woodlands: These woodlands, typical of southern and central Africa, are composed of Brachystegia, Julbernardia, and Isoberlinia species, providing critical ecosystem services such as carbon sequestration, soil stabilization, and habitat for wildlife.

Agricultural Lands: A significant portion of the landscape has been converted into subsistence and small-scale commercial farms, cultivating crops such as maize, groundnuts, tobacco, and vegetables.

Grasslands and Open Savannah: These areas provide grazing land for livestock and serve as important habitats for small mammals, birds, and pollinators.

Wetlands and Seasonal Rivers: The proposed transmission line route intersects a network of small rivers and streams, including the Lutembwe, Chibila, Mwami, and Lubwe rivers. These waterways are predominantly ephemeral, with flow patterns that are highly influenced by seasonal variations. While these small seasonal streams contribute to local water availability, their hydrology remains largely dependent on prevailing rainfall patterns.

Settlements and Infrastructure: Scattered homesteads and small villages dominate the landscape, with basic infrastructure such as unpaved roads, local trading centers, and water collection points.

While the miombo woodlands remain ecologically significant, extensive land clearance for agriculture has led to habitat fragmentation, impacting biodiversity and altering ecological functions.

2.3 Climate and Ecological Characteristics

The Chipata and Vubwi districts experience a Tropical Wet and Dry Climate (Red Cross Climate Centre, 2021), characterized by distinct wet and dry seasons that directly influence ecological patterns and resource availability.

Temperature & Rainfall Patterns

- The average annual temperature is approximately 25.34°C, slightly higher than Zambia's national average.
- The rainy season extends from November to April, with an annual precipitation of approximately 82.6 mm. This period is critical for agriculture and ecological regeneration, replenishing soil moisture and sustaining local biodiversity.
- The dry season (May–October) is marked by low rainfall and high evaporation rates, leading to water stress, vegetation desiccation, and increased fire risks.

Seasonal Ecological Impacts

Wet Season: Enhances habitat productivity, supports insect and amphibian breeding, and stimulates tree growth in miombo woodlands. However, heavy rainfall may cause erosion, sedimentation, and localized flooding.

Dry Season: Leads to water scarcity, increases wildfire risks, and forces wildlife movement toward permanent water sources, making them vulnerable to human-wildlife conflict.

Given these climatic conditions, the project must integrate climate-resilient infrastructure and ecological mitigation strategies to minimize disturbances during sensitive periods.

2.4 Hydrology: Topography, Drainage, and Surface Water

Topographical Features

The Chipata and Vubwi districts are characterized by gently rolling plains, interspersed with low hills and ridges that influence local drainage patterns. The elevation varies gradually, creating a landscape prone to seasonal water fluctuations.

Surface Water and Drainage

The project area contains seasonal streams, which play a critical role in local hydrology. These watercourses support:

- **Agricultural irrigation**
- **Wildlife hydration needs**

- **Micro-habitats for aquatic and semi-aquatic species**

However, these streams are highly seasonal, experiencing significant reductions in flow during the dry season, leading to increased reliance on groundwater resources.

Groundwater Resources

The region's groundwater availability is influenced by rock formations and soil permeability. Many rural communities rely on shallow wells and boreholes for domestic water supply. However, groundwater recharge depends on seasonal precipitation, making it vulnerable to climate variability and extraction pressures.

3. Survey Methodology

3.1 Overview of the Survey Approach

A comprehensive ecological survey was conducted to assess the biodiversity and habitat characteristics along the 44-kilometer transmission corridor of the Malawi-Zambia 400kV Interconnector Project on the Zambian side. This survey was designed to provide a systematic and detailed evaluation of species diversity, distribution, and ecological conditions within the project area.

The primary objectives of this ecological survey were to:

1. **Establish Baseline Biodiversity Data:** By documenting the existing flora and fauna, the survey aimed to create a reference point for future biodiversity monitoring. This data is crucial in detecting changes in species diversity and abundance over time and understanding how the transmission line project may impact biodiversity.
2. **Assess Habitat Integrity and Transformation:** The survey evaluated the condition of natural habitats, the extent of habitat fragmentation, and the influence of human activities such as agriculture, settlement expansion, and deforestation.
3. **Identify Potential Environmental Impacts and Risks:** The study sought to identify vulnerable or threatened species, potential human-wildlife conflicts, and ecological changes resulting from the project.
4. **Inform the Environmental and Social Impact Assessment (ESIA):** The findings of the survey provide scientific evidence to support environmental decision-making, including impact assessments, mitigation planning, and conservation strategies.

5. **Support Sustainable Development and Conservation Planning:** The data collected will be used to recommend environmentally responsible construction practices and biodiversity conservation strategies, ensuring that the project is implemented with minimal ecological disruption.

To achieve these objectives, the survey was designed using a systematic, stratified sampling approach, incorporating transect-based surveys, point count techniques, pitfall trapping, and observational methods tailored to different taxa.

3.2 Survey Design and Sampling Strategy

The survey was conducted using a systematic sampling strategy to ensure that data collection accurately represents the ecological conditions of the 44 km project corridor.

Selection of Survey Plots and Transects

To achieve comprehensive biodiversity coverage, the entire project corridor was divided into five evenly spaced survey plots, each measuring 5 km². These plots were established at approximately 4.5 km intervals along the transmission corridor, except for plot 5 that was moved further along the same habitat due to inaccessibility of the area, to capture variability in vegetation types, land use patterns, and species composition.

Within each 5 km² plot, five transects were randomly established to collect biodiversity data across different habitat types. This approach ensured that both natural miombo woodlands and modified agricultural landscapes were adequately represented.

The strategic placement of these transects allowed for:

- An accurate representation of species diversity and abundance within the project area.
- The inclusion of both disturbed vegetation and cleared land, ensuring a balanced ecological assessment.
- The detection of species distribution patterns, including dominant and rare species.
- The assessment of ecological connectivity, which is crucial for wildlife movement and conservation planning.

By applying this systematic and stratified sampling approach, the study minimized sampling bias, ensuring that the results are statistically robust and ecologically meaningful.

3.3 Equipment and Materials Used

To facilitate effective data collection, a range of scientific tools and field equipment were used. The selection of equipment was specific to each taxonomic group and aimed at maximizing data accuracy and efficiency.

Vegetation Survey Equipment

- **Measuring Tapes & DBH (Diameter at Breast Height) Tapes:** Used to measure **tree diameter, canopy cover, and vegetation density**.
- **GPS Device:** Used to record the precise geographic coordinates of each sampling location.
- **Field Guides and Taxonomic Keys:** Essential for species identification and classification of vegetation types.
- **Quadrat Frames (1m² for herbaceous plants, 30m × 30m for woody vegetation):** Used for **standardized vegetation sampling** and species cover estimation.

Bird Survey Equipment

- **Binoculars:** Essential for long-distance bird identification and monitoring.
- **Field Guides & Mobile Apps:** Used for species identification based on visual and auditory cues.
- **Data Sheets:** Used for recording bird abundance, location, and habitat preferences.

Mammal Survey Equipment

- **Field datasheets and Notebooks & GPS Devices:** Used for recording direct and indirect evidence (tracks, scat, burrows, etc.).

Insect Survey Equipment

- **Pitfall Traps:** Used to capture ground-dwelling insects for population analysis.
- **Field Identification Guides:** Used to classify insect species and their ecological roles.

Reptile & Amphibian Survey Equipment

- **Drift Fences with Pitfall Traps:** Used to trap and monitor reptiles and amphibians and insects in various microhabitats.
- **Bucket Traps & Cover Boards:** Used to attract and record small herpetofauna species.
- **Field Guides & GPS Devices:** Used for identification and mapping species distribution.

3.4 Survey Methods by Taxonomic Group

3.4.1 Vegetation Survey

Vegetation assessments were conducted using a combination of quadrat sampling, species identification, and habitat classification.

Quadrat Sampling:

- Herbaceous vegetation was sampled using **1m² quadrats**, while woody vegetation was sampled using **30m × 30m quadrats**.
- Quadrats were placed every 100 meters along transects to assess species abundance, canopy cover, and tree density.

Species Identification:

- Plant species were identified in the field using taxonomic keys and field guides.
- Difficult-to-identify species were collected as voucher specimens for later verification**.**

Data Collection Parameters:

- **Geographic Coordinates:** Recorded using GPS for mapping species distribution.

3.4.2 Bird Survey

The point count method was employed to assess bird species diversity, abundance, and habitat use.

Observation Methodology:

- Point count stations were placed at systematic intervals along transects.
- At each station, observers conducted 10-minute surveys, recording all bird species seen or heard.

Data Collection Parameters:

- **Geographic Coordinates:** Logged using GPS to track species distribution.
- **Time of Day & Weather Conditions:** Recorded to analyze environmental influences on bird activity.

3.4.3 Insect Survey

Pitfall Trap Sampling:

- Pitfall traps were buried flush with the ground and left for 24 hours.
- Insect specimens were later classified by order and species.

Data Collection Parameters:

- **Microhabitat Characteristics:** Vegetation cover, soil type, were recorded.

3.4.4 Mammal Survey

Direct Observations: Conducted along transects during early morning and late afternoon hours.
Indirect Evidence Collection: Scat, footprints, burrows, and feeding signs were documented.

3.4.5 Reptile & Amphibian Survey

Visual Encounter Surveys (VES): Systematic searches along transects for individuals. Pitfall Traps & Drift Fences: Used to passively capture cryptic species.

3.4.6 Community Biodiversity Survey Methodology

To complement the field biodiversity survey and address gaps in direct observations, a Community Biodiversity Survey was conducted to gather local ecological knowledge on mammal, reptile, and amphibian populations. This approach was necessary due to the limited sightings of these taxa during the field assessment, likely influenced by habitat fragmentation, human settlements, and the cryptic nature of some species.

Survey Design and Implementation

A total of 20 households were interviewed across villages situated within the designated 5 km^2 survey plots along the proposed transmission line route. The survey was structured to assess:

- **Local wildlife presence** and species frequently encountered.
- **Habitats where wildlife is commonly observed** (e.g., rocky outcrops, forest patches, cultivated lands).
- **Threats to biodiversity**, including habitat loss, hunting, and human-wildlife conflicts.
- **Community perceptions on conservation** and willingness to participate in conservation efforts.

Data Collection and Analysis

Structured questionnaires were administered through face-to-face interviews to ensure inclusivity, particularly for respondents with limited literacy. The responses were recorded and analyzed using SPSS statistical software, allowing for quantitative interpretation of species occurrences, threats, and conservation attitudes among the local communities.

By integrating local ecological knowledge with field biodiversity assessments, this survey provided a broader understanding of species distribution and human-wildlife interactions, offering valuable insights for designing effective biodiversity conservation and mitigation measures for the Malawi-Zambia 400kV Interconnector Project.

3.5 Data Analysis and Reporting

Data was processed using Excel spreadsheets, and biodiversity was analyzed using Simpson's Diversity Index:

$$D = 1 - \frac{\sum n(n-1)}{N(N-1)}$$

Where:

D= Diversity Index
n = Number of individuals of a species
N = Total individuals across all species

Interpretation:
Higher D values indicate greater species diversity.
Lower D values suggest species dominance and reduced diversity.

Tree Density = Total number of trees/Total surveyed area M^2 x 10,000

Canopy Cover Percentage = Total Canopy Cover Area/Total Surveyed Area x 100

4.0 Survey Findings

4.1 Plot 1

4.1. 2 Vegetation and Habitat Condition and Transformation

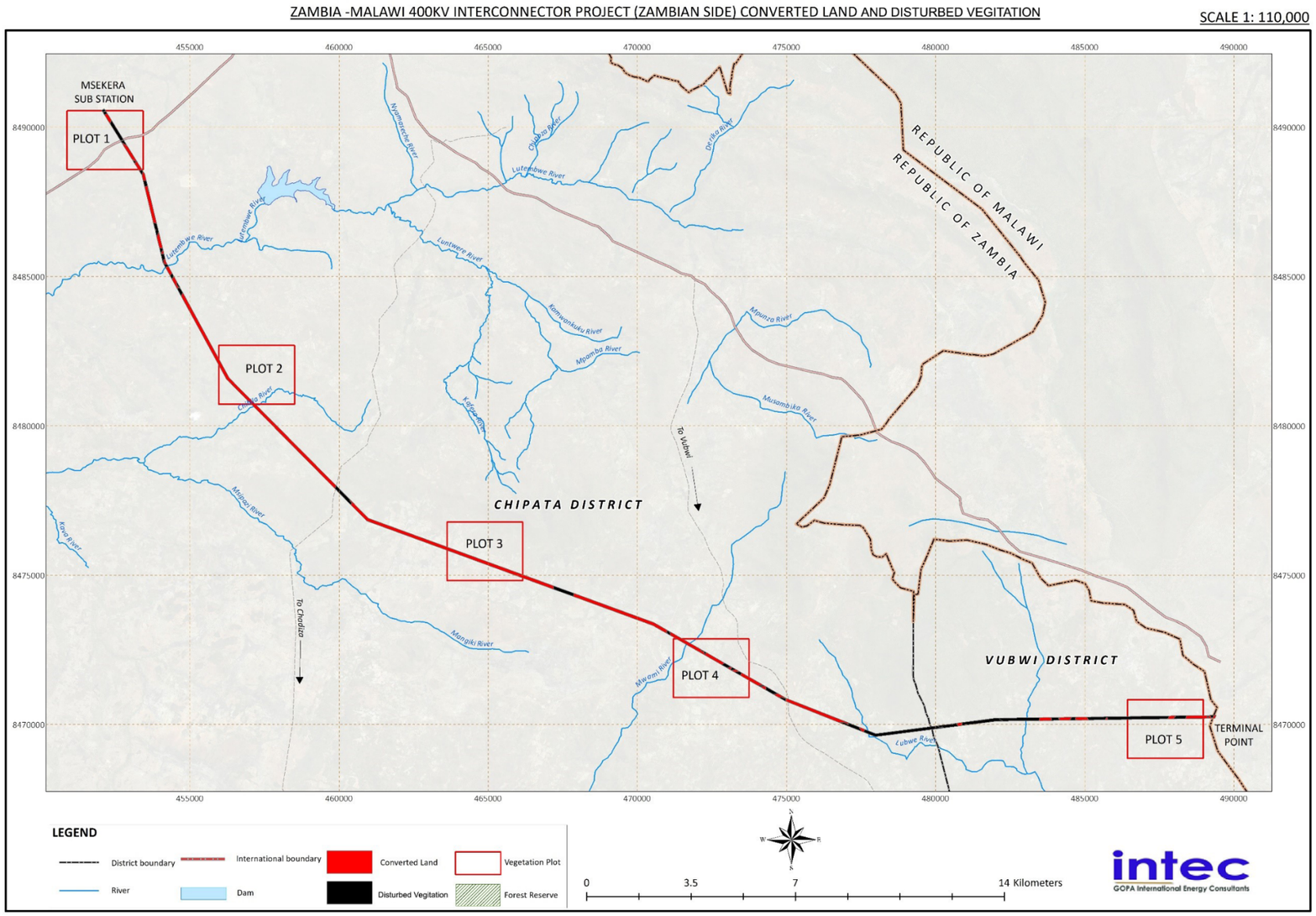


Figure 2: Map showing Extent of vegetation vs cleared land and survey plots

Vegetation Condition and Land Transformation Analysis

As part of the vegetation assessment for the Malawi-Zambia 400kV Interconnector Project, an evaluation of habitat condition and land transformation was conducted to quantify the extent of intact vegetation versus cleared land along the transmission line corridor. This analysis provides a crucial baseline for understanding habitat distribution, ecological functionality, and the overall integrity of the landscape (refer to Fig. 2).

Extent of Vegetation Cover and Land Transformation

The total assessed area along the 466.33-hectare transmission corridor comprises a diverse mosaic of habitats, each varying in ecological condition and human influence. The spatial distribution of vegetation and cleared land is as follows:

- **Agricultural fields** account for **1,282 hectares (53%)** of the total wayleave, representing the most significant form of land transformation. These areas have been modified by subsistence and commercial farming, leading to substantial vegetation clearance.
- **Degraded vegetation** spans **694 hectares (28.02%)**, reflecting areas where past land use, including shifting cultivation and firewood collection, has altered the natural woodland structure.
- **Wooded vegetation** covers **326 hectares (13.63%)**, comprising secondary Miombo woodland with varying canopy cover and tree density, providing essential habitat for flora and fauna.
- **Thicket habitat** occupies **71 hectares (2.97%)**, characterized by dense woody growth and high canopy cover, playing a crucial role in maintaining local biodiversity.
- **Built-up areas** make up **0.79%** of the surveyed area, representing villages, peri-urban developments, and other infrastructure.
- **Riparian corridors and river crossings**, such as the **Lutembwe, Chibila, Mwami, and Lubwe rivers**, feature narrow bands of intact vegetation that serve as critical ecological buffers and biodiversity hotspots.

Ecological Implications of Land Transformation

The dominance of agricultural and degraded vegetation indicates substantial human-induced land modification, reducing habitat connectivity and altering ecosystem processes. However, the presence of intact wooded vegetation, thicket, and riparian zones highlights opportunities for conservation and ecological management.

Key ecological considerations include:

- **Habitat Fragmentation:** The separation of intact vegetation patches by agricultural fields and settlements may restrict wildlife movement, disrupt ecological interactions, and reduce genetic flow among plant and animal populations.
- **Riparian Habitat Integrity:** The riverine ecosystems provide critical ecological functions, including water filtration, erosion control, and refuge for diverse species. Maintaining buffer zones around these crossings is essential to preserve their ecological value.
- **Carbon Sequestration and Soil Stabilization:** The remaining woodlands and thickets contribute to carbon storage, reducing greenhouse gas emissions, while the retention of vegetative cover mitigates soil erosion.
- **Conservation Opportunities:** The presence of natural habitat patches within the corridor presents possibilities for targeted conservation interventions, including controlled clearing strategies, habitat restoration, and buffer zone establishment.

Tree Species Composition and Dominance

Plot 1

Table 1 :Tree Species composition and dominance for plot 1

Species	**n**	**Composition (%)**	**Species Dominance (%)**
Azanza garkeana	1	0.44	0.320512821
Acacia nigrescens	3	1.33	1.007326007
Anona senegalensis	4	1.77	1.327838828
Acacia sieberana	1	0.44	0.183150183
Bauhinia petersiana	80	35.40	28.18681319
Brachystegia speciformis	3	1.33	2.60989011
Cassia abbreviata	2	0.88	1.419413919
Combretum molle	12	5.31	9.798534799
Combretum mossambicense	1	0.44	0.013736264
Combretum zeyheri	9	3.98	1.991758242
Diospyros batocana	2	0.88	2.289377289
Dichrostachys cinerea	2	0.88	0.755494505
Diplorhynchus condylocarpon	7	3.10	3.388278388
Erythrophleum africanum	2	0.88	0.228937729
Julbernardia globiflora	1	0.44	0.549450549
Julbernardia paniculata	50	22.12	14.57417582
Lannea stuhlmannii	5	2.21	4.029304029
Markhmia acuminata	2	0.88	0.741758242
Ochna pulchra	5	2.21	0.961538462
Pericopsis angolensis	1	100.00	0.183150183
Parinari curatellifolia	3	1.33	3.067765568
Pseudolachnostylis maprouneifolia	3	1.33	2.197802198
Piliostigma thonningii	4	1.77	4.880952381
Strychnos cocculoides	2	0.88	0.595238095
Swartzia madagascariensis	3	1.33	1.144688645
Senegalia polyacantha	4	1.77	3.754578755
Ximenia africana	1	0.44	0.228937729
Ziziphus abyssinica	9	3.98	7.005494505
Zanha africana	4	1.77	2.564102564
	226		

The vegetation assessment for Plot 1 refer to (table 1) recorded a total of 29 species and 226 individual trees within the surveyed area. The species composition was predominantly

characterized by Bauhinia petersiana (35.4%) and Julbernardia paniculata (22.1%), which emerged as the most abundant species in terms of individual count.

In terms of dominance by diameter at breast height (DBH), Bauhinia petersiana accounted for 28% of the total DBH, making it the most structurally significant species, followed by Julbernardia paniculata at 14%. The prevalence of these species suggests their ecological importance within the surveyed plot, influencing both canopy structure and habitat characteristics.

Tree Density and Canopy Cover

Canopy cover	99.3
Tree Density	502.2 trees per ha

The vegetation assessment for **Plot 1** indicates a **canopy cover of 99.3%**, signifying a well-developed tree layer with substantial foliage coverage. This high percentage suggests that the plot maintains significant vegetative cover, which plays a crucial role in regulating microclimatic conditions, reducing soil erosion, and providing habitat for various wildlife species. However, this only represents the area with vegetation within the plot. The rest of the area within the plot comprises of cleared land with villages and small farms.

The **tree density** was calculated at **502.2 trees per hectare**, reflecting a moderately dense woodland structure. This density suggests a stable and established tree community, with sufficient regeneration potential to support biodiversity. The findings highlight the ecological importance of the area, particularly in relation to habitat integrity and resource availability for both flora and fauna.

Biodiversity Analysis

Table 2 : Biodiversity Analysis Plot 1

Species	n	n-1	n(n-1)
Azanza garkeana	1	0	0
Acacia nigrescens	3	2	6
Anona senegalensis	4	3	12
Acacia sieberana	1	0	0
Bauhinia petersiana	80	79	6320
Brachystegia speciformis	3	2	6
Cassia abbreviata	2	1	2
Combretum molle	12	11	132
Combretum mossambicense	1	0	0

Combretum zeyheri	9	8	72
Diospyros batocana	2	1	2
Dichrostachys cinerea	2	1	2
Diplorhynchus condylocarpon	7	6	42
Erythrophleum africanum	2	1	2
Julbernardia globiflora	1	0	0
Julbernardia paniculata	50	49	2450
Lannea stuhlmannii	5	4	20
Markhmia acuminata	2	1	2
Ochna pulchra	5	4	20
Pericopsis angolensis	1	0	0
Parinari curatellifolia	3	2	6
Pseudolachnostylis maprouneifolia	3	2	6
Piliostigma thonningii	4	3	12
Strychnos cocculoides	2	1	2
Swartzia madagascariensis	3	2	6
Senegalia polyacantha	4	3	12
Ximenia africana	1	0	0
Ziziphus abyssinica	9	8	72
Zanha africana	4	3	12
	226	225	9218

D=1-(∑n(n-1)/(N(N-1) **1-(9218/226*225) = 0.8187217306**

Biodiversity Index Interpretation – Vegetation (Plot 1)

The biodiversity assessment for vegetation in Plot 1 yielded a Simpson's Diversity Index (D) of 0.8187, indicating a high level of species diversity within the surveyed area. With 29 recorded species and 226 individual trees, the ecosystem is characterized by a balanced distribution of species, reducing the likelihood of dominance by a single species. The most abundant species, Bauhinia petersiana (35.4%) and Julbernardia paniculata (22.1%), contribute significantly to species composition and structural complexity. The high diversity suggests that the vegetation community remains ecologically stable and resilient, (Magurran, 2004), capable of supporting various faunal species. However, species dominance and land-use changes should be closely monitored to ensure biodiversity conservation within the project corridor.

4.1.3 Grasses

Table 3: Grass Species Composition plot 1

Species	n	Composition (%)
Setaria sphacelata	42	31.34328358
Setaria hirta	26	19.40298507
Setaria parviflora	12	8.955223881
Setaria viridis	5	3.731343284
Setaria verticillata	35	26.11940299
Hyarrehenia hirta	12	8.955223881
Hyarrehenia filipendula	2	1.492537313
	134	

Grass Composition Analysis – Plot 1

The grass composition assessment in Plot 1 identified a total of 134 individual grass species distributed across seven distinct species, indicating a moderate level of grass diversity within the surveyed area. The most dominant species were *Setaria sphacelata* (31.3%) and *Setaria verticillata* (26.1%), collectively comprising more than 57% of the total grass cover. Other notable species included *Setaria hirta* (19.4%), while less abundant species such as *Setaria viridis* (3.7%) and *Hyarrehenia filipendula* (1.5%) contributed to the structural diversity of the grass community. The observed composition suggests that Setaria species are well adapted to the ecological conditions of the area, Magurran (2004), potentially influenced by soil type, moisture availability, and past land-use activities. This diversity provides essential forage resources for herbivores and contributes to soil stabilization and habitat complexity within the project corridor.

Table 4: Grass Species Biodiversity Analysis

Species	**n**	**n-1**	**n(n-1)**
Setaria sphacelata	42	41	1722
Setaria hirta	26	25	650
Setaria parviflora	12	11	132
Setaria viridis	5	4	20
Setaria verticillata	35	34	1190
Hyarrehenia hirta	12	11	132
Hyarrehenia filipendula	2	1	2
	134	133	3848

D=1-(∑n(n-1)/(N(N-1) = 1-(3848/134*133)
1-0.1934687465
D = 0.806531

Grass Biodiversity Index Interpretation – Plot 1

The Simpson's Biodiversity Index (D) of 0.8065 for the grass community in Plot 1 indicates a high level of species diversity, suggesting a well-balanced and resilient grassland ecosystem. This value reflects the even distribution of dominant species, with no single species overwhelming the composition. The presence of *Setaria sphacelata* (31.3%) and *Setaria verticillata* (26.1%) as the most dominant species, alongside smaller contributions from *Setaria hirta* (19.4%) and other species, enhances the ecological stability of the habitat. A high biodiversity index such as this is ecologically significant, as it supports forage availability, soil stability, and habitat diversity for various faunal species.

Faunal Assessment

4.1.4 Bird Survey -

Table 5: Bird Species Composition plot 1

Common Name	Scientific Name	Count (n)	Composition (%)
Red-necked Francolin	*Pternistis afer*	2	5.714285714
Long-tailed Widow	*Euplectes progne*	1	2.857142857
Ring-necked Dove	*Streptopelia capicola*	3	8.571428571
Black-eared Seed-eater	*Crithagra mennelli*	1	2.857142857
Swamp Boubou Shrike	*Laniarius bicolor*	1	2.857142857
Carmine Bee-eater	*Merops nubicoides*	3	8.571428571
Flappet Lark	*Mirafra rufocinnamomea*	1	2.857142857
Red-eyed Dove	*Streptopelia semitorquata*	1	2.857142857
Red-eyed Bulbul	*Pycnonotus nigricans*	1	2.857142857
Collared Sunbird	*Hedydipna collaris*	3	8.571428571
African Emerald Cuckoo	*Chrysococcyx cupreus*	1	2.857142857
Black-backed Puffback	*Dryoscopus cubla*	1	2.857142857
Black-crowned Tchagra	*Tchagra senegalus*	1	2.857142857
Emerald-spotted Dove	*Turtur chalcospilos*	1	2.857142857

White-winged Widowbird	*Euplectes albonotatus*	1	2.857142857
Black-winged Bishop	*Euplectes nigroventris*	1	2.857142857
Masked Weaver	*Ploceus velatus*	5	14.28571429
Fire Finch	*Lagonosticta rubricata*	2	5.714285714
Miombo Grey Tit	*Melaniparus griseiventris*	3	8.571428571
Blue Waxbill	*Uraeginthus angolensis*	1	2.857142857
Tawny-flanked Prinia	*Prinia subflava*	1	2.857142857

Bird Species Composition – Plot 1

The bird survey for Plot 1 recorded a diverse assemblage of 21 bird species, reflecting a moderately rich avian community within the surveyed habitat. The Masked Weaver (14.3%) emerged as the most dominant species, likely benefiting from the available vegetation structure that provides suitable nesting sites. Other relatively common species include the Ring-necked Dove (8.6%), Carmine Bee-eater (8.6%), Miombo Grey Tit (8.6%), and Collared Sunbird (8.6%), all of which indicate the presence of mixed habitat types, including open woodlands, thickets, and riverine vegetation.

The recorded species composition suggests a habitat supporting granivorous, insectivorous, and nectarivorous birds, highlighting a balanced ecological interaction within the area. However, the low abundance of certain species (2.9%) such as the Swamp Boubou Shrike, Black-backed Puffback, and Emerald-spotted Dove suggests that some habitat niches may be limited or under environmental pressure.

Overall, the bird diversity in Plot 1 contributes to the ecological resilience of the landscape, with avian species playing crucial roles in seed dispersal, pollination, and pest control.

Table 6: Biodiversity analysis for birds plot 1

Common Name	Scientific Name	Count (n)	n-1	n(n-1)
Red-necked Francolin	*Pternistis afer*	2	1	2
Long-tailed Widow	*Euplectes progne*	1	0	0
Ring-necked Dove	*Streptopelia capicola*	3	2	6
Black-eared Seed-eater	*Crithagra mennelli*	1	0	0
Swamp Boubou Shrike	*Laniarius bicolor*	1	0	0
Carmine Bee-eater	*Merops nubicoides*	3	2	6
Flappet Lark	*Mirafra rufocinnamomea*	1	0	0
Red-eyed Dove	*Streptopelia semitorquata*	1	0	0
Red-eyed Bulbul	*Pycnonotus nigricans*	1	0	0
Collared Sunbird	*Hedydipna collaris*	3	2	6
African Emerald Cuckoo	*Chrysococcyx cupreus*	1	0	0
Black-backed Puffback	*Dryoscopus cubla*	1	0	0
Black-crowned Tchagra	*Tchagra senegalus*	1	0	0
Emerald-spotted Dove	*Turtur chalcospilos*	1	0	0
White-winged Widowbird	*Euplectes albonotatus*	1	0	0
Black-winged Bishop	*Euplectes nigroventris*	1	0	0
Masked Weaver	*Ploceus velatus*	5	4	20
Fire Finch	*Lagonosticta rubricata*	2	1	2
Miombo Grey Tit	*Melaniparus griseiventris*	3	2	6
Blue Waxbill	*Uraeginthus angolensis*	1	0	0
Tawny-flanked Prinia	*Prinia subflava*	1	0	0

D=1-(∑n(n-1)/(N(N-1)

1-(48/35*34)

1-0.0403361345

D = 0.959663

Bird Biodiversity Index Interpretation – Plot 1

The Simpson's Biodiversity Index (D) for birds in Plot 1 was calculated at 0.9596, indicating a high level of species diversity within the surveyed area. This value suggests that the avian community in this plot is well-balanced, with no single species overwhelmingly dominant over others. The

high diversity reflects the availability of varied microhabitats, which support different feeding guilds such as granivores, insectivores, frugivores, and nectarivores.

The presence of 21 bird species highlights the ecological richness of the area, with species such as the Masked Weaver, Ring-necked Dove, Carmine Bee-eater, and Miombo Grey Tit contributing significantly to the overall species composition. The diversity of bird species suggests that the habitat is relatively stable, (Magurran, 2004), providing essential resources such as nesting sites, food availability, and cover from predators.

A high biodiversity index such as this is ecologically significant, as birds play a crucial role in seed dispersal, insect population control, and pollination.

4.1.5 Insect Survey

Table 7: Insect Species Composition - Plot 1

Common Name	Scientific Name	Count	Dominance (%)
Carpenter Ant	*Camponotus spp.*	1	2.44
Western Honey Bee	*Apis mellifera*	1	2.44
Linnes Cicada	*Cicadidae spp.*	1	2.44
Common Wasp	*Vespula vulgaris*	1	2.44
Grasshopper	*Acrididae spp.*	1	2.44
Western Thatching Ants	*Messor pergandei*	11	26.83
Sugar Ant	*Camponotus consobrinus*	11	26.83
Giant African Centipede	*Ethmostigmus rubripes*	1	2.44
House Fly	*Musca domestica*	1	2.44
Cabbage White Butterfly	*Pieris rapae*	1	2.44
Stink Bug	*Pentatomidae spp.*	1	2.44
Swallowtail Butterfly	*Papilio spp.*	1	2.44
Mopane Bee (Sweat Bee)	*Lipotriches spp.*	1	2.44
Giant African Millipede	*Archispirostreptus gigas*	1	2.44
Widow Spider	*Latrodectus spp.*	2	4.88
Huntsman Spider	*Sparassidae spp.*	3	7.32
Armed Spider	*Palystes superciliosus*	1	2.44
Recluse Spider	*Loxosceles spp.*	1	2.44
		41	

Insect Species Composition in Plot 1

The insect species survey in Plot 1 recorded a total of 18 different species, representing a diverse range of ecological roles, including pollinators, decomposers, and predators. Western Thatching

Ants (*Messor pergandei*) and Sugar Ants (*Camponotus consobrinus*) were the most dominant species, each comprising 26.83% of the total insect population. These species play a crucial role in nutrient recycling and soil aeration.

Other notable species included Huntsman Spiders (*Sparassidae spp.*), which accounted for 7.32%, and Widow Spiders (*Latrodectus spp.*) at 4.88%, highlighting the presence of predatory arthropods that help regulate insect populations. Pollinators such as the Western Honey Bee (*Apis mellifera*), Swallowtail Butterfly (*Papilio spp.*), and Mopane Bee (*Lipotriches spp.*), though present in lower numbers (2.44% each), are critical for plant reproduction and ecosystem stability.

The presence of Grasshoppers (*Acrididae spp.*), Stink Bugs (*Pentatomidae spp.*), and Cabbage White Butterflies (*Pieris rapae*) suggests an interaction between the local vegetation and herbivorous insects, which may influence plant health and regeneration. The occurrence of Giant African Millipedes (*Archispirostreptus gigas*) and Giant African Centipedes (*Ethmostigmus rubripes*) indicates a well-structured ecosystem supporting decomposers and predators.

Overall, the insect community in Plot 1 is relatively diverse, with a mix of functional groups that contribute to ecological balance. The dominance of ants suggests a well-established ground-dwelling insect network, while the presence of pollinators and predators highlights the area's ecological significance.

Table 8: Biodiversity Index Analysis of Insect Species in Plot 1

Common Name	Scientific Name	Count	n-1	n(n-1)
Carpenter Ant	*Camponotus spp.*	1	0	0
Western Honey Bee	*Apis mellifera*	1	0	0
Linnes Cicada	*Cicadidae spp.*	1	0	0
Common Wasp	*Vespula vulgaris*	1	0	0
Grasshopper	*Acrididae spp.*	1	0	0
Western Thatching Ants	*Messor pergandei*	11	10	110
Sugar Ant	*Camponotus consobrinus*	11	10	110
Giant African Centipede	*Ethmostigmus rubripes*	1	0	0
House Fly	*Musca domestica*	1	0	0
Cabbage White Butterfly	*Pieris rapae*	1	0	0
Stink Bug	*Pentatomidae spp.*	1	0	0

Swallowtail Butterfly	*Papilio spp.*	1	0	0
Mopane Bee (Sweat Bee)	*Lipotriches spp.*	1	0	0
Giant African Millipede	*Archispirostreptus gigas*	1	0	0
Widow Spider	*Latrodectus spp.*	2	1	2
Huntsman Spider	*Sparassidae spp.*	3	2	6
Armed Spider	*Palystes superciliosus*	1	0	0
Recluse Spider	*Loxosceles spp.*	1	0	0
		41	40	228

$$D=1-(\sum n(n-1)/(N(N-1)$$
$$1-(228/40*41)$$
$$1-0.1390243902$$
$$0.860975$$

Insect Species Biodiversity Index Interpretation

The Simpson's Biodiversity Index for the insect population in Plot 1 refer to (table 8) was calculated as 0.861. This high biodiversity index indicates a relatively diverse and well-distributed insect community within the surveyed area. The dominance of Western Thatching Ants (26.8%) and Sugar Ants (26.8%) suggests that these species are ecologically significant, potentially due to their role in soil aeration, organic matter decomposition, and food web dynamics (Magurran, 2004). The presence of multiple functional insect groups, including pollinators (honey bees, butterflies), decomposers (millipedes, centipedes), and predators (widow spiders, huntsman spiders), highlights the ecological balance of the habitat.

The high diversity score suggests that the insect community is relatively stable, which is crucial for maintaining ecological services such as pollination and nutrient cycling.

4.1.6 Mammals Observed in Plot 1

Common Name	Scientific Name	Count	Observation Method
Vervet Monkey	*Chlorocebus pygerythrus*	1	Direct Sighting
Civet Cat	*Civettictis civetta*	1	Spoor Evidence
Common Duiker	*Sylvicapra grimmia*	1	Spoor Evidence

The mammal survey in Plot 1 revealed the presence of three species, including the Vervet Monkey (*Chlorocebus pygerythrus*), which was physically observed, while the Civet Cat (*Civettictis civetta*)

and the Common Duiker (*Sylvicapra grimmia*) were detected through spoor evidence. The low number of recorded individuals did not meet the threshold for Simpson's Biodiversity Index calculation, as a minimum of five individuals is required for meaningful statistical analysis.

Despite the low number of observations, the presence of these species highlights the ecological significance of the habitat, particularly for small to medium-sized mammals. The Vervet Monkey's direct sighting suggests that arboreal and semi-open woodland habitats are still intact, providing resources such as food and shelter. The detection of the Civet Cat and Common Duiker through spoor evidence indicates the use of the area as part of their movement corridors, likely in search of food and water.

4.1.7 Reptiles

No observations of reptiles were made during the survey.

4.1.8 Amphibians

No observation of amphibians during the survey.

Table 9: Overall Biodiversity Composition in Plot 1

Species	n	Composition
Trees	226	51.48063781
Grasses	134	30.523918
Birds	35	7.972665148
Insects	41	9.339407745
Mammals	3	0.683371298
Reptiles	0	0
Amphibians	0	0
	439	

The overall ecological assessment of Plot 1 revealed a total of 439 individual organisms across various taxonomic groups refer to (table 9), demonstrating a diverse and dynamic ecosystem. The distribution of biodiversity components highlights the relative dominance of different groups within the surveyed area.

1. Vegetation (Trees and Grasses) - 81.99% of Total Observations

Vegetation dominated the biodiversity of Plot 1, accounting for 81.99% of all recorded individuals.

Trees (51.48%): A total of 226 individual trees were recorded, making them the most dominant group in the surveyed area. The dominance of *Bauhinia petersiana* and *Julbernardia paniculata*,

along with other miombo woodland species, reflects the ecological character of the region, which is primarily secondary woodland with patches of anthropogenic disturbance.

Grasses (30.52%): Grasses also comprised a significant proportion of the biodiversity, with 134 individual grasses recorded. *Setaria sphacelata* and *Setaria verticillata* were the most common species, indicating that the ground layer vegetation is well established and provides habitat for small mammals and invertebrates.

2. Birds - 7.97% of Total Observations

A total of 35 individual birds were recorded, contributing to 7.97% of the total observed biodiversity in Plot 1. The bird population was relatively diverse, with species such as the Masked Weaver, Red-Necked Francolin, and Carmine Bee-eater being among the most frequently recorded. These findings suggest that the habitat is suitable for both resident and migratory bird species, offering ample food sources and nesting sites.

3. Insects - 9.34% of Total Observations

The insect survey recorded 41 individuals, accounting for 9.34% of the total biodiversity observations. The dominant insect species included Western Thatching Ants and Sugar Ants, which together accounted for more than 50% of all recorded insects. This suggests a stable insect community, with potential roles in soil aeration, decomposition, and food chain interactions within the ecosystem.

4. Mammals - 0.68% of Total Observations

Only three mammal species were recorded, making up 0.68% of the total biodiversity observations. The Vervet Monkey was directly observed, while the Civet Cat and Common Duiker were identified through spoor. The low mammal count suggests either low detectability, avoidance behavior, or habitat fragmentation, which may be a result of human activities within and around the survey area.

5. Reptiles and Amphibians - 0.00% of Total Observations

No reptiles or amphibians were observed during the survey, likely due to seasonal variation, habitat structure, or the timing of the survey. The absence of these taxa does not necessarily indicate their complete absence from the area but suggests that targeted survey techniques, such as nocturnal searches or water source monitoring, may be required in future assessments.

Table 10: Overall Biodiversity Index Analysis for Plot 1

Species	n	n-1	n(n-1)	
Trees	226	225	50850	
Grasses	134	133	17822	
Birds	35	34	1190	
Insects	41	40	1640	
Mammals	3	2	6	
Reptiles	0	-1	0	
Amphibians	0	-1	0	
	439	438	71508	

$D=1-(\sum n(n-1)/(N(N-1)$

$1-(71508/439*438)$

$1- 0.371891$

D= 0.628108715

The overall biodiversity index for Plot 1, as calculated using Simpson's Biodiversity Index, is 0.6281 refer to (table 10). This value indicates a moderate level of biodiversity within the surveyed area, meaning that while the ecosystem hosts a variety of species, some taxa—such as trees and grasses—are more dominant, contributing significantly to overall species composition.

Ecological Implications of the Biodiversity Index

Moderate Species Diversity

With a diversity score of 0.6281, the ecosystem demonstrates some degree of ecological resilience, but it is not highly diverse compared to pristine or protected habitats, Simpson (1949).

This suggests that certain species, particularly trees and grasses, dominate the area, while other taxa such as mammals, birds, and insects have relatively lower representation.

The absence of observed reptiles and amphibians suggests that the surveyed period, environmental conditions, or habitat types may not have been conducive for these species or that their populations are naturally low in this area.

Vegetation as a Key Ecological Component

Trees account for 51.5% of the species composition, followed by grasses at 30.5%, indicating that the area is largely vegetated with a mix of woodland and grassland. This highlights the crucial role of vegetation in maintaining ecosystem stability, providing habitat and food sources for other species.

4.2 Plot 2

4.2.1 Vegetation Assessment

Table 11: Vegetation Composition and Dominance plot 2

Species	n	Composition (%)	Species Dominance (%)
Acacia natalensis	1	0.632911392	0.772897076
Acacia polyacantha	1	0.632911392	1.030529434
Annona senegalensis	7	4.430379747	2.499033879
Brachystegia boehmii	4	2.53164557	3.7356692
Brachystegia bussei	18	11.39240506	6.35063764
Brachystegia floribunda	1	0.632911392	1.545794152
Brachystegia longifolia	4	2.53164557	2.576323586
Bauhinia petersiana	29	18.35443038	19.12920263
Brachystegia spiciformis	1	0.632911392	0.257632359
Cassia abbreviata	3	1.898734177	1.80342651
Combretum elaeagnoides	3	1.898734177	1.416977972
Combretum molle	2	1.265822785	1.288161793
Diospyros batocana	15	9.493670886	7.870668556
Diplorhynchus condylocarpon	10	6.329113924	4.444158186

Erythrophleum africanum	3	1.898734177	3.606853021
Julbernadia paniculata	9	5.696202532	8.115419297
Lannea discolor	4	2.53164557	1.391214737
Ochna pulchra	1	0.632911392	0.515264717
Pericopsis angolensis	2	1.265822785	1.030529434
Peltophorum africanum	1	0.632911392	0.772897076
Pseudolachnostylis maprouneifolia	3	1.898734177	4.637382455
Piliostigma thonningii	16	10.12658228	12.36635321
Rhus tenuinervis	6	3.797468354	4.122117738
Syzygium cordatum	5	3.164556962	3.568208167
Strychnos cocculoides	2	1.265822785	1.030529434
Terminalia sericea	3	1.898734177	2.511915497
Ziziphus abyssinica	4	2.53164557	1.610202241
Grand Totals	**158**		

Vegetation Composition and Dominance in Plot 2

The vegetation assessment of Plot 2 identified a total of 27 tree species, comprising 158 individual trees, refer to (table 11). The most dominant species in terms of abundance and relative frequency were Bauhinia petersiana (18.35%), Piliostigma thonningii (10.13%), and Brachystegia bussei (11.39%), collectively contributing to the structural composition and ecological significance of the plot.

Species Composition Analysis

The vegetation of Plot 2 is primarily dominated by Miombo woodland species, with the presence of Brachystegia, Diplorhynchus, and Julbernardia indicating a well-established woodland ecosystem. The abundance of Bauhinia petersiana suggests an adaptive advantage in disturbed environments, reinforcing its role in habitat succession and ecological stabilization.

- **Bauhinia petersiana (18.35%)** was the most prevalent species, playing a key role in providing canopy structure and soil stabilization.
- **Brachystegia bussei (11.39%)** and Piliostigma thonningii (10.13%) further established the dominance of Miombo woodland-associated flora.
- Other significant species include **Diospyros batocana (9.49%)**, **Diplorhynchus condylocarpon (6.33%)**, and **Julbernardia paniculata (5.70%)**, which indicate a diverse composition that supports various faunal species.

Species Dominance

The dominance values, which consider both species abundance and cumulative basal area, indicate that Bauhinia petersiana (19.13%) and Piliostigma thonningii (12.37%) are the key contributors to the forest canopy and ground cover. These species play a vital role in the ecological structure of Plot 2, shaping both the light penetration and soil nutrient cycling in the area.

Other noteworthy species contributing significantly to canopy dominance include:

- **Diospyros batocana (7.87%)**,
- **Julbernardia paniculata (8.12%)**,
- **Brachystegia bussei (6.35%)**, and
- **Diplorhynchus condylocarpon (4.44%)**.

The distribution of these species suggests a balance between primary forest species and pioneer species, highlighting both successional processes and ecological resilience within the woodland ecosystem.

Ecological Implications

The species composition and dominance trends in Plot 2 provide insight into the health and stability of the woodland ecosystem. The high dominance of Bauhinia petersiana and Piliostigma thonningii suggests that the area has undergone some level of disturbance, favoring fast-growing species. This could be a result of natural regeneration, past selective logging, or localized anthropogenic activities. Plot 2 was one of the areas that is heavily resettled and the vegetation in the area is found in patches due to fields and homesteads.

The vegetation composition of Plot 2 reflects a semi-intact Miombo woodland ecosystem, with a mix of highly dominant species and moderately represented flora. The balance of pioneer species and mature woodland species suggests a stable yet dynamic habitat.

Canopy Cover and Tree Density for Plot 2

Canopy cover	30.9
Tree Density	351.1

Vegetation Canopy Cover and Tree Density – Plot 2

The vegetation assessment for Plot 2 reveals a canopy cover of 30.9%, indicating moderate overhead vegetation density within the surveyed area. This suggests that while the plot maintains a reasonable extent of tree cover, it is not fully closed, allowing for understory vegetation growth and potential light penetration to the woodland floor. The relatively moderate canopy cover is reflective of a mixture of tree species with varying crown spread, some forming dense patches while others occur more sparsely, potentially influenced by natural gaps or human activities such as selective clearing for agriculture or settlements.

The tree density for Plot 2 was calculated at 351.1 trees per hectare, which falls within the expected range for secondary miombo woodlands and mixed vegetation zones. This density suggests a moderately populated tree community, with an uneven distribution of dominant and subdominant species across the plot. The data highlights the presence of species such as Bauhinia petersiana, Brachystegia bussei, and Piliostigma thonningii, which contribute significantly to both tree density and canopy spread.

From an ecological perspective, the observed canopy cover and tree density provide valuable insights into habitat suitability for various fauna, including birds, insects, and small mammals. Additionally, the presence of species with larger canopies (e.g., Julbernardia paniculata and Diospyros batocana) suggests their role in providing shade, nesting sites, and forage opportunities for wildlife.

Overall, the vegetation structure in Plot 2 reflects a resilient yet moderately disturbed woodland system, emphasizing the need for sustainable environmental management interventions as the project progresses.

Table 12: Vegetation Biodiversity Analysis for plot 2

Species	n	n-1	n(n-1)
Acacia natalensis	1	0	0
Acacia polyacantha	1	0	0
Annona senegalensis	7	6	42
Brachystegia boehmii	4	3	12
Brachystegia bussei	18	17	306
Brachystegia floribunda	1	0	0
Brachystegia longifolia	4	3	12
Bauhinia petersiana	29	28	812
Brachystegia spiciformis	1	0	0
Cassia abbreviata	3	2	6
Combretum elaeagnoides	3	2	6
Combretum molle	2	1	2
Diospyros batocana	15	14	210
Diplorhynchus condylocarpon	10	9	90
Erythrophleum africanum	3	2	6
Julbernadia paniculata	9	8	72
Lannea discolor	4	3	12
Ochna pulchra	1	0	0
Pericopsis angolensis	2	1	2
Peltophorum africanum	1	0	0
Pseudolachnostylis maprouneifolia	3	2	6
Piliostigma thonningii	16	15	240
Rhus tenuinervis	6	5	30
Syzygium cordatum	5	4	20
Strychnos cocculoides	2	1	2
Terminalia sericea	3	2	6
Ziziphus abyssinica	4	3	12
Grand Totals (N)	**158**	**157**	**1906**

D=1-(∑n(n-1)/(N(N-1)

1-(1906/158*157)

0.076836249

1-0.076836249

D= 0.92316

Vegetation Biodiversity Index Interpretation – Plot 2

The biodiversity analysis for Plot 2 using Simpson's Index of Diversity (D) resulted in a value of 0.9231, indicating a high level of species diversity within the surveyed vegetation. This score suggests that the vegetation community is well-distributed among various species, with a lower probability of dominance by a single species, Simpson (1949).

A high Simpson's Index value typically reflects a stable and resilient ecosystem, where species interactions contribute to ecosystem functionality, including carbon sequestration, soil stabilization, and habitat provision for wildlife. In this plot, species such as Bauhinia petersiana, Brachystegia bussei, and Piliostigma thonningii emerged as dominant contributors to overall biodiversity, playing a crucial role in the structural composition of the woodland.

From an environmental impact perspective, the high biodiversity index highlights the ecological importance of Plot 2 as a habitat supporting diverse plant species, Primack (2014).

Overall, the vegetation biodiversity assessment for Plot 2 underscores the ecological richness of the area and the need for sustainable management practices to balance infrastructure development with biodiversity conservation.

4.2.2 Grass-Assessment

Table 13: Grass Species Composition for Plot 2

Grass Species	n	Composition (%)
Sporobolus africanus	56	12.06896552
Pennisetum purpureum	191	41.1637931
Aristida stitata	69	14.87068966
Eragrostis superba	38	8.189655172
Hyparrhania hirta	63	13.57758621
Andropogon gayanus	47	10.12931034
	464	

Grass Species Composition – Plot 2

The grass species composition for Plot 2 reveals a diverse assemblage of grass types, with *Pennisetum purpureum* (Napier grass) being the most dominant species, comprising 41.16% of the total surveyed population, refer to (Table 13). This species is known for its fast growth, high biomass production, and role in soil stabilization, making it an essential component of the ecosystem.

Other notable species include *Aristida stitata* (14.87%) and *Hyparrhania hirta* (13.58%), which are common in savanna and open woodland ecosystems, providing forage for herbivores and contributing to soil fertility. Sporobolus africanus (12.07%) and *Andropogon gayanus* (10.13%) also play significant roles in the ecological structure of the area, supporting biodiversity by serving as nesting grounds for insects, game birds and small mammals.

The grass composition suggests that Plot 2 contains a mix of perennial and annual grass species, which contribute to both short-term ground cover and long-term habitat stability. This vegetative cover is critical for erosion control, water retention, and maintaining soil health, factors.

Table 14: Grass Species Biodiversity Analysis Plot 2

Species	n	n-1	n(n-1)
Sporobolus africanus	56	55	3080
Pennisetum purpureum	191	190	36290
Aristida stitata	69	68	4692
Eragrostis superba	38	37	1406
Hyparrhania hirta	63	62	3906
Andropogon gayanus	47	46	2162
	464	463	51536

$D=1-(\sum n(n-1)/(N(N-1)$ $1-(51536/464*463)$

$1-0.2680230079$

$D= 0.73197699$

Grass Biodiversity Index Interpretation – Plot 2

The biodiversity index for grasses in Plot 2 was calculated using Simpson's Diversity Index, yielding a result of 0.7319. This value indicates a moderately high level of grass species diversity within the surveyed area.

Among the dominant species, Pennisetum purpureum (Napier grass) had the highest representation, contributing significantly to the total population. Despite this, the presence of five other species, including *Sporobolus africanus*, *Aristida stitata, Hyparrhania hirta, Eragrostis superba,* and *Andropogon gayanus*, suggests a well-structured and functionally diverse grassland ecosystem.

A biodiversity index closes to 1 suggests that no single species is overwhelmingly dominant, which is beneficial for maintaining ecosystem stability, soil protection, and habitat provision for insects, birds, and small mammals, (Simpson, 1949).

The diversity of grasses enhances nutrient cycling, erosion control, and resilience to environmental disturbances such as grazing and seasonal changes.

Faunal Assessment Plot 2

4.2.3 Bird Survey

Table 15: Bird Species Composition for Plot 2

Bird Species	Scientific Name	Count (n)	Composition (%)
Go-away Bird	*Corythaixoides concolor*	1	0.71
Singing Cisticola	*Cisticola cantans*	1	0.71
Copper Sunbird	*Cinnyris cupreus*	1	0.71
White-browed Sparrow-Weaver	*Plocepasser mahali*	107	75.89
Black-headed Heron	*Ardea melanocephala*	2	1.42
Red-eyed Bulbul	*Pycnonotus nigricans*	1	0.71
African Hawk Eagle	*Aquila spilogaster*	1	0.71
Harlequin Quail	*Coturnix delegorguei*	1	0.71

Tawny-flanked Prinia	*Prinia subflava*	1	0.71
Blue Waxbill	*Uraeginthus angolensis*	3	2.13
Puffback	*Dryoscopus cubla*	1	0.71
Black Sunbird	*Cyanomitra amethystina*	1	0.71
Green Pigeon	*Treron calvus*	1	0.71
Red Bishop	*Euplectes orix*	3	2.13
Fire Finch	*Lagonosticta senegala*	4	2.84
Yellow-rumped Widow	*Euplectes capensis*	4	2.84
Red-necked Francolin	*Pternistis afer*	5	3.55
Emerald-spotted Dove	*Turtur chalcospilos*	1	0.71
Miombo Barbet	*Tricholaema frontata*	1	0.71
Total		**141**	**100%**

Bird Species Composition – Plot 2

The bird survey conducted in Plot 2 recorded a total of 141 individuals representing 19 different species, showcasing a moderately diverse avian community within the project area. The most dominant species observed was the White-browed Sparrow-Weaver *(Plocepasser mahali),* comprising 75.89% of the total bird population. This species' overwhelming presence suggests that the habitat conditions in Plot 2 favor its nesting and foraging preferences, likely due to the availability of grasslands, open woodlands, and shrubs.

Other notable species recorded include Red-necked Francolin *(Pternistis afer)* (3.55%), Fire Finch *(Lagonosticta senegala)* (2.84%), Yellow-rumped Widow *(Euplectes capensis)* (2.84%), and Red Bishop *(Euplectes orix)* (2.13%). These species are typically associated with savanna and open woodland environments, suggesting that the habitat is structurally diverse enough to support a mix of granivorous, insectivorous, and frugivorous bird species.

Additionally, low-frequency sightings of raptors such as the African Hawk-Eagle *(Aquila spilogaster)* and Black-headed Heron (Ardea melanocephala) indicate the presence of higher trophic-level species, which play a critical role in maintaining ecological balance by controlling rodent and insect populations.

The overall species composition in Plot 2 reflects a healthy bird community, but the dominance of a single species White-browed Sparrow-Weaver suggests a possible imbalance, likely influenced by vegetation structure and food availability.

Table 16: Biodiversity Analysis for birds in Plot 2

Bird Species	Scientific Name	n	n-1	n(n-1)
Go-away Bird	*Corythaixoides concolor*	1	0	0
Singing Cisticola	*Cisticola cantans*	1	0	0
Copper Sunbird	*Cinnyris cupreus*	1	0	0
White-browed Sparrow-Weaver	*Plocepasser mahali*	107	106	11342
Black-headed Heron	*Ardea melanocephala*	2	1	2
Red-eyed Bulbul	*Pycnonotus nigricans*	1	0	0
African Hawk Eagle	*Aquila spilogaster*	1	0	0
Harlequin Quail	*Coturnix delegorguei*	1	0	0
Tawny-flanked Prinia	*Prinia subflava*	1	0	0
Blue Waxbill	*Uraeginthus angolensis*	3	2	6
Puffback	*Dryoscopus cubla*	1	0	0
Black Sunbird	*Cyanomitra amethystina*	1	0	0
Green Pigeon	*Treron calvus*	1	0	0
Red Bishop	*Euplectes orix*	1	0	0
Fire Finch	*Lagonosticta senegala*	3	2	6
Yellow-rumped Widow	*Euplectes capensis*	4	3	12
Red-necked Francolin	*Pternistis afer*	4	3	12
Emerald-spotted Dove	*Turtur chalcospilos*	5	4	20
Miombo Barbet	*Tricholaema frontata*	1	0	0
Total		141	140	11400

D=1-(∑n(n-1)/(N(N-1)

1-(11400/141*140)

1-0.5775075988

D= 0.42249

Bird Biodiversity Index Interpretation for Plot 2

The biodiversity index for bird species in Plot 2, calculated using Simpson's Diversity Index, is 0.422. This value suggests a moderate level of bird diversity, indicating that while there is some variation in species presence, the dominance of a few species particularly the White-browed Sparrow-Weaver (*Plocepasser mahali*) reduces overall species evenness.

The relatively low index value (compared to a more diverse community closer to 1) indicates that a few species are highly dominant, while many others occur in much lower numbers (Simpson 1949).

Specifically, the White-browed Sparrow-Weaver accounts for over 75% of all recorded birds, significantly outweighing other species in abundance. Such an uneven distribution may be influenced by habitat characteristics, availability of food sources, and anthropogenic disturbances.

From an ecological perspective, the dominance of a single species over a large proportion of the avian population could indicate habitat specialization or environmental pressures that favor certain birds over others.

4.2.4 Insect Survey-

Table 17: Insect Species Composition in Plot 2

Common Name	Count (n)	Composition (%)	Scientific Name
Harvester Ant	6	16.67	*Messor spp.*
Giant African Millipede	3	8.33	*Archispirostreptus gigas*
Centipede	2	5.56	*Scolopendra spp.*
Ground Beetle	3	8.33	*Carabidae spp.*
Common Shining Cockroach	5	13.89	*Blattodea spp.*
Argentine Ant	10	27.78	*Linepithema humile*
Water Scavenger Beetle	3	8.33	*Hydrophilidae spp.*
Wolf Spider	1	2.78	*Lycosidae spp.*
Centipede	2	5.56	*Chilopoda spp.*
Field Cricket	1	2.78	*Gryllidae spp.*

The insect survey in Plot 2 recorded 36 individuals across 10 different species, demonstrating a diverse range of arthropods refer to (Table 17). The Argentine Ant (*Linepithema humile*) exhibited the highest dominance at 27.78%, indicating its strong presence in the ecosystem. The Harvester Ant (*Messor spp.*) followed with 16.67% dominance, reflecting its adaptation to the environment.

Other notable species included the Common Shining Cockroach (*Blattodea spp.*) and Giant African Millipede (*Archispirostreptus gigas*), both of which are significant decomposers contributing to nutrient cycling.

Predatory species such as the Wolf Spider (*Lycosidae spp.*) and Ground Beetle (*Carabidae spp.*) were observed in lower numbers, suggesting a moderate level of predation within the habitat. The presence of Water Scavenger Beetles (*Hydrophilidae spp.*) highlights the availability of moisture-dependent microhabitats. The diversity of insect species in Plot 2 is indicative of a functional ecosystem with varied trophic interactions.

Table 18: Insect Biodiversity Analysis for Plot 2

Insects	Count (n)	n-1	n(n-1)	Scientific Name
Harvester Ant	6	5	30	*Messor spp.*
Giant African Millipede	3	2	6	*Archispirostreptus gigas*
Centipede	2	1	2	*Scolopendra spp.*
Ground Beetle	3	2	6	*Carabidae spp.*
Common Shining Cockroach	5	4	20	*Blattodea spp.*
Argentine Ant	10	9	90	*Linepithema humile*
Water Scavenger Beetle	3	2	6	*Hydrophilidae spp.*
Wolf Spider	1	0	0	*Lycosidae spp.*
Centipede	2	1	2	*Chilopoda spp.*
Field Cricket	1	0	0	*Gryllidae spp.*
Grand Totals	**36**	**35**	**162**	

$D=1-(\sum n(n-1)/(N(N-1)$ **1-(162/36*35)**

1-0.1285714286

D= 0.8714

Insect Biodiversity Index Interpretation for Plot 2

The Simpson's Biodiversity Index for the insect population in Plot 2 was calculated at 0.8714, indicating a high level of insect diversity within the surveyed area. This index suggests that the ecosystem supports a varied and well-distributed insect community, with multiple species present in significant numbers.

The dominance of Argentine Ants (*Linepithema humile*), which accounted for a considerable proportion of the population, suggests that this species has established a strong foothold in the ecosystem. Other notable species, such as the Harvester Ant (*Messor spp.*) and the Common Shining Cockroach (*Blattodea spp.*), contribute to ecological functions such as soil aeration, decomposition, and nutrient cycling.

The presence of predatory species like the Wolf Spider (*Lycosidae spp.*) and Ground Beetle (*Carabidae spp.*) suggests a balanced food web, where insectivorous species regulate prey populations. Additionally, Water Scavenger Beetles (*Hydrophilidae spp.*) indicate the availability of moisture-dependent microhabitats within the surveyed area.

The high biodiversity index underscores the importance of conserving insect habitats in Plot 2, as insects play crucial ecological roles in pollination, decomposition, and food web dynamics.

4.2.5 Mammals

No sighting of any mammal was made during the survey.

4.2.6 Reptiles

Only one Monitor lizard was sighted during the survey.

4.2.7 Amphibians

No sighting of any amphibian was made during the survey.

Table 19: Overall Biodiversity Composition for Plot 2

Species Category	n	Composition (%)
Trees	158	19.75
Grasses	464	58
Birds	141	17.625
Insects	36	4.5
Mammals	0	0
Reptiles	1	0.125
Amphibians	0	0
	800	

The biodiversity assessment for Plot 2 revealed a total of 800 recorded individuals across various species categories, showcasing a diverse ecological composition, refer to (Table 19). The analysis highlights the dominant presence of grasses (58%), followed by trees (19.75%), birds (17.63%), and insects (4.5%), with a minimal representation of reptiles (0.125%) and no recorded observations of mammals or amphibians.

1. Grasses – 58% (464 individuals)

Grasses constituted the largest proportion of recorded species in Plot 2, underscoring the savanna-dominated nature of the landscape. The dominance of species such as *Pennisetum purpureum, Aristida stitata,* and *Hyparrhenia hirta* suggests that the area supports grazing herbivores, soil stabilization, and seasonal regeneration of vegetation. The high grass diversity also indicates a well-functioning ecosystem that contributes to carbon sequestration, erosion control, and habitat support for insects and ground-nesting birds.

2. Trees – 19.75% (158 individuals)

The tree population in Plot 2 was substantially lower than grasses, reflecting the semi-open woodland structure of the area. Species such as *Bauhinia petersiana*, *Brachystegia bussei*, and *Diospyros batocana* were the most dominant. This tree composition is critical in providing shade, stabilizing the microclimate, and supporting avian and insect biodiversity. However, the lower percentage of trees compared to grasses suggests some level of habitat degradation, possibly from past anthropogenic activities such as land clearing and agriculture.

3. Birds – 17.63% (141 individuals)

Bird species diversity was notably high, indicating healthy habitat connectivity and resource availability. The dominance of White-browed Sparrow Weavers (*Plocepasser mahali*), Red-necked

Francolins (*Pternistis afer*), and Fire Finches (*Lagonosticta spp.*) suggests a balanced avian community that includes seed dispersers, insectivores, and nectar feeders. The presence of raptors such as the African Hawk Eagle (*Aquila spilogaster*) signals the existence of sufficient prey populations and an active food web.

4. Insects – 4.5% (36 individuals)

The insect population, though relatively low in dominance, plays an essential role in pollination, decomposition, and soil health maintenance. Key species such as the Argentine Ant (*Linepithema humile*), Harvester Ant (*Messor spp.*), and Water Scavenger Beetle (*Hydrophilidae spp.*) demonstrate the functional role of insects in nutrient cycling. The presence of predatory species like the Wolf Spider (*Lycosidae spp.*) suggests a balanced ecosystem with predator-prey interactions.

5. Reptiles – 0.125% (1 individual)

Only a single reptile observation was recorded in Plot 2, indicating either low reptilian diversity or limited detectability during the survey period. This could be attributed to seasonal activity patterns, habitat alterations, or disturbances in the environment.

6. Mammals and Amphibians – 0%

No mammal or amphibian species were recorded during the survey in Plot 2. This absence suggests that either mammal populations are extremely low, or their activity is more nocturnal and was not detected during the survey period. Similarly, the absence of amphibians may be linked to a lack of permanent water sources within the surveyed transects.

Ecological Significance and Conservation Considerations

The biodiversity composition of Plot 2 reflects a grass-dominated ecosystem with pockets of woodland that support diverse bird and insect populations. The low representation of reptiles, amphibians, and mammals raises questions about habitat integrity and ecological connectivity, potentially signaling past land-use changes or environmental pressures.

Table 20: Overall Biodiversity Analysis for Plot 2

Species	n	n-1	n(n-1)	
Trees	158	157	24806	
Grasses	464	463	214832	
Birds	141	140	19740	
Insects	36	35	1260	
Mammals	0	-1	0	
Reptiles	1	0	0	
Amphibians	0	-1	0	
	800	799	260638	

$$D=1-(\sum n(n-1)/(N(N-1)$$
$$1-(260638/800*799)$$
$$1-0.4077565707$$
$$D= 0.59224$$

Overall Biodiversity Index Interpretation for Plot 2 (0.5922) and Its Ecological Implications

The Simpson's Biodiversity Index (D) of 0.5922 for Plot 2 reflects a moderately high level of biodiversity, with a balanced distribution of different species categories, particularly trees, grasses, birds, and insects. This biodiversity score suggests that while the ecosystem supports a relatively diverse range of flora and fauna, there may be some underlying environmental pressures affecting species richness and evenness, (Magurran, 2004).

Ecological Interpretation of the Biodiversity Index

1. **Moderate Biodiversity Stability**
   A biodiversity index of 0.5922 indicates a moderate degree of ecological diversity and species interactions. Compared to a theoretical maximum of 1.0 (perfect diversity), this index suggests that some species dominate the ecosystem, potentially limiting the presence of others. The dominance of grasses (58%) and trees (19.75%) suggests a vegetation structure that is still relatively intact, providing habitat for other taxa such as birds and insects.

2. **High Grassland Influence and Habitat Dynamics**
   The dominance of grasses (464 individuals, 58% composition) in the plot means that the ecosystem is largely characterized by open grassland habitats, which may support herbivores, seed-eating birds, and ground-dwelling insects. However, the relatively lower tree density (158 individuals, 19.75%) suggests some level of habitat fragmentation or previous land-use changes.

3. **Avian and Insect Contributions to Ecosystem Functioning**
   Birds (17.63%) and insects (4.5%) make up a significant part of the biodiversity, highlighting their crucial role in pollination, seed dispersal, and pest control. The presence of species such as the White-browed Sparrow Weaver (*Plocepasser mahali*) and the Argentine Ant (*Linepithema humile*) suggests an active trophic network, supporting both herbivorous and predatory interactions.

4. **Absence of Mammals and Amphibians: A Conservation Concern**
   The lack of recorded mammals and amphibians in Plot 2 is an ecological concern, potentially indicating:

   - Habitat disturbances due to human activity.
   - Seasonal migration or nocturnal behaviors affecting detectability.
   - Limited availability of permanent water bodies, which may have impacted amphibian presence.

   The biodiversity index of 0.5922 for Plot 2 suggests that while the ecosystem maintains moderate species diversity, certain groups—such as mammals and amphibians—are underrepresented or absent.

4.3 Plot 3

4.3.1 Vegetation Survey

Vegetation Assessment

Table 21: Vegetation Species Composition and Dominance for Plot 3

Species	n	Composition (%)	Species Dominance (%)
Anisophyllea boehmii	1	0.318471338	0.581868963
Annona senegalensis	4	1.27388535	1.629233097
Burkea africana	1	0.318471338	0.46549517
Brachystegia boehmii	26	8.280254777	13.15023857
Brachystegia bussei	29	9.23566879	13.55754684
Brachystegia longifolia	32	10.1910828	14.31397649
Brachystegia manga	1	0.318471338	0.581868963
Cussonia arborea	6	1.910828025	6.866053765
Canthium glaucum	2	0.636942675	1.396485511
Combretum collinum	8	2.547770701	8.960782032
Combretum elaeagnoides	1	0.318471338	0.581868963
Croton gratissimus	1	0.318471338	1.512859304
Combretum molle	1	0.318471338	0.814616548
Combretum zeyheri	2	0.636942675	0.698242756
Diospyros batocana	5	1.592356688	2.909344816
Diplorhynchus condylocarpon	20	6.369426752	9.77539858
Dichrostachys cinerea	2	0.636942675	0.930990341
Diospyros mespiliformis	1	0.318471338	1.745606889
Dalbergiella nyasae	2	0.636942675	0.814616548
Erythrophleum africanum	4	1.27388535	1.629233097

Flacourtia indica	1	0.318471338	0.232747585
Faurea saligna	2	0.636942675	1.978354475
Gardenia spatulifolia	1	0.318471338	0.46549517
Julbernadia paniculata	50	15.92356688	17.22332131
Lannea stuhlmannii	15	4.777070064	7.948330036
Maprounea africana	5	1.592356688	2.560223438
Monotes glaber	1	0.318471338	0.232747585
Ochna pulchra	12	3.821656051	5.004073083
Ozoroa reticulate	4	1.27388535	1.512859304
Pericopsis angolensis	4	1.27388535	1.512859304
Parinari curatellifolia	5	1.592356688	2.909344816
Pseudolachnostylis maprouneifolia	10	3.184713376	7.680670313
Piliostigma thonningii	1	0.318471338	0.46549517
Syzygium cordatum	8	2.547770701	5.004073083
Strychnos spinosa	3	0.955414013	0.698242756
Securidaca virosa	1	0.318471338	0.232747585
Securinega virosa	4	1.27388535	1.512859304
Terminalia randii	4	1.27388535	1.978354475
Terminalia sericea	5	1.592356688	4.42220412
Uapaca kirkiana	15	4.777070064	12.5683696
Uapaca nitida	10	3.184713376	6.749679972
Vangueriopsis lanciflora	1	0.318471338	0.698242756
Vitex payos	1	0.318471338	0.46549517
Ziziphus abyssinica	2	0.636942675	1.047364134

Grand Totals	314		

Vegetation Composition and Dominance in Plot 3

The vegetation assessment for Plot 3 recorded a total of 314 individual trees representing a diverse array of 44 species, refer to (Table 21). The species composition and dominance were determined based on the relative abundance of each species and their cumulative Diameter at Breast Height (DBH), respectively.

Species Composition

The most dominant species in terms of numerical abundance included *Julbernadia paniculata* (15.92%), *Brachystegia longifolia* (10.19%), *Brachystegia bussei* (9.23%), and *Brachystegia boehmii* (8.28%). These species are typical of Miombo woodlands, which are characteristic of the surveyed region. The presence of *Diplorhynchus condylocarpon* (6.37%), *Uapaca kirkiana* (4.77%), and *Ochna pulchra* (3.82%) further reflects the ecological makeup of the plot.

Less frequently occurring species, including *Anisophyllea boehmii* (0.31%), *Croton gratissimus* (0.31%), and *Monotes glaber* (0.31%), contribute to the overall species diversity, even though their representation in the survey is low.

Species Dominance (Based on DBH)

While *Julbernadia paniculata* (17.22%) remains the most dominant species in both composition and DBH, *Brachystegia longifolia* (14.31*%), Brachystegia bussei* (13.55%), *and Brachystegia boehmii* (13.15%) also exhibit significant dominance, suggesting these species play a crucial role in defining the woodland structure. *Uapaca kirkiana* (12.57%) also stands out as an ecologically important species, contributing significantly to the overall basal area of the plot.

Other species contributing to structural dominance include *Diplorhynchus condylocarpon* (9.77%), *Combretum collinum* (8.96%), and *Lannea stuhlmannii* (7.94%), all of which exhibit larger DBH values, indicating well-established trees within the plot.

Ecological Interpretation and Implications

The dominance of Miombo-associated species such as Brachystegia, Julbernadia, and Uapaca suggests that Plot 3 is largely composed of secondary Miombo woodland, with a stable tree canopy providing habitat for associated flora and fauna. The presence of shade-intolerant species like Diplorhynchus condylocarpon and Ochna pulchra may indicate natural disturbances or

human-induced changes, such as selective logging or shifting cultivation, influencing species succession.

The high structural dominance of a few key species suggests that these trees provide the bulk of the canopy cover and basal area, reinforcing their importance in maintaining the ecological integrity of the plot. However, the relatively low representation of several species suggests potential threats such as habitat fragmentation, selective harvesting, or localized resource pressures, which may impact overall forest heterogeneity.

Tree Canopy Cover and Density in Plot 3

Canopy cover	15.7%
Tree Density	431.1

The tree canopy cover in Plot 3 was recorded at **15.7%**, indicating a moderately open woodland structure with scattered tree cover. This suggests that while trees are present, the area is characterized by a more open canopy, allowing significant light penetration to the understory vegetation. The observed tree density of **431.1 trees per hectare** reflects a relatively stable Miombo woodland ecosystem, albeit with signs of past disturbances.

The dominant tree species in this plot include ***Julbernardia paniculata, Brachystegia longifolia, Brachystegia bussei,*** **and** ***Uapaca kirkiana,*** all characteristic of Miombo woodlands. The relatively low canopy cover, combined with the moderate tree density, suggests that the area has undergone partial clearing or selective logging, likely due to historical land-use activities such as agriculture, charcoal production, or human settlement expansion.

Despite the openness of the woodland, the presence of mature Miombo species and secondary growth indicates a recovering landscape that still provides essential ecological functions such as carbon sequestration, soil stabilization, and habitat for avifauna and insect pollinators.

Table 22: Tree Species Biodiversity Index Analysis for Plot 3

Species	n	n-1	n(n-1)
Anisophyllea boehmii	1	0	0
Annona senegalensis	4	3	12
Burkea africana	1	0	0
Brachystegia boehmii	26	25	650
Brachystegia bussei	29	28	812
Brachystegia longifolia	32	31	992
Brachystegia manga	1	0	0
Cussonia arborea	6	5	30
Canthium glaucum	2	1	2
Combretum collinum	8	7	56
Combretum elaeagnoides	1	0	0
Croton gratissimus	1	0	0
Combretum molle	1	0	0
Combretum zeyheri	2	1	2
Diospyros batocana	5	4	20
Diplorhynchus condylocarpon	20	19	380
Dichrostachys cinerea	2	1	2
Diospyros mespiliformis	1	0	0
Dalbergiella nyasae	2	1	2
Erythrophleum africanum	4	3	12
Flacourtia indica	1	0	0
Faurea saligna	2	1	2
Gardenia spatulifolia	1	0	0
Julbernadia paniculata	50	49	2450
Lannea stuhlmannii	15	14	210
Maprounea africana	5	4	20
Monotes glaber	1	0	0
Ochna pulchra	12	11	132
Ozoroa reticulate	4	3	12
Pericopsis angolensis	4	3	12
Parinari curatellifolia	5	4	20
Pseudolachnostylis maprouneifolia	10	9	90
Piliostigma thonningii	1	0	0
Syzygium cordatum	8	7	56
Strychnos spinosa	3	2	6
Securidaca virosa	1	0	0
Securinega virosa	4	3	12
Terminalia randii	4	3	12

Terminalia sericea	5	4	20
Uapaca kirkiana	15	14	210
Uapaca nitida	10	9	90
Vangueriopsis lanciflora	1	0	0
Vitex payos	1	0	0
Ziziphus abyssinica	2	1	2
Grand Totals	314	313	6328

$D=1-(\sum n(n-1)/(N(N-1)$ 1-(6328/314*313)

1-0.0643861541

D= 0.9356138459

The Simpson's Biodiversity Index (D) of 0.94 for Plot 3 indicates a high level of tree species diversity within the surveyed area. This score reflects the even distribution of species, with multiple dominant taxa contributing to the richness of the habitat, (Magurran, 2004). The *Julbernadia paniculata* species exhibited the highest individual count (50), followed by various Brachystegia species, including *B. boehmii* (26*), B. bussei* (29), and *B. longifolia* (32), highlighting their prominence within the miombo woodland ecosystem.

Despite extensive human disturbance due to agricultural expansion, the diversity of species suggests a relatively intact woodland system with key ecological functions still in place. The high index value implies reduced species dominance by a few taxa, ensuring a balanced ecosystem with multiple species contributing to woodland structure and ecological resilience.

4.3.2 Grass Assessment

Table 23: Grass Species Composition for Plot 3

Grass Species	n	Composition %
Tristachya rehmannii	399	34.27835052
Stipagrostis zeyheri	28	2.405498282
Eragrostis obtusa	14	1.202749141
Eriochloa stapfiana	89	7.64604811
Digitaria eriantha	36	3.092783505
Aristida stitata	598	51.37457045
	1164	100

Grass Species Composition for Plot 3

The vegetation assessment of Plot 3 identified a total of 1,164 individual grass species distributed among six dominant species refer to (Table 23). The species composition provides insight into the structure and ecological balance of the grassland ecosystem within the project area.

Dominant Grass Species

The *Aristida stitata* species exhibits the highest dominance, accounting for 51.37% of the total grass cover. This indicates a strong adaptation to the local soil and climatic conditions, suggesting its significance in maintaining soil stability and providing forage for grazing species.

Tristachya rehmannii follows as the second most abundant species, representing 34.28% of the composition. Its presence contributes to biodiversity, offering habitat and food sources for insects and small vertebrates.

Other species with lower but notable representation include:

- *Eriochloa stapfiana* (7.65%) – A valuable grass species for soil stabilization and moisture retention.
- *Digitaria eriantha* (3.09%) – Recognized for its palatability to herbivores and contribution to rangeland productivity.
- *Stipagrostis zeyheri* (2.41%) – Typically found in semi-arid regions, playing a role in dune stabilization and erosion control.
- *Eragrostis obtusa* (1.20%) – A less dominant species but contributes to the overall diversity and resilience of the grassland ecosystem.

Ecological Implications

The dominance of *Aristida stitata* and *Tristachya rehmannii* suggests that the area is primarily characterized by hardy, drought-resistant grasses that are well adapted to the local environmental conditions. This composition indicates a relatively stable but moderately disturbed habitat, where selective clearing or land-use practices may have influenced species distribution.

Maintaining species diversity within this ecosystem is essential for sustaining soil health, grazing potential, and ecological balance.

Table 24: Grass Species Biodiversity Index for Plot 3

Grass Species	n	n-1	n(n-1)
Tristachya rehmannii	399	398	158802
Stipagrostis zeyheri	28	27	756
Eragrostis obtusa	14	13	182
Eriochloa stapfiana	89	88	7832
Digitaria eriantha	36	35	1260
Aristida stitata	598	597	357006
	1164	1163	525838

$D=1-(\sum n(n-1)/(N(N-1)$ 1-(525838/1164*1163)

1-0.3884358204

D= 0.61156418

Grass Species Biodiversity Index Interpretation for Plot 3

The Simpson's Biodiversity Index (D) for the grass species in Plot 3 was calculated at 0.6115, indicating a moderate level of species diversity within the surveyed area. This index reflects the probability that two randomly selected individuals belong to different species, highlighting the evenness and richness of the grassland ecosystem.

Interpretation of Biodiversity Index

1. **Moderate Species Diversity**

- With a D-value of 0.6115, the grassland ecosystem in Plot 3 is neither highly diverse nor overly dominated by a single species.

- While *Aristida stitata* (51.37%) and *Tristachya rehmannii* (34.28%) are the most abundant species, the presence of four additional species adds to the ecological balance.

2. **Dominant Species Influence**

- The dominance of *Aristida stitata* suggests that the area may experience moderate disturbance or selective pressures, such as grazing or environmental conditions favoring its proliferation.
- The lower representation of *Stipagrostis zeyheri, Eragrostis obtusa*, and *Digitaria eriantha* indicates that these species may be more sensitive to ecological changes or less competitive in the existing conditions.

3. **Ecosystem Implications**

- The observed moderate biodiversity suggests that the grassland is functionally stable but could be vulnerable to further land-use changes (e.g., clearing, grazing, or infrastructure development).
- Ensuring conservation measures such as controlled grazing, protection of less dominant species, and sustainable land-use planning will help maintain ecosystem balance and prevent biodiversity loss.

The grass biodiversity index of 0.6115 for Plot 3 indicates a moderate level of species richness with a dominance of a few key species. The maintenance of biodiversity is crucial for habitat stability, soil health, and ecological resilience, particularly in areas affected by human activities and infrastructure development.

Faunal Assessment

4.3.3 Bird Survey

Table 25: Bird Species Composition Table for Plot 3

Common Name	Scientific Name	Count	Dominance (%)
Abdim's Stork	*Ciconia abdimii*	37	53.62%
Turtle Dove	*Streptopelia turtur*	2	2.90%
Burchell's Coucal	*Centropus burchellii*	1	1.45%
Greater Striped Swallow	*Cecropis cucullata*	1	1.45%
Blue Waxbill	*Uraeginthus angolensis*	4	5.80%

Yellow-billed Kite	*Milvus aegyptius*	1	1.45%
Red-eyed Bulbul	*Pycnonotus nigricans*	4	5.80%
Flappet Lark	*Mirafra rufocinnamomea*	1	1.45%
Hammerkop	*Scopus umbretta*	1	1.45%
Yellow-rumped Widow	*Euplectes capensis*	1	1.45%
Ashy Tit	*Melaniparus cinerascens*	1	1.45%
Lilac-breasted Roller	*Coracias caudatus*	1	1.45%
Pied Crow	*Corvus albus*	1	1.45%
Tawny-flanked Prinia	*Prinia subflava*	1	1.45%
Black-masked Weaver	*Ploceus velatus*	6	8.70%
Fire Finch	*Lagonosticta rubricata*	3	4.35%
White-winged Widowbird	*Euplectes albonotatus*	1	1.45%
Grey-headed Sparrow	*Passer griseus*	1	1.45%
Grey-headed Heron	*Ardea melanocephala*	1	1.45%
Total		**69**	**100%**

Bird Species Composition for Plot 3

The bird survey for Plot 3 recorded 19 bird species, with a total of 69 individuals observed refer to (Table 25). The dominant species in this plot was Abdim's Stork (*Ciconia abdimii*), which accounted for 53.62% of all sightings. The significant presence of this migratory species suggests that the area provides important stopover or foraging habitats, likely due to the availability of open land, wetlands, or food resources that support seasonal movements.

Other species such as the Black-masked Weaver (*Ploceus velatus*) (8.70%), Blue Waxbill (*Uraeginthus angolensis*) (5.80%), and Red-eyed Bulbul (*Pycnonotus nigricans*) (5.80%) were also well-represented, indicating a mix of open-country, woodland, and wetland-associated bird species.

The diversity of functional feeding guilds, including seed-eaters (Turtle Dove, Flappet Lark), insectivores (Lilac-breasted Roller, Tawny-flanked Prinia), and scavengers (Yellow-billed Kite, Pied Crow)—highlights the ecological richness of the area. The presence of Hammerkop (*Scopus umbretta*) and Grey-headed Heron (*Ardea melanocephala*) suggests that nearby water sources or seasonal wetlands may be supporting wading birds.

This species composition indicates that the habitat supports a mixture of terrestrial, arboreal, and wetland-dependent birds, demonstrating good ecosystem functionality. However, the overwhelming dominance of Abdim's Stork may indicate seasonal resource availability, which could fluctuate throughout the year.

Table 26: Bird Species Biodiversity Analysis for Plot 3

Bird Species	Count	n-1	n(n-1)
Abdim's Stork	37	36	1332
Turtle Dove	2	1	2
Burchell's Coucal	1	0	0
Greater Stripped Swallow	1	0	0
Blue Waxbill	4	3	12
Yellowbilled Kite	1	0	0
Redeyed Bulbul	4	3	12
Flappet Lark	1	0	0
Hammer Kop	1	0	0
Yellow rumped Widow	1	0	0
Ashly Tit	1	0	0
Lilac breasted Roller	1	0	0
Pied Crow	1	0	0
Tawnyflanked Prinia	1	0	0
Blackmasked Weaver	6	5	30
Fire Fitch	3	2	6
Whitewinged Widow	1	0	0
Greyheaded Sparrow	1	0	0
Greyheaded Heron	1	0	0
N	69	68	1394

$D=1-(\sum n(n-1)/(N(N-1)$ 1-(1394/69*68)

1-0.2971014493

0.702898551

Bird Species Biodiversity Index Interpretation for Plot 3

The biodiversity index for bird species in Plot 3, calculated using Simpson's Diversity Index, is 0.7029. This score indicates a moderate to high level of bird species diversity, signifying a relatively healthy and functional avian ecosystem within the surveyed area.

Key Observations and Ecological Significance

1. **Dominant Species Influence**

- The Abdim's Stork (*Ciconia abdimii*) was the most dominant species, accounting for 53.62% of the bird population in this plot. This heavy skew towards a single species slightly lowers the overall biodiversity index but also indicates the importance of the habitat for migratory storks.
- Other species such as the Black-masked Weaver (*Ploceus velatus*) (8.70%), Blue Waxbill (*Uraeginthus angolensis*) (5.80%), and Red-eyed Bulbul (*Pycnonotus nigricans*) (5.80%) contributed to species richness and balanced ecosystem dynamics.

2. **Functional Diversity**

- The presence of predatory birds such as the Yellow-billed Kite (*Milvus aegyptius*) and Greater Striped Swallow (*Cecropis cucullata*) suggests that the area supports a food web with multiple trophic levels.
- The Hammerkop (*Scopus umbretta*) and Grey-headed Heron (*Ardea melanocephala*) indicate proximity to wetlands or seasonal water sources, which are important for sustaining wading bird species.

The bird species biodiversity index of 0.7029 suggests that Plot 3 supports a diverse avian population, with a mix of resident, migratory, and habitat-specific species. This diversity underscores the ecological importance of the area, necessitating a careful approach to infrastructure development to ensure minimal disruption to bird populations and their habitats.

4.3.4 Insect Survey

Table 27: Insect Species Composition Table for Plot 3

Common Name	Scientific Name	Count	Dominance (%)
Carcass Beetle	*Dermestes maculatus*	2	6.25
Small Black Sugar Ant	*Camponotus sp.*	6	18.75
Spotted Sugar Ant	*Camponotus maculatus*	5	15.63
White-spotted Fruit Chafer	*Mausoleopsis amabilis*	1	3.13
Harvest Ant	*Messor barbarus*	2	6.25
Bal-byter Sugar Ant	*Camponotus fulvopilosus*	3	9.38
Striped Toktokkie	*Psammodes striatus*	4	12.50
Metallic Tree Darkling Beetle	*Tenebrionidae sp.*	1	3.13
Spotted Sugar Ant	*Camponotus maculatus*	1	3.13
Widow Spider	*Latrodectus sp.*	1	3.13
Stick Mantid	*Phasmida sp.*	1	3.13
African Black Beetle	*Heteronychus arator*	1	3.13
Single Toktokkie	*Psammodes sp.*	1	3.13
Recluse Spider	*Loxosceles sp.*	2	6.25
Giant African Millipede	*Archispirostreptus gigas*	1	3.13
Total		**32**	**100.00**

Insect Species Composition for Plot 3

The insect survey conducted in Plot 3 recorded 15 different insect species with a total count of 32 individuals, refer to (Table 27). The species composition reflects a mix of ants, beetles, spiders, mantids, and millipedes, indicating the presence of a functionally diverse insect community.

Key Observations

1. **Dominant Species**

- The Small Black Sugar Ant (*Camponotus sp.*) was the most dominant species, making up 18.75% of the total insect population.
- The Spotted Sugar Ant (*Camponotus maculatus*) was the second most common species at 15.63%, highlighting the prevalence of ant populations, which play critical roles in soil aeration, nutrient cycling, and pest control.
- Striped Toktokkie (*Psammodes striatus*) beetles accounted for 12.50% of observations, indicating a healthy population of detritivorous beetles contributing to decomposition and organic matter recycling.

2. **Predatory and Decomposing Insects**

- The presence of widow spiders (*Latrodectus sp.*) and recluse spiders (*Loxosceles sp.*), both at 6.25%, suggests a balanced predator-prey dynamic within the insect ecosystem.
- The Carcass Beetle (*Dermestes maculatus*), which accounted for 6.25%, highlights the role of scavengers in maintaining ecological balance by aiding in decomposition.

3. **Specialized Species**

- The White-spotted Fruit Chafer (*Mausoleopsis amabilis*), at 3.13%, suggests the presence of flowering plants and fruiting trees, which support pollinators and frugivorous insects.
- The Giant African Millipede (*Archispirostreptus gigas*), also at 3.13%, indicates the presence of moist, organic-rich habitats, as these detritivores thrive in areas with decaying vegetation and leaf litter.

The insect biodiversity of Plot 3 is characterized by a diverse and functionally important insect community, including decomposers, predators, and herbivorous species.

Table 28: Insect Biodiversity Analysis for Plot 3

Insect Species	Count	n-1	n(n-1)
Carcass beetle	2	1	2
Small black Sugar ant	6	5	30
Spotted Sugar ant	5	4	20
White spotted fruit chafer	1	0	0
Harvest ant	2	1	2
Bal-byter sugar ant	3	2	6
Striped toktokkie	4	3	12

Metalic tree darkling beetle	1	0	0
Spotted Sugar ant	1	0	0
Widow Spider	1	0	0
Stick Mantid	1	0	0
Frican Black Beetle	1	0	0
Sindle toktokkie	1	0	0
Recluse spider	2	1	2
Giant African millipede	1	0	0
	32	31	74

$D=1-(\sum n(n-1)/(N(N-1)$ $1-(74/32*31)$

$1-0.0745967742$

D= 0.925403226

The insect biodiversity analysis for Plot 3 yielded a Simpson's Diversity Index (D) of 0.9254, indicating a high level of species diversity within the surveyed area. This suggests that the local insect population is not dominated by a single species, but rather distributed among multiple species, promoting a balanced and resilient ecosystem.

Interpretation of Results

1. **High Diversity, Low Dominance**

- The Simpson's Index of 0.9254 suggests a well-distributed insect population, where no single species is overwhelmingly dominant.
- This high species evenness indicates a stable and functional insect community, crucial for ecosystem services such as pollination, decomposition, and pest control.

2. **Ecological Implications**

- The presence of decomposers, such as the Carcass Beetle (*Dermestes maculatus*), and detritivores like the Giant African Millipede (*Archispirostreptus gigas*), highlights an active organic matter recycling system in the area.
- Predatory species, such as the Widow Spider (*Latrodectus sp.*) and Recluse Spider (*Loxosceles sp.*), contribute to pest population control, maintaining a balanced food web.
- The abundance of ants, particularly Sugar Ants (*Camponotus sp.*) and Bal-byter Ants (*Camponotus fulvopilosus*), indicates a healthy soil ecosystem, as ants play a vital role in aeration, seed dispersal, and organic matter breakdown.

The biodiversity index of 0.9254 for Plot 3 reflects a highly diverse insect community, with multiple species playing critical roles in ecosystem maintenance. The balanced distribution of species suggests that the area provides a stable habitat with minimal ecological stressors.

4.3.5 Mammals

No sighting of mammals was done during the survey

4.3.6 Reptiles

One Monitor Lizard was sighted during the survey

4.3.7 Amphibians

No sighting of amphibians was done during the survey

Table 29: Overall Species Composition for Plot 3

Species Category	Count	Composition (%)
Trees	314	19.87341772
Grasses	1164	73.67088608
Birds	69	4.367088608
Insects	32	2.025316456
Mammals	0	0
Reptiles	1	0.063291139
Amphibians	0	0
	1580	

The biodiversity assessment for Plot 3 recorded a total of 1,580 individual organisms across six species categories: trees, grasses, birds, insects, reptiles, and mammals. The species composition reflects the ecological structure of the area, with a strong dominance of grasses (73.67%), followed by trees (19.87%), and lower proportions of birds, insects, and reptiles.

Key Observations from the Species Composition

1. **Grassland Dominance (73.67%)**

- Grasses form the dominant vegetation cover in Plot 3, accounting for nearly three-quarters of the total recorded species.

- The abundance of grass species, particularly *Aristida stitata* and *Tristachya rehmannii*, suggests that the area supports open savanna or disturbed woodlands, likely influenced by human activities such as farming and grazing.
- The dominance of grasses indicates significant ecological transformation, which may result in reduced tree regeneration and altered soil moisture retention.

2. **Tree Cover (19.87%)**

- The presence of 314 trees highlights the persistence of woody vegetation, despite the overwhelming presence of grasses.
- Dominant species include *Julbernardia paniculata, Brachystegia species,* and *Uapaca kirkiana,* characteristic of miombo woodlands.
- However, the lower proportion of trees relative to grasses suggests that anthropogenic influences, such as deforestation and land conversion, may be impacting forest cover.

3. **Bird Community (4.37%)**

- Avian diversity is relatively low compared to other taxa, reflecting a potential decline in suitable nesting and foraging habitats.
- The most observed species, Abdim's Stork (*Ciconia abdimii*), dominates the bird population, suggesting a strong association with open grasslands or wetland edges or freshly cultivated fields.
- The limited tree cover may restrict arboreal and forest-dependent bird species, reducing overall avian diversity.

4. **Insect Population (2.03%)**

- The recorded insect species, primarily ant species, beetles, and mantids, play crucial ecological roles in decomposition, pollination, and soil aeration.
- The low insect count relative to total biodiversity suggests potential disturbance in microhabitats, possibly due to pesticide use, habitat fragmentation, or land-use changes.
- Given the role of insects in ecosystem processes, maintaining vegetative diversity is crucial to support their populations.

5. **Minimal Presence of Reptiles and No Observed Mammals or Amphibians**

- Only one reptile was recorded, while no mammals or amphibians were observed, indicating either low species richness or under-sampling due to habitat constraints and seasonal factors.
- The absence of amphibians could suggest limited water sources or unsuitable microhabitats for their survival.

- The lack of large mammals may indicate habitat fragmentation or human disturbance, such as farming and settlement expansion, which restricts the movement and presence of large fauna.

The species composition of Plot 3 indicates a grassland-dominated ecosystem with fragmented tree cover and low vertebrate diversity. The absence of key ecological groups, such as mammals and amphibians, coupled with the limited insect population, highlights the need for habitat conservation measures to support biodiversity.

Table 30: Overall Biodiversity Index Analysis for Plot 3:

Species Category	Count	n-1	n(n-1)
Trees	314	313	98282
Grasses	1164	1163	1353732
Birds	69	68	4692
Insects	32	31	992
Mammals	0	-1	0
Reptiles	1	0	0
Amphibians	0	-1	0
	1580	1579	1457698

$D=1-(\sum n(n-1)/(N(N-1)$ 1-(1457698/1580*1579)

1-0.5842898486

D= 0.4157

The biodiversity analysis for Plot 3, refer to (Table 30) yielded a Simpson's Biodiversity Index (D) of 0.4157, indicating moderate biodiversity within the surveyed area. This value suggests a moderate level of species dominance, where certain species significantly outnumber others, reducing overall species evenness, (Primack, 2014).

Key Interpretations of the Biodiversity Index

1. **Moderate Species Diversity with High Grassland Dominance**

- The biodiversity index reflects a landscape heavily dominated by grasses (73.67%), significantly influencing species evenness.

- The presence of 1,164 individual grass species overshadowed trees, birds, and insects, leading to lower biodiversity scores due to the disproportionate representation of a single taxa.
- Despite the presence of 314 trees, the overall diversity is affected by low vertebrate presence and the predominance of a few dominant plant species.

2. **Tree Species Contribute to Structural Complexity but Are Less Diverse**

- The tree category, while having significant numbers (19.87% of total biodiversity), is dominated by a few key species, particularly Julbernardia paniculata and Brachystegia species, reducing species evenness.
- The low overall biodiversity index suggests that while tree species richness is present, dominance by a few species lowers overall ecological balance.

3. **Low Representation of Fauna (Birds, Insects, and Reptiles)**

- Birds and insects together make up only 6.4% of total biodiversity, further highlighting an imbalance in species distribution.
- The absence of mammals and amphibians lowers the biodiversity index, as these groups contribute significantly to ecological complexity in healthier ecosystems.
- Only one reptile species was observed, indicating a limited presence of herpetofauna, likely due to habitat fragmentation, climate factors, or land-use changes or survey timing.

The Simpson's Biodiversity Index of 0.4157 for Plot 3 indicates moderate biodiversity with a skewed species distribution, dominated by grass species and a few key trees. The low presence of vertebrates and insects suggests habitat simplification, likely due to human activity.

4.4 Plot 4

4.4.1 Vegetation Assessment

Table 31: Tree Species Composition and Dominance for Plot 4

Species	n	Composition (%)	Dominance (%)
Anona Senegalensis	3	0.94637224	0.861124158
Brachystegia boehmii	80	25.23659306	40.33192422
Brachystegia bussei	1	0.315457413	0.313136058
Brachystegia floribunda	29	9.148264984	13.08908721
Cassia abbrevita	1	0.315457413	0.313136058
Casia abbreviata	1	0.315457413	0.313136058
Combretum collinum	1	0.315457413	0.939408173
Combretum molle	3	0.94637224	0.939408173
Cussonia arborea	1	0.315457413	0.234852043
Diospyros batocana	8	2.523659306	3.679348677
Diplorhynchus condylocarpon	12	3.785488959	5.479881008
Dichrostachys cinerea	17	5.362776025	5.190230155
Dalbergiella nyasae	7	2.208201893	2.896508533
Diospyros whyteana	1	0.315457413	0.673242524
Ekebergia banguelensis	2	0.630914826	0.469704086
Ficus craterostoma	1	0.315457413	0.782840144
Flacourtia indica	1	0.315457413	0.078284014
Garcinia livingstonei	1	0.315457413	0.234852043

Harungana madagascariensis	2	0.630914826	0.547988101
Julbernardia globiflora	12	3.785488959	3.053076562
Julbernadia paniculata	50	15.77287066	16.36135901
Lannea stuhlmannii	4	1.261829653	0.939408173
Monotes glaber	6	1.892744479	2.505088461
Ochna pulchra	7	2.208201893	2.035384375
Parinari curatellifolia	12	3.785488959	11.58603413
Pseudolachnostylis maprouneifolia	8	2.523659306	6.341005167
Piliostigma thonningii	11	3.470031546	8.846093628
Syzygium cordatum	1	0.315457413	0.547988101
Swartzia madagascariensis	1	0.315457413	0.430562079
Strychonos madagascariensis	1	0.315457413	0.156568029
Terminalia sericea	1	0.315457413	0.391420072
Uapaca kirkiana	19	5.993690852	11.03804603
Uapaca nitida	10	3.154574132	12.91686238
Vangueriopsis lanciflora	2	0.630914826	0.391420072
Grand Totals	317		

The tree species assessment for Plot 4 identified a total of 317 individual trees spanning 33 different species, refer to (Table 31) showcasing a diverse yet unevenly distributed vegetation structure. The species composition and dominance reveal Brachystegia boehmii (25.24%) as the most abundant species, followed by Julbernardia paniculata (15.77%) and Parinari curatellifolia (3.79%), collectively accounting for a substantial proportion of the total tree population.

Key Observations on Species Composition

1. **Dominant Miombo Woodland Species**

- The dominance of Brachystegia boehmii (25.24%) and Julbernardia paniculata (15.77%) is characteristic of Miombo woodlands, which are the defining vegetation type of the region.
- These species, alongside Julbernardia globiflora (3.79%), are known for forming the structural backbone of dry Miombo ecosystems, playing a critical role in carbon sequestration, soil stabilization, and providing habitat for various fauna.

2. **Presence of Ecologically Significant Species**

- *Diospyros batocana* (2.52%), *Uapaca kirkiana* (5.99%), and *Uapaca nitida* (3.15%) indicate the diversity of fruit-bearing species, which are ecologically important for wildlife sustenance and seed dispersal.
- *Ochna pulchra* (2.20%) and *Dalbergiella nyasae* (2.21%) are significant contributors to habitat complexity, supporting various insect and bird species.

3. **Species with Low Composition but High Ecological Value**

- *Ekebergia banguelensis, Garcinia livingstonei*, and *Harungana madagascariensis,* though present in small numbers, contribute to habitat resilience by providing shade, acting as water-retaining species, and improving soil fertility.
- *Combretum molle* and *Combretum collinum,* despite their low representation (0.95%), are important fire-adapted species that thrive in secondary woodlands.

Tree Species Dominance and Ecological Implications

1. **Strong Dominance of Key Miombo Species**

- *Brachystegia boehmii* (40.33%) holds the highest dominance, reinforcing its role as the keystone species in this woodland.
- *Parinari curatellifolia* (11.58%) and *Uapaca nitida* (12.92%) show a high structural presence, highlighting their long-lived canopy coverage and drought resistance.
- *Piliostigma thonningii* (8.85%) and *Pseudolachnostylis maprouneifolia* (6.34%) also exhibit strong dominance, indicating their competitive success in disturbed and regenerating woodland areas.

2. **Low Dominance Species and Their Ecological Role**

- Species such as *Dichrostachys cinerea* (5.19%) *and Diplorhynchus condylocarpon* (5.48%) show moderate dominance, suggesting their tolerance to both dry and semi-moist conditions.
- *Syzygium cordatum* (0.55%) and *Ficus craterostoma* (0.78%) have limited dominance but are important in riparian zones, enhancing water retention and providing food sources for birds and primates.

3. **Impact on Habitat Structure and Function**

- The strong dominance of Brachystegia and Julbernardia species indicates a relatively mature woodland, but the presence of fast-growing secondary species like *Dichrostachys cinerea* and *Pseudolachnostylis maprouneifolia* suggests that portions of the plot may be undergoing successional recovery following past disturbances.
- The presence of fire-resistant and nitrogen-fixing species such as *Diplorhynchus condylocarpon* and *Uapaca kirkiana* points to an adaptive response to periodic fires and nutrient-poor soils, common in Miombo landscapes.

The tree species composition and dominance for Plot 4 highlight a woodland ecosystem dominated by Miombo species, with a mix of regenerating and secondary woodland elements. The strong dominance of *Brachystegia boehmii* (40.33%) and the presence of structurally significant species like *Julbernardia paniculata* and *Parinari curatellifolia* indicate a woodland that is mature but undergoing localized regeneration.

Tree Species Canopy Cover and Tree Density for Plot 4

Canopy Cover	30%
Tree Density	451.1 trees per Ha

The vegetation assessment for Plot 4 revealed a tree canopy cover of 30.0% and a tree density of 451.1 trees per hectare. These figures provide insight into the structural characteristics of the woodland and its ecological integrity.

The **30.0% canopy cover** indicates a moderately open woodland with a balance between tree-covered and open areas. This level of canopy cover suggests that while the area retains significant tree presence, it also has considerable gaps, possibly due to natural forest structure, anthropogenic activities, or seasonal variations in foliage. The moderate canopy cover is typical

of miombo woodlands, where trees are often spaced apart, allowing for the growth of understorey vegetation such as grasses and shrubs.

The **tree density of 451.1 trees per hectare** suggests a relatively well-stocked woodland. This density is comparable to that of secondary miombo woodlands, where tree regeneration is occurring alongside human-induced pressures such as agriculture, firewood harvesting, and grazing. While the density remains relatively high, the dominance of certain tree species—such as *Brachystegia boehmii, Julbernardia paniculata*, and *Uapaca kirkiana*—indicates a selective pressure on specific species, either due to their ecological suitability or their use by local communities.

Table 32: Tree Species Biodiversity Analysis for Plot 4

Species	n	n-1	n(n-1)
Anona Senegalensis	3	2	6
Brachystegia boehmii	80	79	6320
Brachystegia bussei	1	0	0
Brachystegia floribunda	29	28	812
Cassia abbrevita	1	0	0
Casia abbreviata	1	0	0
Combretum collinum	1	0	0
Combretum molle	3	2	6
Cussonia arborea	1	0	0
Diospyros batocana	8	7	56
Diplorhynchus condylocarpon	12	11	132
Dichrostachys cinerea	17	16	272
Dalbergiella nyasae	7	6	42
Diospyros whyteana	1	0	0
Ekebergia banguelensis	2	1	2
Ficus craterostoma	1	0	0
Flacourtia indica	1	0	0
Garcinia livingstonei	1	0	0
Harungana madagascariensis	2	1	2
Julbernardia globiflora	12	11	132
Julbernadia paniculata	50	49	2450
Lannea stuhlmannii	4	3	12
Monotes glaber	6	5	30
Ochna pulchra	7	6	42
Parinari curatellifolia	12	11	132
Pseudolachnostylis maprouneifolia	8	7	56
Piliostigma thonningii	11	10	110

Syzygium cordatum	1	0	0
Swartzia madagascariensis	1	0	0
Strychonos madagascariensis	1	0	0
Terminalia sericea	1	0	0
Uapaca kirkiana	19	18	342
Uapaca nitida	10	9	90
Vangueriopsis lanciflora	2	1	2
Grand Totals	317	316	11048

D=1-(∑n(n-1)/(N(N-1) 1- (11048/317*316) 1-0.1102903007 **D= 0.98897097**

Tree Species Biodiversity Index for Plot 4

The biodiversity assessment of tree species in Plot 4 yielded a Simpson's Biodiversity Index (D) of 0.98, refer to (Table 32) indicating exceptionally high species diversity within the surveyed area. This value is close to 1, suggesting a highly heterogeneous tree community where species are well-distributed without significant dominance by a single species.

Ecological Significance of the Biodiversity Index

A biodiversity index of 0.98 implies that the woodland in Plot 4 exhibits a rich and balanced tree composition, with a wide range of species contributing to the ecosystem structure. Key ecological implications of this high diversity include:

1. **High Ecosystem Resilience** – A diverse tree population provides greater stability against environmental disturbances such as climate variability, pests, and disease outbreaks. The presence of multiple species ensures that if one species is affected by a particular stressor, the ecosystem can continue functioning with minimal disruption.
2. **Enhanced Habitat Quality** – The diversity of tree species supports a varied array of wildlife, including birds, mammals, insects, and other fauna. Species such as Julbernardia paniculata, Brachystegia boehmii, and Uapaca kirkiana provide essential food and shelter for herbivores, frugivores, and pollinators, contributing to broader ecological stability.
3. **Functional Redundancy and Resource Availability** – The relatively even distribution of species in the plot ensures that key ecosystem functions—such as carbon sequestration, soil stabilization, and nutrient cycling—are sustained, even if some species experience population fluctuations.

With a biodiversity index of 0.98, Plot 4 represents a highly diverse and ecologically valuable woodland.

4.4.2 Grass Assessment

Table 33: Grass Species Composition for Plot 4

Grasses	Count	Composition (%)
Sporobolus africanus	599	56.66982025
Digitaria velutina	58	5.487228004
Digitaria ternata	51	4.824976348
Chloris mossambicensis	34	3.216650899
Setaria sphacelate	77	7.284768212
Setaria sphacelate	82	7.757805109
Eragrostis superba	28	2.649006623
Panicum volutans	46	4.351939451
Andropogon gayanus	53	5.014191107
Setaria incrassata	19	1.797540208
Setaria pallide-fusca	10	0.946073794
	1057	

The grass species composition assessment for Plot 4 revealed a total of 1,057 individual grasses, distributed across 11 species, refer to (Table 33) indicating a moderate level of grassland diversity within the surveyed area.

Dominant Grass Species

1. *Sporobolus africanus* (56.67%) – This species was the most dominant, accounting for over half of the total grass population in Plot 4. Its widespread presence suggests that the area may be subject to frequent disturbances such as grazing, fire, or soil compaction, as Sporobolus species are known to thrive in degraded environments.
2. *Setaria sphacelate* (15.04% combined across two variations) – This species exhibited significant coverage, reflecting its adaptability to semi-arid and disturbed environments. Setaria species play an important role in soil stabilization and forage production for herbivores.
3. *Digitaria velutina* (5.49%) and *Digitaria ternata* (4.82%) – Representing a smaller portion of the population, these species are known for their drought resilience and contribution to livestock grazing systems.

4. *Andropogon gayanus* (5.01%) – This species, a characteristic grass of Miombo woodlands, suggests the presence of semi-natural grassland patches within the surveyed area.

5. Other Species – The remaining species, including *Eragrostis superba, Chloris mossambicensis, Panicum volutans,* and Setaria incrassata, made up less than 5% each of the overall composition, highlighting the diversity of the understory vegetation in the region.

Ecological Significance

- The dominance of *Sporobolus africanus* suggests that soil conditions may be compacted or degraded, potentially due to frequent grazing or human activity.
- *Setaria sphacelate* and Digitaria species are valuable for forage and soil fertility, playing a crucial role in maintaining ground cover and reducing erosion.
- The presence of *Andropogon gayanus* indicates patches of relatively intact natural grassland, which are essential for supporting biodiversity, particularly for insect pollinators and ground-nesting birds.

The grass species composition in Plot 4 is dominated by a few resilient species, particularly *Sporobolus africanus* and *Setaria sphacelate*, with moderate species diversity.

Table 34: Grass Species Biodiversity Analysis for Plot 4

Grasses		n	n-1	n(n-1)
Sporobolus africanus		599	598	358202
Digitaria velutina		58	57	3306
Digitaria ternata		51	50	2550
Chloris mossambicensis		34	33	1122
Setaria sphacelate		77	76	5852
Setaria sphacelate		82	81	6642
Eragrostis superba		28	27	756
Panicum volutans		46	45	2070
Andropogon gayanus		53	52	2756
Setaria incrassata		19	18	342
Setaria pallide-fusca		10	9	90
	N	1057	1056	383688

D=1-(∑n(n-1)/(N(N-1)	1-(383688/1057*1056)
	1-0.3437473123
	D = 0.6562526877

Grass Species Biodiversity Index for Plot 4

The Simpson's Biodiversity Index (D) for grasses in Plot 4 was calculated at 0.6562, refer to (Table 34) indicating a moderate level of species diversity within the surveyed grassland. This value suggests that while some species dominate the ecosystem, there is still a fair degree of species evenness, contributing to the overall ecological stability of the area.

Interpretation of the Biodiversity Index

A biodiversity index of 0.6562 indicates that Plot 4 exhibits moderate species richness and distribution balance among the different grass species. The presence of a dominant species, *Sporobolus africanus* (56.67%), contributes to a relatively lower biodiversity score, as a high concentration of a few species reduces overall species evenness (Simpson, 1949). However, the presence of other species such as *Setaria sphacelate, Digitaria velutina*, and *Andropogon gayanus* contributes to maintaining some ecological complexity.

Ecological Significance

- **Presence of Dominant Species:** The high dominance of *Sporobolus africanus* suggests land degradation, overgrazing, or disturbed soil conditions, as this species is known to thrive in poor or compacted soils.
- **Moderate Diversity:** While the index is not extremely low, it indicates that grassland diversity has been impacted, likely due to human activities such as agriculture, grazing, or fire regimes.
- **Soil and Habitat Stability:** The presence of Setaria and Andropogon species indicates that certain areas within the plot retain elements of natural grassland, which are important for maintaining ecosystem functions such as soil retention, forage availability, and carbon sequestration.

The grassland in Plot 4 exhibits moderate biodiversity, with dominance by *Sporobolus africanus*, suggesting some level of ecological disturbance.

4.4.3 Bird Survey

Faunal Assessment

Table 35: Bird Species composition for Plot 4

Bird Species	Scientific Name	Count	Composition (%)
Red-eyed Bulbul	*Pycnonotus nigricans*	5	9.43
Southern Masked Weaver	*Ploceus velatus*	6	11.32
Blue Waxbill	*Uraeginthus angolensis*	4	7.55
Tawny-flanked Prinia	*Prinia subflava*	1	1.89
Turtle Dove	*Streptopelia turtur*	3	5.66
Pied Crow	*Corvus albus*	1	1.89
Lilac-breasted Roller	*Coracias caudatus*	1	1.89
Southern Grey-headed Kingfisher	*Halcyon leucocephala*	1	1.89
Red-billed Oxpecker	*Buphagus erythrorhynchus*	1	1.89
Ashy Tit	*Melaniparus cinerascens*	2	3.77
Grey-headed Sparrow	*Passer griseus*	1	1.89
Yellow-rumped Widow	*Euplectes capensis*	1	1.89
Abdim's Stork	*Ciconia abdimii*	39	73.58
Flappet Lark	*Mirafra rufocinnamomea*	2	3.77
Long-tailed Widow	*Euplectes progne*	1	1.89
Yellow Bishop	*Euplectes capensis*	1	1.89
Fire Finch	*Lagonosticta senegala*	3	5.66
Miombo Barbet	*Lybius rolleti*	1	1.89
Black Sunbird	*Cyanomitra nigricollis*	1	1.89
Collared Sunbird	*Hedydipna collaris*	1	1.89

Bird Species Composition for Plot 4

The bird survey in Plot 4 recorded a total of 53 individual birds, representing 20 different species, refer to (Table 35). The composition analysis reveals that the Abdim's Stork *(Ciconia abdimii)* is the most dominant species, comprising 73.58% of all recorded individuals. Other species, such as the Southern Masked Weaver *(Ploceus velatus)* (11.32%), Red-eyed Bulbul *(Pycnonotus nigricans)* (9.43%), and the Blue Waxbill *(Uraeginthus angolensis)* (7.54%), contribute to the species diversity within the area.

Ecological Interpretation

Dominance of Abdim's Stork:
The overwhelming presence of Abdim's Stork *(Ciconia abdimii)* suggests that the area provides suitable foraging grounds, likely characterized by open habitats, wetlands, or recently plowed agricultural fields that attract these migratory storks. Their dominance may indicate seasonal movement patterns, with birds utilizing the site as a feeding or resting ground.

Presence of Seed-eating and Insectivorous Birds:

- The occurrence of Southern Masked Weaver, Fire Finch, and Blue Waxbill indicates the availability of grasslands and shrubby vegetation, as these species predominantly feed on seeds and small insects.
- The presence of Tawny-flanked Prinia and Flappet Lark suggests that open savanna and grassland patches exist, as these species prefer such habitats for nesting and foraging.

Diversity of Bird Guilds:
The mix of weavers, sunbirds, doves, rollers, and raptors suggests that the area supports diverse foraging and nesting opportunities, albeit with some species appearing in low numbers.

The bird community in Plot 4 is dominated by Abdim's Stork, suggesting a seasonal foraging hotspot. The diversity of seed-eating, insectivorous, and arboreal species reflects a mixed landscape of grasslands, woodlands, and farmlands.

Table 36: Bird Species Biodiversity Index Analysis for Plot 4

Common Name	Scientific Name	Composition (%)	n	n-1	n(n-1)
Red-eyed Bulbul	*Pycnonotus nigricans*	9.43	5	4	20
Southern Masked Weaver	*Ploceus velatus*	11.32	6	5	30
Blue Waxbill	*Uraeginthus angolensis*	7.55	4	3	12
Tawny-flanked Prinia	*Prinia subflava*	1.89	1	0	0
Turtle Dove	*Streptopelia turtur*	5.66	3	2	6
Pied Crow	*Corvus albus*	1.89	1	0	0
Lilac-breasted Roller	*Coracias caudatus*	1.89	1	0	0
Southern Grey-headed Kingfisher	*Halcyon leucocephala*	1.89	1	0	0
Red-billed Oxpecker	*Buphagus erythrorhynchus*	1.89	1	0	0
Ashy Tit	*Melaniparus cinerascens*	3.77	2	1	2
Grey-headed Sparrow	*Passer griseus*	1.89	1	0	0
Yellow-rumped Widow	*Euplectes capensis*	1.89	1	0	0
Abdim's Stork	*Ciconia abdimii*	73.58	39	38	1482
Flappet Lark	*Mirafra rufocinnamomea*	3.77	2	1	2
Long-tailed Widow	*Euplectes progne*	1.89	1	0	0
Yellow Bishop	*Euplectes capensis*	1.89	1	0	0
Fire Finch	*Lagonosticta senegala*	5.66	3	2	6
Miombo Barbet	*Lybius rolleti*	1.89	1	0	0
Black Sunbird	*Cyanomitra nigricollis*	1.89	1	0	0
Collared Sunbird	*Hedydipna collaris*	1.89	1	0	0
			53	52	1560

$D=1-(\sum n(n-1)/(N(N-1)$ 1-(1560/53*52)

1- 0.5660377358

D= 0.4339622642

The biodiversity index for bird species in Plot 4 was calculated using Simpson's Diversity Index, yielding a value of 0.4339, refer to (Table 36). This index reflects a moderate level of avian diversity, indicating that while multiple bird species were recorded in the surveyed area, the distribution of individuals across species is uneven, with a few species being dominant.

The dominant species in the area was Abdim's Stork *(Ciconia abdimii),* which accounted for 73.58% of all bird observations. The high abundance of this species significantly influences the diversity index, as the presence of a dominant species often results in a lower overall biodiversity score. Other recorded species, such as the Southern Masked Weaver *(Ploceus velatus),* Red-eyed Bulbul (Pycnonotus nigricans), and Fire Finch (Lagonosticta spp.), had relatively lower counts, contributing to the overall species richness.

A biodiversity index of 0.4339 suggests that bird diversity in this area is moderately constrained, likely due to habitat modification, vegetation clearance, and human activities such as farming. The presence of farmland-adapted species like Turtle Doves *(Streptopelia turtur),* Pied Crows *(Corvus albus)*, and Lilac-breasted Rollers *(Coracias caudatus)* indicates that the landscape is partially transformed and that these birds have adapted to human-altered environments.

4.4.4 Insect Survey

Insect Species Composition for Plot 4

Table 37: Insect Species Composition for Plot 4

Insect Species	Scientific Name	Count	Composition (%)
Velvet Ant	*Mutillidae family*	1	2.63%
Grass Mantid	*Mantidae family*	1	2.63%
Bal-byter Sugar Ant	*Camponotus fulvopilosus*	1	2.63%
Luck Ant	*Solenopsis spp.*	4	10.53%
Bark Cockroach	*Blaberidae family*	1	2.63%
Chequered Beetle	*Cleridae family*	1	2.63%
Sweat Bee	*Halictidae family*	1	2.63%
Harvester Ant	*Pogonomyrmex spp.*	6	15.79%
Trilobite Cockroach	*Blaberidae family*	1	2.63%
Grey Coffee Snoot Beetle	*Curculionidae family*	1	2.63%
Jumping Spider	*Salticidae family*	2	5.26%
Cicadas	*Cicadidae family*	3	7.89%

Tiny Black Ants	*Monomorium minimum*	10	26.32%
Monarch Butterflies	*Danaus plexippus*	5	13.16%

The insect species composition in Plot 4 consists of 38 individuals representing 14 different species, refer to (Table 37) with a diverse range of ecological roles, including pollinators, predators, decomposers, and generalist feeders. The most dominant species recorded was the Tiny Black Ants *(Monomorium minimum),* making up 26.32% of the surveyed population, followed by the Harvester Ant (Pogonomyrmex spp.) at 15.79% and Monarch *Butterflies (Danaus plexippus)* at 13.16%.

Several insect groups with key ecological functions were observed, including pollinators such as the Sweat Bee (Halictidae family) and Monarch Butterflies *(Danaus plexippus),* as well as predatory species such as the Jumping Spider (Salticidae family) and Grass Mantid (Mantidae family). Additionally, the presence of decomposers such as the Bark Cockroach (Blaberidae family) and Trilobite Cockroach (Blaberidae family) highlights the importance of insects in maintaining the ecological balance of the area.

The balanced distribution of insects in this plot suggests that while some species are dominant, a variety of taxa contribute to overall species richness. The moderate insect diversity observed may be influenced by vegetation availability, habitat conditions, and human activities in the area.

Table 38: Insect Species Biodiversity Analysis for Plot 4

Insect Species	Scientific Name	n	n-1	n(n-1)	
Velvet ant	*Mutillidae family*	1	0	0	
Grass mantid	*Mantidae family*	1	0	0	
Bal-byter sugar ant	*Camponotus fulvopilosus*	1	0	0	
Luck ant	*Solenopsis spp.*	4	3	12	
Bark Cockroach	*Blaberidae family*	1	0	0	
Chequered beetle	*Cleridae family*	1	0	0	
Sweat bee	*Halictidae family*	1	0	0	
Harvester ant	*Pogonomyrmex spp.*	6	5	30	
Trilobite cockroach	*Blaberidae family*	1	0	0	
Grey coffee snoot beetle	*Curculionidae family*	1	0	0	
Jumping Spider	*Salticidae family*	2	1	2	
Cicadas	*Cicadidae family*	3	2	6	

Tiny Black Ants	*Monomorium minimum*	10	9	90	
Monarch Butterflies	*Danaus plexippus*	5	4	20	
		38	**37**	**160**	

D=1-(∑n(n-1)/(N(N-1)

1-(160/38*37)
1-0.1137980085
D= 0.8862019915

Insect Species Biodiversity Index for Plot 4

The biodiversity index of 0.8862 for insects in Plot 4 refer to (Table 38) indicates a highly diverse insect community with a relatively even species distribution. This suggests that the ecological conditions in this plot provide suitable habitats for a range of insect species, supporting various functional roles in the ecosystem.

The Simpson's Biodiversity Index (D), which measures species richness and evenness, demonstrates that no single species overwhelmingly dominates the insect population. Instead, multiple species, including Tiny Black Ants (*Monomorium minimum*) (26.32%), Harvester Ants (*Pogonomyrmex spp.*) (15.79%), and Monarch Butterflies (*Danaus plexippus*) (13.16%), contribute significantly to the total insect count. This balanced distribution enhances ecological resilience and stability.

The high insect biodiversity index of 0.8862 in Plot 4 highlights the ecological significance of insect communities in maintaining ecosystem balance.

4.4.5 Reptile Survey

Table 39: Reptile Species Composition for Plot 4

Reptiles		Count	Composition (%)
Side-striped chameleon	*Chamaeleo dilepis*	1	16.6
Mozambique Rough-Scaled Lizzard	*Ichnotropis squamulosa*	4	66.6
Pancake Tortoise	*Malacochersus tornieri*	1	16.6
		6	

The reptile survey in Plot 4 recorded a total of six (6) individuals across three species, refer to (Table 39) indicating a moderate presence of reptilian biodiversity in the area. The Mozambique Rough-Scaled Lizard (*Ichnotropis squamulosa*) was the most frequently observed species, comprising 66.67% of the total reptile count. The Side-Striped Chameleon (*Chamaeleo dilepis*) and the Pancake Tortoise (*Malacochersus tornieri*) were each represented by a single individual, making up 16.67% of the total reptile population.

Ecological Significance of Observed Reptile Species

1. **Habitat Preferences and Microclimate Dependence**

- The **Mozambique Rough-Scaled Lizard** is a ground-dwelling species commonly found in savanna woodlands and open areas, suggesting that the habitat within Plot 4 provides suitable conditions for lizard populations.
- The **Side-Striped Chameleon**, an arboreal species, indicates the presence of sufficient tree cover to support its needs for camouflage, thermoregulation, and insect predation.
- The **Pancake Tortoise**, a rock-dwelling species, prefers areas with **rocky outcrops** for shelter and protection, suggesting that such microhabitats exist within the plot.

2. **Indicators of Habitat Disturbance**

- The low reptile diversity could be attributed to habitat modifications due to human activities, including farmland expansion, deforestation, and habitat fragmentation.
- Given that reptiles are highly sensitive to environmental changes, the presence of only three species suggests that some reptile populations may be under pressure due to habitat disturbances.

The reptile species composition in Plot 4 indicates that while some suitable habitats exist, species diversity is relatively low, potentially due to habitat disturbances.

Table 40: Reptile Species Biodiversity Analysis for Plot 4

Reptiles	n	n-1	n*(n-1)
Side-striped chameleon	1	0	0
Mozambique Rough-Scaled Lizzard	4	3	12
Pancake Tortoise	1	0	0
	6	5	12

$D=1-(\sum n(n-1)/(N(N-1)$ 1-(12/6*5)

1-0.4

D= 0.6

Reptile Species Biodiversity Index for Plot 4 (D = 0.6)

The Simpson's Biodiversity Index (D) for reptile species in Plot 4 is 0.6, refer to (Table 40) indicating a moderate level of reptile diversity within the surveyed area. This value suggests that the reptile population is somewhat diverse, but species dominance is present, with a few species being more prevalent than others.

Key Findings from the Reptile Biodiversity Analysis

1. **Moderate Diversity with Dominance by a Single Species**
    - The Mozambique Rough-Scaled Lizard (*Ichnotropis squamulosa*) accounted for 66.67% of all reptile observations, demonstrating its dominance in the area.
    - The Side-Striped Chameleon (*Chamaeleo dilepis*) and Pancake Tortoise (*Malacochersus tornieri*) were observed in much lower numbers, each contributing only 16.67% to the total reptile count.
2. **Influence of Habitat Structure on Biodiversity**
    - The presence of an arboreal species (Side-Striped Chameleon) suggests that some tree cover remains intact, providing suitable perches and hunting grounds.
    - The Mozambique Rough-Scaled Lizard, being a ground-dwelling species, indicates that open or semi-open spaces within the plot are still viable habitats for reptiles.
    - The Pancake Tortoise's presence highlights the existence of rocky outcrops, which are critical for shelter and protection.
3. **Potential Factors Affecting Reptile Diversity**
    - Habitat Modification: The moderate biodiversity index suggests that some level of habitat alteration has occurred, likely due to land clearing, farming, or vegetation disturbance.
    - Predation Pressure and Human Disturbance: Reduced reptile diversity could be influenced by predation from birds and mammals, as well as human activities such as hunting and habitat destruction.
    - Microhabitat Fragmentation: The limited number of species suggests that certain habitat conditions required by other reptiles may be lacking or have been degraded.

With a reptile biodiversity index of 0.6, Plot 4 supports a moderate diversity of reptiles, though certain species are more dominant than others.

4.4.6 Mammals

There were no mammal observations that were made during the survey

4.4.7 Amphibians

One Bocage's Burrowing tree frog was observed during the survey.

Table 41: Overall Species Composition for Plot 4

Species Category	Count	Composition (%)
Trees	317	21.53532609
Grasses	1057	71.80706522
Birds	53	3.600543478
Insects	38	2.581521739
Mammals	0	0
Reptiles	6	0.407608696
Amphibians	1	0.067934783
	1472	

The biodiversity assessment for Plot 4 reveals a dominance of grass species, refer to (Table 41) with other taxa contributing in varying proportions. The surveyed area exhibits a predominantly grassland ecosystem with scattered trees and moderate faunal presence, particularly in bird and insect populations. The presence of a single amphibian and limited reptilian diversity suggests that wetland or riparian habitats are minimal within this plot.

Key Findings from the Species Composition Analysis

1. **Grass Species as the Dominant Vegetation Type (71.81%)**
    - Grasses represent the largest proportion of surveyed biodiversity, accounting for 71.81% of all observed species.
    - The dominance of Sporobolus africanus, Digitaria species, and *Eragrostis superba* suggests that this area is characterized by open savanna or grassland ecosystems.
    - The high proportion of grasses may be due to historical land use changes, grazing pressures, or natural soil and climatic conditions favoring grassland over woody vegetation.
2. **Tree Cover and Woody Vegetation (21.54%)**

- Trees account for 21.54% of total species observed, indicating a patchy distribution of woodland elements within the grassland matrix.
- The presence of dominant tree species such as Brachystegia boehmii, Julbernardia paniculata, and Parinari curatellifolia highlights the Miombo woodland influence in this area.
- The relatively lower tree cover suggests that this plot has experienced some level of deforestation or land-use changes, potentially due to human activities such as agriculture or firewood collection.

3. **Moderate Avian Diversity (3.60%)**
    - Bird species contribute 3.60% to the overall biodiversity, with Abdim's Stork as the most dominant species.
    - The presence of seed-eating birds such as the Southern Masked Weaver and Blue Waxbill correlates with the dominance of grass species, which provide both food and nesting materials.
    - Some birds, such as the Lilac-Breasted Roller and Red-Billed Oxpecker, indicate the presence of scattered trees and potential interactions with large herbivores.
4. **Insect Population (2.58%)**
    - Insects, including ants, beetles, cockroaches, and mantids, form a small but ecologically significant portion of the biodiversity.
    - Their low overall representation suggests that the area may not have a highly diverse insect population, or that certain microhabitats required for more specialized insect species are lacking.
5. **Reptile and Amphibian Presence (0.41% and 0.07%)**
    - The reptile population is minimal, contributing only 0.41% to total biodiversity.
    - The presence of one amphibian species at 0.07% composition suggests that wetland habitats are scarce within the surveyed plot.
    - The limited number of reptile and amphibian species may indicate a lack of suitable breeding grounds or the impact of land-use changes on their habitats.
6. **Absence of Large Mammals (0%)**
    - No mammals were recorded during the survey, suggesting that either large mammals avoid this area due to human disturbance or their populations are naturally low due to limited food or shelter availability.

- If historical records suggest the prior presence of mammals, their absence in this plot could indicate habitat degradation, hunting pressure, or shifts in animal movement patterns due to human activities.

The biodiversity composition of Plot 4 is predominantly grassland (71.81%) with scattered woodland elements (21.54%). The low presence of reptiles, amphibians, and mammals suggests that habitat conditions may be limiting for these groups.

Table 42: Overall Biodiversity Index Analysis for Plot 4

Species Category		n	n-1	n(n-1)
Trees		317	316	100172
Grasses		1057	1056	1116192
Birds		53	52	2756
Insects		38	37	1406
Mammals		0	-1	0
Reptiles		6	5	30
Amphibians		1	0	0
		1472	1471	1220556

D=1-(∑n(n-1)/(N(N-1)

1-(1220556/1472*1471)
1-0.5636859723
D= 0.43633140277

The overall Simpson's Biodiversity Index (D) of 0.4363 for Plot 4 refer to (Table 41) indicates a moderate level of biodiversity within the surveyed area. This value suggests that while there is some ecological diversity present, certain species groups exhibit dominance over others, reducing overall evenness (Primack, 2014).

Key Insights from the Biodiversity Analysis

1. **Grassland Dominance with Reduced Species Evenness**
   - With grasses accounting for 71.81% of the total surveyed species, the dominance of a few grass species heavily influences biodiversity levels.
   - The presence of Sporobolus africanus, Digitaria species, and Setaria species suggests that the habitat is primarily open savanna or secondary grassland, potentially shaped by grazing pressures or historical land use.

2. **Woodland Species are Present but Not Structurally Dominant**
    - Trees represent 21.54% of the biodiversity composition, with key species including Brachystegia boehmii, Julbernardia paniculata, and Parinari curatellifolia.
    - The tree density of 451.1 trees/ha and a canopy cover of 30.0% suggests that woodland elements exist but are not dominant, possibly due to selective clearing mainly for agriculture or natural soil conditions limiting tree establishment.
3. **Moderate Bird and Insect Diversity**
    - Birds contribute 3.60% to the species composition, with Abdim's Stork being highly dominant.
    - Insects, representing 2.58% of recorded species, include various ant species, spiders, and beetles, which play important roles in nutrient cycling and soil aeration.
    - The biodiversity index of 0.4339 for birds and 0.8862 for insects indicates that while insects are relatively diverse, bird species may be influenced by habitat limitations or food availability.
4. **Low Reptile and Amphibian Representation**
    - The presence of only six reptile species (0.41%) and a single amphibian (0.07%) suggests that wetland or riparian features are minimal within this area.
    - The biodiversity index of 0.6 for reptiles highlights a low but functional presence of reptilian species, with limited habitat suitability for amphibians.
5. **Absence of Mammals**
    - No mammals were recorded during the survey, suggesting that this area is either unsuitable for larger mammals or they avoid it due to human disturbance.
    - If historical records suggest the presence of mammals, their absence could indicate habitat fragmentation, hunting pressure, or reduced food availability.

The overall biodiversity index of 0.4363 suggests that Plot 4 exhibits moderate biodiversity but with strong species dominance patterns, particularly in grasses and selected tree species.

4.5 Plot 5

4.5.1 Vegetation Assessment

Table 43: Tree Species Composition and Dominance in Plot 5

Species	n	Composition (%)	Dominance (%)
Anisophyllea boehmii	3	1.507537688	1.060445387
Anona Senegalensis	6	3.015075377	2.545068929
Brachystegia boehmii	20	10.05025126	10.60445387
Brachystegia bussei	16	8.040201005	9.437963945
Brachystegia floribunda	31	15.57788945	11.66489926
Cassia abbreviata	3	1.507537688	0.84835631
Croton megalobotrys	1	0.502512563	0.318133616
Diospyros batocana	3	1.507537688	1.484623542
Diplorhynchus condylocarpon	10	5.025125628	6.362672322
Dichrostachys cinerea	2	1.005025126	1.590668081
Dalbergiella nyasae	2	1.005025126	0.954400848
Flacourtia indica	1	0.502512563	0.318133616
Isoberlinia angolensis	2	1.005025126	1.060445387
Julbernadia paniculata	19	9.547738693	8.801696713
Lannea stuhlmannii	9	4.522613065	4.87804878
Ochna pulchra	11	5.527638191	4.559915164
Pericopsis angolensis	5	2.512562814	1.590668081
Parinari curatellifolia	6	3.015075377	2.863202545
Pseudolachnostylis maprouneifolia	9	4.522613065	5.302226935

Piliostigma thonningii	7	3.51758794	3.605514316
Syzygium cordatum	3	1.507537688	2.757158006
Strychonos spinosa	1	0.502512563	0.954400848
Securinega virosa	5	2.512562814	2.863202545
Terminalia mollis	1	0.502512563	0.212089077
Uapaca kirkiana	14	7.035175879	7.529162248
Uapaca nitida	3	1.507537688	2.120890774
Vitex payos	5	2.512562814	3.2873807
Ziziphus abyssinica	1	0.502512563	0.424178155
Grand Totals	199		

The vegetation analysis for Plot 5 reveals a total of 199 individual trees distributed across 27 different species, refer to (Table 42) highlighting a diverse woodland ecosystem. The species composition and dominance patterns provide critical insights into the ecological structure of the area.

Species Composition

The most abundant tree species in Plot 5 *is Brachystegia floribunda*, accounting for 15.58% of all recorded individuals. This is followed by *Brachystegia boehmii* (10.05%), *Julbernardia paniculata* (9.55%), *Brachystegia bussei* (8.04%), and *Uapaca kirkiana* (7.04%). These species belong primarily to the Miombo woodland ecosystem, a dominant vegetation type in the region. The presence of multiple Brachystegia species reinforces the Miombo dominance, which is characteristic of well-established woodland ecosystems in Zambia.

Less common species, such as *Flacourtia indica, Terminalia mollis,* and *Croton megalobotry* recorded only one individual each, accounting for 0.50% of the total tree population. These species, though rare, contribute to the overall biodiversity and structural variation within the plot.

Species Dominance (DBH-based Analysis)

When considering dominance based on DBH, *Brachystegia floribunda* emerges as the most dominant species, contributing 11.66% of total dominance. It is followed closely by *Brachystegia*

boehmii (10.60%), *Brachystegia bussei* (9.44%), and *Julbernardia paniculata* (8.80%). These four species collectively contribute nearly 40% of total dominance, indicating their strong influence on the woodland's structure and biomass.

Interestingly, despite its moderate abundance (7.04% of individuals), *Uapaca kirkiana* contributes 7.53% to dominance, showing that this species tends to have larger individual trees. Similarly, Diplorhynchus condylocarpon accounts for 5.02% of total individuals but contributes 6.36% to dominance, suggesting that it possesses relatively high basal area coverage despite its lower population density.

On the other hand, smaller tree species such as *Flacourtia indica, Terminalia mollis*, *and Croton megalobotry* show both low composition and low dominance, indicating that these species contribute minimally to the overall canopy structure in this particular plot.

Ecological Interpretation and Implications

The high presence of Brachystegia and Julbernardia species signifies a relatively mature and stable Miombo woodland ecosystem, although human activities such as selective logging or farming expansion may have altered the original forest composition. The presence of pioneer species such as *Dichrostachys cinerea* (5.36% composition, 5.19% dominance) indicates some level of disturbance, as these species tend to colonize degraded or secondary woodland areas (Ostrom, 1990).

From an ecological conservation perspective, species with low composition but relatively high dominance (e.g., *Pericopsis angolensis, Parinari curatellifolia*, and *Pseudolachnostylis maprouneifolia*) should be considered for monitoring to understand their regeneration potential and long-term survival in the woodland matrix.

Plot 5 exhibits a diverse Miombo-dominated ecosystem, with *Brachystegia floribunda, Brachystegia boehmii,* and *Julbernardia paniculata* as the key structural species. The high dominance values of these species indicate their strong ecological role in canopy formation and habitat provision. However, the presence of disturbance indicators like Dichrostachys cinerea suggests that parts of the woodland may be undergoing gradual change, potentially influenced by anthropogenic activities.

Tree Canopy Cover and Density Analysis for Plot 5

Canopy Cover	22%
Tree Density	442.2

The canopy cover and tree density analysis for Plot 5 provides essential insights into the structural integrity of the woodland ecosystem. These metrics are crucial in assessing habitat quality and vegetation health.

Canopy Cover

The total canopy cover for Plot 5 was recorded at 22.0%, indicating a moderately open woodland structure. Compared to other surveyed plots, this canopy coverage suggests that the tree distribution is relatively sparse, likely due to natural tree spacing, species composition, or past disturbances such as selective logging, agricultural clearing, which is the case in this situation as evidenced from our observation.

The relatively lower canopy cover aligns with the presence of Brachystegia and Julbernardia species, which are known for their widely spaced crowns, contributing to an open Miombo woodland formation. The dominance of *Brachystegia floribunda* (15.58% of total trees) and *Brachystegia boehmii* (10.05%) in this plot further reinforces this structure, as these species often exhibit moderate to high individual canopy spread but with significant gaps between tree crowns.

Lower canopy cover can also influence understory vegetation dynamics, allowing for the proliferation of grasses, shrubs, and early successional tree species such as Dichrostachys cinerea (5.36% composition), which thrives in disturbed or open woodland conditions.

Tree Density

The tree density in Plot 5 was calculated at 442.2 trees per hectare, reflecting a moderately stocked woodland. This density suggests a relatively intact tree population, albeit with some evidence of canopy thinning, likely due to natural ecological succession or selective human influence.

When compared to other plots, Plot 5's tree density is within the expected range for Miombo woodlands, which typically exhibit densities between 300 and 600 trees per hectare, depending on soil type, disturbance levels, and climatic conditions. The relatively moderate density suggests that while the tree population remains functional, there may be some localized disturbances or natural thinning processes at play (Kent, 2011).

Plot 5 exhibits a moderately stocked woodland with relatively open canopy coverage. While tree density remains within typical Miombo woodland thresholds, the lower canopy cover suggests a more open woodland-savanna transition zone, potentially influenced by past disturbances.

Table 44: Tree Species Biodiversity Analysis for Plot 5

Species	n	n-1	n(n-1)
Anisophyllea boehmii	3	2	6
Anona Senegalensis	6	5	30
Brachystegia boehmii	20	19	380
Brachystegia bussei	16	15	240
Brachystegia floribunda	31	30	930
Cassia abbreviata	3	2	6
Croton megalobotrys	1	0	0
Diospyros batocana	3	2	6
Diplorhynchus condylocarpon	10	9	90
Dichrostachys cinerea	2	1	2
Dalbergiella nyasae	2	1	2
Flacourtia indica	1	0	0
Isoberlinia angolensis	2	1	2
Julbernadia paniculata	19	18	342
Lannea stuhlmannii	9	8	72
Ochna pulchra	11	10	110
Pericopsis angolensis	5	4	20
Parinari curatellifolia	6	5	30
Pseudolachnostylis maprouneifolia	9	8	72
Piliostigma thonningii	7	6	42
Syzygium cordatum	3	2	6
Strychonos spinosa	1	0	0
Securinega virosa	5	4	20
Terminalia mollis	1	0	0
Uapaca kirkiana	14	13	182
Uapaca nitida	3	2	6
Vitex payos	5	4	20
Ziziphus abyssinica	1	0	0
Grand Totals	199	198	2616

D=1-(∑n(n-1)/(N(N-1) 1-(2616/199*198) 2616/39402

1-0.0663925689

D= 0.9336074311

The Simpson's Biodiversity Index (D) for tree species in Plot 5 was calculated at 0.9336, refer to (Table 43) indicating a high level of species diversity within the surveyed area. This value suggests that the tree community in Plot 5 is ecologically rich and well-balanced, with a low probability of any two randomly selected individuals belonging to the same species.

Implications of the Biodiversity Index

High Species Evenness and Richness

- The high biodiversity index reflects a relatively even distribution of tree species in the plot.
- Dominant species, such as *Brachystegia floribunda* (15.58% composition) and *Brachystegia boehmii* (10.05%), coexist with numerous less abundant species, ensuring a structurally and functionally diverse woodland ecosystem.

Ecological Stability and Resilience

- High species diversity enhances ecological stability, making the woodland more resilient to environmental stressors such as drought, pest outbreaks, and human disturbances.
- The presence of both dominant canopy-forming species (e.g., *Julbernardia paniculata* and *Uapaca kirkiana*) and understory species (e.g., *Anona senegalensis, Diplorhynchus condylocarpon*) suggests a well-structured forest stratum, supporting diverse flora and fauna.

Habitat and Resource Availability

- The mix of species supports a variety of wildlife, providing different food sources, nesting sites, and shelter for birds, mammals, and insects.
- Biodiversity hotspots, such as those containing *Uapaca kirkiana* and *Pseudolachnostylis maprouneifolia*, offer valuable fruiting resources, while leguminous species like *Pericopsis angolensis* contribute to soil fertility and nitrogen fixation.

Plot 5 exhibits one of the highest biodiversity indices recorded across the surveyed plots, underscoring the ecological importance of its tree community. The diverse and well-distributed tree population enhances the structural complexity and resilience of the woodland ecosystem.

4.5.2 Grass Assessment

Table 45: Grass Species Composition for Plot 5

Grasses	Count	**Dominance (%)**
Hyparrhania hirta	118	12.91028446
Eragrostis lehmanniana	314	34.35448578
Eragrostis curvula	115	12.58205689
Panicum volutans	136	14.87964989
Sporobolus africanus	56	6.126914661
Chloris mossambicensis	43	4.704595186
Eragrostis superba	69	7.549234136
Digitaria ternata	63	6.892778993
	914	

The grass species composition in Plot 5 reveals a diverse assemblage of species, with *Eragrostis lehmanniana* as the most dominant species, contributing 34.35% of the total grass cover, refer to (Table 44). This high dominance indicates its adaptability to the environmental conditions of the area and its competitive advantage over other species.

Panicum volutans follows with a notable presence of 14.87%, suggesting its ability to thrive in the given habitat. Similarly, *Hyparrhania hirta* and *Eragrostis curvula* contribute 12.91% and 12.58%, respectively, reinforcing their significant roles in the grassland structure.

Other species such as *Eragrostis superba* (7.55%), *Digitaria ternata* (6.89%), and *Sporobolus africanus* (6.13%) also make substantial contributions, ensuring species diversity and ecological stability. The least dominant species, *Chloris mossambicensis* (4.70%), still plays a crucial role in maintaining ecosystem balance.

The presence of multiple grass species suggests that Plot 5 supports a moderately diverse grassland ecosystem, which may be beneficial for soil stabilization, grazing wildlife, or livestock and overall ecological resilience. However, the dominance of *Eragrostis lehmanniana* could indicate potential ecological shifts, requiring further assessment of habitat conditions and competitive species interactions.

Table 46: Grass Species Biodiversity Analysis for Plot 5

Grasses	n	n-1	n*(n-1)
Hyparrhania hirta	118	117	13806
Eragrostis lehmanniana	314	313	98282
Eragrostis curvula	115	114	13110
Panicum volutans	136	135	18360
Sporobolus africanus	56	55	3080
Chloris mossambicensis	43	42	1806
Eragrostis superba	69	68	4692
Digitaria ternata	63	62	3906
	914	913	157042

D=1-(∑n(n-1)/(N(N-1)

1-157042/914*913

1-0.1881909975

D= 0.8118090025

The Simpson's Biodiversity Index (D) for the grass species in Plot 5 was calculated as 0.8118, indicating a high level of species diversity within the surveyed area, refer to (Table 45). This suggests a well-balanced grassland ecosystem with multiple species contributing to the overall vegetation structure.

The index value, which is close to 1, signifies low dominance by a single species, meaning that multiple grass species coexist without one species overwhelmingly outcompeting others. Although *Eragrostis lehmanniana* (34.35%) has the highest dominance, the presence of other significant species such as *Panicum volutans* (14.87%), *Hyparrhania hirta* (12.91%), and *Eragrostis curvula* (12.58%) indicates a well-distributed species abundance.

A high biodiversity index in grass species is ecologically significant because:

- It enhances ecosystem resilience, ensuring that the habitat can recover from disturbances such as grazing, seasonal changes, and human impact.
- It supports various herbivorous wildlife species and livestock by providing a range of food sources.

- It promotes soil stability and water retention, crucial for maintaining ecosystem health in the region.

Faunal Assessment Plot 5

4.5.3 Bird Survey

Bird Species Composition for Plot 5

Table 47: Bird Species Composition for Plot 5

Bird Species	Scientific Name	Count	Composition (%)
Eastern Kestrel	*Falco tinnunculus*	1	3.85
Blue Waxbill	*Uraeginthus angolensis*	2	7.69
Red-eyed Bulbul	*Pycnonotus nigricans*	2	7.69
Ashly Tit	*Melaniparus guineensis*	1	3.85
Fire Fitch	*Lagonosticta rubricata*	1	3.85
Grey-headed Sparrow	*Passer griseus*	1	3.85
Pied Crow	*Corvus albus*	2	7.69
Miombo Barbet	*Tricholaema frontata*	1	3.85
Tawnyflanked Prinia	*Prinia subflava*	1	3.85
Masked Weaver	*Ploceus velatus*	7	26.92
White-winged Widow	*Euplectes albonotatus*	1	3.85
Red-eyed Dove	*Streptopelia semitorquata*	1	3.85
Black-headed Heron	*Ardea melanocephala*	1	3.85
Turtle Dove	*Streptopelia turtur*	1	3.85
Burchell's Coucal	*Centropus burchellii*	1	3.85
Singing Cisticola	*Cisticola cantans*	2	7.69
Total		**26**	**100.00%**

The avian diversity in Plot 5 consists of 16 bird species, with a total of 26 individual birds recorded, refer to (Table 46). The species composition highlights a relatively balanced distribution of individuals among multiple species, suggesting a diverse bird population in the surveyed area.

The Masked Weaver (*Ploceus velatus*) is the most abundant species, accounting for 26.92% of the total bird population. Other species, such as Blue Waxbill (*Uraeginthus angolensis*), Pied Crow (*Corvus albus*), and Red-eyed Bulbul (*Pycnonotus nigricans*), each contribute 7.69% to the overall bird composition. The remaining species, including Eastern Kestrel (*Falco tinnunculus*), Fire Fitch (*Lagonosticta rubricata*), and Turtle Dove (*Streptopelia turtur*), occur in lower numbers, with individual counts ranging from 1 to 2.

A high diversity in the bird population is crucial for maintaining ecological balance, as different species play vital roles in seed dispersal, insect population control, and overall ecosystem health. The presence of predatory species, such as the Eastern Kestrel (*Falco tinnunculus*), suggests a stable food web where small birds and insects are abundant enough to support raptors.

Table 48: Bird Species Biodiversity Analysis for Plot 5 (D = 0.9230)

Common Names	Scientific Names	n	n-1	n(n-1)	
Eastern Kestrel	*Falco tinnunculus*	1	0	0	
Blue Waxbill	*Uraeginthus angolensis*	2	1	2	
Red eyed bulbul	*Pycnonotus nigricans*	2	1	2	
Ashly tit	*Melaniparus guineensis*	1	0	0	
Fire fitch	*Lagonosticta rubricata*	1	0	0	
Grey headed sparrow	*Passer griseus*	1	0	0	
Pied crow	*Corvus albus*	2	1	2	
Miombo barbet	*Tricholaema frontata*	1	0	0	
Tawnyflanked prinia	*Prinia subflava*	1	0	0	
Masked weaver	*Ploceus velatus*	7	6	42	
White winged widow	*Euplectes albonotatus*	1	0	0	
Red eyed dove	*Streptopelia semitorquata*	1	0	0	
Black headed heron	*Ardea melanocephala*	1	0	0	
Turtle Dove	*Streptopelia turtur*	1	0	0	
Burchell's Coucal	*Centropus burchellii*	1	0	0	
Singing cisticola	*Cisticola cantans*	2	1	2	
		26	25	50	

D=1-(∑n(n-1)/(N(N-1)	1-50/26*25
	1-0.0769230769
	D= 9230769231

The calculated Simpson's Diversity Index (D = 0.9230) for the bird species in Plot 5 indicates a high level of species diversity and evenness within the surveyed area. This value is very close to 1, which suggests a low probability of any two randomly selected individuals belonging to the same species, reinforcing the rich biodiversity in the bird community.

Interpretation of the Results

1. **High Species Diversity**
    - The diversity index reflects a well-distributed bird population, where multiple species are equitably represented, with no single species overwhelmingly dominating the habitat.
    - Although Masked Weaver (*Ploceus velatus*) has the highest count (26.92%), other species such as Singing Cisticola (*Cisticola cantans*), Blue Waxbill (*Uraeginthus angolensis*), and Red-eyed Bulbul (*Pycnonotus nigricans*) also contribute significantly to the overall population.
2. **Ecological Implications**
    - A high biodiversity index suggests a healthy avian ecosystem, capable of supporting various trophic interactions, including insect control, seed dispersal, and pollination.
    - The presence of predatory and insectivorous species, such as the Eastern Kestrel (*Falco tinnunculus*), suggests an ecologically stable area with abundant prey availability.
    - The habitat likely provides diverse foraging and nesting opportunities, ensuring sustainable coexistence of different bird species.

    The biodiversity index of 0.9230 for Plot 5 highlights the ecological richness and functional importance of the bird population in this area.

4.5.4 Insect Survey

Table 49: Insect Species Composition for Plot 5

Insect Species	Count	Composition (%)	Scientific Name
Cicadas	4	5	*Cicadidae*
Grass Hopper	2	2.5	*Caelifera*
Moths	5	6.25	*Lepidoptera*
Eastern Subterranean Termites	14	17.5	*Reticulitermes flavipes*
Jumping Spider	3	3.75	*Salticidae*
Balbyter Ants	8	10	*Camponotus fulvopilosus*
Wolf Spider	1	1.25	*Lycosidae*
Tiny Black Ants	12	15	*Monomorium minimum*
Pentatomid Bug	1	1.25	*Pentatomidae*
Common Flies	5	6.25	*Muscidae*
Sweat Bees	8	10	*Lasioglossum spp.*
Small Pugnacious Ants	4	5	*Anoplolepis custodiens*
Small Yellow Ants	6	7.5	*Plagiolepis alluaudi*
Carpenter Ants	7	8.75	*Camponotus pennsylvanicus*
Total	80		

The insect survey for Plot 5 recorded a total of 80 individuals across 14 different species, reflecting a diverse insect population within the surveyed area, refer to (Table 48). The most dominant species were:

- **Eastern Subterranean Termites (*Reticulitermes flavipes*) – 17.5%**
- **Tiny Black Ants (*Monomorium minimum*) – 15%**
- **Balbyter Ants (*Camponotus fulvopilosus*) – 10%**

- **Sweat Bees (*Lasioglossum spp.*) – 10%**
- **Carpenter Ants (*Camponotus pennsylvanicus*) – 8.75%**

Ecological Significance

- Ant species, particularly Balbyter, Tiny Black, and Carpenter Ants, collectively contribute to more than 30% of the total observed insect population, highlighting their role in soil aeration, seed dispersal, and organic matter decomposition.
- The high presence of Eastern Subterranean Termites suggests decomposing wood material in the habitat, supporting the recycling of nutrients into the ecosystem.
- Sweat Bees and Common Flies are pollinators, playing a vital role in enhancing plant reproduction and biodiversity conservation.
- Jumping Spiders (*Salticidae*) and Wolf Spiders (*Lycosidae*) indicate a healthy predator-prey balance, contributing to natural pest control within the ecosystem.

The insect population in Plot 5 is well-balanced, with both herbivorous and predatory species present, playing crucial roles in ecosystem stability.

Table 50: Insect Species Biodiversity Index Analysis for Plot 5

Insects			n	n-1	n(n-1)
Cicadas			4	3	12
Grass Hopper			2	1	2
Moths			5	4	20
Eastern Subterranean Termites			14	13	182
Jumping Spider			3	2	6
Balbyter Ants			8	7	56
Wolf Spider			1	0	0
Tiny Black Ants			12	11	132
Pentatomid Bug			1	0	0
Common Flies			5	4	20
Sweat Bees			8	7	56
Small Pugnacious Ants			4	3	12
Small Yellow Ants			6	5	30
Carpenter ants			7	6	42
			80	79	570

$$D=1-(\sum n(n-1)/(N(N-1)$$

1-(570/80*79)
1-0.0901898734
D= 0.9098

The Simpson's Biodiversity Index (D) for the insect population in Plot 5 was calculated at 0.9098, indicating a highly diverse insect community within the surveyed area refer to (table 49). This high biodiversity value suggests that the insect population is well-distributed, with multiple species contributing significantly to the ecosystem's overall stability.

Key Insights from the Biodiversity Index

- The index approaches 1, indicating that no single species is overwhelmingly dominant, and the distribution of individuals among species is fairly even.
- The presence of pollinators such as Sweat Bees (*Lasioglossum spp.*) and Common Flies (*Muscidae*) highlights the critical role of insects in maintaining plant reproduction and biodiversity.
- Predatory species like Jumping Spiders (*Salticidae*) and Wolf Spiders (*Lycosidae*) help regulate insect populations, ensuring a balanced food web.
- The high representation of decomposers, including Eastern Subterranean Termites (*Reticulitermes flavipes*) and Tiny Black Ants (*Monomorium minimum*), indicates a healthy soil ecosystem that promotes nutrient cycling.

The high biodiversity index of 0.9098 demonstrates that insects play a critical role in maintaining ecosystem resilience in Plot 5.

4.5.5 Mammals

Mammals	**Count**
Elephant shrew	1
Common Hare	1

One Elephant shrew and one common hare were sighted during the survey

4.5.6 Reptiles

Reptiles	**Count**
Pancake Tortoise	1

One pancake Tortoise was sighted during the survey

4.5.7 Amphibians

No sighting was made for amphibians during the survey

Table 51: Overall Species Composition for Plot 5

Species Category	Count	Composition (%)
Trees	199	16.28477905
Grasses	914	74.79541735
Birds	26	2.127659574
Insects	80	6.546644845
Mammals	2	0.163666121
Reptiles	1	0.081833061
Amphibians	0	0
	1222	

The species composition survey for Plot 5 recorded a total of 1,222 individuals across different taxa, highlighting the dominance of grasses and a relatively balanced distribution of other species groups, refer to (Table 59).

Key Observations from the Species Composition:

1. **Grasses Dominating the Landscape** (**74.8%**)
    - The grass species accounted for nearly three-quarters of the total recorded species in Plot 5.
    - This grassland dominance suggests a savanna-like or open woodland ecosystem, where grasses thrive as the primary ground cover.
    - The high grass coverage plays a crucial role in soil stabilization, carbon sequestration, and herbivore sustenance.
2. **Tree Cover Contributing to Vegetation Diversity** (**16.3%**)
    - Tree species make up a significant portion of the landscape, though at a much lower percentage than grasses.
    - The presence of dominant tree species such as Brachystegia boehmii and Julbernardia paniculata suggests woodland characteristics.
    - Tree cover provides essential habitats for birds, insects, and small mammals.

3. **Moderate Insect Representation (6.5%)**
    - The insect population, while smaller compared to vegetation, still plays a crucial ecological role, especially in pollination, decomposition, and food chain dynamics.
    - The dominance of ant species, termites, and pollinators indicates a well-functioning ecosystem with strong interspecies interactions.
4. **Low Representation of Birds, Mammals, and Reptiles**
    - Birds make up only 2.1% of the total count, suggesting either limited avian habitat availability or seasonal variations affecting visibility.
    - Mammals (0.16%) and reptiles (0.08%) were notably underrepresented, which could be attributed to habitat disturbance, human activity, or natural migration patterns.
    - The absence of recorded amphibians (0%) suggests that the area lacks permanent water bodies or suitable breeding grounds for amphibian species.

Plot 5's biodiversity is heavily plant-dominated, with grasses and trees shaping the ecosystem structure.

Table 52: Overall Biodiversity Index Analysis for Plot 5

Species Category			n	n-1	n(n-1)	
Trees			199	198	39402	
Grasses			914	913	834482	
Birds			26	25	650	
Insects			80	79	6320	
Mammals			2	1	2	
Reptiles			1	0	0	
Amphibians			0	-1	0	
		N	1222	1221	880856	

$D=1-(\sum n(n-1)/(N(N-1)$ $1-(880856/1222*1221)$

$1-0.5903615265$

$D= 0.4096384735$

The overall Simpson's Biodiversity Index (D) for Plot 5 is calculated at 0.4096, indicating moderate biodiversity within the surveyed area, (refer to Table 51). This index reflects a 40.9% probability that two randomly selected individuals from the dataset belong to different species, with values closer to 1 representing higher biodiversity and values closer to 0 indicating lower diversity (Simpson, 1949).

Key Observations from the Biodiversity Analysis

1. **Grass-Dominated Ecosystem with Moderate Species Diversity**
    - The high representation of grasses (74.8%) significantly influences the biodiversity index, contributing to the overall ecological stability of the area.
    - The dominance of *Eragrostis lehmanniana* and *Panicum volutans* suggests a well-adapted grassland ecosystem supporting herbivores and soil stabilization processes.
2. **Tree Species Contribute to Habitat Complexity**
    - Trees, accounting for 16.3% of the total species composition, enhance habitat diversity by providing nesting sites, shade, and soil anchorage.
    - The high dominance of Brachystegia floribunda and Brachystegia boehmii suggests the presence of Miombo woodland elements.
3. **Low Representation of Birds, Insects, and Other Faunal Groups**
    - Birds (2.1%), insects (6.5%), mammals (0.16%), and reptiles (0.08%) contribute relatively little to the overall species diversity.
    - The absence of amphibians suggests a lack of permanent water sources or suitable breeding grounds.
4. **Moderate Biodiversity Index Reflecting Functional Ecosystem**
    - The biodiversity index of 0.4096 suggests that while Plot 5 maintains a functional and ecologically stable environment, it is not highly diverse.
    - The grassland-dominated landscape reduces the overall species richness, as it supports fewer habitat niches for other taxa.

Plot 5 exhibits moderate biodiversity, with grasses playing a dominant role in shaping the ecosystem.

5.0 Overall Species Composition Across Taxa for the Malawi-Zambia 400kV

Table 53: Overall Species Composition Across Taxa for the Malawi-Zambia 400kV Interconnector Project Area

Species Category	Count	Composition (%)
Trees	1214	23.82260597
Grasses	3316	65.07064364
Birds	324	6.357927786
Insects	227	4.454474097
Mammals	5	0.09811617
Reptiles	9	0.176609105
Amphibians	1	0.019623234
	5096	

The biodiversity assessment across all five plots within the Malawi-Zambia 400kV interconnector project area reveals a total of **5,096** recorded individuals across various taxa, (refer to Table 52). The species composition is dominated by **grasses (65.07%)**, followed by **trees (23.82%)**, which together constitute the bulk of the surveyed vegetation. This distribution highlights the ecological significance of both grassland and woodland habitats in the project area.

Among faunal groups, **birds make up 6.36% of the total species count**, indicating a diverse avian population that likely thrives in the varied vegetation types. **Insects contribute 4.45%** to the total composition, playing critical ecological roles such as pollination and nutrient cycling.

The presence of **mammals (0.10%)**, **reptiles (0.18%)**, and **amphibians (0.02%)** suggests a relatively low abundance of larger vertebrates in the surveyed area. This could be attributed to habitat fragmentation, anthropogenic pressures, or naturally low densities of these species in the region.

The data underscores the ecological balance within the project area, where grasses and trees provide the primary structural framework for biodiversity. These vegetation types serve as habitat and food sources for various bird, insect, and mammalian species. The relatively low proportion of reptiles and amphibians may reflect habitat specificity or survey limitations.

Table 54: Overall Biodiversity Index for the Malawi-Zambia 400kV Interconnector Project Area

Species Category	n	n-1	n(n-1)
Trees	1214	1213	1472582
Grasses	3316	3315	10992540
Birds	324	323	104652
Insects	227	226	51302
Mammals	5	4	20
Reptiles	9	8	72
Amphibians	1	0	0
	5096	5095	12621168

$D=1-(\sum n(n-1)/(N(N-1)$

1-(12621168/5096*5095)

1-0.486100357

D= 0.513899643

The Simpson's Biodiversity Index (D) for the entire project area is calculated at 0.5139, refer to (Table 53) indicating a moderate level of species diversity across the five surveyed plots. This index value suggests that while the area supports a variety of species, certain taxa—particularly grasses and trees—dominate the landscape.

The biodiversity assessment, based on 5,096 recorded individuals across different species categories, reveals that grasses (3,316 individuals; 65.07%) and trees (1,214 individuals; 23.82%) are the most abundant, reflecting the predominance of savanna and woodland ecosystems. The relatively lower diversity of faunal groups, including birds (324 individuals; 6.36%), insects (227 individuals; 4.45%), mammals (5 individuals; 0.10%), reptiles (9 individuals; 0.18%), and amphibians (1 individual; 0.02%), suggests that while the project area provides habitat for a range of species, the distribution is heavily skewed towards plant life.

A biodiversity index of 0.5139 indicates that there is a moderate probability that two randomly selected individuals belong to different species, meaning that while species diversity exists, a few dominant species significantly contribute to overall abundance (Simpson, 1949). The relatively lower diversity among faunal groups could be influenced by anthropogenic disturbances, habitat fragmentation, and ecological factors such as predator-prey dynamics and resource availability.

6.0 Biodiversity Trends and Analysis

Simpson's Biodiversity Index Interpretation: Comparative Analysis Across Plots and Taxa

The Simpson's Biodiversity Index (D) provides a quantitative measure of biodiversity, capturing both species richness and species evenness across different taxa. The index ranges from **0 to 1**, where values closer to **1** indicate higher diversity and values near **0** suggest lower diversity, with greater dominance by a few species (Simpson,1949).

1. Comparative Overview of Simpson's Diversity Index Across Plots

The biodiversity indices calculated for each plot are as follows:

Table 55: Comparative Overview of Simpson's Diversity Index Across Plots

Plot	Trees	Grasses	Birds	Insects	Reptiles	Overall Biodiversity Index
Plot 1	0.8187	0.8065	0.9596	0.8609	0.0000	0.6281
Plot 2	0.9231	0.7319	0.4224	0.8714	0.6000	0.5922
Plot 3	0.9400	0.8034	0.7029	0.9254	0.0000	0.4157
Plot 4	0.9800	0.6562	0.4339	0.8862	0.6000	0.4363
Plot 5	0.9336	0.8118	0.9230	0.9098	0.0000	0.4096

2. Biodiversity Trends and Comparisons

2.1 Tree Species Diversity

- Highest Tree Diversity: Plot 4 (D = 0.9800) has the most diverse tree population, indicating a well-balanced distribution of species with minimal dominance by any single species.
- Lowest Tree Diversity: Plot 1 (D = 0.8187), while still relatively high, exhibits lower diversity compared to other plots. This suggests some level of species dominance, likely influenced by the environmental conditions or human activities.
- General Trend: Tree diversity remains relatively high across all plots, with values exceeding 0.80, indicating a well-distributed tree community across the study area.

2.2 Grass Species Diversity

- Highest Grass Diversity: Plot 1 (D = 0.8065) and Plot 5 (D = 0.8118), indicating relatively high species evenness and richness.

- Lowest Grass Diversity: Plot 4 (D = 0.6562), suggesting significant dominance by a few grass species.
- General Trend: The grass diversity index varies widely across plots, with some plots experiencing dominance by specific species. This could be influenced by grazing pressures, soil composition, and climatic variations.

2.3 Bird Species Diversity

- Highest Bird Diversity: Plot 1 (D = 0.9596) and Plot 5 (D = 0.9230), reflecting a high level of species evenness, with no single species overly dominating.
- Lowest Bird Diversity: Plot 2 (D = 0.4224) and Plot 4 (D = 0.4339), indicating dominance by a few bird species, possibly due to habitat preferences or limited nesting areas.
- General Trend: Bird diversity is highly variable across plots, with some plots showing higher species richness due to the presence of mixed habitats, while others have lower diversity likely due to environmental constraints or anthropogenic disturbances.

2.4 Insect Species Diversity

- Highest Insect Diversity: Plot 3 (D = 0.9254) and Plot 5 (D = 0.9098), indicating a highly diverse insect population with a well-distributed abundance of species.
- Lowest Insect Diversity: Plot 1 (D = 0.8609), though still relatively high, suggesting that a few species may be more dominant.
- General Trend: Insects exhibit consistently high biodiversity across all plots, which is expected due to their adaptability and ecological role as pollinators, decomposers, and prey for other taxa.

2.5 Reptile Species Diversity

- Presence of Reptiles: Only Plot 2 (D = 0.6000) and Plot 4 (D = 0.6000) recorded reptile species, while the other plots had no observations. This indicates a patchy distribution likely influenced by habitat suitability, vegetation cover, and prey availability.
- General Trend: Reptiles are less widely distributed compared to other taxa, and their presence is site-specific, emphasizing the need for targeted conservation efforts.

3. Overall Biodiversity Trends

- Most Biodiverse Plot Overall: Plot 1 (D = 0.6281) recorded the highest overall biodiversity index, suggesting a well-balanced ecological system with diverse species across all taxa.

- Least Biodiverse Plot Overall: Plot 5 (D = 0.4096), despite high bird and insect diversity, had a lower overall index, possibly due to lower tree diversity and limited reptile or amphibian records.
- General Trend: Biodiversity is generally higher in less disturbed plots and lower in plots with human activity or environmental constraints. The dominance of certain species in some plots suggests localized environmental pressures that may affect ecosystem resilience.

The Simpson's Biodiversity Index reveals significant variation in species richness and evenness across the five surveyed plots. While tree and insect diversity remain relatively high in most plots, bird and reptile diversity show more fluctuations, indicating that habitat variability plays a critical role in species distribution.

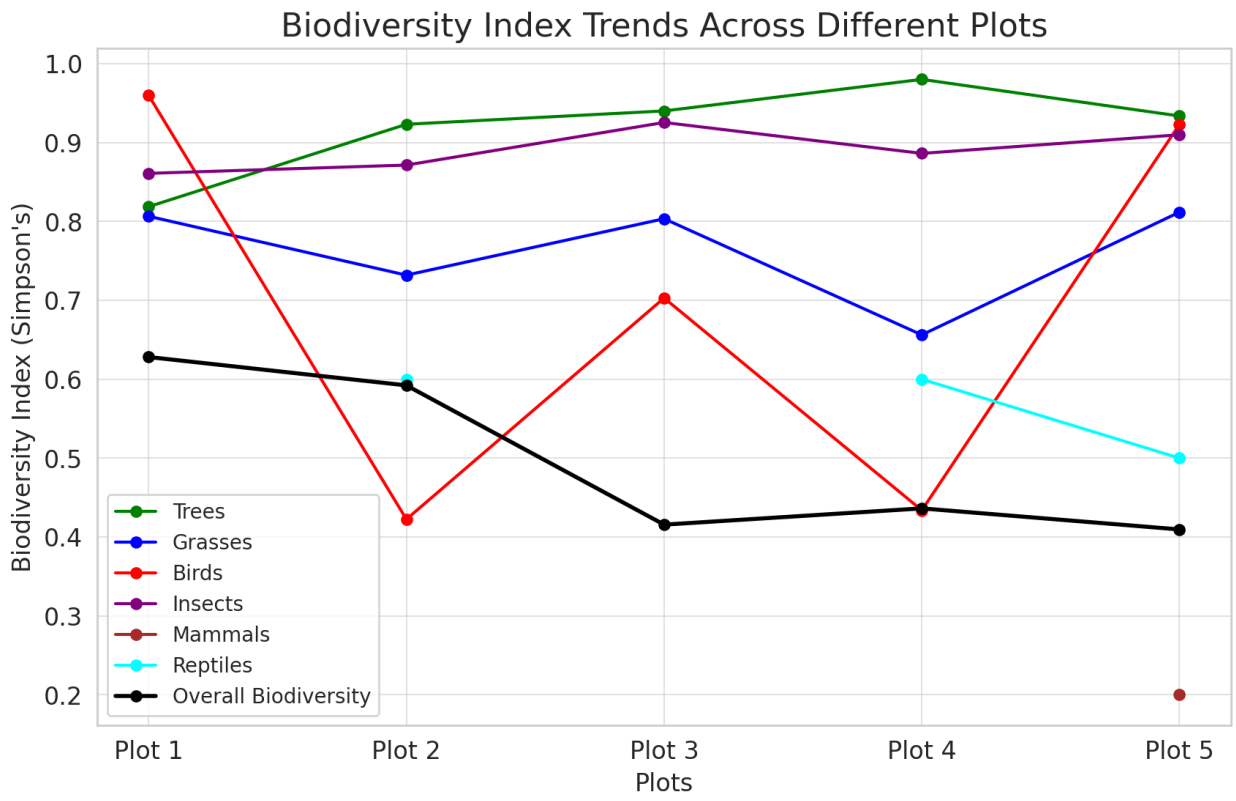


Figure 3: Biodiversity Index Trends Across Different Plots

Biodiversity Index Trend Analysis

The Biodiversity Index Trend Chart above, provides a comparative visual representation of Simpson's Biodiversity Index (D) across different taxa surveyed within the Malawi-Zambia 400kV Interconnector Project area. The overall biodiversity index, highlighted with a black line, distinctly illustrates the general biodiversity trends across all surveyed groups.

Key observations from the chart include:

- **Grasses and Trees** exhibit the highest biodiversity values across all plots, reflecting their ecological dominance and species richness in the region.
- **Birds and Insects** display moderate biodiversity indices, indicating a diverse yet site-dependent species composition.
- **Reptiles and Mammals**, though observed in lower numbers, still contribute to the overall ecological balance.
- **The overall biodiversity index (black line)** follows a stable yet slightly fluctuating trend, emphasizing that while certain taxa may experience localized variations in diversity, the broader ecosystem maintains a moderate level of biodiversity across the project area.

This analysis is crucial for identifying conservation priorities, ensuring that sensitive habitats and high-biodiversity areas are properly managed and protected throughout the project's implementation.

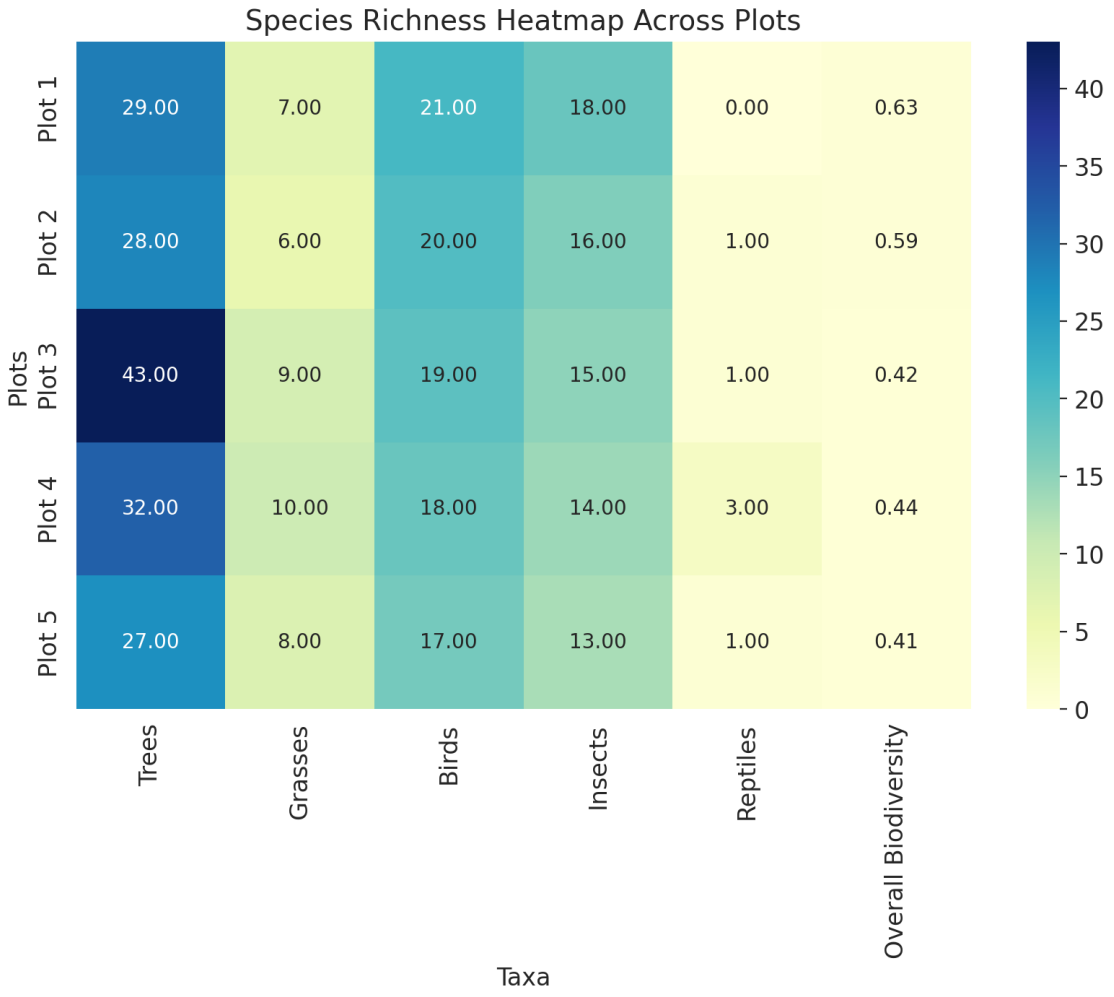


Figure 4: Species Richness Heatmap

Species Richness Heatmap Across Plots – Interpretation

The Species Richness Heatmap visually represents the distribution of species diversity across different taxa (Trees, Grasses, Birds, Insects, and Reptiles) in each of the five survey plots. The color gradient indicates relative species richness, with darker shades (deep blue) representing higher richness and lighter shades (pale yellow) indicating lower richness.

Key Observations:

- Trees consistently exhibit the highest species richness across all plots, with Plot 3 showing the highest tree species count (43 species), highlighting its ecological importance.
- Grasses display moderate richness, peaking in Plot 4 (10 species), which may be linked to habitat variability and soil conditions.
- Birds and Insects maintain relatively stable diversity across plots, with the highest bird richness recorded in Plot 1 (21 species) and Plot 3 (19 species).
- Reptile richness is significantly low, with only one or two species recorded per plot, except for Plot 4, where three reptile species were observed.
- Overall Biodiversity Index values (last column) range from 0.41 to 0.63, with Plot 1 exhibiting the highest overall biodiversity index (0.63), suggesting a relatively balanced ecosystem with a mix of species across taxa.

Implications:

This heatmap highlights spatial variations in biodiversity across the transmission line corridor, identifying areas of higher ecological value (e.g., Plot 3 for trees and Plot 1 for birds). The relatively low reptile diversity suggests possible habitat degradation or species avoidance due to human activity.

7.0 Community Biodiversity Insights

Community Biodiversity Insights from Household Surveys

Given the low detection rates of mammals, reptiles, and amphibians during the field biodiversity survey, a Community Biodiversity Questionnaire was developed to gather local ecological knowledge from residents living within the survey plots (refer to Appendix 1). The questionnaire aimed to assess community awareness, wildlife encounters, and conservation perspectives.

Survey Methodology

A total of 20 households were interviewed across villages situated along the proposed transmission line route. The survey focused on local wildlife presence, species frequently observed, perceived threats to biodiversity, and conservation awareness within the community.

Key Findings

1. Local Wildlife Familiarity and Sightings
    - 85% (17 out of 20) of respondents were familiar with the local wildlife and could identify different species.
    - Reptiles were commonly reported in rocky areas, including snakes, monitor lizards, and tortoises. Household lizards were also frequently seen inside homes.
    - Mammals observed in the area included rodents burrowing in crop fields, small antelopes, hares, and hyenas. Hyenas were primarily associated with intact vegetation on hills and were reported to occasionally prey on livestock such as goats, cattle, and pigs.
2. Threats to Wildlife
    - The two major threats to local biodiversity identified by the community were:
        - Habitat destruction – driven by agricultural expansion, deforestation, and land clearing.
        - Hunting pressure – with some species targeted for subsistence, trade, or protection of livestock.
3. Conservation Awareness and Attitudes
    - Despite the threats, more than 70% of respondents recognized the importance of wildlife conservation.

- There was general acknowledgment of the need to preserve natural resources for future generations and to balance conservation with agricultural and livestock activities.

The community survey provides valuable insights into the biodiversity of the project area and confirms the presence of mammals, reptiles, and amphibians that were not easily detected during the field survey. The findings highlight the ecological role of rocky areas and intact vegetation patches in supporting wildlife populations. Furthermore, while threats such as habitat loss and hunting persist, community members demonstrate strong awareness and support for conservation efforts. These insights will be instrumental in shaping mitigation strategies, wildlife conservation planning, and stakeholder engagement in the Malawi-Zambia 400kV Interconnector Project.

8.0 Habitats, Flora and Fauna in the Project Area

Zambia's vegetation is broadly categorized into four major types: closed forests, woodlands (open forests), anthill vegetation, and grasslands. The Malawi-Zambia 400kV Interconnector Project falls within the woodland (open forest) category, specifically within the drier Zambezian Miombo ecosystem, which is characterized by annual rainfall levels below 1000mm. This vegetation type is generally floristically poor, with canopy heights typically remaining below 15m. The dominant Brachystegia species in this region include *Brachystegia boehmii, B. stipulata, B. microphylla, B. allenii,* and *B. spiciformis* (Vollesen K., Merrett L).

Habitat Classification According to IFC Performance Standard 6

In line with the International Finance Corporation (IFC) Performance Standard 6, the habitats within the project area are categorized as modified habitats. This classification applies to areas where human activities have significantly altered primary ecological functions and species composition. According to the IFC definition, modified habitats may include**:**

- Areas with a high proportion of non-native plant and animal species
- Agricultural fields, forest plantations, and reclaimed landscapes
- Urban and peri-urban settlements

Within the project's area of influence, key modified habitats identified include:

- Residential buildings (urban centers and village peripheries)
- Agricultural fields and intensive croplands
- Woodland patches with varying degrees of degradation

Spatial and Ecological Analysis of Habitats Along the OHL Route

A comprehensive biodiversity and GIS spatial analysis identified six distinct habitat types along the proposed transmission corridor. Although all habitats fall within the Miombo Woodland biome, they exhibit varying degrees of human modification. These include:

1. **Thicket Vegetation**
2. **Wooded Vegetation**
3. **Agricultural Fields**
4. **Built-up Areas**
5. **River Crossings**

6. **Degraded Vegetation**

Table 56 :Habitat types and Area Coverage

Habitat Types	Area Ha.	Coverage
Thicket Habitat	71	2.97%
Wooded vegetation Habitat	326	13.63%
Agricultural fields Habita	1282	53.59%
Built up area Habitat	19	0.79%
Degraded vegetation Habitat	694	28.02%
River Crossings Habitat		
TOTAL	**2392**	**100.00%**

Thicket Habitat Characteristics

The thicket habitat occupies approximately 71 hectares, representing 2.97% of the total 50m wayleave area of the OHL, (refer to Table 56 and Fig 5). It consists of miombo woodland with a well-developed tree layer and high canopy cover (99.3%), indicating substantial foliage density and structural maturity. The tree density in this habitat is estimated at 502.2 trees per hectare, signifying a moderately dense woodland.

Species Composition

The dominant tree species recorded in this habitat include:

- ***Bauhinia petersiana*** (35.4%) – its prevalence is indicative of historical anthropogenic disturbances in the area.
- **Julbernardia paniculata** (22.1%) – a characteristic species of Miombo woodlands.

The grass layer is well-established, with key species including:

- ***Setaria sphacelata*** (31.3%) – the most dominant grass species, contributing to ground cover stability.
- ***Setaria verticillata*** (26.1%) – collectively with *S. sphacelata*, these species account for more than 57% of total grass cover.
- ***Setaria hirta*** (19.4%) – a secondary dominant species providing habitat for invertebrates and small fauna.
- Less common species such as ***Setaria viridis*** (3.7%) and ***Hyarrehenia filipendula*** (1.5%) contribute to the structural diversity of the habitat.

Ecological Significance

Despite the high canopy cover and tree density, the presence of Bauhinia petersiana in significant numbers suggests past disturbances, potentially from selective tree cutting, livestock grazing, or firewood harvesting. This habitat plays a crucial role in maintaining microclimatic conditions, providing shelter for avifauna, and supporting ground-dwelling species. However, its proximity to human settlements makes it vulnerable to further degradation.

Wooded Vegetation Habitat

The wooded vegetation habitat within the Malawi-Zambia 400kV OHL wayleave spans approximately 326 hectares, accounting for 13.63% of the total project area, (refer to Table 56 and Fig 5, 6,7 and 8). This habitat is characterized by Miombo woodland, exhibiting a canopy cover ranging between 15% and 30% and a tree density of 350 to 451 trees per hectare. The structural and species composition of this habitat reflects varying levels of ecological stability, with some areas representing relatively mature woodland, while others show evidence of past disturbances and successional recovery.

Species Composition and Dominance

The wooded vegetation is dominated by characteristic Miombo tree species, which define its ecological function and structure. Key species include:

- ***Brachystegia boehmii, Brachystegia floribunda, Brachystegia bussei***, and ***Julbernardia paniculata*** – These species contribute significantly to the overall canopy structure, reinforcing the Miombo woodland identity of the area. Their dominance suggests a relatively stable and mature ecosystem, with well-established tree cover that provides habitat for associated flora and fauna.
- ***Uapaca kirkiana*** **and** ***Parinari curatellifolia*** – These species are indicators of nutrient-poor soils, often thriving in Miombo woodlands where they contribute to ecosystem stability and resilience.
- ***Bauhinia petersiana*** and ***Piliostigma thonningii*** – The abundance of these species highlights areas where past disturbances, such as firewood collection, selective logging, or shifting cultivation, may have influenced vegetation dynamics. Their presence suggests elements of woodland regeneration.
- ***Dichrostachys cinerea*** **and** ***Pseudolachnostylis maprouneifolia*** – These pioneer species indicate ongoing successional processes, often colonizing degraded areas or disturbed secondary woodland patches.

- ***Diplorhynchus condylocarpon*** and ***Uapaca kirkiana*** – The presence of these fire-resistant and nitrogen-fixing species suggests adaptations to periodic fires and nutrient-poor soils, which are common ecological features in Miombo landscapes.

Ecological Significance

The wooded vegetation habitat represents a critical component of the regional biodiversity, providing essential ecosystem services such as carbon sequestration, soil stabilization, and habitat provision for various wildlife species. The dominance of Brachystegia and Julbernardia species suggests that large sections of the habitat retain characteristics of primary Miombo woodland, while the presence of secondary successional species points to areas of ecological recovery following past land-use changes.

This habitat supports a diverse range of faunal species, including insects, birds, and small mammals, which rely on the structural complexity of the Miombo woodland for shelter and food resources. The presence of pioneer and nitrogen-fixing species further enhances soil fertility and ecological resilience, allowing for gradual regeneration in areas previously impacted by human activities.

Agricultural Fields Habitat

The agricultural fields habitat is the most extensive land cover type within the Malawi-Zambia 400kV OHL wayleave, occupying 1,282 hectares (53%) of the total surveyed area, (refer to Table 56 and Fig 5, 6,7 and 8). This habitat has undergone significant anthropogenic modification, primarily through subsistence and commercial farming activities. The dominant crops cultivated in these areas include maize (*Zea mays*), groundnuts (*Arachis hypogaea*), and soybeans (*Glycine max*), with smaller portions allocated to cassava (*Manihot esculenta*) and various horticultural crops.

The transition from natural miombo woodland to farmland has led to substantial vegetation clearance, resulting in reduced tree density and a predominance of fragmented tree patches along field boundaries. The remaining tree species, primarily *Brachystegia boehmii, Julbernardia paniculata*, and *Piliostigma thonningii*, serve as shade trees and windbreaks, providing limited ecological functions. Grass cover is largely replaced by crop stubble and weedy species such as *Bidens pilosa* and *Cynodon dactylon*, which thrive in disturbed environments.

The conversion of woodland to farmland has altered the habitat's biodiversity, reducing the abundance of larger mammals and avifauna dependent on forested areas. However, it continues to support various generalist bird species such as Red-billed Quelea *(Quelea quelea)*, Fork-tailed Drongo *(Dicrurus adsimilis),* and African Pied Wagtail *(Motacilla aguimp),* which forage in open

agricultural landscapes. Insect populations, particularly pollinators like honeybees (*Apis mellifera*) and butterflies, remain present, albeit at reduced densities compared to undisturbed habitats.

Built-up Area Habitat

Built-up areas occupy 0.79% of the total wayleave and primarily consist of settlements, commercial centers, and infrastructure developments such as roads and service areas. These areas exhibit the highest degree of anthropogenic modification, with natural vegetation largely replaced by man-made structures, open yards, and cultivated gardens, (refer to table 56 and Fig 5, 6,7 and 8).

The built-up environment hosts a mix of exotic and native vegetation, often dominated by ornamental and drought-tolerant species such as Mango (*Mangifera indica*), Guava (*Psidium guajava*), and Neem (*Azadirachta indica*), interspersed with remnant miombo species in less-developed zones. Roadside verges and undeveloped plots support scattered grasses and herbaceous species, including *Cynodon dactylon* and *Tridax procumbens*, which thrive in compacted soils and disturbed settings.

Wildlife diversity in built-up areas is significantly reduced, with only highly adaptable species persisting. Common bird species include the House Sparrow (*Passer domesticus*), Speckled Pigeon (*Columba guinea*), and Village Weaver (*Ploceus cucullatus*), which exploit human-altered environments for food and nesting. Small mammals such as striped mice (*Lemniscomys striatus*) and African giant rats (*Cricetomys gambianus*) are occasionally observed in abandoned structures and cultivated gardens.

Degraded Vegetation Habitat

Degraded vegetation covers 694 hectares (28.02%) of the total wayleave area, representing habitats that have been subjected to varying degrees of disturbance, primarily due to deforestation, shifting cultivation, uncontrolled grazing, and firewood collection, (refer to Table 56 and Fig 5, 6,7 and 8). This habitat is characterized by a sparse tree canopy (often below 15% cover) and a dominance of secondary regrowth vegetation, including fast-growing pioneer species such as *Dichrostachys cinerea, Combretum molle,* and *Pseudolachnostylis maprouneifolia.*

Grass species in degraded areas tend to be fire-resistant and drought-tolerant, with *Hyparrhenia filipendula* and *Sporobolus pyramidalis* being the most commonly observed. The ground layer exhibits exposed soil patches, increasing susceptibility to erosion and nutrient depletion.

Biodiversity in degraded habitats is significantly lower compared to intact woodland, with faunal assemblages shifting towards disturbance-tolerant species. Birds such as the Laughing Dove (*Spilopelia senegalensis*), Fork-tailed Drongo (*Dicrurus adsimilis*), and Crowned Lapwing (*Vanellus*

coronatus) are commonly observed, while insect populations primarily consist of termites, ants, and grasshoppers, which play crucial roles in nutrient cycling.

River Crossings Habitat

The river crossings habitat along the Malawi-Zambia 400kV Overhead Transmission Line (OHL) corridor represents a critical ecological feature, supporting hydrological functions, aquatic biodiversity, and riparian vegetation, (refer to table 56 and fig 5, 6,7 and 8). The OHL route intersects several river systems, including the Lutembwe, Chibila, Mwami, and Lubwe Rivers, all of which play essential roles in sustaining biodiversity, maintaining water quality, and providing ecosystem services for local communities.

Ecological Characteristics

The riparian zones along these rivers exhibit distinct vegetation communities, characterized by high moisture availability, dense vegetation cover, and increased species richness compared to surrounding habitats. The dominant tree species in these riparian corridors include *Syzygium cordatum, Ficus sycomorus, Diospyros mespiliformis,* and *Parinari curatellifolia,* which are adapted to periodic flooding and serve as critical habitat for birds, amphibians, reptiles, and aquatic invertebrates. The canopy cover in these zones is generally higher than in surrounding woodland, providing shade and maintaining microclimatic stability within the riverbanks.

The grass and shrub layers in these areas are also well developed, consisting of moisture-dependent species such as *Phragmites australis (*Water reeds), *Pennisetum purpureum* (Elephant grass) and *Cyperus species,* which contribute to bank stabilization and prevent soil erosion. These riverine habitats function as wildlife corridors, facilitating species movement across fragmented landscapes, particularly for birds, small mammals, and reptiles.

Habitat Mapping of the Malawi-Zambia 400kV Transmission Line Project Area

To provide a comprehensive spatial representation of the ecological landscape, the project area has been divided into four habitat sections, each represented by a dedicated habitat map. These maps illustrate the distribution of key habitat types along the transmission corridor, offering critical insights into vegetation cover, land use patterns, and ecological features within the project footprint.

Each section delineates distinct habitat classifications, including wooded vegetation, thickets, agricultural fields, built-up areas, degraded vegetation, and riparian zones. The maps serve as essential tools for assessing habitat variability, identifying ecologically sensitive areas, and

supporting informed decision-making regarding biodiversity conservation and project implementation.

The following habitat maps (Sections 1–4) provide a visual overview of the spatial extent, composition, and ecological significance of the various habitats traversed by the transmission line.

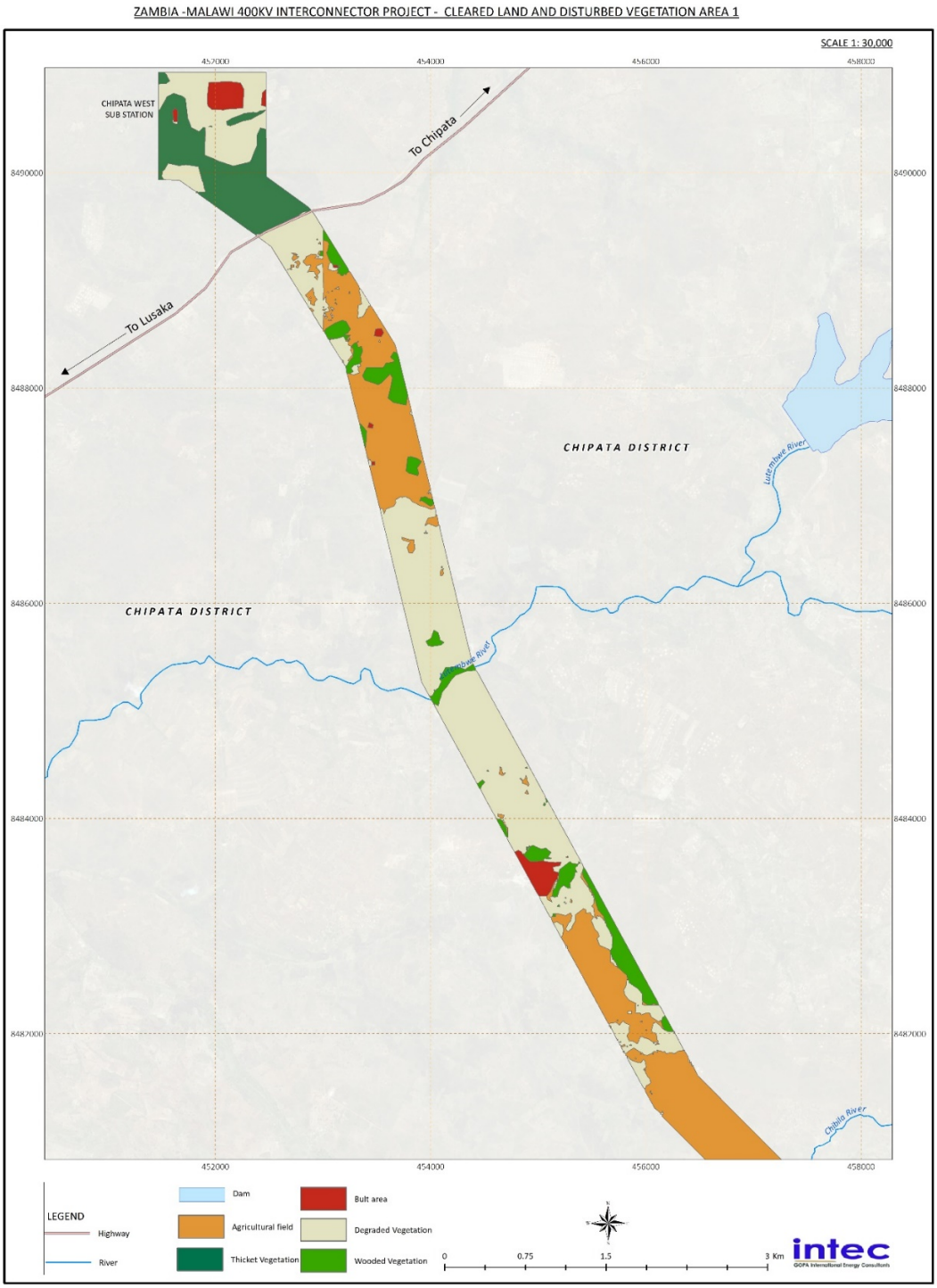


Figure 5: Habitat Map of the Project Area Section 1

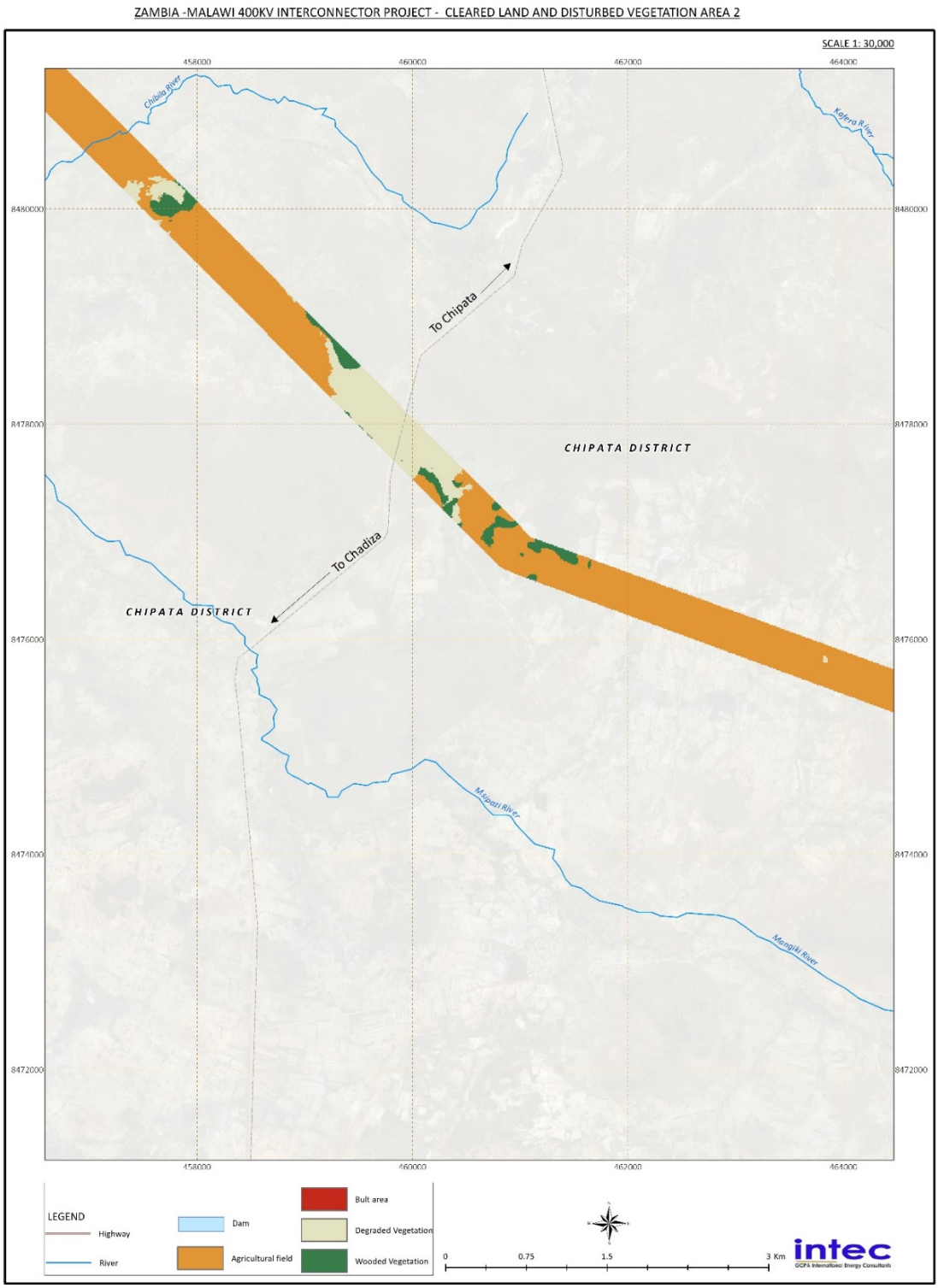


Figure 6: Habitat Map of the Project Area Section 2

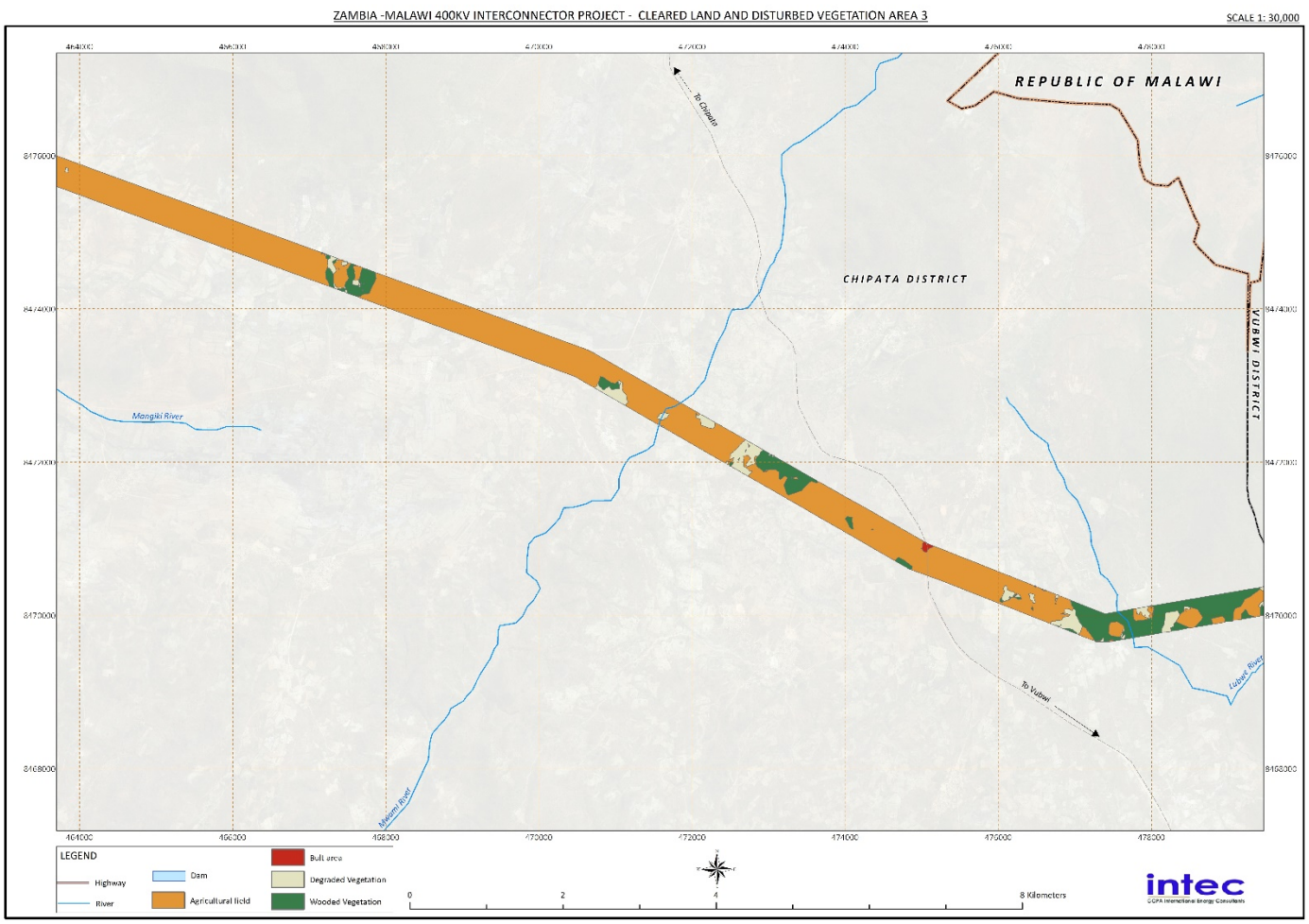


Figure 7: Habitat Map of the Project Area Section 3.

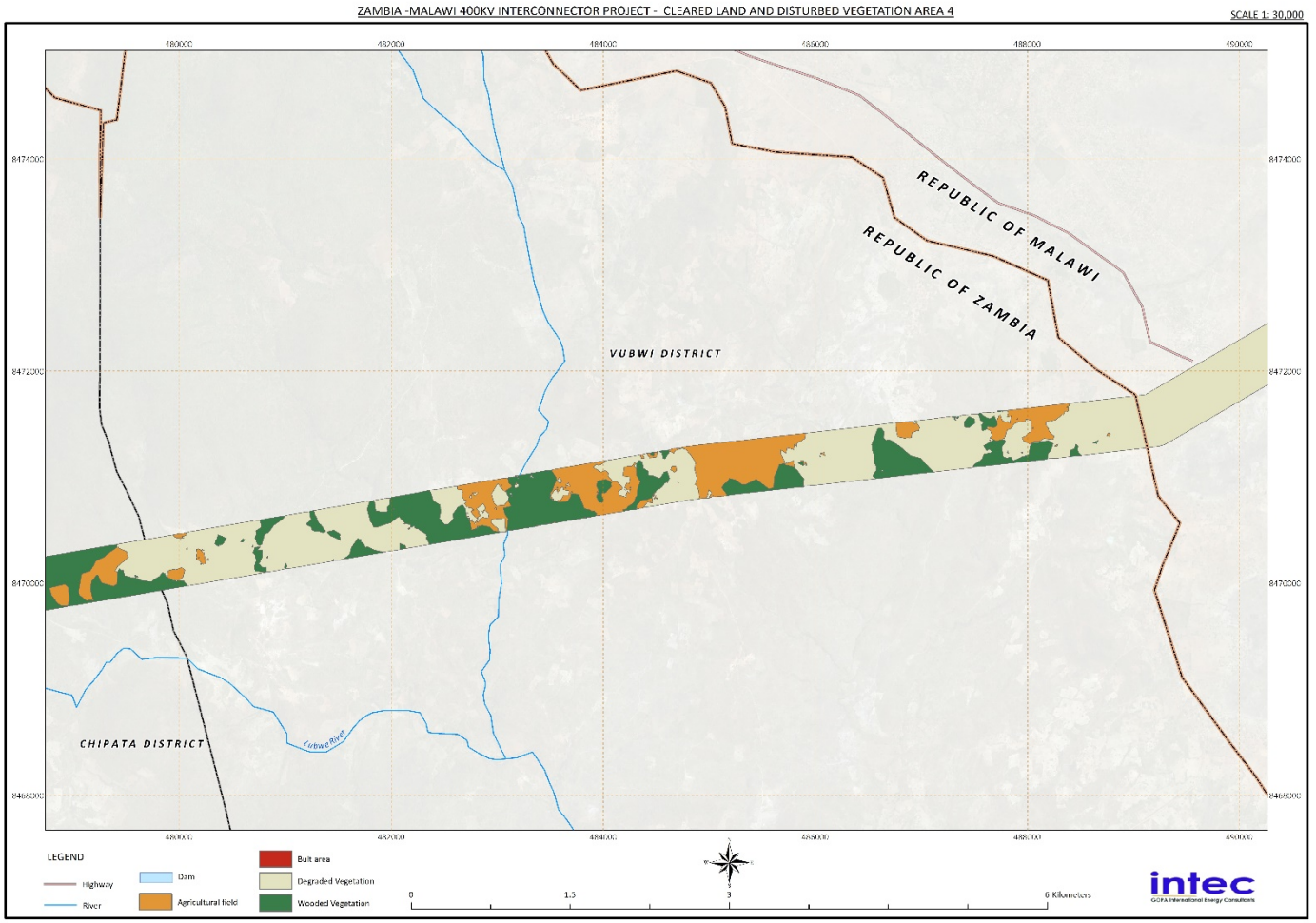


Figure 8: Habitat Map of the Project Area Section 4

Flora

Flora of the Malawi-Zambia 400kV Interconnector Project Area

The biodiversity analysis of the Malawi-Zambia 400kV Interconnector Project area identified a diverse range of tree and grass species distributed across various habitats within the transmission corridor. These species play a crucial role in maintaining ecosystem stability, providing habitat for fauna, and contributing to soil conservation and carbon sequestration.

The tables below present the tree and grass species recorded in the project area, along with their corresponding IUCN Global Conservation Status, highlighting their conservation significance.

Table 57: Surveyed Tree Species with their IUCN Conservation Status

Species	**IUCN Conservation Status**
Azanza garkeana	Least Concern
Acacia nigrescens	Least Concern
Anona senegalensis	Least Concern
Acacia sieberana	Least Concern
Bauhinia petersiana	Not Evaluated
Brachystegia speciformis	Least Concern
Cassia abbreviata	Least Concern
Combretum molle	Least Concern
Combretum mossambicense	Not Evaluated
Combretum zeyheri	Not Evaluated
Diospyros batocana	Not Evaluated
Dichrostachys cinerea	Least Concern
Diplorhynchus condylocarpon	Not Evaluated
Erythrophleum africanum	Least Concern
Julbernardia globiflora	Least Concern
Julbernardia paniculata	Least Concern

Lannea stuhlmannii	Least Concern
Markhamia acuminata	Least Concern
Ochna pulchra	Least Concern
Pericopsis angolensis	Near Threatened
Parinari curatellifolia	Least Concern
Pseudolachnostylis maprouneifolia	Not Evaluated
Piliostigma thonningii	Not Evaluated
Strychnos cocculoides	Least Concern
Swartzia madagascariensis	Not Evaluated
Senegalia polyacantha	Least Concern
Ximenia africana	Least Concern
Ziziphus abyssinica	Least Concern
Zanha africana	Not Evaluated
Acacia natalensis	Not Evaluated
Acacia polyacantha	Least Concern
Brachystegia boehmii	Least Concern
Brachystegia bussei	Least Concern
Brachystegia floribunda	Least Concern
Brachystegia longifolia	Not Evaluated
Brachystegia manga	Not Evaluated
Cussonia arborea	Least Concern
Canthium glaucum	Not Evaluated
Combretum elaeagnoides	Not Evaluated
Croton gratissimus	Least Concern
Diospyros mespiliformis	Least Concern

Dalbergiella nyasae	Not Evaluated
Flacourtia indica	Least Concern
Faurea saligna	Least Concern
Gardenia spatulifolia	Not Evaluated
Maprounea africana	Not Evaluated
Monotes glaber	Not Evaluated
Ozoroa reticulate	Not Evaluated
Peltophorum africanum	Least Concern
Rhus tenuinervis	Not Evaluated
Strychnos spinosa	Least Concern
Securidaca virosa	Least Concern
Securinega virosa	Not Evaluated
Terminalia randii	Not Evaluated
Terminalia sericea	Least Concern
Uapaca kirkiana	Least Concern
Uapaca nitida	Not Evaluated
Vangueriopsis lanciflora	Not Evaluated
Vitex payos	Not Evaluated
Croton megalobotrys	Not Evaluated
Diospyros whyteana	Not Evaluated
Ekebergia banguelensis	Not Evaluated
Ficus craterostoma	Not Evaluated
Garcinia livingstonei	Not Evaluated
Harungana madagascariensis	Not Evaluated
Isoberlinia angolensis	Least Concern

Terminalia mollis	Not Evaluated

Table 58: Surveyed Grass Species with their IUCN Conservation Status

Grass Species	**IUCN Global Conservation Status**
Setaria sphacelata	Least Concern (LC)
Setaria hirta	Not Evaluated (NE)
Setaria parviflora	Least Concern (LC)
Setaria viridis	Least Concern (LC)
Setaria verticillata	Least Concern (LC)
Hyarrehenia hirta	Not Evaluated (NE)
Hyarrehenia filipendula	Not Evaluated (NE)
Sporobolus africanus	Least Concern (LC)
Pennisetum purpureum	Least Concern (LC)
Aristida stitata	Least Concern (LC)
Eragrostis superba	Least Concern (LC)
Hyparrhania hirta	Not Evaluated (NE)
Andropogon gayanus	Least Concern (LC)
Tristachya rehmannii	Not Evaluated (NE)
Stipagrostis zeyheri	Not Evaluated (NE)
Eragrostis obtusa	Least Concern (LC)
Eriochloa stapfiana	Not Evaluated (NE)
Digitaria eriantha	Not Evaluated (NE)

Digitaria velutina	Not Evaluated (NE)
Digitaria ternata	Not Evaluated (NE)
Chloris mossambicensis	Least Concern (LC)
Panicum volutans	Not Evaluated (NE)
Setaria incrassata	Not Evaluated (NE)
Setaria pallide-fusca	Not Evaluated (NE)
Eragrostis lehmanniana	Not Evaluated (NE)
Eragrostis curvula	Least Concern (LC)

The vegetation within the Malawi-Zambia 400kV Interconnector Project area represents a dynamic and ecologically diverse landscape dominated by Miombo woodland, interspersed with grasslands, riparian vegetation, and modified habitats such as agricultural fields and degraded areas. The flora is largely characteristic of Zambia's Zambezian phytogeographic zone, exhibiting species adapted to the region's climatic conditions, soil composition, and historical land-use patterns.

1. Woodland and Tree Species Composition

The woodland areas within the project corridor are dominated by species typical of Miombo woodland, a vegetation type widespread across southern and central Africa. The floristic composition includes a mixture of mature trees, secondary regrowth species, and fire-resistant taxa, reflecting natural succession processes and varying levels of anthropogenic disturbance.

Key dominant species include:

- **Brachystegia spp.** (*Brachystegia boehmii, B. bussei, B. floribunda, B. spiciformis*) – These species form the ecological backbone of the Miombo woodlands, providing essential ecosystem services such as carbon sequestration, soil stabilization, and habitat for wildlife.
- ***Julbernardia paniculata*** **and** ***Julbernardia globiflora*** – Frequently co-occurring with Brachystegia, these species contribute to the structural and functional integrity of the woodland.
- ***Uapaca kirkiana*** – A well-established species known for its ecological and socio-economic value, providing fruit to both humans and wildlife as well as shade while supporting soil

fertility. The Uapaca fruit is known as Masuku in the local language. When in season it is sold in the markets.

- ***Pericopsis angolensis*** – A notable species classified as *Near Threatened* under the IUCN Red List, emphasizing the importance of conservation awareness for this species. It's usually used as wood for making furniture.
- ***Ochna pulchra, Combretum molle, Parinari curatellifolia, Diospyros mespiliformis, Terminalia sericea*** – These species contribute to habitat complexity, enhancing biodiversity and providing resources for various fauna.

The woodland areas also contain nitrogen-fixing species such as *Diplorhynchus condylocarpon* and *Erythrophleum africanum*, which play a crucial role in maintaining soil health and fertility, particularly in fire-prone Miombo ecosystems. Additionally, pioneer species such as *Dichrostachys cinerea* indicate previous disturbances, as they tend to colonize degraded lands and open spaces.

2. Grassland and Ground Cover Species

Grasslands play a crucial role in maintaining ecosystem function, particularly in soil stabilization, carbon cycling, and supporting herbivorous wildlife. The project area exhibits a range of grass species, primarily from the genera *Setaria, Sporobolus, Eragrostis, Hyparrhenia, Digitaria, Chloris,* and *Andropogon.*

Notable grass species include:

- *Setaria sphacelata, Setaria hirta, Setaria verticillata* – Dominant in open grasslands and woodland understory, these species provide essential forage for herbivores and contribute to soil stabilization.
- *Sporobolus africanus, Eragrostis superba, Andropogon gayanus, Hyparrhenia filipendula* – Frequently found in semi-arid areas, these species are well adapted to seasonal variations and grazing pressure.
- *Aristida stitata, Tristachya rehmannii, Digitaria ternata, Chloris mossambicensis* – Species that enhance the structural diversity of grassland habitats, supporting various invertebrates and small mammals.
- *Pennisetum purpureum* (Elephant Grass) – Commonly associated with riparian zones, providing an essential habitat for insects and serving as a food source for larger herbivores.

The presence of species such *as Eragrostis obtusa, Eriochloa stapfiana, Stipagrostis zeyheri*, and *Panicum volutans* suggests a landscape capable of supporting diverse ecological interactions, from soil microbial activity to large mammalian grazers.

3. Riparian and Hydrophytic Vegetation

Riparian habitats along key watercourses such as the Lutembwe, Chibila, Mwami, and Lubwe Rivers support a distinct assemblage of species adapted to periodic water availability. The flora in these areas provides critical ecosystem functions such as water filtration, erosion control, and wildlife corridors.

Characteristic species include:

- ***Syzygium cordatum*** – A common water-loving tree species, often found along riverbanks, contributing to riparian stabilization.
- ***Diospyros whyteana, Garcinia livingstonei, Ficus craterostoma*** – Woody species providing shade and habitat for aquatic and terrestrial organisms.
- ***Monotes glaber, Terminalia mollis, Ekebergia banguelensis*** – Trees contributing to the ecological resilience of riparian zones.

These habitats also contain grasses such *as Panicum spp., Chloris mossambicensis*, and *Hyparrhenia spp*., which play a role in preventing sediment runoff and maintaining hydrological stability.

4. Modified and Disturbed Vegetation

The survey also identified modified habitats, including agricultural fields and built-up areas, where the natural vegetation has been altered due to human activities. These areas are characterized by early successional plant species, ruderal vegetation, and cultivated crops.

Key species found in disturbed habitats:

- *Dichrostachys cinerea, Senegalia polyacantha* – Frequently found in degraded areas, indicating secondary succession and land-use changes.
- *Peltophorum africanum, Combretum mossambicense, Swartzia madagascariensis* – Representing woodland regrowth in transitional landscapes.
- Weedy species such as *Hyparrhenia hirta, Eragrostis lehmanniana, Digitaria velutina* – Commonly observed in abandoned fields and along roadsides.

These areas retain ecological significance by supporting pollinators, soil regeneration, and potential wildlife corridors, despite the dominance of cultivated landscapes.

5. Conservation Significance and Ecological Function

While most recorded tree and grass species are classified as *Least Concern* by the IUCN Red List, the presence of *Pericopsis angolensis* (Near Threatened) highlights the need for careful management of certain species. The dominance of Brachystegia and Julbernardia species across multiple survey plots indicates a relatively stable woodland structure, albeit with varying degrees of disturbance.

The vegetation within the project area plays a critical role in:

- Carbon Sequestration and Climate Regulation – Miombo woodlands act as important carbon sinks, mitigating greenhouse gas emissions.
- Soil Stabilization and Erosion Control – Grasslands and riparian species help prevent soil degradation, particularly in sloped terrains and watercourse crossings.
- Biodiversity Support – The floristic diversity supports numerous faunal species, from insects and birds to large herbivores.
- Livelihood and Ecosystem Services – Many tree and grass species provide fuelwood, construction materials, traditional medicine, and grazing resources for local communities.

The Malawi-Zambia 400kV Interconnector Project area encompasses a diverse range of vegetation types, from mature Miombo woodlands to dynamic riparian zones and modified habitats. The documented flora provides critical ecological functions, supporting biodiversity, soil health, and local livelihoods. This baseline survey establishes a valuable reference for future conservation and management efforts, ensuring that natural habitats are maintained and ecosystem resilience is upheld within the project landscape.

Fauna

Fauna of the Malawi-Zambia 400kV Interconnector Project Area

The ecological survey for the Malawi-Zambia 400kV Interconnector Project documented a diverse range of fauna, including birds, insects, mammals, reptiles, and amphibians. The assessment aimed to establish a comprehensive baseline of species composition, distribution, and conservation status within the project area. The fauna recorded reflects the varying habitat conditions along the transmission corridor, ranging from miombo woodlands and thickets to agricultural fields, degraded landscapes, and riverine ecosystems.

Avifauna was the most well-represented group, with numerous bird species recorded, many of which are adapted to woodland and open savanna environments. Insects also exhibited

significant diversity, playing critical ecological roles such as pollination, decomposition, and pest control. Mammals were less frequently encountered, with observations primarily consisting of small to medium-sized species adapted to fragmented and human-modified habitats. Reptiles and amphibians were recorded in low numbers, largely due to seasonal variations and habitat limitations along the surveyed transects.

To ensure alignment with global and national conservation priorities, all identified species were screened against the IUCN Red List for global conservation status, while mammals, reptiles, and amphibians were additionally assessed against the Zambian National Conservation Status. The tables below provide a detailed summary of the fauna documented during the ecological survey, highlighting their respective conservation designations.

Table 59: Surveyed Bird Species with their IUCN Conservation Status

Common Name	**Scientific Name**	**IUCN Global Conservation Status**
Red-necked Francolin	*Pternistis afer*	LC (Least Concern)
Long-tailed Widow	*Euplectes progne*	LC (Least Concern)
Ring-necked Dove	*Streptopelia capicola*	LC (Least Concern)
Black-eared Seed-eater	*Crithagra mennelli*	LC (Least Concern)
Swamp Boubou Shrike	*Laniarius bicolor*	LC (Least Concern)
Carmine Bee-eater	*Merops nubicoides*	LC (Least Concern)
Flappet Lark	*Mirafra rufocinnamomea*	LC (Least Concern)
Red-eyed Dove	*Streptopelia semitorquata*	LC (Least Concern)
Red-eyed Bulbul	*Pycnonotus nigricans*	LC (Least Concern)
Collared Sunbird	*Hedydipna collaris*	LC (Least Concern)
African Emerald Cuckoo	*Chrysococcyx cupreus*	LC (Least Concern)
Black-backed Puffback	*Dryoscopus cubla*	LC (Least Concern)
Black-crowned Tchagra	*Tchagra senegalus*	LC (Least Concern)
Emerald Spotted Dove	*Turtur chalcospilos*	LC (Least Concern)
White-winged Widow	*Euplectes albonotatus*	LC (Least Concern)

Black-winged Bishop	*Euplectes nigroventris*	LC (Least Concern)
Masked Weaver	*Ploceus velatus*	LC (Least Concern)
Fire Finch	*Lagonosticta senegala*	LC (Least Concern)
Miombo Grey Tit	*Parus griseiventris*	LC (Least Concern)
Blue Waxbill	*Uraeginthus angolensis*	LC (Least Concern)
Tawny-flanked Prinia	*Prinia subflava*	LC (Least Concern)
Go-away Bird	*Corythaixoides concolor*	LC (Least Concern)
Singing Cisticola	*Cisticola juncidis*	LC (Least Concern)
Copper Sunbird	*Cinnyris cupreus*	LC (Least Concern)
White-browed Sparrow Weaver	*Plocepasser mahali*	LC (Least Concern)
Black-headed Heron	*Ardea melanocephala*	LC (Least Concern)
African Hawk Eagle	*Aquila spilogaster*	LC (Least Concern)
Harlequin Quail	*Coturnix delegorguei*	LC (Least Concern)
Green Pigeon	*Treron calvus*	LC (Least Concern)
Red Bishop	*Euplectes orix*	LC (Least Concern)
Abdim's Stork	*Ciconia abdimii*	LC (Least Concern)
Turtle Dove	*Streptopelia turtur*	LC (Least Concern)
Burchell's Coucal	*Centropus burchellii*	LC (Least Concern)
Greater Striped Swallow	*Cecropis cucullata*	LC (Least Concern)
Yellow-billed Kite	*Milvus aegyptius*	LC (Least Concern)
Hammerkop	*Scopus umbretta*	LC (Least Concern)
Lilac-breasted Roller	*Coracias caudatus*	LC (Least Concern)
Pied Crow	*Corvus albus*	LC (Least Concern)
Southern Grey-headed Kingfisher	*Halcyon leucocephala*	LC (Least Concern)

Red-billed Oxpecker	*Buphagus erythrorhynchus*	LC (Least Concern)
Eastern Kestrel	*Falco rupicoloides*	LC (Least Concern)

Table 60: Surveyed Insect Species with their IUCN Conservation Status

Common Name	**Scientific Name**	**IUCN Conservation Status**
Carpenter Ant	*Camponotus spp.*	Not Evaluated
Western Honey Bee	*Apis mellifera*	Not Threatened
Linnaeus' Cicada	*Cicada orni*	Least Concern
Common Wasp	*Vespula vulgaris*	Least Concern
Grasshopper	*Caelifera spp.*	Least Concern
Western Thatching Ant	*Messor barbarus*	Not Evaluated
Sugar Ant	*Camponotus consobrinus*	Not Evaluated
Giant African Centipede	*Scolopendra gigantea*	Not Evaluated
House Fly	*Musca domestica*	Least Concern
Cabbage White Butterfly	*Pieris rapae*	Least Concern
Stink Bug	*Halyomorpha halys*	Least Concern
Swallowtail Butterfly	*Papilio machaon*	Least Concern
Mopane Bee (Sweat Bee)	*Nomia spp.*	Not Evaluated
Giant African Millipede	*Archispirostreptus gigas*	Not Evaluated
Widow Spider	*Latrodectus spp.*	Not Evaluated
Huntsman Spider	*Sparassidae spp.*	Not Evaluated
Armed Spider	*Gasteracantha spp.*	Not Evaluated
Recluse Spider	*Loxosceles spp.*	Not Evaluated

Harvester Ant	*Pogonomyrmex spp.*	Not Evaluated
Ground Beetle	*Carabidae spp.*	Not Evaluated
Common Shining Cockroach	*Periplaneta americana*	Not Evaluated
Argentine Ant	*Linepithema humile*	Not Evaluated
Water Scavenger Beetle	*Hydrophilidae spp.*	Not Evaluated
Wolf Spider	*Lycosidae spp.*	Not Evaluated
Field Cricket	*Gryllidae spp.*	Not Evaluated
Carcass Beetle	*Silphidae spp.*	Not Evaluated
Spotted Sugar Ant	*Camponotus spp.*	Not Evaluated
White Spotted Fruit Chafer	*Pachnoda sinuata*	Not Evaluated
Harvest Ant	*Messor spp.*	Not Evaluated
Bal-byter Sugar Ant	*Camponotus fulvopilosus*	Not Evaluated
Striped Toktokkie	*Psammodes striatus*	Not Evaluated
Metallic Tree Darkling Beetle	*Omorgus squalidus*	Not Evaluated
Stick Mantid	*Empusa pennata*	Not Evaluated
African Black Beetle	*Heteronychus arator*	Not Evaluated
Velvet Ant	*Mutillidae spp.*	Not Evaluated
Grass Mantid	*Mantodea spp.*	Not Evaluated
Luck Ant	*Formicidae spp.*	Not Evaluated
Bark Cockroach	*Periplaneta spp.*	Not Evaluated
Chequered Beetle	*Cleridae spp.*	Not Evaluated
Sweat Bee	*Halictidae spp.*	Not Evaluated
Trilobite Cockroach	*Cryptocercidae spp.*	Least Concern
Grey Coffee Snoot Beetle	*Curculionidae spp.*	Not Evaluated
Jumping Spider	*Salticidae spp.*	Not Evaluated

Monarch Butterfly	*Danaus plexippus*	Not Evaluated
Pentatomid Bug	*Pentatomidae spp.*	Not Evaluated
Eastern Subterranean Termites	*Reticulitermes flavipes*	Not Evaluated
Small Yellow Ant	*Solenopsis spp.*	Least Concern

Table 61: Surveyed Mammal Species with their IUCN Conservation Status

Common Name	**Scientific Name**	**IUCN Status**	**Zambian National Status**
Vervet Monkey	*Chlorocebus pygerythrus*	Least Concern (LC)	Not Listed
Civet Cat	*Civettictis civetta*	Least Concern (LC)	Not Listed
Common Duiker	*Sylvicapra grimmia*	Least Concern (LC)	Not Listed
Elephant Shrew	*Elephantulus spp.*	Least Concern (LC)	Not Listed
Common Hare	*Lepus spp.*	Least Concern (LC)	Not Listed

Table 62: Surveyed Reptile Species with their IUCN Conservation Status

Common Name	Scientific Name	IUCN Status	Zambian National Status
Monitor Lizard	*Varanus niloticus*	Least Concern (LC)	Not Listed
Side-striped Chameleon	*Trioceros bitaeniatus*	Least Concern (LC)	Not Listed
Mozambique Rough-Scaled Lizard	*Ichnotropis squamulosa*	Not Evaluated (NE)	Not Listed
Pancake Tortoise	*Malacochersus tornieri*	Vulnerable (VU)	Protected

Table 63: Surveyed Amphibian Species with their IUCN Conservation Status

Scientific Name	Common Name	IUCN Global Conservation Status	Zambian National Status
Leptopelis bocagii	Bocage's Burrowing Tree Frog	Least Concern (LC)	Not Listed

Fauna of the Malawi-Zambia 400kV Interconnector Project Area

The biodiversity survey of the Malawi-Zambia 400kV Interconnector Project corridor provided a comprehensive inventory of fauna across multiple taxonomic groups, highlighting species diversity and ecological distribution within the study area. The assessment encompassed birds, insects, mammals, reptiles, and amphibians, with species records varying across different habitats, including miombo woodlands, riparian corridors, degraded vegetation, agricultural fields, and built-up areas. The results contribute to a critical ecological baseline, providing essential data for understanding species composition, habitat preferences, and the broader ecological significance of the project area.

Avifauna (Birds)

Bird diversity was significant, with multiple species identified across different habitat types. The surveyed area supports a mix of resident and migratory species, reflecting the ecological role of the region in avian conservation. The presence of Abdim's Stork *(Ciconia abdimii)*, a migratory species categorized as *Least Concern* by the IUCN, underscores the importance of the area as a seasonal stopover habitat. Other frequently recorded species included Red-necked Francolin *(Pternistis afer*), Black-headed Heron *(Ardea melanocephala),* White-browed Sparrow-Weaver *(Plocepasser mahali),* and Lilac-breasted Roller *(Coracias caudatus).* The diversity of granivores, insectivores, and nectarivores observed suggests that the area provides ample food resources and nesting sites, particularly in wooded and riparian habitats. Raptors such as the African Hawk Eagle *(Aquila spilogaster)* were also recorded, indicating the presence of a functioning predator-prey dynamic within the ecosystem.

Invertebrates (Insects and Other Arthropods)

Insects formed a crucial component of the ecosystem, fulfilling roles in pollination, decomposition, and soil aeration. The survey recorded a variety of ant species, including Western Thatching Ants (*Messor spp.*), Harvester Ants *(Pogonomyrmex spp.),* and Argentine Ants *(Linepithema humile),* highlighting their importance in nutrient cycling. The presence of grasshoppers, cicadas, mantids, and various butterfly species such as the Monarch Butterfly *(Danaus plexippus)* and Swallowtail Butterfly *(Papilio spp.)* reflects the ecological integrity of the area in supporting herbivorous and pollinating insect populations. Predatory species, including Wolf Spiders *(Lycosidae spp.)* and Huntsman Spiders *(Sparassidae spp.)*, suggest a stable arthropod food web. In aquatic and semi-aquatic habitats, water scavenger beetles and stick mantids were documented, providing insight into the ecological role of wetlands in supporting insect biodiversity.

Mammalian Diversity

The survey recorded a limited but ecologically significant assemblage of mammals, primarily small to medium-sized species adapted to the semi-wooded and open grassland habitats of the project area. Observed species included the Vervet Monkey *(Chlorocebus pygerythrus),* Civet Cat *(Civettictis civetta),* Common Duiker *(Sylvicapra grimmia),* Elephant Shrew *(Macroscelidea spp.)*, and Common Hare *(Lepus microtis).* The absence of larger mammalian species suggests that habitat fragmentation and human activity have influenced mammalian distribution within the study area. However, spoor evidence and local reports indicate occasional movements of small ungulates and nocturnal carnivores in less disturbed habitats. The presence of insectivorous

mammals, such as shrews, highlights the functional role of small mammals in regulating invertebrate populations within the ecosystem.

Herpetofauna (Reptiles and Amphibians)

The reptile survey identified a variety of species, including Monitor Lizards (*Varanus spp.*), Side-striped Chameleons (Chamaeleo dilepis), and Mozambique Rough-Scaled *Lizards (Ichnotropis squamulosa)*. The occurrence of the Pancake Tortoise *(Malacochersus tornieri),* which is listed as *Vulnerable* by the IUCN, highlights the need for further study of its ecological status in the region. The project area provides a range of microhabitats for reptiles, from grassland environments supporting terrestrial species to riparian zones that may serve as critical breeding areas.

Amphibian diversity was limited, with Bocage's Burrowing Tree Frog *(Leptopelis bocagii)* recorded within the riparian habitats of Plot 4. The presence of this species suggests that seasonal water availability plays a key role in maintaining amphibian populations. Although no other amphibians were observed, their presence cannot be ruled out, particularly in wetter months when breeding conditions improve.

Ecological Significance

The surveyed fauna reflects the ecological diversity of the project area, with varying species compositions across different habitat types. Birds and insects were the most abundant taxa, demonstrating the area's role in supporting pollinators, seed dispersers, and insectivorous species. Mammals, reptiles, and amphibians, although less frequently recorded, contribute to the overall ecological balance of the landscape. The presence of migratory and habitat-sensitive species highlights the ecological importance of maintaining habitat connectivity and protecting key biodiversity areas.

This baseline assessment provides valuable data for long-term biodiversity monitoring and contributes to the broader understanding of species distributions within the Malawi-Zambia interconnector corridor.

Conservation Significance of Identified Species

The ecological survey conducted along the Malawi-Zambia 400kV Interconnector corridor documented a range of plants, mammals, birds, reptiles, amphibians, and insects, primarily comprising species classified as Least Concern (LC) or Not Evaluated (NE) under the IUCN Red List (2023). No endemic, rare, or highly threatened species were recorded among mammals, amphibians, and insects.

To ensure compliance with Zambia's Wildlife Act and international conservation standards, all species were screened against both Zambia's National Conservation Status and the IUCN Red List

(2023). The results confirmed that most recorded species are not legally protected under Zambia's conservation regulations, except for one reptile species of concern—the Pancake Tortoise (*Malacochersus tornieri*).

Conservation Status of the Pancake Tortoise

The Pancake Tortoise was identified during the reptile survey and is classified as Vulnerable (VU) on the IUCN Red List (2023) due to ongoing population declines caused by habitat destruction and illegal collection for the pet trade. In Zambia, this species is protected under national wildlife regulations, meaning that its capture, trade, or disturbance is strictly regulated.

Although the species is not widespread within the project area, its presence signifies an important ecological finding that warrants specific conservation attention. Further assessments are recommended to determine the extent of its distribution along the transmission corridor and ensure that any potential project-related disturbances do not threaten its habitat.

Avifauna Considerations

No bird nesting colonies were observed within the surveyed plots. The project area is highly disturbed by human activities, including agriculture and settlements, which limit suitable nesting sites for large avian species. However, scattered woodland patches still provide foraging and perching sites for a variety of birds.

A notable avian species identified during the survey is Abdim's Stork (*Ciconia abdimii*), which is classified as Least Concern (LC) under the IUCN Red List (2023).

Mammals, Reptiles, and Amphibians

The mammal survey recorded no species of conservation concern, with all identified mammals—including the Vervet Monkey, Civet Cat, and Common Duiker—falling under the Least Concern (LC) category. Similarly, the amphibian assessment identified Bocage's Burrowing Tree Frog (*Leptopelis bocagii*), which is not classified as threatened under the IUCN.

Among reptiles, apart from the Pancake Tortoise, other observed species—including the Monitor Lizard, Side-Striped Chameleon, and Mozambique Rough-Scaled Lizard—are categorized as Least Concern (LC). These species are commonly found in woodland and savanna ecosystems and are not under immediate conservation threats.

The faunal assessment confirms that the project area does not host critically endangered species but does contain species that require conservation consideration, particularly the Pancake Tortoise and migratory birds.

9.0 Conclusion

The ecological survey for the Malawi-Zambia 400kV Interconnector Project provides a comprehensive baseline assessment of the biodiversity, habitat distribution, and land transformation within the transmission corridor. The study documented key flora and fauna species, characterized habitat types, and analyzed the extent of land modification along the project route. This baseline information serves as a critical reference for understanding the ecological integrity of the area and the interactions between natural and human-modified environments.

The vegetation assessment revealed a landscape dominated by agricultural fields (**53%**) and degraded vegetation (**28.02%**), highlighting extensive land-use modification. However, significant portions of wooded vegetation (**13.63%**) and thicket (**2.97%**) remain, particularly in riparian corridors and less disturbed areas, supporting key ecological functions such as carbon sequestration, erosion control, and wildlife habitat provision. The project area falls within the drier Zambezian Miombo woodland, with varying levels of canopy cover and tree density. Dominant tree species include **Brachystegia boehmii, Julbernardia paniculata, Uapaca kirkiana**, and **Bauhinia petersiana**, which collectively define the woodland structure.

The faunal survey recorded a range of species across multiple taxa, including birds, insects, reptiles, amphibians, and mammals. Bird diversity was relatively high, with notable species such as **Abdim's Stork *(Ciconia abdimii*), African Hawk Eagle *(Aquila spilogaster)*, and Red-necked Francolin *(Pternistis afer)*** being observed. Insect diversity was also notable, with pollinators and decomposers contributing to ecosystem functioning. The reptile assessment identified the **Pancake Tortoise (*Malacochersus tornieri*)**, a species classified as **Vulnerable** under the IUCN Red List and protected under Zambian wildlife law. Mammal diversity was relatively low, with only a few species, including the **Vervet Monkey *(Chlorocebus pygerythrus)*** and **Common Duiker *(Sylvicapra grimmia),*** observed. Amphibian diversity was minimal, with **Bocage's Burrowing Tree Frog *(Leptopelis bocagii)*** being the only recorded species.

The assessment also highlighted the presence of riparian corridors along major river crossings, including the **Lutembwe, Chibila, Mwami, and Lubwe Rivers**. These watercourses serve as vital ecological buffers, supporting localized biodiversity and maintaining hydrological functions. The retention of natural vegetation in these areas plays a crucial role in stabilizing riverbanks, preventing soil erosion, and providing habitat for various species.

Overall, the findings of this survey establish a robust ecological baseline for the project area, offering critical insights into species composition, habitat distribution, and land transformation. This information is essential for future ecological monitoring and land-use planning, ensuring that

natural ecosystems and biodiversity within the transmission corridor are well-documented and understood.

References

- BirdLife International. (2023) *Guidelines for power line development in bird-sensitive areas.* BirdLife International.
- Bothma, J. P. J. G. (2010) *Game ranch management.* 5th edn. Van Schaik.
- Fahrig, L. (2003) 'Effects of habitat fragmentation on biodiversity', *Annual Review of Ecology, Evolution, and Systematics*, 34(1), pp. 487–515.
- Forman, R. T. T. and Godron, M. (1986) *Landscape ecology.* John Wiley & Sons.
- Groom, M. J., Meffe, G. K. and Carroll, C. R. (2006) *Principles of conservation biology.* Sinauer Associates.
- International Finance Corporation (IFC). (2012) *Performance standard 6: Biodiversity conservation and sustainable management of living natural resources.* IFC.
- IUCN Red List of Threatened Species. (2023) *Threatened species assessment methodology.* International Union for Conservation of Nature (IUCN).
- Kent, M. (2011) *Vegetation description and data analysis: A practical approach.* Wiley-Blackwell.
- Laurance, W. F. and Bierregaard, R. O. (1997) *Tropical forest remnants: Ecology, management, and conservation of fragmented communities.* University of Chicago Press.
- Lindenmayer, D. B. and Fischer, J. (2006) *Habitat fragmentation and landscape change: An ecological and conservation synthesis.* Island Press.
- Magurran, A. E. (2004) *Measuring biological diversity.* Blackwell Publishing.
- Millennium Ecosystem Assessment. (2005) *Ecosystems and human well-being: Biodiversity synthesis.* World Resources Institute.
- Newman, K. (1983) *Newman's birds of Southern Africa.* 1st edn. Macmillan South Africa.
- Oudtshoorn, F. V. (1992) *Guide to grasses of South Africa.* 1st edn. Briza.
- Picker, M. and Griffiths, C. (2015) *Insects of South Africa.* Struik.
- Primack, R. B. (2014) *Essentials of conservation biology.* Sinauer Associates.
- Red Cross Climate Centre. (2021). *Climate Profiles of Countries in Southern Africa: Zambia*.

- Simpson, E. H. (1949) 'Measurement of diversity', *Nature*, 163, p. 688.
- Spawls, S., Howell, K. M. and Drewes, R. C. (2008) *Reptiles and amphibians of East Africa.* A&C Black.
- Sutherland, W. J. (2000) *The conservation handbook: Research, management, and policy.* Wiley-Blackwell.
- Turner, M. G., Gardner, R. H. and O'Neill, R. V. (2001) *Landscape ecology in theory and practice: Pattern and process.* Springer.
- World Bank. (2022) *Environmental and social framework: Guidance on habitat protection and sustainable land use planning.* World Bank Group.
- Wyk, B. V. and Wyk, P. V. (1997) *Field guide to trees of Southern Africa.* Struik.
- Zambia Environmental Management Agency (ZEMA). (1997) *Environmental Protection and Pollution Control Act, No. 12 of 1990 (Amended 1997).* Government of Zambia.
- Zambia Environmental Management Agency (ZEMA). (2021) *Regulations for environmental impact assessments and terms of reference development.* Government of Zambia.
- Zambia Forestry Department. (1995) *Know your trees: Some of the common trees found in Zambia.* Zambia Printing Company.

Appendix I: Community Biodiversity Questionnaire

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

Community Biodiversity Questionnaire

Focus*: Mammals, Reptiles, and Amphibians in the Project Area*

INTRODUCTION

Dear Participant,

We are conducting an ecological survey to understand the biodiversity in your area as part of the Malawi-Zambia 400kV Interconnector Project Environmental and Social Impact Assessment. Your insights into the presence and behavior of mammals, reptiles, and amphibians in the project area are invaluable. This questionnaire is designed to gather your knowledge about these species. Your responses will help guide sustainable implementation of the project while conserving biodiversity.

Your participation is voluntary, and all responses will be kept confidential.

GENERAL INFORMATION

1. **Date:** _____
2. **Village/Community Name:** _____
3. **Name of Respondent (optional):** _____
4. **Gender:**
   ☐ Male
   ☐ Female
5. **Age Group:**
   ☐ Under 18
   ☐ 18–30
   ☐ 31–50
   ☐ Over 50

Section A: General Awareness of Local Wildlife

A1. How familiar are you with the mammals, reptiles, and amphibians in this area?

☐ Very familiar

☐ Somewhat familiar

☐ Not familiar

A2 Have you observed any changes in the presence or abundance of wildlife in recent years?

☐ Yes

☐ No

☐ Not sure

If yes, please explain: _____

Section B: Mammals

B1. What mammals are commonly found in this area? (e.g., rodents, antelopes, predators, etc.)

B2. Have you observed any of the following recently (Tick all that apply):

☐ Rodents (e.g., mice, rats, elephant shrews)

☐ Small mammals (e.g., monkey, mongoose, hare, civet etc……..)

☐ Large mammals (e.g., antelope, hyaena)

☐ None

Define the period when any of the above were observed:

B3. Where are mammals most commonly observed?

☐ Forest areas

☐ Near water sources

☐ Open fields

☐ Other (specify): _____

B4. Have any mammals caused conflict with humans (e.g., crop damage, livestock predation)?

☐ Yes

☐ No

If yes, please describe: _____

B5. Do you hunt animals (mammals) for food and other uses?

☐ Yes

☐ No

If yes, please describe: _____

Section C: Reptiles

C1. What reptiles are commonly found in this area? (e.g., snakes, lizards, tortoises)

_____

C2. Have you observed any of the following recently? (Tick all that apply):

☐ Tortoises

☐ Lizards

☐ Snakes (what type? ……)

☐ None

Please define the period when any of the above were observed:

C3. Are reptiles considered harmful or beneficial in this area?

☐ Harmful

☐ Beneficial

☐ Both

Please explain: _____

C4. Where are reptiles most commonly observed?

☐ Near water sources

☐ Rocky areas

☐ Forest areas on the hills

☐ Grasslands

☐ Other (specify): _____

C5. Do you hunt reptiles for food and other uses?

☐ Yes

☐ No

If yes, please describe: _____

Section D: Amphibians

D1. What amphibians are commonly found in this area? (e.g., frogs, toads, salamanders)

_____

D2. Have you observed any amphibians recently?

☐ Yes

State the period:

☐ No

D3. If yes, where are amphibians most commonly found?

☐ Wetlands/swamps

☐ Near rivers or streams

☐ Forest areas on the hills

☐ Other (specify): _____

D4. Are amphibians associated with any cultural or traditional beliefs in this community?

☐ Yes

☐ No

If yes, please explain: _____

D5. Do you hunt amphibians for food and other uses?

☐ Yes

☐ No

If yes, please describe: _____

Section E: Perceptions and Threats

E1. Are there any known threats to mammals, birds, reptiles, and amphibians in this area? (Tick all that apply):

☐ Hunting

☐ Habitat destruction (e.g., deforestation, farming)

☐ Climate changes

☐ Other (specify): _____

E2. Do you think the population of these species has changed over time?

☐ Increased

☐ Decreased

☐ Stayed the same

If decreased, why do you think this is happening? _____

Section F: Conservation Awareness

F1. Do you think it is important to conserve mammals, birds, reptiles, and amphibians in this area?

☐ Yes

☐ No

F2. Are there any existing local conservation efforts to protect these species?

☐ Yes

☐ No

☐ Not sure

If yes, please describe: _____

F.3. How can the community be involved in protecting local wildlife?

Thank You

Thank you for your time and valuable information. Your input will contribute to the conservation of biodiversity and sustainable development in this area.

Name of Enumerator: ----------

Signature of Enumerator: _____

Date: _____

RESULTS

FREQUENCY

Statistics

		Village	Gender	Familiar_local_wildlife
N	Valid	20	20	20
	Missing	0	0	0
Mean				1.75
Std. Deviation				.716
Variance				.513
Kurtosis				-.826
Std. Error of Kurtosis				.992

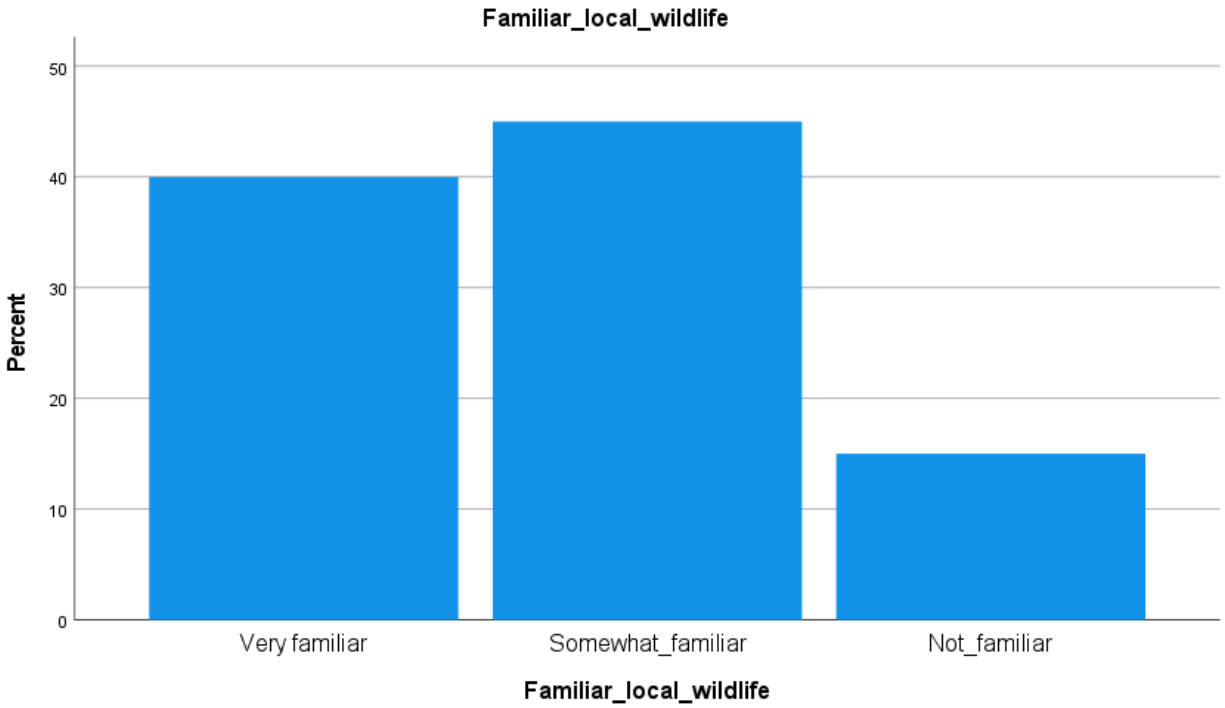
FREQUENCY TABLE

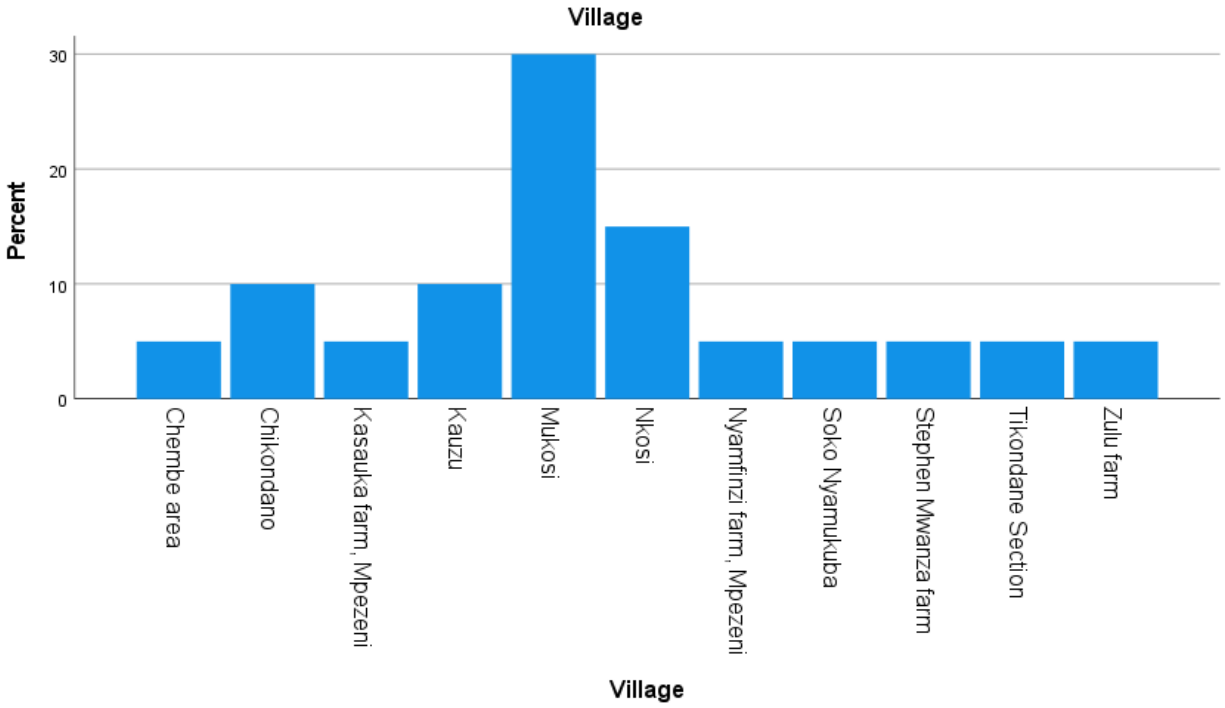
Village

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Chembe area	1	5.0	5.0	5.0
	Chikondano	2	10.0	10.0	15.0
	Kasauka farm, Mpezeni	1	5.0	5.0	20.0
	Kauzu	2	10.0	10.0	30.0
	Mukosi	6	30.0	30.0	60.0
	Nkosi	3	15.0	15.0	75.0
	Nyamfinzi farm, Mpezeni	1	5.0	5.0	80.0
	Soko Nyamukuba	1	5.0	5.0	85.0
	Stephen Mwanza farm	1	5.0	5.0	90.0
	Tikondane Section	1	5.0	5.0	95.0
	Zulu farm	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

Familiar_local_wildlife

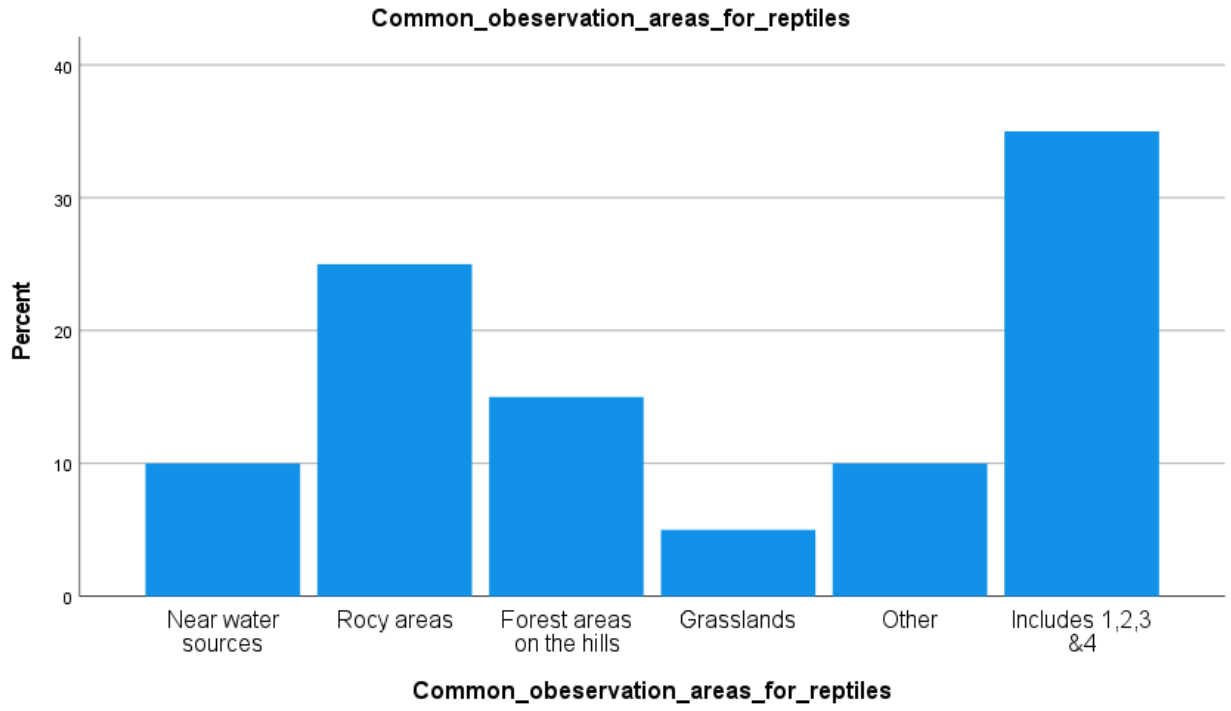
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very familiar	8	40.0	40.0	40.0
	Somewhat_familiar	9	45.0	45.0	85.0
	Not_familiar	3	15.0	15.0	100.0
	Total	20	100.0	100.0	


Familiar_local_wildlife
Percent
50
40
30
20
10
0
Very familiar
Somewhat_familiar
Not_familiar
Familiar_local_wildlife


Village
Percent
30
20
10
0
Chembe area
Chikondano
Kasauka farm, Mpezeni
Kauzu
Mukosi
Nkosi
Nyamfinzi farm, Mpezeni
Soko Nyamukuba
Stephen Mwanza farm
Tikondane Section
Zulu farm
Village

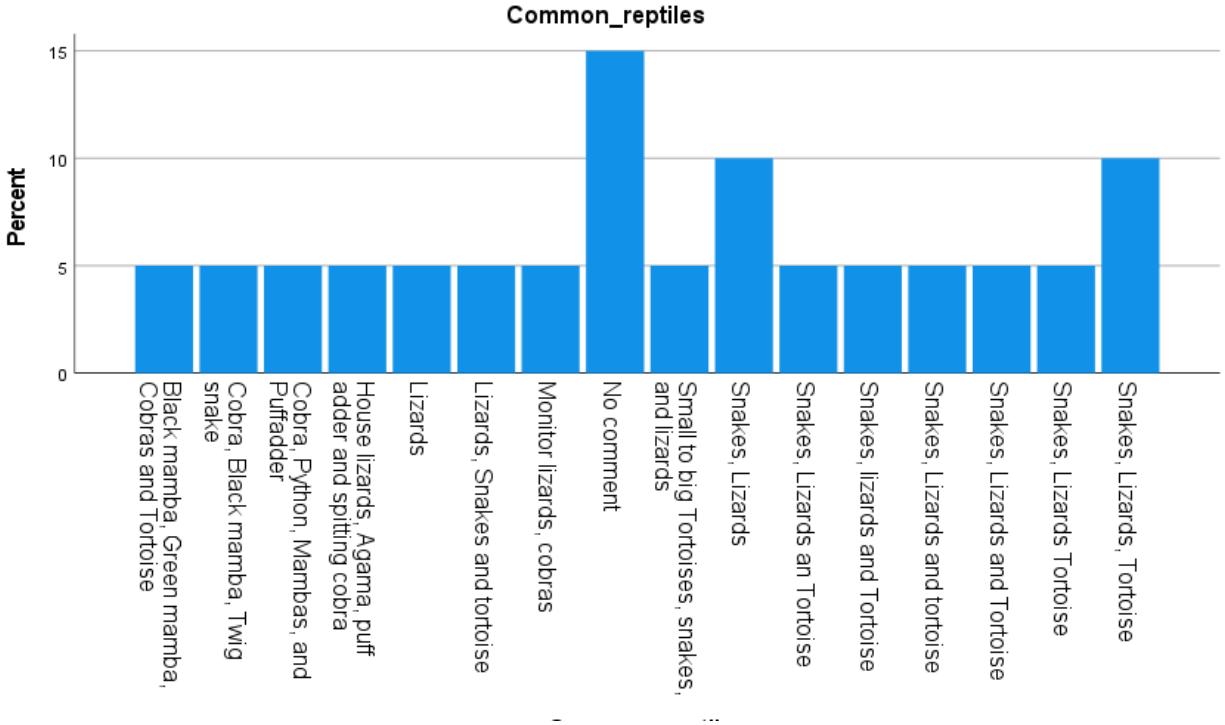
Common_obeservation_areas_for_reptiles

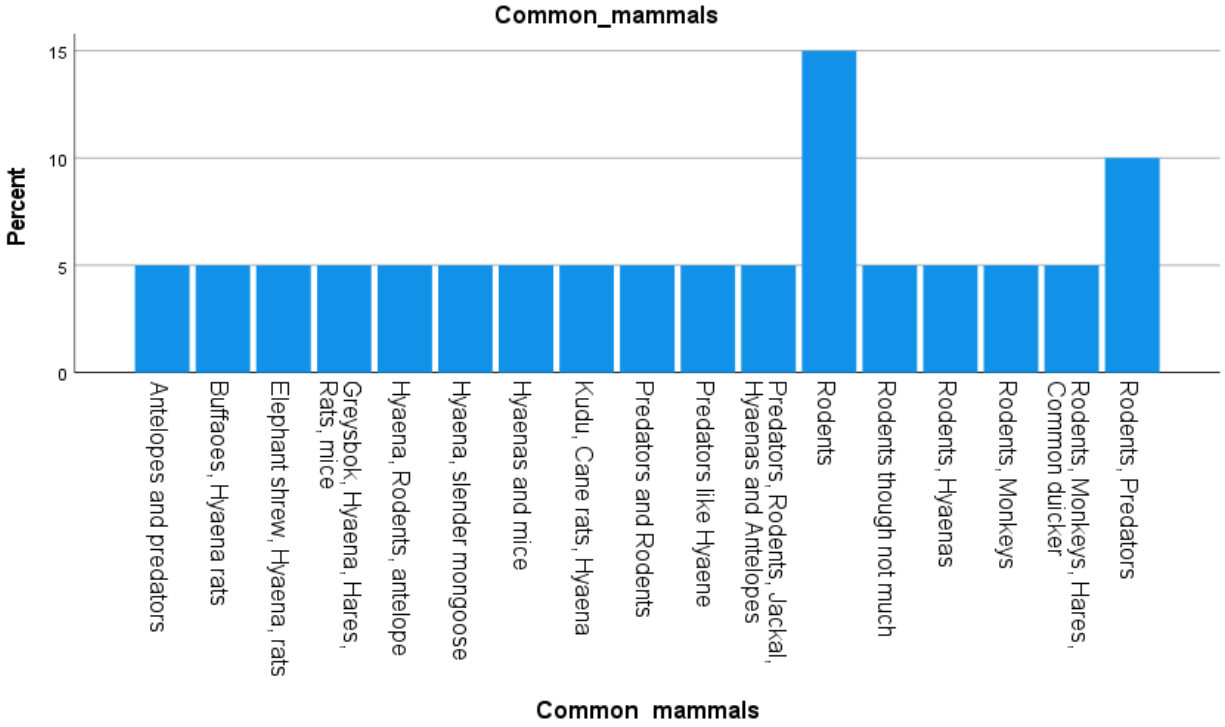
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Near water sources	2	10.0	10.0	10.0
	Rocy areas	5	25.0	25.0	35.0
	Forest areas on the hills	3	15.0	15.0	50.0
	Grasslands	1	5.0	5.0	55.0
	Other	2	10.0	10.0	65.0
	Includes 1,2,3&4	7	35.0	35.0	100.0
	Total	20	100.0	100.0	

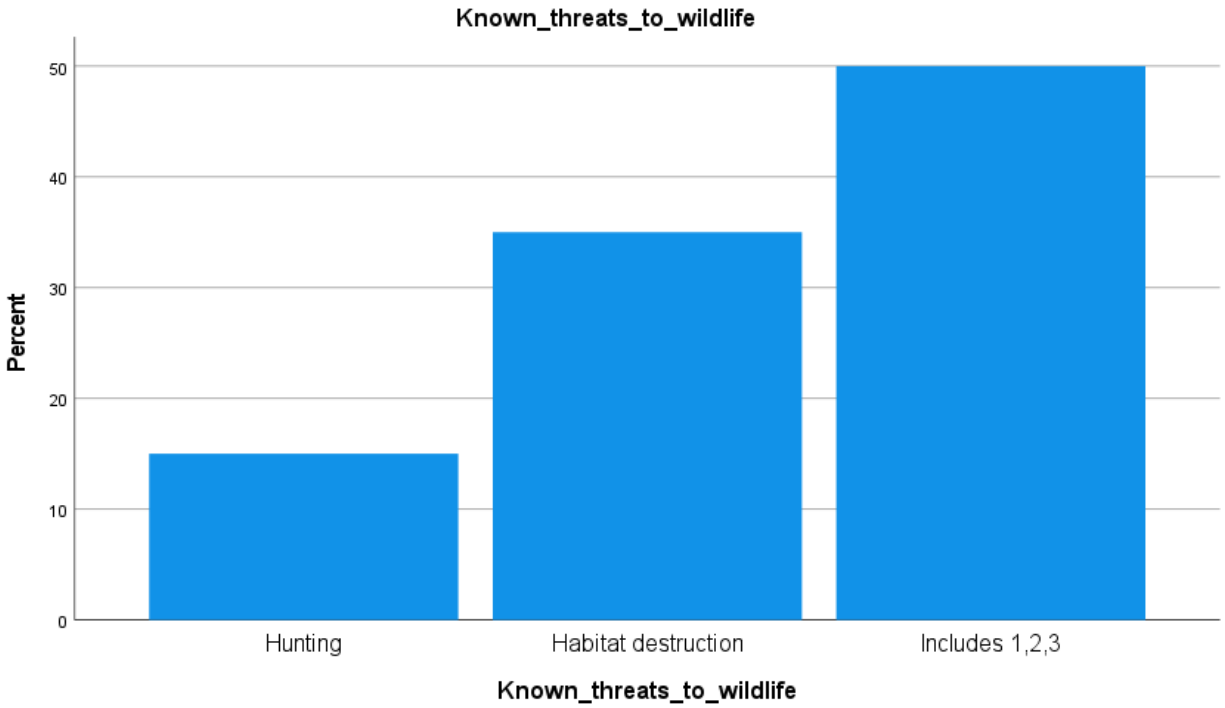


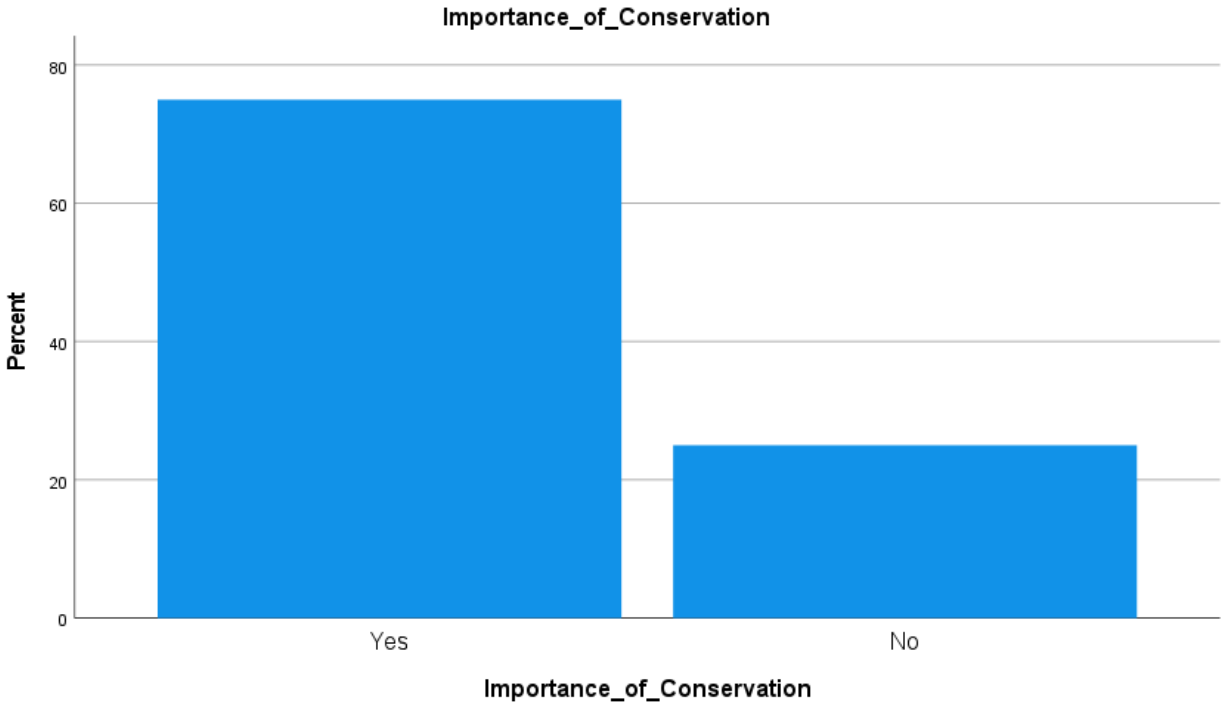
Common_reptiles

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Black mamba, Green mamba, Cobras and Tortoise	1	5.0	5.0	5.0
	Cobra, Black mamba, Twig snake	1	5.0	5.0	10.0
	Cobra, Python, Mambas, and Puffadder	1	5.0	5.0	15.0
	House lizards, Agama, puff adder and spitting cobra	1	5.0	5.0	20.0
	Lizards	1	5.0	5.0	25.0
	Lizards, Snakes and tortoise	1	5.0	5.0	30.0
	Monitor lizards, cobras	1	5.0	5.0	35.0
	No comment	3	15.0	15.0	50.0
	Small to big Tortoises, snakes, and lizards	1	5.0	5.0	55.0
	Snakes, Lizards	2	10.0	10.0	65.0
	Snakes, Lizards an Tortoise	1	5.0	5.0	70.0
	Snakes, lizards and Tortoise	1	5.0	5.0	75.0
	Snakes, Lizards and tortoise	1	5.0	5.0	80.0
	Snakes, Lizards and Tortoise	1	5.0	5.0	85.0
	Snakes, Lizards Tortoise	1	5.0	5.0	90.0
	Snakes, Lizards, Tortoise	2	10.0	10.0	100.0
	Total	20	100.0	100.0	


Common_reptiles
Percent
15
10
5
0
Black mamba, Green mamba, Cobras and Tortoise
Cobra, Black mamba, Twig snake
Cobra, Python, Mambas, and Puffadder
House lizards, Agama, puff adder and spitting cobra
Lizards
Lizards, Snakes and tortoise
Monitor lizards, cobras
No comment
Small to big Tortoises, snakes, and lizards
Snakes, Lizards
Snakes, Lizards an Tortoise
Snakes, lizards and Tortoise
Snakes, Lizards and tortoise
Snakes, Lizards and Tortoise
Snakes, Lizards Tortoise
Snakes, Lizards, Tortoise


Common_mammals
Percent
15
10
5
0
Antelopes and predators
Buffaoes, Hyaena rats
Elephant shrew, Hyaena, rats
Greysbok, Hyaena, Hares, Rats, mice
Hyaena, Rodents, antelope
Hyaena, slender mongoose
Hyaenas and mice
Kudu, Cane rats, Hyaena
Predators and Rodents
Predators like Hyaene
Predators, Rodents, Jackal, Hyaenas and Antelopes
Rodents
Rodents though not much
Rodents, Hyaenas
Rodents, Monkeys
Rodents, Monkeys, Hares, Common duicker
Rodents, Predators
Common mammals


Known_threats_to_wildlife
Percent
50
40
30
20
10
0
Hunting
Habitat destruction
Includes 1,2,3
Known_threats_to_wildlife


Importance_of_Conservation
Percent
80
60
40
20
0
Yes
No
Importance_of_Conservation

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI-ZAMBIA 400KV TRANSMISSION INTERCONNECTOR PROJECT

SOCIO-ECONOMIC SURVEY REPORT

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Acronyms

BDPA	Beijing Declaration and Platform for Action
CBO	Community Based Organization
CEDAW	Convention on the Elimination of all forms of Discrimination Against Women
COMESA	Common Market for Eastern and Southern Africa
EMCT	Elimination of Mother to Child Transmission
FGD	Focus Group Discussion
FRA	Food Reserve Agency
GEEA	Gender Equity and Equality Act
HTC	HIV Counselling and Testing
NGO	Non-Governmental Organization
OSC	One-Stop Centers
URTI	Upper Respiratory Tract Infections
REA	Rural Electrification Authority
SADC	South African Development Community
SAPP	Southern African Power Pool
STI	Sexually Transmitted Infections
TIP	Transmission Interconnector Project
ZESCO	Zambia Electricity Supply Cooperation
VLOSC	Village-led One-Stop Centers
VSU	Victim Support Unit
ZHDS	Zambia Health Demographic Survey

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EXECUTIVE SUMMARY

ZESCO Limited and ESCOM, respective power utilities of Zambia and Malawi, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia. ZESCO will construct the power line on the Zambian and ESCOM will construct the section of the power line in the Malawian territory. On the Zambian side the power line traverses Chipata and Vubwi districts.

The objectives of the Project are to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

Land tenure in Zambia is primarily governed by the Land Act of 1995 which recognizes two main categories of land ownership. Customary land (about 94% of Zambia's land) held and administered by traditional leaders (chiefs, headmen, or village elders) cannot be sold, but can be allocated to individuals within the community. Individuals can apply to convert customary land into leasehold tenure[1]. Most of the land in the project area is held in customary ownership. Under customary ownership, land is owned by the family or communally under the chief, through the headmen. The chiefs have the power to issue land to their subjects. However, Msekera and Kauzu areas near Chipata West Substation have a good number of farms with certificates of title (deeds) issued by Ministry of Lands.

The State Land (leasehold) is about 6% of Zambia's land which is administered by the Ministry of Lands and Natural Resources with authority of the Republican President. Individuals or entities can obtain leases (usually 99 years renewable leases).

Chipata District, like much of Zambia, is characterized by a dual land tenure system: customary and leasehold. Chipata District covers an area of approximately 2,616 square kilometers (km^2). A significant portion of the land in Chipata, over 90% (2354.4 sq mi), falls under the category of customary land, where ownership and use rights are determined by traditional customs and practices. While customary land dominates, leasehold tenure, where land is granted for a specific period, also exists, but it covers a smaller percentage (10%) representing 261.6 sq mi of the total land area.

Vubwi District covers an area of 981.7 square kilometers (379.0 sq mi). In Vubwi district, customary land constitutes a large portion of Zambia's land area (approximately 94%) representing (356.26 sq mi) and is held and administered by traditional leaders, such as chiefs and headmen, while lease land covers 6% representing (22.74 sq mi).

Agriculture is the main form of land use in the project area. Settlements also occupy significant portion of land in form of villages, which are scattered, throughout the project area in both Chipata and Vubwi districts. The main housing structures in the areas are made of mud bricks and roofed with grass. However, families with resources have also constructed houses with burnt bricks and corrugated iron roofs. The study population comprised community members living in the 15

villages in Chipata and Vubwi Districts. They included households, community leaders, church leaders, schoolteachers, men, women, the youths (male, female), community Based organisations (CBOs), NGOs and selected Government departments. In this study, a purposive sampling procedure was used to interview household respondents in the study area using an electronic questionnaire. Heads of the household were targeted for the interviews and majority of the responded were males.

Data Collection: For collecting data, the following instruments were used:

(a) Desk review: consisting of legislation, policies, research reports, and other literature obtained online and through consultation with experts.

(b) Household questionnaire: The questionnaires were prepared and loaded on tablets. Surveys were undertaken on tablets using Kobo Collector, recording GPS coordinates for each respondent.

(c) Focus Group discussions (FGD): FGD comprising of 10-12 people. The FGD included separate groups of men, women, and youths and mixed of men and women.

(d) Key informant interviews: Interviews were held with local people and experts that had in-depth knowledge on issues under investigation.

Sampling: Three hundred and seven (307) households were interviewed in 15 villages, and 20 households were interviewed per village. Of these, 72% were household heads while 28% were other members of the family. Of the 307 respondents, 76% were farmers, 15% were economically inactive, 7% were traders, while1% were government employees and student workers respectively. It is important to note that 307 respondents are within the 1km swathe of the proposed line route regardless of whether they are impacted or not. This is because the asset survey has not yet been conducted.

Households: Out of the 307 respondents, 92% were males (heads of household) while 8% were females. Of all the respondents, 68% were married, 13% were widowed, 11% were divorced and 8% were single. The average number of people in a household was 4.6 persons. In terms of education attained by the respondents, 55% had primary education, 28% Secondary, 10% Tertiary, and 9% had Higher Education. Lack of funds was cited as the main challenge to education attainment.

Education: Zambia is a signatory to SDG4 and is committed to achieving Goal NO 4 by ensuring inclusion equitable quality education promoting lifelong learn opportunities for all. Overall, access to education in the area is high and has improved in recent years based on the number of children enrolled. This means that more children both male and female are attending school at the correct age.

National literacy levels in primary schools' report[2], while improving, literacy levels remain a significant challenge, with studies indicating that many children struggle to read and write at the required levels, even after completing primary school. A significant number of primary school

[2] Education Statistical Bulletin 2017

children struggle with literacy, with estimates suggesting that a large percentage (around 98%) may be "learning poor" and unable to read and understand age-appropriate text by age 10[3].

The study on literacy levels in Eastern and Southern provinces (2016-2017) results confirmed that most Grade 3 to 5 learners in Zambia were lacking basic reading and mathematics skills, with more than half of the learners in Grades 3 to 5 unable to read words. Chipata District had the highest youth illiteracy rate (83.2%) among districts in Eastern Province for the 15-24 age group. Research suggests that a significant number of pupils in primary schools' struggle with reading and writing skills[4]. This shows that Chipata faces challenges in achieving high literacy rates, particularly in rural areas.

In Vubwi district, literacy levels present challenges, with some learners struggling to read even a single word in their local language. A pilot found that some schools had a significant number of learners unable to read words, highlighting the need for interventions. In Vubwi District, a significant portion of parents were unaware of the Catch-Up program (a program to enhance literacy and numeracy in primary), and a large percentage of learners lack home support for literacy due to parental illiteracy. The study revealed that 67% of parents interviewed were unaware of the Catch-Up program. 58% of learners are not supported to learn to read, write, and numerate at home because their parents are illiterate.

Health: In terms of disease burden and prevalence, information from the health centers in the study sites indicated that Malaria, Diarrhea, Bilharzia, Upper Respiratory Tract Infections (URTI), Skin Rashes and Sexually Transmitted Infections (STI), including HIV/AIDS, were the common diseases in the project area. Vulnerability to HIV/AIDS, TB and malaria has continued to threaten lives and overall well-being of the population in the project area.

In Chipata district, malaria is a significant public health concern, with over 140,000 cases recorded by September 2023. Diarrhea, Bilharzia, URTI, skin rashes, and STIs are also prevalent, and HIV prevalence among category groups aged 16 and older is 44.4%. Chipata is a meso- and hyperendemic malaria district. Over 140,000 malaria cases were recorded in Chipata District from as at September 2023. Malaria parasite prevalence rates in the study districts range from 15.6% in Chipata. Diarrhea, Bilharzia, URTI, Skin Rashes and STIs are also prevalent in Chipata district. A study found that 38.7% of participants were coinfected with malaria parasites. 26.0% of participants were infected with at least one STI but no malaria. HIV prevalence among population category aged 16 years and older was 44.4% in Chipata. HIV prevalence among adults aged 15 to 49 in Zambia is 11.3%.

In Vubwi district, malaria and diarrhea are significant causes of mortality, while HIV prevalence is a concern, particularly among women aged 26 to 34. Other health issues include bilharzia, URTI, skin rashes, and STIs. Sexually Transmitted Infections (STI) including syphilis, gonorrhea, chlamydia, and trichomoniasis, are a concern, with syphilis seroprevalence being 40.5% in a study and HIV prevalence at screening was 38.7%, with the highest age-specific prevalence of HIV being 54.1% seen in women aged 26 to 34 years. In a study, 19.33% of tested STIs[5]. In focus group

[3] Education Statistical Bulletin 2024

[4] Ministry of Education (2016-2017). Low Literacy and Numeracy Levels Catch-Up intervention pilot in 80 schools in Eastern and Southern Provinces.

[5] ZHDS, 2023

discussion, it was evidenced that Vubwi District's geographical location might influence the prevalence of certain diseases, such as malaria. It was also envisaged that in Vubwi District, malaria and diarrheal diseases are significant health concerns, with malaria being a leading cause of mortality, and diarrheal diseases being among the top five causes of death. URTI, STIs, and skin rashes are also prevalent, with STIs being a major health problem. Therefore, interpersonal communication and targeted health education should be implemented at full scale in Vubwi District.

Ministry of Health has programmes at the health facilities and communities to deal with common diseases such as malaria, TB and HIV/AIDS, and other health challenges. In terms of receiving education on HIV/AIDS, 99% this community members indicated they were aware of HIV/AIDS.

Means of Transport: The poor condition of road infrastructure in project area was cited as a significant challenge to development of the communities in the project area. The survey revealed that Motor Bike was the most common form transport. Other forms of transport included Bicycle, Ox cart and walking. The road infrastructure in the project area was reported to be poor condition.

Employment and Income: The average household monthly income reported was between ZMK 551 TO ZMK 1,000 and the major sources of income included sales from crops, livestock and forest products, wages from seasonal work, Social Transfer, rentals and revenue from private businesses (mainly trading). Of the 307 respondents, 76% were farmers, 15% were economically inactive, 7% were traders while1% were government employees and student workers respectively. The results show that the majority of the respondents were not in formal employment. Agriculture is the main activity of most people in Chipata and Vubwi districts. Main crops grown include cotton, maize, groundnuts, potatoes, soybeans, sunflower, and tobacco. Livestock reared includes cattle, pigs, goats and chickens. Agriculture is the main pillars of the economy of Chipata and Vubwi districts.

Energy: Like most rural areas the living conditions of the majority of people is have had little improvement. Rural communities in both Chipata and Vubwi are not connected to the National Grid. Only township in both Chipata and Vubwi have access to electricity. The Township represented by 10% are connected to the national grid with service provided 24 hours. The remaining 90% of the people living in rural community's biomass energy such as charcoal or firewood for energy and cooking and, candles for lighting. Through the rural electrification Programme, Zambia Electricity Supply Corporation (ZESCO) has plans to connect some parts of the rural communities in Chipata and Vubwi districts to the national grid.

Firewood is the most dominant source of energy for heating and cooking and account for 92% of the energy used in the households. The remaining households used charcoal (6%) and to a lesser extent gas and electricity accounting for only (2%) of fuel used in the study area. Regarding access to electricity services, a staggering 94% of respondents reported having no access to electricity and only 4% had access. Those with access to electricity described electricity supply as poor and irregular.

Land Ownership: In Zambia, hhouseholds with customary land tenure had a 17.4%, 17.2% and 9.1% lower probability to adopt crop diversification, agroforestry and planting basins, respectively, than households with statutory tenure. Descriptive chi-square tests revealed that the implementation of crop diversification and agroforestry is associated with the food security status of smallholder households.

In terms of land ownership in the project study, majority of the respondents owned the land they were living on and cultivating as it was allocated to them by the headman or inherited from their parents. Only a small fraction was using rented land. Regarding irrigation, 91.6% of the households' report that their farmland was not under irrigation and farmers depend on the rains to grow their crops. Only 8.4% reported that they practiced irrigation farming. This means that most of the land remains unutilised during the dry months of the year.

Drinking Water: The survey indicates that 56% of the respondents use a borehole for drinking water, 33% used artesian well, 8% used artificial well and 3% used piped water. Majority of the people reported that water sources were close to their places of residence and did not have to walk long distances to fetch water. A staggering 94% of the people rely on pit latrines as their primary method of waste disposal and only 3% of the population utilizes sewer wells (septic tank with soak away). Additionally, 2% of respondents employ alternative methods for waste disposal, which may include practices not commonly recognized or documented. A mere 1% indicated having access to a centralized effluent disposal line (sewer system).

GBV: The Survey indicates that majority of respondents (94%) were informed about the issue of GBV and only 6% reported being ignorant. Married women and girls were listed to be main victims of GBV. GBV against married men and boys was report to be less common compared to those of married women and girls. Verbal, financial, pphysical and emotional were identified as the most common types of abuse. Regarding perpetrators of GBV, 95% of the respondents' attribute GBV to partners or spouses, 4% to extended family members and 1% pointed to immediate family members. The survey provides useful baseline information essential for project planning, management, stakeholder engagement and mitigation of adverse impacts of the project.

Challenges faced: The key challenges encountered while undertaking this assessment included rains which had increased steadily during the data collection period and contributed to limitations in movement caused by the already-poor roads. Secondly, since this was the rainy season, most community members were busy working in their fields such that fewer household members were available in the homesteads hence prolonging the duration of the survey.

1.0 INTRODUCTION

The ZESCO Limited and ESCOM, the respective power utilities of Zambia and Malawi, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia. ZESCO will construct the power line on the Zambian and ESCOM will construct the section of the power line in the Malawian territory. On the Zambian side the power line traverses Chipata and Vubwi districts.

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

1.1 Project Background

The Malawi - Zambia 330/400 kV Transmission Interconnector Project (The Project) has been proposed, to connect the newly constructed Nkhoma 400/132 kV Substation in Lilongwe, Malawi, to the existing Chipata West 330/132 kV Substation in Chipata, Zambia, through a 400kV transmission line.

The Project is under the two electricity utility companies ESCOM of Malawi and ZESCO of Zambia, based on an Inter-Utility Memorandum of Understanding (IUMoU) signed between them, which is in turn based on an Inter-Governmental Memorandum of Understanding (IGMoU) signed between the Governments of Malawi and Zambia. This project is being undertaken under the auspices of the Southern African Power Poor (SAPP) with funding from Swedfund.

1.2 Location of the Project - Geographical Area

The Project is located within the Chipata and Vubwi Districts of the Eastern Province of Zambia. The geographical location of the project traverses, the jurisdiction of Paramount Chief Mpezeni of the Ngoni and Paramount Chief Gwa Undi of the Chewa speaking people. Local communities are predominantly of Ngoni and Chewa ethnicity, living in households comprising around 4 to 5 members, with parents and children, and in some cases extended family members.

1.3 Overview of the Districts

1.3.1 Chipata District

According to the 2022 Census of Population and Housing, Chipata has a population of 322,703, of which 158,212 are males and 164,491 are females. The district has 70,802 households of which 51,375 are male headed and 19,427 are female headed. With an estimated surface area of 1,807 square kilometres, Chipata a population density of 178.6 persons per square kilometre. The population of Chipata has been growing steadily from 234,750 in 2010 to 322,703 in 2022, representing a growth rate of 3.7 %. Given Chipata's strategic location as a border town surrounded by a rich and productive agriculturalsector, this high growth rate is expected to continue over the next 10 to 20 years. Being the provincial capital for Eastern Province, public infrastructure in

Chipata is developed compared to other districts in the province and this attracts migration into the district.

1.3.2 Vubwi District

Vubwi is a relatively new district, having been separated Chadiza District. It lies between latitude 14.001 degrees south and longitude 32.90 degrees east. The District spans an area of 981.7 square kilometres and has a total population of 53,118, resulting in a lower population density of 54.11 individuals per square kilometre. According to the 2022 Census of Population and Housing, the population of Vubwi comprises 26,465 males and 26,653 females, with most residents, approximately 45,643 individuals, residing in rural areas, while 7,475 live in the urban centre.

Vubwi public service infrastructure is still developing, reflecting its recent status as a district. Subsistence agriculture, primarily maize and soya beans, is the major economic activity. The land is fertile, suggesting potential for agricultural expansion, including winter irrigation and livestock farming.

1.4 Administration

Administratively, the Malawi – Zambia Interconnector project is in Eastern Province and traverses through two districts, namely Chipata and Vubwi Districts. In terms of traditional administration, the Transmission Project cuts across two chiefdoms of Paramount Chief Mpezeni of Chipata and Chief Pembamoyo of Vubwi Districts.

1.5 Land Tenure

The Land Act of 1995 provides the legal framework for both customary and leasehold tenure systems in Zambia. Zambia's land tenure system is a dual system of customary and leasehold, with customary tenure covering approximately 94% of the land and leasehold tenure covering around 6%[6].

Customary land system is based on traditional practices, covering the majority of Zambia's land (94%). Customary land tenure being the dominant system, especially in rural areas. Traditional authorities manage and allocate land within their communities, with land use often dictated by customary practices. Land is administered under customary law by chiefs, who act as custodians on behalf of the communities within their jurisdiction. Land rights are primarily based on use and occupation, rather than formal titles.

The other system is leasehold, where the government grants land to individuals or companies for a specified period. This system is more prevalent in urban areas and for large-scale commercial activities. With the Leasehold Tenure system, land is owned by the state and leased out, covers approximately 6% of the land. The state can alienate land under leasehold to eligible legal or natural persons. Leasehold titles are formal and recognized under the Land Act[7].

[6] Land Act of 1995
[7] Land Act of 1995

In Zambia, land use heavily relies on a dual tenure system (customary and leasehold) with customary land accounting for a significant portion, impacting agriculture, livelihoods, and urban development. It is important to note that all land in Zambia is constitutionally vested in the President, acting on behalf of the people, with the power to allocate land delegated to the Commissioner of Lands.

However, most of the land in the project area is held in customary ownership. Under customary ownership, land is owned by the family or communally under the chief, through the chiefs. The chiefs have the powers to issue land to their subjects. However, Msekera and Kauzu areas near Chipata West Substation have a respectable number of farms with titles deeds issued by the Government through Ministry of Land.

In 2022, Zambia's land area was 743,390 sq km, with 38,390 sq km designated as arable land and permanent crops, and 444,376 sq km as forest[8]. Approximately (444, 376 sq km) 60% of Zambia is forested, with 74.8% of the land area having above 10% tree cover. 74.8% of Zambia's land area has above 10% tree cover with 32.07% of Agricultural land and **o**ver 16 million hectares or 21.7% of the total area of cultivable land. Over 63% of the forests are in good condition. Approximately 90% of Zambia is traditional land under 'customary tenure,' and 10% is under leasehold tenure.

Chipata District, with a population of about 327,059 in 2022, and population density of approximately 193 people per square kilometer (km²), is primarily an agricultural area, with 80% of the population engaged in farming, and boasts a significant area under traditional land tenure systems. Chipata has a total Land Area of approximately 1,691 square kilometers (km²) and projected annual growth rate of 2.8%.

The study[9] found that over 90% of land in Chipata district is under traditional land tenure systems. As of 2000, 14% of Chipata land cover was tree cover with >30% canopy density. The majority of the population (80%) is engaged in farming. Major Crops grown are Maize, cassava, cotton, tobacco, and peanuts are the main crops grown in the district. Chipata region is highly productive, with strong potential for groundnut, cotton, tobacco, and vegetable oil production. The study findings reveal that sustainable land use practices are not widely adopted due to policy and institutional constraints.

1.6 Land use

The main land use in the project area ranges from commercial, subsistent farming and residential activities. Land use in Chipata and Vubwi is a mix of villages and small-scale farming activities. Rather than having strict land use zoning the situation in Chipata and Vubwi is largely mixed land use.

1.7 Settlement Patterns

The settlement patterns of Vubwi and Chipata districts in Zambia exhibit distinct characteristics influenced by geography, culture, and economic activities.

[8] ZamStat. The Monthly – December 2023, Volume 249

[9] Haruka Ono, Mundia Muya (2024). *Relationship between land tenure and land use in unplanned settlements in* Zambia. Habitat International, Volume 143, January 2024, 102985

In Vubwi District, settlements are primarily rural, with communities often clustered around agricultural land. The population is engaged in subsistence farming, which shapes the layout of villages. Houses are typically constructed using local .materials, and the settlements are organized in a way that facilitates access to farmland and water sources. The district's proximity to natural resources also influences settlement patterns, as communities tend to establish themselves near forests and rivers for fishing and gathering.

Conversely, Chipata District, being the provincial capital of Eastern Province, has a more urbanized settlement pattern. The city of Chipata serves as a commercial hub, attracting people from surrounding rural areas seeking employment and better services. This urban center features a mix of formal and informal settlements, with a range of housing types from brick houses to makeshift structures[10]. The infrastructure in Chipata is more developed, with roads, schools, and health facilities, which further encourages migration from rural areas.

Overall, while Vubwi maintains a predominantly rural settlement pattern focused on agriculture, Chipata reflects a more urbanized and diverse demographic, driven by economic opportunities and urbanization.

1.8 Economic Activities

(a) Chipata

In Chipata, agriculture is the primary economic activity in Chipata district. ZamStat 2022/2023 crop survey show that in Chipata the majority of people's main agricultural activity centers around maize cultivation, with maize being the primary crop grown by both smallholder and emergent farmers[11]. Maize is the most significant crop in Chipata district, both for local consumption and for sale.

A large portion of the farming population in Chipata are smallholder farmers, who primarily cultivate food crops like maize, sorghum, millet, cassava, and groundnuts using traditional methods. However, the 2022/2023 crop survey shows that there's a growing number of emergent farmers, who are larger-scale farmers with holdings ranging from 20 to 50 hectares.

While maize dominates, other crops like soya beans, wheat, sweet potatoes, and groundnuts are also grown in the Chipata. Even yet, a large portion of the crop yield is shipped in raw form to Lusaka for processing or exported to nearby nations. Besides agriculture, Chipata's economy also includes quarry mining, trade, and limited value addition to agricultural and cash crop products.

(b) Vubwi

In Vubwi, economy of Vubwi is predominantly agriculturally based. Major crops grown in the district include maize, groundnuts, soya beans and sunflower. Livestock reared includes cattle, pigs, goats and chickens. ZamStats 2022-2023, the majority of farmers in Vubwi District are smallholder farmers. The study found that the main agricultural activities in Vubwi district likely involve rain-

[10] Urban and region planning Act No 4, of 2015 of the Laws of Zambia
[11] ZamStat 2022/2023 Crop Survey

fed slash-and-burn farming in uplands, continuous flood irrigated lands in dambo areas, and cattle grazing[12].

The survey findings show that Agriculture is the dominant industry in Vubwi District, with the majority of the population engaged in farming and livestock rearing. Cassava and millet are grown on upland soils, while maize and sorghum are grown on the lower slopes of depressions (dambos). Cattle and goats are commonly reared by local residents. The land in Vubwi District is fertile, presenting potential for agricultural expansion, including seasonal rain-aided agriculture and winter irrigation.

1.9 Village Settlements

Several villages and settlements are dotted along the stretch of the transmission line corridor. Domestic infrastructures found within the road reserve (within 25m from the centerline of the transmission corridor on both sides) mostly constituted huts, Insakas, kitchens, bath shelters and pit latrines. The village headman or woman who is the chief representative heads each village. The main housing structures in the areas are mainly made of mud and grass. However, families with resources have also constructed houses with burnt bricks and corrugate roofs.

1.10 Education

The government has introduced a policy of universal free primary education and about 95% of primary school age children are enrolled at schools. Others continue to secondary level and approximately a modest number ccontinues to tertiary level. Although illiteracy levels are only about 27%, the dropout rate at schools is very high. The standard of education in rural areas is hampered by lack of facilities, transport and teachers.

(a) Chipata

The total number of schools in Chipata is 163 comprising of 116 primary schools, 26 secondary schools and 15 community schools. Chipata has a total number of 6 tertiary institutions, all located in Chipata City.

Table 1: Education Facilities in Chipata

District	Primary Schools	Secondary Schools	Tertiary Institutions	Community Schools	Total
Chipata	116	26	6	15	163

Source: Chipata District Education Board Secretary Office, 2025

According to the information obtained from the office of the District Education Board Secretary (DEBS) in Chipata, a total of 64,234 children were in enrolled in primary schools as of January 2025, of which 31,276 (48.7%) were boys and 32,958 (51.3%) were girls. The higher enrollment ratio for girls was attributed to two factors. Firstly, the natural phenomena in Zambia and the project area is that there are more girls who are borne every year than boys. The second factor is

[12] ZamStats 2022-2023 economic statistics

that parents now understand the importance of providing education to the children, both boys and girls. In the past, parents used pay more attention to the education of boys than girls due to the belief that the girls future was secured in marriage.

In terms of secondary enrolled, at total of a total of 16,973 pupils were in enrolled in secondary schools as of January 2025, of which 8,548 (50.34%) were boys and 8,425 (49.65%) were girls. The enrollment ratio for girls and boys was almost balanced. However, it was observed that the progression rate from grade 7 (primary) to grade 8 (junior secondary) and from grade 9 (junior secondary) to grade 10 (senior secondary) was higher for boys than girls in Chipata District, a trend that is consistent across Zambia. The information obtained from the office of the District Education Board Secretary (DEBS) shown that the progression rate for 2024 from Grade 7 to Grade 8 was 70% for boys and 69% for girls (almost the same for boys and girls). From G9 to Grade 10, the progression rate was 69% for boys and 68% for girls (almost the same for boys and girls)

In the first quarter of 2023, the Chipata District Education Board Secretary DEBS recorded a total of 186 female dropped out of school, and only 27 boys dropped out school. In addition, Chipata District recorded a total of 111 teenage pregnancies in the first quarter of 2023 that contributed to the young girls dropping out of school. The dropout rates were higher among rural schools than schools in urban areas.

(b) Vubwi

Vubwi district has a total of 52 schools of which 8 are secondary schools, 34 primary schools, 10 community schools which serve as the foundation for the district's education system. The district has no tertiary institution. Despite its limited facilities, Vubwi public services are gradually expanding, with ongoing efforts to improve accessibility and service delivery to meet the growing needs of its population.

Table 2: Education Facilities in Vubwi

District	Primary Schools	Secondary Schools	Tertiary Institutions	Community Schools	Total
Vubwi	34	8	Nil	10	52

Source: Vubwi District Education Board Secretary Office, 2025

According to the information obtained from the office of the Vubwi District Education Board Secretary (DEBS), a total of 14,930 children were in enrolled in primary schools as of January 2025, of which 7,133 (47.8%) were boys and 7,799 (52.2%) were girls. The higher enrollment ratio for girls was attributed to two factors. Firstly, the natural phenomena in Zambia and the project area is that there are more girls who are borne every year than boys. The second factor is that parents now understand the importance of providing education to the children, both boys and girls. In the past, parents used pay more attention to the education of boys than girls due to the belief that the girls future was secured in marriage.

In terms of secondary enrolled, at total of a total of 2,062 pupils were in enrolled in secondary schools as of January 2025, of which 1,120 (54.3%) were boys and 942 (45.7%) were girls. The enrollment ratio for girls and boys was almost balanced. However, it was observed that the progression rate from grade 7 (primary) to grade 8 (junior secondary) and from grade 9 (junior secondary) to grade 10 (senior secondary) was higher for boys than girls in Vubwi District, a trend that is consistent across Zambia. The information obtained from the office of the District Education Board Secretary (DEBS) shown that the progression rate for 2024 from Grade 7 to Grade 8 was 74.2% for boys and 67.5% for girls. From G9 to Grade 10, the progression rate was 73.8% for boys and 50.9% for girls. Teenage pregnancies and early marriages are some of the factors affecting progressing of girls in school.

1.11 Health

The health sector is among the primary sectors that helps in the reduction of both morbidity and mortality rates and contributes to poverty reduction. This requires more equitable access to quality health services by constructing and rehabilitating health facilities and providing diagnostic equipment.

(a) Chipata

Chipata district has 33 facilities comprising Three (3) Hospitals; Sixteen (16) Health Centres; and Fourteen (14) Health Posts.

Table 3: Health facilities in Chipata District.

District	No. of Hospitals	No. of Health Centre's	No. of Health Posts	Total
Chipata	4	11	18	33

Source: Chipata District Medical Office, 2025

The health services provided at these facilities include preventive, curative, promotive and rehabilitative care, including activities like: Information Education Communication, case management, ante-natal, post-natal, family planning, environmental health services, youth friendly health services and cross-border initiative. Other activities provided in the districts include laboratory services, Elimination of Mother to Child Transmission (MTCT) and HIV Counselling and Testing (HCT), while Anti-Retroviral Therapy (ART) activities are being strengthened by Mwami Hospital, Chipata Central Hospital, Chipata District Hospital, and Kapata Urban Hospital. X-Ray and mortuary services are being offered by Mwami and Chipata Central Hospitals.

(b) Vubwi

Vubwi District like many other rural districts is characterized by inadequate health facilities and services. Vubwi District has 14 health facilities broken down into one District Hospital, nine (9) Health Posts and three Zonal Health Centres. The unequal distribution of health facilities and services, inadequate staffing, poor infrastructure among others has affected the health sector in the district. The challenge with this distribution of Health facilities is that most people must walk distances to reach the nearest Health facility. Apart from distance the other challenge faced is the lack of qualified medical personnel in the centres, especially

those located in the rural most areas where there is inadequate accommodation such that the health officers must live far away from the health centre.

Table 4: Health facilities in Chipata District.

District	No. of Hospitals	No. of Health Centre's	No. of Health Posts	Total
Vubwi	1	4	9	14

Source: Vubwi *District Medical Office 2025*

(c) Major Diseases

In terms of disease burden and prevalence in the project area, information from the health centres in the study sites indicate that Malaria, Diarrhoea, Bilharzia, Upper Respiratory Tract Infections (URTI), Skin Rashes and Sexually Transmitted Infections (STIs), including HIV/AIDS, are the common diseases in the project area. Vulnerability to HIV/AIDS, TB and malaria has continued to threaten lives and overall well-being of the population along the road corridor. Malaria vectors are widespread in the project sites especially during the rainy season.

Diarrhoea and Bilharzia is attributed to the contaminated water from the unprotected wells and streams. Diarrhoea contributes to the high morbidity and mortality among children under 5 years of age.

Diarrhea and Bilharzia is attributed to the contaminated water from open excavated borrow pits made during road rehabilitation at some stage and streams. In addition, as mentioned above, people rarely chlorinate their drinking water and water from boreholes is not accessible to most households. A critical consequence of the disease burden has been the presence of relatively high morbidity and mortality among children and women.

Based on UNAIDS Report of 2014, Zambia now has a generalized epidemic, with HIV spreading throughout the population as opposed to being concentrated in specific populations. Adult HIV prevalence was estimated at 13.3% with prevalence in women higher than in men (15.1% compared to 11.3%)[13]. However, trends indicate a continuous drop in HIV prevalence at a national level. Provincial prevalence levels range from 7% to 21% (2007)[14].

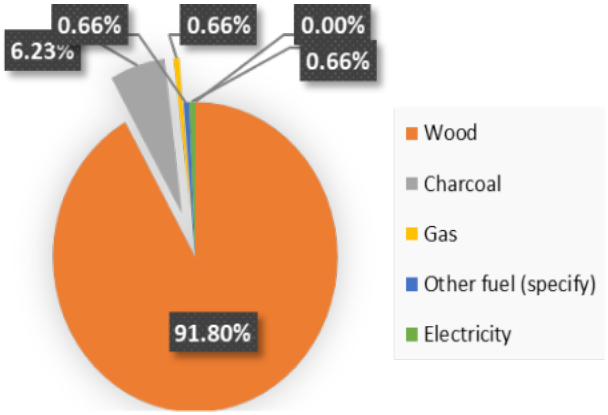
1.12 Sources of Energy

Like most rural areas in Zambia, rural communities in both Chipata and Vubwi are not connected to the National Grid. Only township in both Chipata and Vubwi have access to electricity. Most of the people living in rural communities use biomass energy such as charcoal or firewood for heating

[13] Zambia Demographic and Health Study (ZDHS) 2013-14
[14] UNAIDS, 2014

and cooking and, candles for lighting. Through the Rural Electrification Authority (REA) programme, ZESCO has plans to extend electricity connection to the rural communities in Chipata and Vubwi districts.

The socio-economic surveyed conducted in the study area, revealed that firewood is the most dominant source of energy for heating and cooking, and account for 92% of fuel used in the households in the communities surveyed. Six ~~(6%)~~ percent indicated that used charcoal and gas to a lesser extent, and electricity play a very minor role accounting for only 2% of energy used in the study area.



1.13 Transport

According to the Vubwi Integrated Development of 2020, the District has a total of 350 km roads, of which 125 km are rural feeder roads and 40 km are township roads. The district has only 2km paved township road. The district is connected to the neighbouring districts of Chadiza and Chipata via three district road networks (D804 and D403). Vubwi does not have a reliable public and private transport due to the poor state of roads. In some areas, lack of bridges and culverts means that some communities are cut off during the raining season. The poor condition of roads impacts on the quality of the daily life of communities in terms of accessing social facilities such as schools and clinics. In addition, poor road conditions limit the potential for farmers to access new markets, limit the attractiveness of the district as a location for new commercial activity, and therefore this impedes economic development.

Chipata district has a total of 120 km of urban roads, of which 60 km are paved (bituminous). These roads connect the different settlements with each other, thereby providing ease of movement of goods and services. The roads in the Central Business District link the business premises such as banks, shops, markets, and health facilities. Rural communities particularly take advantage of the rural road network to deliver their inputs to the urban communities.

2.0 STUDY APPROACH AND METHODOLOGY

2.1 Study Area and Population

The study population comprised of community members living in the 20 villages in Chipata and Vubwi Districts. They included community leaders, church leaders, school teachers, men, women, the youths (male, female), community Based organisations (CBOs), NGOs and selected Government departments. In this study, a purposive sampling procedure was used to interview household respondents in the study sites.

The preliminary report of 2022 Census of Population and Housing show that Zambia's population size and sex composition as of 8th September 2022 was 19,610,769. The male population was 9,603,056 and the female population was 10,007,713[15].

The preliminary report also shows that population density for Vubwi District was approximately 54 people per square kilometer (140 per square mile) with a total Population of 53,080 calculated at 981.7 square kilometers (379.0 square miles).

The preliminary report of 2022 Census of Population and Housing show that Chipata District was 327,059 with a population density of approximately 190 people per square kilometer (500 per square mile). With a population of about 327,059 in 2022, Chipata District is believed to be the 8th largest district in Zambia. The city of Chipata had 193,288 inhabitants in 2022. The predominant ethnic groups in the city are the Chewa, Tumbuka, Ngoni and Nsenga. Below is a list of Villages visited during the socio-economic assessment. Below is a list of Villages visited during the socio-economic assessment:

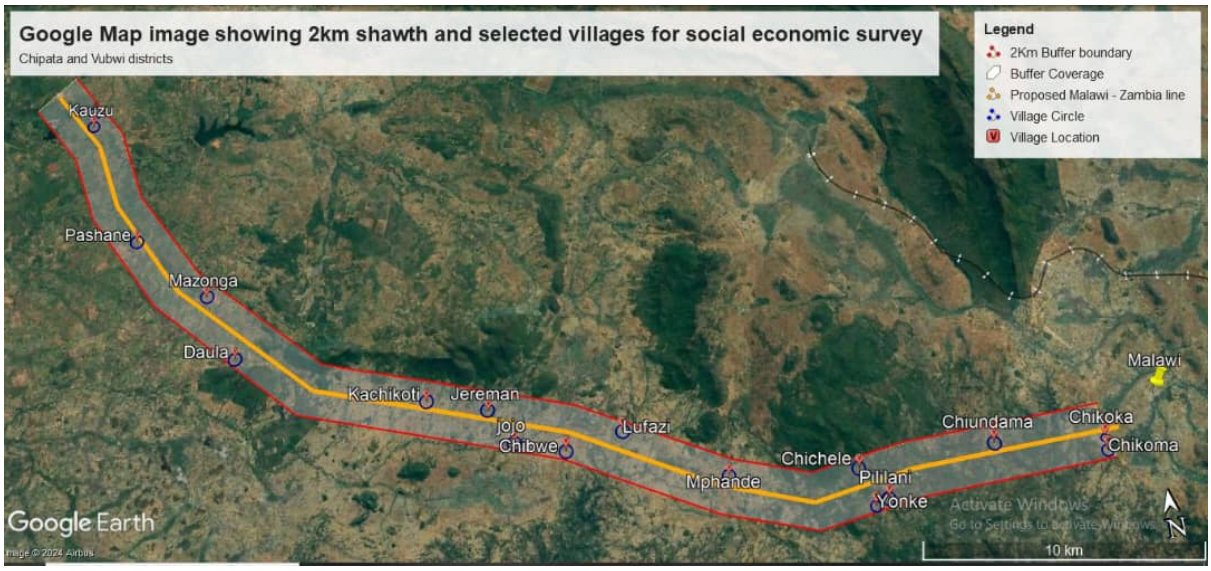
Table 5: Villages that participated in the Socio-Economic Survey

Village	Chief	Population	District
Kauzu	Mpezeni	867	Chipata
Chembele	Mpezeni	560	Chipata
Mazonga	Mpezeni	600	Chipata
Chibwe	Mpezeni	180	Chipata
Mphande	Mpezeni	150	Chipata
Pashane	Mpezeni	350	Chipata
Daula	Mpezeni	680	Chipata
Chiundama/Yonke	Mpezeni	425	Chipata
Kachikoti	Mpezeni	680	Chipata
Jelemani	Mpezeni	63	Chipata
Lufazi/Jojo	Mpezeni	410	Chipata
Chichele/Pililani	Pembamoyo	300	Vubwi
Chikoti	Pembamoyo	410	Vubwi
Chikoka.	Pembamoyo	692	Vubwi

[15] ZamStat preliminary Report- Census of Population and Housing 2023

Chikoma	Pembamoyo	360	Vubwi
Total Population		**6,272**	

Figure I: Google Map Image showing swath of selected Villages



2.2 Study Sample and Sampling Procedure

In this study, a purposive sampling procedure was used to interview maleand female members of the community, local leaders, teachers and health workers and other participants. In each of the fifteen villages purposely selected, twenty households were selected for interviews to bring the total number of households to be interviewed to three hundred. However, a total of 307 households were interviewed, slightly more than the target. The study targeted villages within 1km from the centre of the power line on either side.

2.3 Methods of Data Collection

The study used a mixed method approach to carry out the study This methodology was deemed most appropriate because of the variety of different methods use to collect data. These methods were needed to corroborate participants' perspectives and findings from other sources. By collecting data using different methods with different respondent groups, the research acquired validity, rreliability and objectivity. Heads of the household were targeted for the interviews and majority of the responded were males.

2.4 Data collection instruments

In collecting data for this social survey, the mixture of methods used included the following:

(a) *Desk review:* consisting of legislation, policies, research reports, and other literature obtained online and through consultation with experts.
(b) *Household questionnaire*: The questionnaires were prepared and loaded on tablets. Surveys were undertaken on tablets using Kobol Collector, recording GPS coordinates for each respondent.
(c) *Focus Group discussions (FGD):* FGD comprising of 10-12 people. The FGD included separate groups of men, women, youths and mixed of men and women.
(d) *Key informant interviews:* Interviews were held with local people and experts that had in-depth knowledge on issues under investigation.

Figure 2: Interview with the Head of Household in Pashane Village, Chipata

2.5 Training of Enumerators

Before embarking of data collection, enumerators were trained in the use of data collection instruments and how to approach people for the interview. Issues of courtesy, dress code, confidentiality and other aspects were discussed during the training.

Figure 3: Focused Group Discussion in Pashane Village, Chipata

2.6 Ethical Considerations

Before data collection, informed consent was sought from participants by the survey team. Respondents were informed about the assessment and its objectives, the enumerator's roles and responsibilities, and the use of the data that was collected. They were also told that that their participation was voluntary and were free to terminate the interview if they were uncomfortable with the questions being asked However, the respondents were assured that the information collected would be kept confidential.

2.7 Limitations of the Study

The field survey was undertaken with some challenges. The rains increased steadily during the data collecting period and causing limitations in movement on the already poor roads, making some of them impassable. This meant that vehicles had to be packed in one place while the team walked on foot to cover long distances in the hills where some villages and households were located. Consequently, these mean that fewer households were interviewed by day than planned.

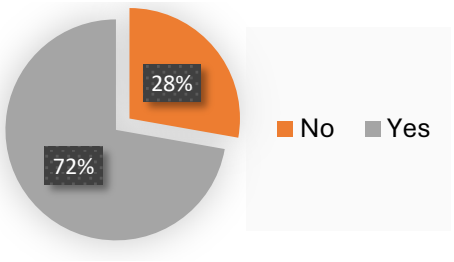
Secondly, being planting season, most community members were busy working in their fields such that fewer Household members were found in the homesteads and had to be followed to their fields. These factors created the need to extend the duration of the survey.

3.0 SURVEY KEY FINDINGS

Three hundred and seven (307) households were surveyed and interviewed in 20 villages. Presented below were the key survey findings.

3.1 Head of the Household

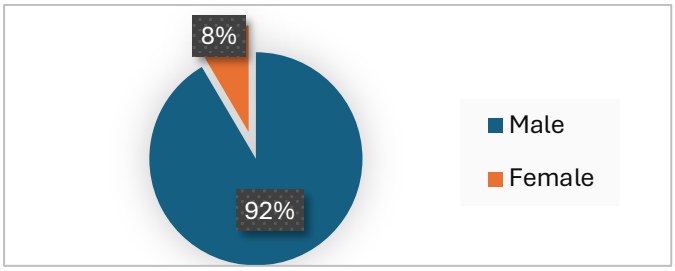
A total of 307 households were interviewed in fifteen villages and about twenty households were interviewed in each village. Of these 72% of were heads of household while 28% were other members of the household. This implies that the data collected was accurate and reliable.



Graph 1: Head of Household- Respondent

3.2 Gender of Respondents

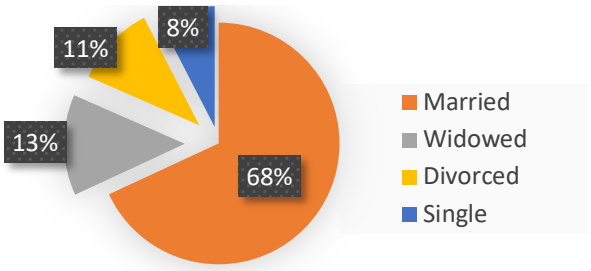
The Survey findings show that out of the 307 respondents who were interviewed, 92% were males while 8% were females. The Survey targeted the heads of households and majority of them were men. According to the culture of the project area, men always take up the responsibility to speak to the visitors while the women listen in the background. In the family setup, women will speak when they are call upon to do so by the husband or a senior male member of the family.



Graph 2: Gender of Respondents

3.3 Respondents Marital Status

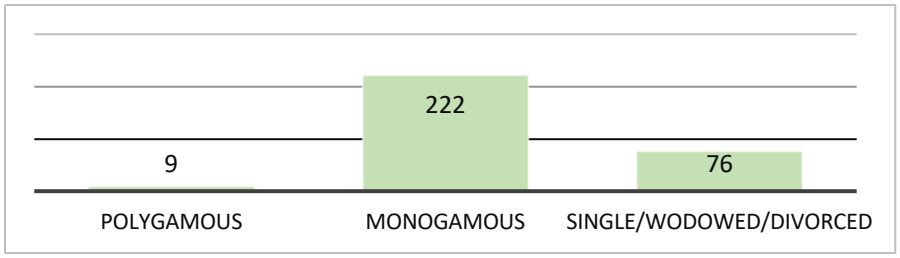
Out of 307 respondents interviewed, 68% were married, 13% were widowed, 11% were divorced and 8% were single.



Graph 3: Respondents Marital Status

3.4 Marriage Status

The survey findings show that of the 307 interviewed, 222 (72.3%) respondents reported being in monogamous marriages while 76 respondents reported to be either single, widowed or divorced. Only 9 respondents reported being in polygamous marriage, representing a meagre 2.9%. This indicates that many respondents in the survey site population strong preference for monogamous relationships. Therefore, suggests that monogamy is the dominant marital structure among the surveyed population.



Graph 4: Respondents Marriage status

The reasons for this preference could be multifaceted, including cultural, social, and personal beliefs that favour monogamous unions. Further, the small number of individuals in polygamous marriages raises questions about the viability and acceptance of such relationships in the current societal context. They mentioned that marital and family dispute were common in polygamous marriages because there is competition for attention and there are more people, especially school going children, to support.

It may also reflect legal, economic, and emotional factors that influence individuals' choices in their marital arrangements.

3.5 Ethnicity

In terms of ethnicity, majority of the survey respondents were of Ngoni (80%) and 20% were Chewas. It also follows that the main languages spoken in the project area are Ngoni in Chipata and Chichewa in Vubwi. Other ethnic groups, but with insignificant numbers, include the Tumbuka, Nsenga and Bemba. Intermarriages between the Ngoni and Chewa were reported to be common in the project area.

Table 6: Intermarriages between the Ngoni and Chewa

Language	Percentage
Ngoni	80
Chewa	20

3.6 Education

3.6.1. Access to Eeducation Facilities in the Study Area

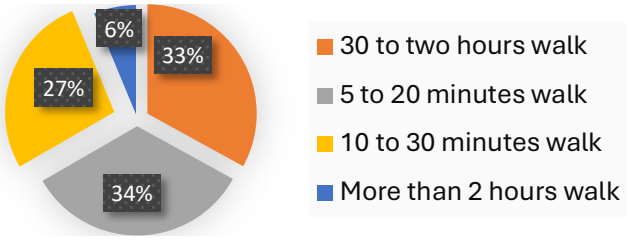
(a) Nursery and Primary Schools

Information collected shows that 34% respondents indicated that they live near a nursery school, and it takes them 5 to 20 minutes to reach the nursery school, while 27% take 10 to 30 minutes.

The results of the survey show that 33% of respondents indicated that they take 30 minutes to 2 hours to reach the nearest nursery while 6% of the respondents indicated that the walk to the nearest nursery school for over two (2) hours. This calls for more nursery schools to be built in the project area so that the children can reach their schools within 30 minutes.

Regarding access to primary schools, 30% of the respondents take five 5 to 10 minutes to reach the nearest primary school and 26% take 10 to 30 minutes. Other respondents 37% reported that they take between 30 minutes and 2 hours to access a primary school, and only 7% indicated that it took them more than two hours to reach a primary school.

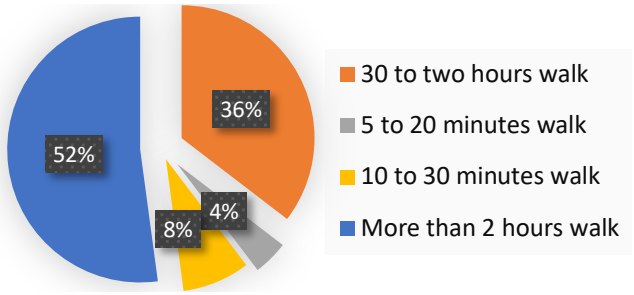
The survey results show that while most of the children the children can reach a primary school within 30 minutes of walking, more schools need to be built so that children do not have to walk long distances access a primary school.



Graph 5: Proximity to Nursery Education Facility

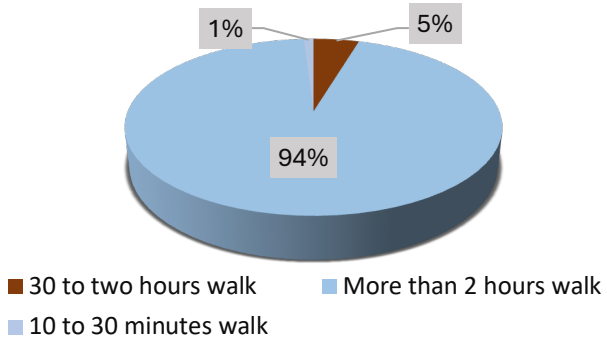
(b) Secondary and Tertiary facilities

Respondents were asked to indicate how long it takes them to reach the nearest secondary school and 52% indicated that it took more than two (2) hours to reach the nearest secondary school while 35% revealed that it takes between 30 minutes to two (2) hours to access the nearest secondary school. Only eight percent (8%) reported that it takes them 10 to 30 minutes to reach a secondary school and 4% take 5 to 20 minutes. This implies that more secondary schools are needed in the project area so that pupils do not have to travel long distances to access secondary education.



Graph 6: Proximity to Secondary Education Facility

Regarding tertiary education facilities, 94% of the respondents indicated they accessed tertiary facilities after a two-hour (2 hour) walk. Other respondents (3%) indicated that it takes then 5 to 10 minutes while 2% responded that it takes between 30minutes to two hours. The remaining 1% reported that it takes ten to thirty minutes to reach the nearest tertiary education facility. Therefore, access to tertiary education facilities is a challenge to most people living in the project area.



Graph 7: Proximity to Tertiary Education Facility

(c) University

The survey results reveal a significant trend in the commuting patterns of students traveling to university. A striking 95% of respondents reported that they take more than two hours to walk to their destination, indicating a potential challenge for those students in terms of time management and physical endurance. In contrast, only 5% of participants indicated that their walking time falls between 30 minutes to 2 hours.

The disparity suggests that a vast majority of students may face longer travel times, which could affect their academic performance and overall well-being. Further investigation into the factors contributing to these extended walking times may be necessary to address the needs of the student population.

3.6.2 People Attending School at the time of the Survey

In the 307 households' interview, a total of 1666 individuals were reported to be attending school at the educational facilities in the two districts at various levels of education.

Primary School: Accounted for 55% (916) of the total number of schools going children. This high percentage indicates a strong emphasis on foundational education, which is crucial for the development of literacy and numeracy skills in young learners.

Secondary School: With 26% of the attendees (433 students), this group represents a critical transition phase in education. The lower percentage compared to primary school suggests that while many children complete primary education, fewer continue to secondary education, which may raise concerns about the progression rates and accessibility of secondary education.

*Tertiary School***:** Only 10% (167) of the learners were in tertiary facilities of learning (colleges) and this low figure highlights the challenges faced in accessing tertiary education. The low percentage may reflect barriers such as financial constraints, lack of awareness, or limited availability of institutions.

Higher Education: Finally, 9% of the attendees (150 students) were in higher institutions of learning (universities). The low percentage may reflect barriers such as financial constraints, lack of awareness, or limited availability of institutions.

3.6.3 Children Under 6 years Old Not Attending School

Although there is a growing recognition of the importance of early childhood education, majority of the children below 6 years of age were not enrolled in any educational institution. This highlights a significant gap in early childhood education access, which is crucial for the developmental milestones of young children. The absence of formal schooling at such a formative age may have long-term implications on their cognitive, social, and emotional growth. The main reason cited for this situation the absence of early childhood classes in the nearby schools, forcing children to walk long distances to the nearest schools with early childhood classes. Other reason mentioned include lack of funds to buy school requisites, lack of teaching staff for early childhood, disability, and lack of school uniform.

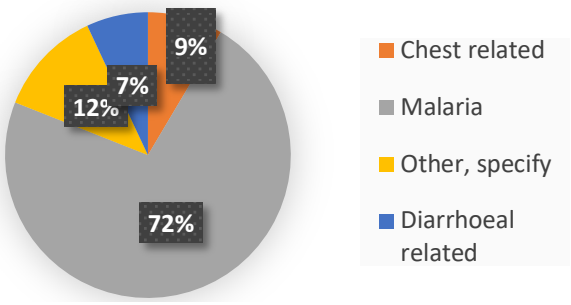
Overall, these statistics underscore the multifaceted challenges that prevent young children from accessing education, emphasizing the need for targeted interventions to address financial, logistical, and infrastructural barriers.

4.0 ACCESS TO HEALTH FACILITIES

4.1 Disease Burden in the Household in the Last 12 Months

In terms of disease burden and prevalence, information from the health centres in the study sites indicated that Malaria, Diarrhoea, Bilharzia, Upper Respiratory Tract Infections (URTI), Skin Rashes, pneumonia, Sexually Transmitted Infections (STI), including HIV/AIDS, diabetes and TB were the common diseases in the project area. Vulnerability to HIV/AIDS, TB and malaria has continued to threaten lives and overall well-being of the population in the project area.

During the survey, respondents were asked to mention the four illnesses they frequently suffered from in the last 12 months. The survey indicates that malaria was the most common illness at 72%, chest related followed at 12% and diarrheal related illnesses was third at 7%. The other illness constituted 12%. Within the 12% are the other illness such as anemia, tuberculosis and diabetes.



Graph 8: Common Diseases in the Project Area in the last 12 months.

Ministry of Health has programmes at the health facilities and communities to deal with common diseases such as malaria, TB and HIV/AIDS, and other health challenges. In terms of receiving education on HIV/AIDS, 99% this community members indicated they were aware of HIV/AIDS.

In view of the high prevalence of malaria in the project area, 85% of the households indicated that they sleep under a mosquito net, 9% mentioned that they use other methods while 6% do not sleep under a mosquito net. Mosquito net distribution is one of the Government strategies to control malaria. Sleeping under a mosquito net may help reduce cases of malaria over time and improve the health status of member of the community in the project area.

However, there are a few households who reported not having mosquito net because they did not receive a donated one and cannot not afford to buy one. Others reported that they do not have enough mosquito nets to cater for all family members.

4.1 Access to Health Facilities

Regarding access to health facilities, the survey reviewed that 44% of the respondents took 60 minutes (1 hour) to walk and reach the nearest health centre for treatment, 33% took 30 minutes and the remaining 23% reported that they took more an hour. The above information showed that majority of the people would reach the nearest health centre with one hour by walking. With the increasing use of motor bikes and bicycles, people can reach the health centre within a brief period of time.

4.2 Availability of Medical Supplies

Survey respondents were asked about their experience regarding the availability of medical supplies in the health facilities, especially drugs. Majority of the respondents (80%) reported that medical supplies are available at the health facility "sometimes" while 20% mentioned that the health facility had supplies always. However, the medical personnel who were interviewed at the health centres indicated that essential medical supplies were available all the time. They mentioned that Ministry of Health had an organised plan for the distribution of medical supplies to all health centres in the districts under consideration.

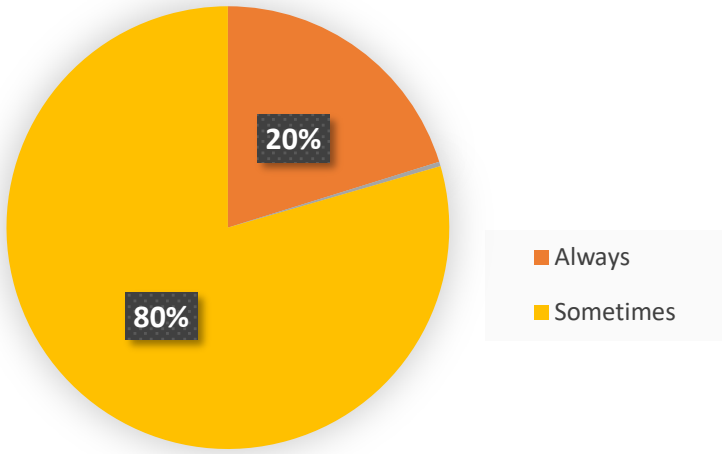


Table 3: Availability of Medical Supplies

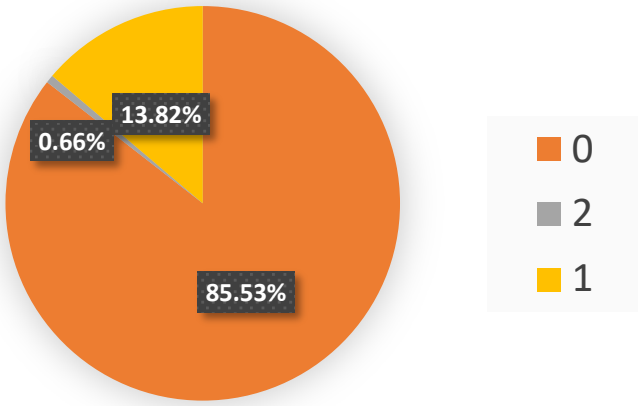
4.3 Availability of Maternal Health

Maternal health services denote the availability, accessibility and quality of healthcare services related to maternal health of the surveyed population. It reflects the resources available for prenatal, childbirth, and postnatal care, including the presence of healthcare facilities, trained healthcare professionals, and essential medical supplies.

The Survey showed that 93% of the respondents agreed that maternal health services were available at health centres while 7% reported that maternal health services were not available. Visits to the health facilities in the project and interviews with the medical personnel confirmed the availability of basic maternal health services.

4.4 Births in the Household in the Last 12 Months

From the Survey, 86% of the population did not register any births in the last year, 14% registered one (1) birth while insignificantly less that 1% had 2 births. The number of births denotes various critical aspects of a population's demographic and economic conditions. It serves as an indicator of fertility rates, which can reflect cultural, social, and economic factors influencing family planning and reproductive health. Additionally, this data can provide insights into the population growth rate.



Graph 4: Number of Members in the Household who had Births in the Last One Year

4.5 Deaths in the Last 12 Months

When asked if the household had experience death in the last 12 months, 96% of the respondents reported that they did not record any death of a household member and only 4% had recorded death during the period under consideration.

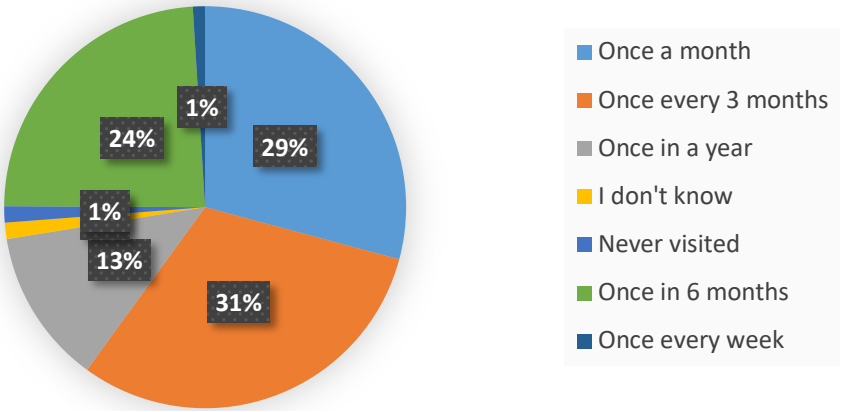
4.6 Medical Insurance for Household

Households were asked if they were under any medical insurance for healthcare cover. A significant majority of households surveyed (93%) lack medical insurance. Only a small minority (7%) reported having medical insurance. In addition to private medical insurance, the Government has established the National Health Insurance Management Authority (NHIMA) to cater health

insurance need of all categories of people in the country, including people in the villages. NHIMA members are required to contribute a small, fixed amount of money every month. People in the rural area need to be sensitised about the benefits of medical insurance to encourage them to take medical insurance cover.

4.7 Visitation to a rural Health Facility

Respondents were asked how often they visited a health facility. The analysis of health centre visitation revealed distinct patterns among the population surveyed.



Graph 6: Visitation to a Rural Health Facility

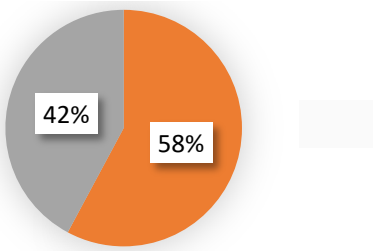
A significant 31% of the individual respondents reported visiting a rural health centre once every three months, indicating a relatively regular engagement with healthcare services. Following this, 29% of respondents visited the health centre once a month, suggesting a slightly more frequent reliance on these services. In contrast, 24% of the population visited the health centre once every six months, which may indicate a more sporadic approach to healthcare. Additionally, 13% of respondents only visited the centre once a year, highlighting a potential gap in regular health monitoring. A small fraction, 1%, visited the centre weekly, which could reflect a need for ongoing care or support for people with health conditions that require regular monitoring. Notably, 1% of respondents have never visited a rural health centre, and another 1% were unsure of their visitation status. This data underscores the varying levels of engagement with rural health services and may inform strategies to improve access and encourage more consistent healthcare utilization.

Regarding preventive health check-up, the survey results showed that a majority 55% of respondents were engaged in regular health preventive check-ups while 45% did not participate in the health check-ups.

5.0 ACCESS TO MARKET

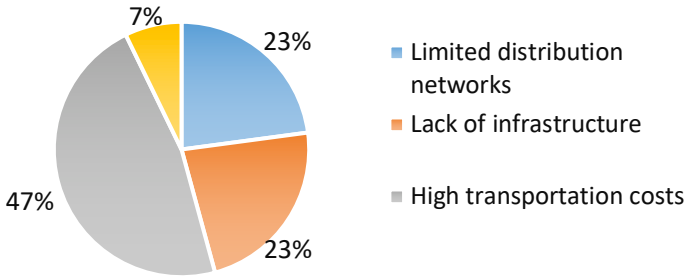
5.1 Access to Markets

Study findings showed that of the 307 respondents, 177 (58%) indicated that they had no difficulty in accessing goods and services, while129 (42%) reported that they had some difficulty.



Graph 9: Access to Market

Of those who indicated that they had challenges in accessing the markets for their agricultural produce, 42% attributed the challenges to the high transportation costs. Twenty-three (23%) mentioned the limited distribution network in the area while another twenty-three (23%) mentioned lack of or poor road infrastructure and the remaining 7% reported lack of entrepreneurial knowledge as the main hinderance to access to the markets for their produce. The absence of a reliable distribution network (channels) for goods and services, including the agricultural produce, was also mentioned as a significant challenge.



Graph 10: Storage Facilities Regulatory Barriers

These finding resonate with the information obtained from Focus Group Discussion (FGD) discussions that suggested that while there was an extensive road net work of feeder roads in some areas, the roads were in poor condition and become impassable during the rainy season. Participants in FGDs and key informant interviews also singled out the major constraints to market access and crop marketing as poor infrastructure like inadequate roads, lack of storage facilities, price volatility due to limited market competition, insufficient access to finance, and a lack of knowledge about market demands, which according to them, often forced farmers to sell their

produce at low prices due to limited bargaining power. FGD participants further noted that Farmers often lack access to real-time market information regarding prices, demand, and market trends, leading to poor decision-making and potentially selling their goods at unfavourable prices.

5.2 Challenges in Storage Facilities Regulatory Barriers Impacting Operations in the Market

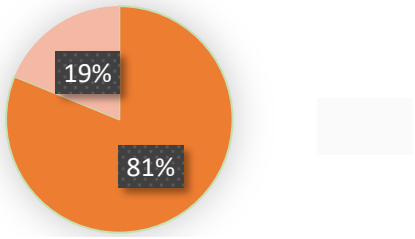
Food grain storage plays a vital role in ensuring food security in rural areas. It is essential to have proper storage facilities in rural areas so that farmers can store their produce to wait for better price for their products in the market. The adequacy of storage facilities in rural areas is generally considered insufficient due to lack of modern well-maintained structures and limited capacity.

In rural areas once the crop is harvested, the most readily available storage options is through government-run Food Reserve Agency (FRA) depots located in some rural areas, which are often insufficient to meet the needs of local farmers.

Field data collected during the survey indicate that 59% of participants did not have challenges with storage facilities. Forty-one (41%) percent of the participants indicated challenges in accessing storage infrastructure because they live in isolated locations with transportation challenges on account of poor roads.

5.3 Regulatory Barriers, Sale of Merchandise, and Impact on Operating in the market

Small-scale farmers in rural areas face multiple challenges to operate in the market. Findings of the survey show that 81% of the respondents in the survey indicated that there were no barriers affecting their ability to operate in the market. The survey findings show that the majority of these do not face barriers because they sell their produce in the informal markets within their communities. The remaining 19% percent reported regulatory barriers as affecting their ability to operate in the market and this may be attribute to a number of issues.



Graph 11: Regulatory Barriers that Impact on Ability to Operate in the Market

Many small-scale farmers do not have a coordinated connection to the product markets to ensure that production is according to the demand on the market to maximise the sales and profitability. Other market barriers include lack of or little value addition to their product, high transportation costs and inability to meet the quantity and quality requirements of formal markets.

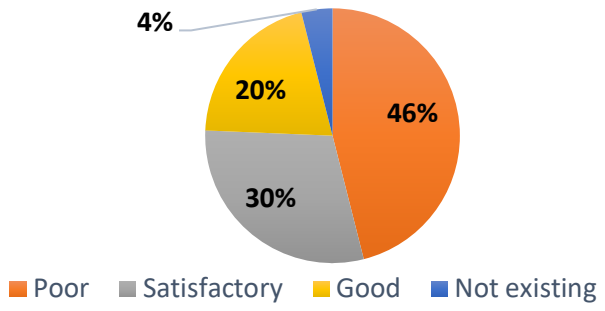
6.0 TRANSPORT AND INFRASTRUCTURE

The Vubwi District Integrated Development Plan of 2020 indicates that the district has a total of 350 km roads, of which 125 km are rural feeder roads and 40 km are township roads[16]. The district has only 2km paved township road. Vubwi is connected to the neighboring districts via three road networks. It is connected to Chipata through the Vubwi to Chipata Road and by a loop through Mbande, Mzigawa, Chaoleka to Mwami on the Chipata to Vubwi Road.

Vubwi is also connected to Chadiza. Vubwi does not have a reliable public and private transport. The general condition of roads in the district is poor, with most roads being gravel. In some areas, lack of bridges and culverts means that some communities are cut off during the rainy season.

Chipata, being the provincial capital, has better road infrastructure than Vubwi. According to the Chipata District Integrated Development Plan (Joint) of 2021, the district has a total of 120 km of urban roads, of which 60 km are paved (bituminous). These roads connect the different settlements with each other, thereby providing ease of movement of goods and services. The roads in the Central Business District link the business premises such as banks, shops, markets and health facilities. To cater for communities in rural areas, the District as a network of district and feeder roads which help farmers to deliver their inputs to the urban communities. Due to lack of regular maintenance, most of the rural roads are in poor condition. However, during the period of the survey it was observed that maintenance grading had commences on some of the rural roads, though few.

The Survey results confirms the above situation regarding the road infrastructure. Of the 307 respondents interviewed, that 46% indicated that the road infrastructure is poor, 30% reported that the roads are satisfactory, However, 20% indicated that the roads were good, while 4% mentioned that there is completely no roads where they stay.



Graph 12: Conditions of Roads in the Project Area

[16] Integrated Development Plan of 2022

Generally, the condition of roads in the district is poor, with most roads being gravel. In some areas, lack of bridges and culverts means that some communities are cut off during the raining season. The poor condition of roads impacts on the quality of the daily life of communities in terms of accessing social facilities such as schools and clinics. In addition, poor road conditions limit the potential for farmers to access new markets, limit the attractiveness of the district as a location for new commercial activity, and, therefore this impedes economic development.

7.0 CURRENT EMPLOYMENT STATUS

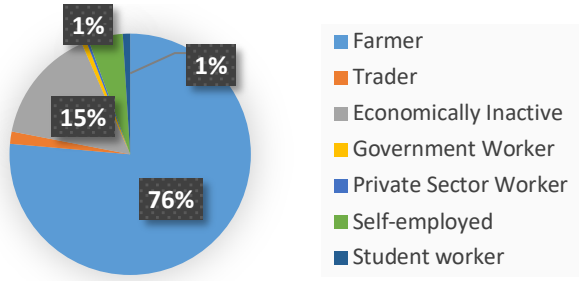
7.1 Employment Status

Survey findings show that of the 307 participants 139 representing 46% of the total participants are unemployed while 168 (54%) are engaged in various forms of activities to earn an income.

Eighty two percent (82%) are engaged in small-scale farming and 13% in other activities. Meanwhile 1.4% are engaged in casual work such as building people's houses, hut or kitchens, while 1.9% are involved in seasonal work.

a. Employment Status of Respondent

The majority of participants are engaged in small-scale farming and grow crops like maize, groundnuts, cotton beans, sweet potatoes and other farm crops.

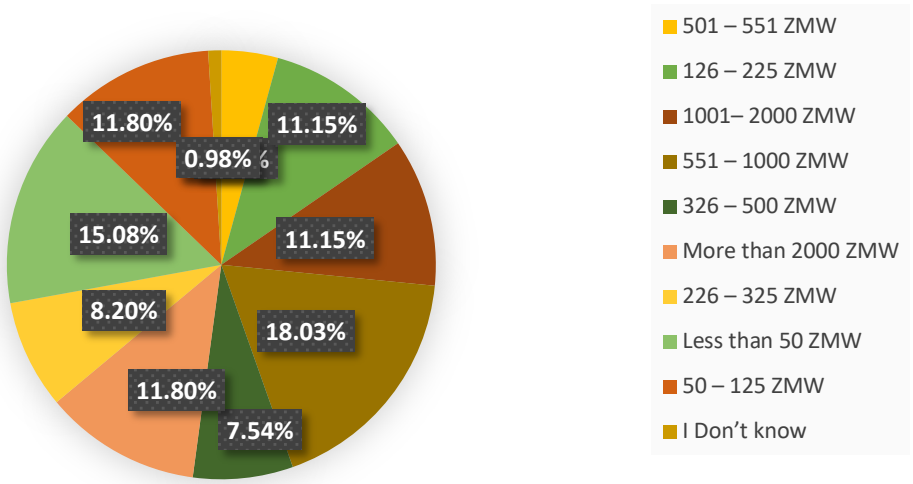


Graph 14: Employment Status of Respondents

Of the 307 respondents, 76% were farmers, 15% were economically inactive, 5% were self-employed, 2% were traders while1% were government employees and another 1% were student workers respectively.

7.2 Average Monthly Income

Like other rural areas in the country, majority of households in the project area have low incomes. Survey findings revealed that 43% of the households earned a monthly income below K500, 22% earned between K550and K1,000.00 per month while 11% earned between K1,001 and K2,000 per month. Of the remaining households, 12% earned above K2,000 and another 12% were unable to estimate how much they earned per month.



Graph 7: Average Monthly Income, Current Financial Situation & Change in Financial Status

Note: *In the analysis above earns between K50 and K500 have been combined into one category and earns between K500 and K1,000 have also been combined into one category for easy of presentation.*

These findings show the elevated level of poverty prevailing in the project area. About 70% of the house had an average monthly income below the provincial level of K1,307 and all the households report an income level below the national average of K3,442 according to the 2022 Living Conditions Monitoring Survey conducted by the Zambia Statistics Agency.

According to above national survey, 60% of the Zambian population lived below the national poverty line and there was a significant variation between rural and urban areas. In rural areas, 78.8% of the population lived below the national poverty line compared to 31.9% in urban areas and higher poverty levels were identified among female headed households.

The above amounts are far below the Jesuit Centre for Theological Reflection (JCTR) estimated monthly food and nutrition basket for a family of K11, 273.00 at the time of the study. Income earnings in rural areas are significantly low with many people living below the poverty line[17].

During the survey, the major sources of household income identified included sales from crops, livestock and forest products, wages from seasonal work, Social Transfer, rentals, and revenue from private businesses (mainly trading).

The results of the survey show that poor monthly earnings by the majority of participants could be attributed to multidimensional factors such as existence of poor infrastructure such as roads, inadequate access to markets impact of climate, gender, and public policy[18].

[17] JCTR food and nutrition basket

[18] (ZSA: 2022).

7.3 Current Financial status

When asked to compare their current financial situation to the previous year (2023), 90% of the respondents indicated that they were worse of. Poor financial situation by the majority of could be attributed to multidimensional factors such as the 2023/24 drought (climate change), poor road infrastructure, inadequate access to markets impact inadequate agricultural, gender and other public policies.

Regarding the financial stability of the households, over 65% of the respondents indicated that they could barely make ends meet while 23 % were indigent (living in abject poverty). Those that could barely make ends meet include poor households and women who provide labour to others on off farm and on farm activities inside and outside their villages. Indigent categories included the elderly and widows who have little or no productive assets, labour, and cannot sustain themselves on the small parcels of land they cultivate. They produce extraordinarily little and have no surplus for sale. Other were child headed households who ended up as child labour herding cattle for extraordinarily little pay. Only 12 % indicated that they can meet their needs. These include small scale farmers with draught power able to cultivate more than ten acres who have cattle and houses made of brick and corrugated iron sheets. Others in this category are those that own retail shops, grinding mills and petty traders.

7.3 Inflation against Purchasing Power

In the study area, participants cited the rising inflation and its impact of prices for consumable, which had a negative effect on household consumption patterns. They contended that since 2015, prices of gods have been on an upward trend outweighing there increases in the floor price of maize. They argued both the price of inputs and consumer goods have been affected as prices have risen making many good out of reach for majority of rural people.

Women in FGD and local leaders spoke of increased prices of some basic food stuffs such as mealie meal, beef, fish sugar chicken cooking oil and milk. Non-food essentials such as paraffin, bathing and washing soap were said to have doubled and even trebled over the past few years. A woman in a focus grow discussion in Jeremani Village noted thus:

> *"I am a widow with four children. I have challenges feeding my children because even if I sell my tomatoes that I grow in my garden the money realised from the sales is not enough for me to buy essential foodstuffs such as salt, sugar, and cooking oil. In the past, these basic food staff were cheap that even we are widows could at least get something. However, this is no longer the case. So, for many of us meat, chicken or fish is out of reach and so subsist on vegetables."*

In a participatory exercise to confirm the rise of inflation and against the purchasing power, participants identified the following consumption expenditures to measure price increase and inflation.

Table 7: Cost variations of food items between 2022 and 2024

Consumer Item	Quantity	Unit Cost 2022	Unit cost 2024
Cooking Oil	2.51trs	K65	K129
Dry beans	1kg	K30	k120
Dry bream	1kg	k50	k100
Dry kapenta	1kg	k60	k120
Chicken	50	k50	k140
Meat	97	K32	k97
Sugar	1kg	k23	k38
Salt	1kg	k15	K40

8.0 ACCESS TO IRRIGATION FACILITIES AND FARM IMPLEMENTS

8.1 Access to Irrigation Facilities

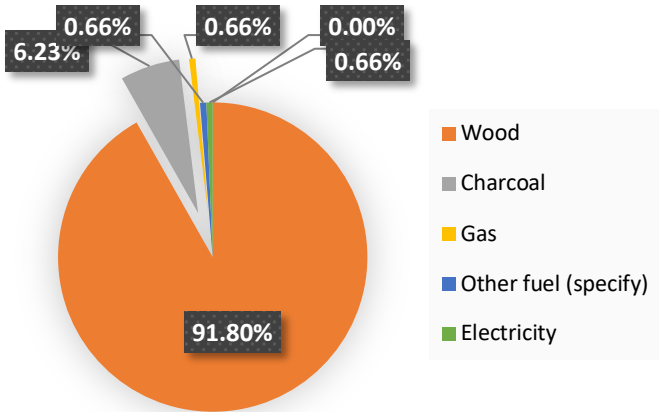
The Survey indicates that 91.64% of the households had no access to irrigation facilities and only few households (8.36%) had access. The survey shows that a significant majority of the population depended on rain-fed agriculture which rendered them unproductive during the dry part of the year and that could affect the overall agricultural output. Without irrigation it is also difficult to mitigate the effects of climate change (drought), and this can affect household food security. To ensure sustainable and equitable agricultural development, it is crucial to focus on expanding irrigation infrastructure, improving water management, and addressing the needs of the majority without irrigation access. Doing so will help ensure that all farmers have the tools they need to thrive, regardless of climate conditions or regional disparities.

8.2 Access to Farm Implements

The households surveyed showed that 52% had no access to farming implements while 48% reported having access. Lack of access to farming inputs has a negative effect of agricultural production since majority of the rural farmers cannot afford to buy all the implements. Access to farming implements need to be increase through Government and private development agencies as well as Non-Governmental Organisations to boot agricultural production.

9.0 SOURCES OF ENERGY

Study findings across the country show that in rural areas firewood and charcoal are the main sources of energy. In the study area, firewood is the most dominant source of energy for heating and cooking, and account for 92% of fuel used in the households in the communities surveyed. Six (6%) indicated that used charcoal and gas to a lesser extent, and electricity play a very minor role accounting for only 2% of energy used in the study area.



Graph 16: Sources of Energy

Firewood is, therefore, the primary source for cooking and heating in the rural areas, therefore, contributing deforestation and, climate change. Alternative energy sources need to be introduced in the area to curb deforestation.

Figure 4 : Improved Firewood Mbaula being used in the Kauzu Village in Chipata

10.0 WATER AND SANITATION

The survey indicates that 56% of the respondents use boreholes for drinking water, 33% used artesian well, 8% used artificial well and 3% used piped water. Majority of the people reported that water sources were close to their places of residence and did not have to walk long distances to fetch water.

Figure 5: Borehole at Makwelelo Primary School in Vubwi District

A staggering 94% of the people rely on pit latrines as their primary method of waste disposal and only 3% of the population utilizes sewer wells (septic tank with soak away). Additionally, 2% of respondents employ alternative methods for waste disposal, which may include practices not commonly recognized or documented. A mere 1% indicated having access to a centralized effluent disposal line (sewer system).

11.0 TRANSPORT SERVICES

The survey revealed that Motorbike was the most common form of transport. Other forms of transport included bicycle, ox cart and walking. The road infrastructure in the project area was reported to be poor condition by 46% , 30% are satisfactory, 20% said the roads were good while 4% of the respondents confirmed that there were no roads where they live.

12.0 ECONOMIC DISRUPTION OVER TWELVE (12) MONTHS

12.1 Income Disruptions

In order to determine household coping strategies, participants were asked to discuss the household strategies employed in the light of increase of prices for essential basic food items, failing agriculture commodity prices and climate change.

During the study, the following factors were identified as major income disruption in the last year:

- loss of employment

- Crop (harvest) failure
- Serious illnesses
- Pests
- loss of goods/services
- Low prices of agricultural produce

12.2 Copings Mechanisms for income loss

To determine household coping strategies participants were asked to discuss the household strategies employed in the light of increasing of prices for essential basic food items, falling agriculture commodity prices and climate change (drought). Analysis showed that households typically adopted diverse livelihood strategies to survive. Majority of the households (79%) restricted their expenditure to essential commodities only while 18% percent reported that they chose not to do anything about their situation. Only 3% reported that they sold their livestock.

This information corresponded with FGD where participants reported that they were engaged in various off-farm livelihood portfolios to earn some income. According to FGD and stakeholder consultations, the following strategies were employed by households to survive.

- Weaving or making handcraft such as reed mats, baskets, traditional brooms, drums for sale
- Sale of forest products particularly mushrooms, charcoal, and firewood. Charcoal production and firewood were mentioned as one of the coping strategies although this is one of the driving forces of environmental degradation (deforestation).
- Some female headed households receive remittances from children in town to assist them make ends meet, but these were very few.
- Engaging in short term work as casual labourers.
- Gardening and selling crops such as green maize, onions, green pepper, and other garden products.
- Sale of small livestock such as chicken, goats, pigs, and sheep.
- Petty trading, including selling of fruits like mangoes and guava.
- In a few extreme cases, families reduce the number and quality of meals during food shortages.
- Some households with a higher asset base liquidate the assets to get some money.

The table below discusses the coping strategies for each type of loss identified by the respondents.

Table 9: Copings Mechanisms for income loss

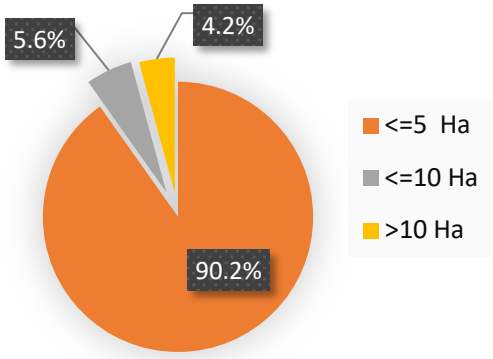
	Coping Mechanisms for Loss				
	Serious Illness (%)	Loss of Employment (%)	Harvest Failure (%/ Climate Change)	Pests (%)	Low Prices of goods/services (%)
Used savings	-	11	45	12	11

Sold Household Assets	-	4	5	1	4
Loans from Outside Households	-	0	0	-	-
loan or gift from friends/family	-	1	3	1	1
Nothing	-	84	27	78	84
other	-	0	20	8	0
Averages		25	20	20	25

12.3 Size and Hectares of land Cultivated by Household

In Zambia, agriculture contributes significantly to economic development, especially in rural areas. Most people still in rural areas making their living on agricultural production. However, the level of production is still exceptionally low for most of the people resulting in low levels of household incomes. In rural areas, ownership of land is determined by customary tenure where traditional chiefs and chiefs/women allocate land based on tribal customs. Land is held communally by families with limited individual ownership.

In the survey, 90% of respondents reported that they owned less than 5acres of land while 6% owned less than 10 acres and 4% own more than ten acres. Those that owned more than ten acres often cultivated the using draught power. Findings show that most households cultivate small plots of land using manual tools (hoe and axe) and depended on family labour for farm work. Most participants indicated they acquired their pieces of land more than 10years ago and in most cases, land was inherited from the parents and only few indicated that the acquired (bought) the land themselves.

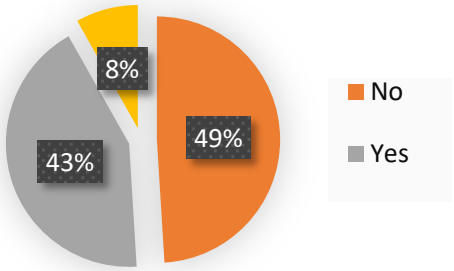


Graph 17: Size and Hectares of land Cultivated by Household

13.0 PRESENCE OF ASSOCIATIONS AND ACTIVITIES IN THE AREA

Traditional Zambian societies are characterised by existence of formal and formal social networks. This is what which engenders a feeling of community in social relations among individuals' social networks are platforms that enable users to connect with each other, share information, and interact with each other.

Social networks are an important conduit for community members in accessing resources, as well as social support and friendship. Findings show that forty-three 43% noted that there were CBO FBOs and other NGIs in the area while forty-nine 49% doubted the presence of NGOs or, FBOS in the area. Eight percent had no idea of the organisations.



Graph 18: Presence of Associations and Activities in the Area

The most prominent ones mentioned included Forty-one (41%) percent was Marys Meals which was involved in providing meals to school going children primary schools, eighteen (18%) percent noted the presence of Village Banking organisations while 20% identified the existent of cooperatives. Other CBOs FBOs identified included FBOS (9%) Seven 7% percent said they were aware of NGOS involved on world life conservation (WWF). Most of the organisations identified above were perceived to be involved in poverty alleviation and agricultural production.

Focus Group Discussions support these findings as men women and stakeholder consultations also identified the various NGOs FBOs and other Social Networks existing in the study areas included the following:

- Village leadership institutions: responsible for the administration of village affairs
- Women initiation ceremonies: responsible for cultural marital orientation for girls who attain puberty
- Religious organizations: Responsible for providing social connection, promoting moral values.
- Health Neighborhood committees (NHC): responsible for health promotion and hygiene practices in the community
- Water Supply and Sanitation Committees (WATSAN): responsible for the management and promotion of water and sanitation facilities
- Village Banking groups: these bring women who contribute money to support each other
- Cooperatives: promotion of input supply at community level

These findings show that there are multiple CBOs NGOs FBOs who play important roles in communities visited. They form part of a larger net work that play a different roles to enhance social relationships and build strong interconnectedness between people related by blood and marriage, bind whole community and makes people live in harmony/ peace, promotes mutual responsibility and help, enhance sense of security/ loyalty belongingness, regulate marital customs/rules/regulations, regulates behavior, lead to preservation of cultural identify, provides ways for peaceful settlement of conflicts and lead to families justice in inheritance.

14.0 ELECTRICAL POWER AND WILLINGNESS TO PAY

Electricity plays an important in improving the household's wellbeing. However, access to electricity comes with a cost as households are required to pay for the electricity they use. Majority of the households interviewed indicated that they were willing to pay for electricity if the electricity connection was extended to their houses and shops. It was their hope that the Government, through ZESCO and the Rural Electrification Authority, would facilitate the extension for electricity connection to their communities so that houses, shops, and public facilities such as schools and health centres are provided with electricity.

However, majoring of the households interviewed are living below the national and provincial poverty lines as discussed earlier in this report and this affects the ability of the households to pay for electricity services.

15. COMMUNITY SAFETY CONCERNS AND SAFETY OF GOODS

Safety is a human right for an individual to feel free from risk and fear of danger regardless of where one lives. Safety enhances community stability and promotes investor confidence. Where there is safety, people and the Government will be free to invest and both private and public property will be safe. To assess the overall sense of security and how it affects people's lives in the study areas, participants were asked to state their perceptions on safety in their communities.

The survey showed that 70% of respondents perceived that they lived in a safe environment while 27% indicated that they were not living is a safe environment. Three (3%) percent-expressed did not know the safety situation of their area. Majority of the respondents indicated that they had no safety fears both during the day and at night, and this is an indication that the crime rate in the project area is low.

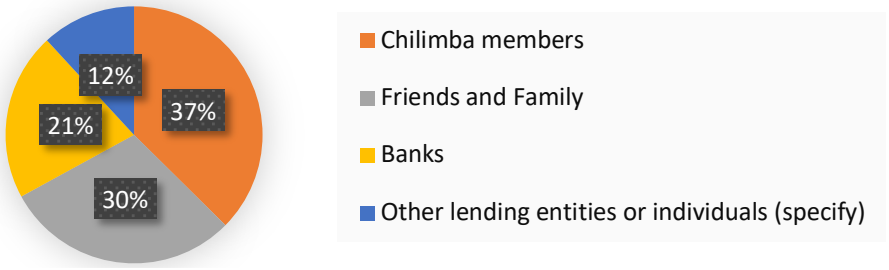
16.0 COMMUNITY DECISION-MAKING IN THE PROJECT AREA

In rural community, decision-making involves a blend of traditional practices of community consensus and leadership roles with the aim of ensuring the wellbeing and harmony of the society.

16.1 Financial Advice

Participants in the survey were asked where the often seek advice on financial matter to access their exposure to modern financial services. About 37% indicated that they sought financial advice from Village Banking Groups (VBGs). Village Banking groups are a common phenomenon in the villages visited and have emerged as the best options for quick credit or loans to improve their income sources. Members of the village can join a VBG, contribute money to the group weekly or monthly. After an agreed period, they will be eligible to borrow at a low interest rate.

Of the remaining survey participants, 30% would go to their friends or family members for advice, 21% would go the bank and only 12% prevent indicated that they would not seek financial advice from anywhere and would make financial decisions on their own.



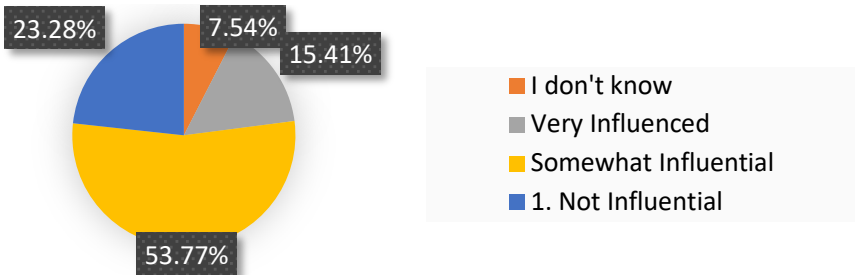
Graph 20: Financial Advice

Findings with FGDs comprising women, men, youths, and other stakeholders revealed majority of the people go the Village Banking Groups because they are managed by fellow members of the village, interest rate in low, no collateral required, and there is no tedious paperwork to fill in. One FGD participant had this to say:

> *'The Village Banking Group (VBG or Chilimba) is very beneficial. Loans are easily accessible; interest rates are low and a social safety net without cumbersome registration system or collateral needed.'* (Woman Participant in an FGD, Chikoti Village, Vubwi District)

16.2Influence of Decisions

An attempt was made to find out how influential the respondents were in decision making on issues or projects in their respective communities. The study indicated that 54% of respondents feel somewhat influential in decision-making; 23% acknowledged that they were not influential; 15% indicated that they were very influential. In contrast 15% expressed ignorance (don't know).



Graph 24: Influence of Decisions

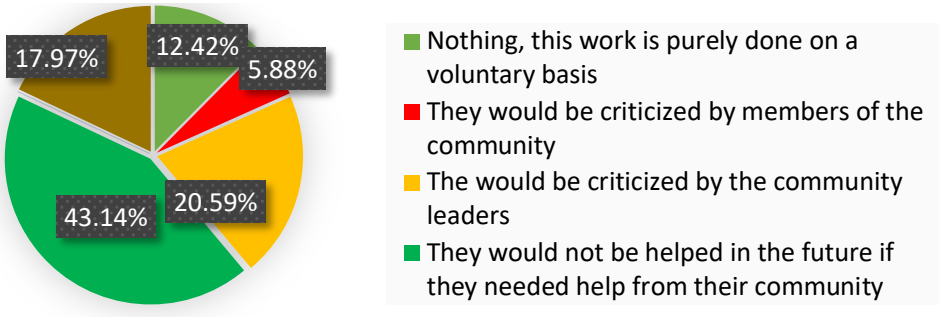
16.3 Community Decision Making and Participation in Community Activities

In many rural communities, decision-making involves communal thinking and the participation of elderly, the youth, women, men and the vulnerable. Although the chiefs/women and counsellors and community leaders may take a leading role in community meeting, the decision on the course of action the community should take a particular matter in decided through consensus. Even community projects and their location are determined through the participation of the community members in form of meeting.

Information obtained from FGDs indicated that where a project involved the mobilisation of resources as such as sand, bricks other locally available material, the community often worked together to provide the needed materials to build a school, clinic, or market.

When asked about the penalty imposed on those who do not take part in community meetings and projects, several responses were provided by the respondents. If a family does not participate in community projects and meetings, 43% were of a view that the family would not be assisted in future if they needed help with community while 21% indicated that the family would be criticized by the community leaders and 18% indicated the family would be criticized by the ward or government leaders.

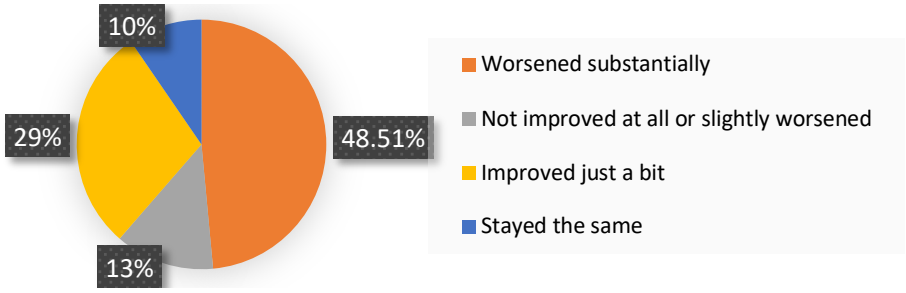
In contrast 12% advocated for nothing to be done to the family while 6% mentioned that such a family would not be criticized by the community at all. FDG discussions show that traditional Zambia societies are characterized by an essentially communitarian's structure to share information, interact with each other and accessing resources and social support and friendship.



Graph 25: Participation in Community Activities

16.4 Household Financial Independence

Respondents were asked to state whether their financial independence had improved over the last 2 years. The survey findings revealed that financial independence of the majority of the households had substantially worsened. Of the 307 respondents, 29% indicated their financial independence just improved marginally; 13% reported no improvement at all while 10% reported their financial independence remained the same.

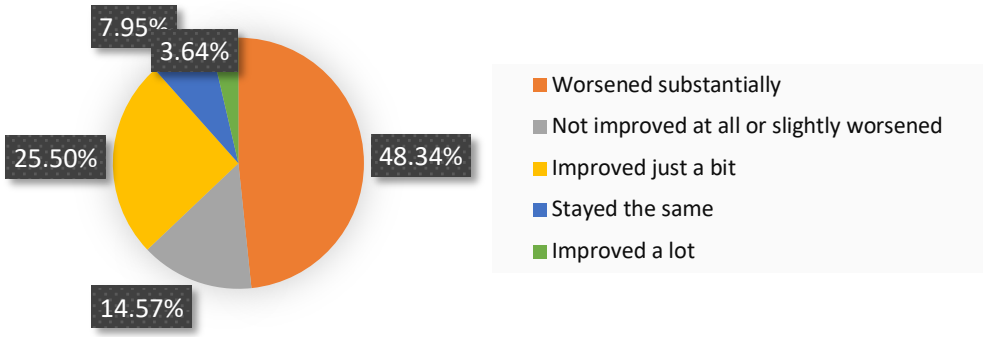


Graph 26: Financial Independence

The remaining 48.5% reported that their financial independence had substantially worsened in the last two years.

16.5 Women's Financial Independence

Women were asked to indicate their current financial situation compared to how they were two years ago. Out of the 307 respondents, 48.34% of women report worsened financial independence, 25.5% improved just a bit, 7.95% remained the same, 14.57% had not improved at all in contrast to 3.64 which had improved a lot.



Graph 27: Women's Financial Independence

Information collected revealed that women who reported improvements to their financial status were members of Women Village Banking and Lending groups or *Chilimba,* as is commonly known. Women reported that that Village Banking Groups were a source of loans and credit at low interest rates. Membership for the Village Banking Groups was open to all the women and

membership ranges from 15 to 30 members. According to the respondents, women members meet regularly (weekly) and pool their resources. These savings or contributions then become a source of lending from which members borrow with minimal interest of at least 10% over a specified period. A participant articulated the motivation for joining a Village Banking Groups as thus: *'Most of us have joined the Village Banking Group because it has improved our financial status at household level. We have easy access to loans; interest rates are low, and it is a social safety net with no cumbersome registration system or collateral needed'. (Woman Participant in an FGD, Chikoti village, Vubwi District)*

Other participants added that:

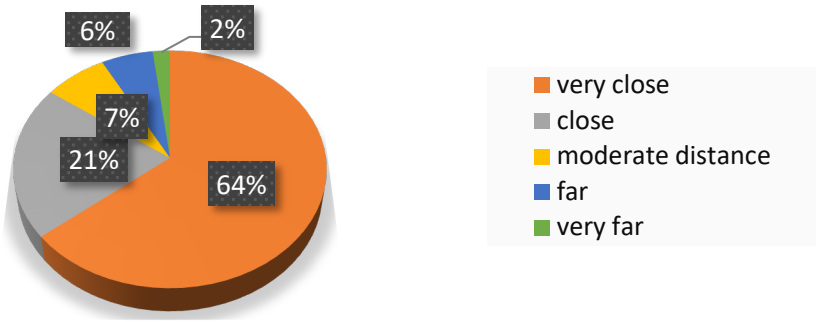
> *'Our Village Banking Group in which I belong has a lot of women including widows and unmarried ones that have benefited a lot. It was very helpful. In some cases when it is time to access dividends after 12 months, I go home with as much as K20, 000 or even K30, 000 depending on the specified amounts of contributions agreed by the group. I use the money to buy household food and additional farming inputs such as fertilizer or seed and school requirements for children.*

According to the FGD discussions, those whose financial position had not improved or remained static were largely poor households headed by elderly women, some widows and the disabled. Barriers that contribute to poor position of the elderly and poor widows include discrimination on ownership and control of assets, belief in witchcraft, lack of start-up capital and lack of labor.While some social protection mechanisms exist, they are largely insufficient and there is still much work to be done to ensure that older people in Zambia can enjoy a decent standard of living and are able to meaningfully participate on an equal basis to other population groups in their communities. As a result, older people are highly dependent on others for their survival.

17.0 DISTANCE FROM AMNESTIES

a) Distance to sources of Water

In the survey, 65% percent reported that they lived remarkably close to a water source while 21% were close and 7% were between 800m and 1,600m away. About 6% fetched water from a distance between 1.5 and 2.5km2% walked over 2.5km to fetch water. The above information, about 85% of the population is close to sources of safe drinking water, boreholes, which decreases the risk of water borne diseases. Often, collecting water is primarily the responsibility of women and girls. Further short distances help women save time for other activities such as income generation.

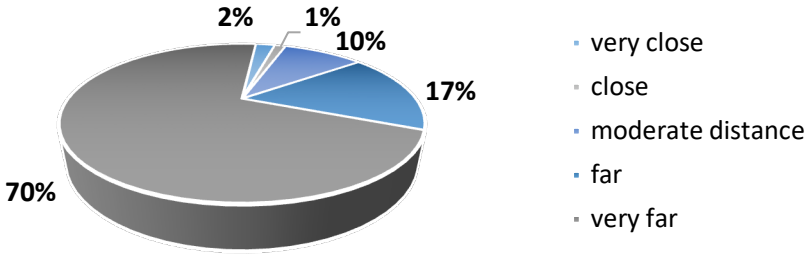


Graph 28: Distance to sources of Water

B) Distance to Markets

Proximity to markets is crucial and vital to households that rely on markets to sell their agricultural produce and handcraft. The closer the market the easier it is to sell goods, generate income, and access new customers.

Survey findings show that Seventy percent (70%) were located very far from the market and only 2% reported living near the market. About 17% were far from the markets, 10% were moderately far while the remaining 1% reported to be close to the market. This situation denotes lack of infrastructure in the study sites and therefore lack of economic activities. Domestic market farmers are disadvantaged due to inadequate or poor transportation system.



Graph 29: Distance to Markets

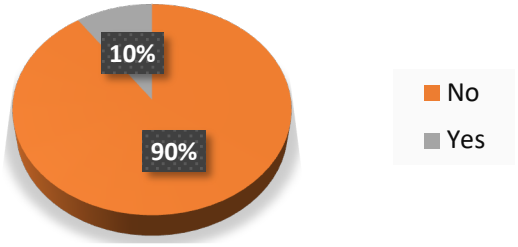
In rural areas, distance to markets vary significantly with some having a permanent market nearby while others people have to travel long distances to access them often rely on of periodic markets or rural service centres. Proximity to markets is also crucial and vital to households that rely on markets to sell agricultural produce and handcraft.

The close the market the easier it is to sale goods, generate income, and access new customers. When markets are far from the population the coast and effort p purchase goods can increase reducing access to essential products and negatively impacting living standards.

18.0 ACCESSING LOANS FROM LENDING INSTITUTIONS

18.1 Borrowing Patterns and Purpose of the loans

Informal and informal services provide various types of investment avenues for rural population in Zambia in general and communities in the study area. When participants were asked to indicate whether they had taken and loans from lending institutions survey information revealed that the majority of participants (90%) reported not to have taken any loan from any formal lending organisation. Only 10% said they had taken a loan.



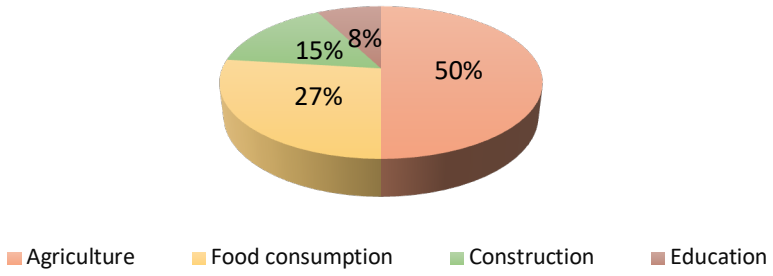
Graph 30: Accessing Loans from Lending Institutions

The survey findings reveal that access to financial services in the project sites is a challenge due to various reasons, which among others include low population density in rural areas and extremely poor infrastructure, compounded by low productivity, making it difficult and expensive to provide such services.

FGDs also revealed that the lending institutions were far and many respondents were unfamiliar with banking practice, procedures due to a high degree of illiteracy. Therefore, many individuals, especially in rural areas, may distrust formal banks due to experiences or perceived bureaucratic hurdles.

18.2 Borrowing Patterns and Purpose of the loans

Out of the 307 respondents that were surveyed, 86% did not borrowed at all, 6% mentioned that they had borrowed from other sources, 3% from money lenders (Kaloba). Of the 10% that had taken loans 50% was used on agriculture, 27% percent used it for food consumption and 15% used to for the construction of houses while 8% used it on education for their children.



Graph 31: Borrowing Patterns and Purpose of the loans

The findings show that may respondents borrowed from both relatives and friends and less from the commercial banks. This shows that informal lenders may offer more flexible repayment terms compared to banks, accommodating borrowers who may have irregular income streams. The findings further reveal that individuals in the study population have limited access to financial services, lack credit facilities or that they could be risk adverse arising from cultural or personal resistance to debt. The findings may also reflect on economic conditions and income levels/poverty where people have no financial capacity to qualify for loans or repay loans, leading to low loan uptake.

18.3 When was the loan taken

The survey indicates that the loans were contracted in the year 2016, 2023 and 2024. 34% were contracted in 2024, while the years 2016 and 2023 had 33% respectively. The period when these loans were contracted are marked with fluctuations influenced by climatic conditions. In 2016, Zambia faced a severe drought leading to reduced agricultural yields[19].

In 2023 eastern Zambia experienced below-average rainfall between November and December, coupled with above-average temperatures in December. These conditions led to a dry crop and rangeland conditions, affecting 45 to 75% of the active crop area in Southern, Eastern and Central province[20].

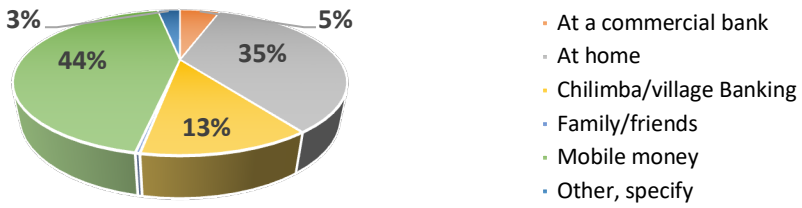
Table 10: Percentage of people that contracted loans

Percentage of People that contracted loans	Year
34%	2013 - 2016
33%	2016/2023
23%	2024 -2024

In 2024 Zambia faced a severe drought exacerbated by El Nino, reflecting contractions in the agriculture sector[21]. Given the scenario above, it is most likely that the respondents were severely hit by these climatic challenges and hence opted to contract these loans.

18.4 Methods of Keeping Money

Results of the survey shows that 44% of the respondents kept their money though mobile platforms, 35% kept the savings at home, 13% saved through the village banking groups, five per cent saved at commercial banks whereas 3% saved elsewhere.



[19] elibrary.imf.org
[20] agricultural-production-hotspots.ec.europa.eu
[21] Worldbank.org

Graph 32: Methods of Keeping Money

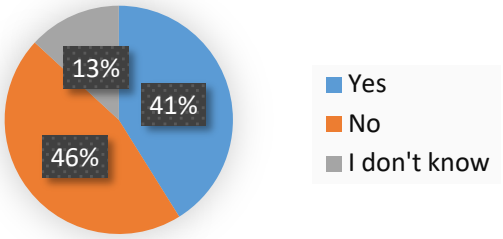
The survey revealed a number of savings employed by people in the rural areas such as under the bed, in a jar in the ground with friends or und the pillow. People save for a variety of reasons including prepare for future emergencies or risks (natural disasters, injuries, and death), to smooth out variations in income and consumption: Saving during surplus periods to use during difficult periods and to educate their children. Other reasons for saving include to invest in opportunities potentially profitable (purchasing a cow, starting a small enterprise, storing grain to resell during high price season, etc.) and to fulfil social and religious obligations (marriage, funeral)[22].

19.0 EXPERIENCE OF IMPLEMENTING MICRO PROJECTS IN THE SITES

Micro projects are small projects usually characterised by short duration, limited in scope, and involve a smaller and budget. Community participation is critical to ensure ownership and care of the project. Members of the community can contribute to the project through the provision of funds, labour, and locally available materials such as sand, timber, and bricks.

19.1 Experience in Community Project

Survey findings show that 46% said they had experiencing in implementing a micro project, forty-One per cent were positive they had experience while 13% did not. This shows that people in these communities had limited knowledge in implementing projects.

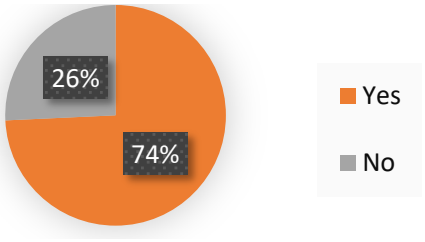


Graph 33: Experience of Implementing Micro Projects in the Sites

19.2 Community Participation in a Mobilization Meeting for a community project

Evidence collected in interviews and FGD showed that 74% reported participating in mobilizing for a community project while 26% said they had not participated.

[22] FGDs in Chipata/Vubwi,2024



Graph 34: Mobilization Meeting for a community project

Participants were also asked to state their experience on participation in mobilization meetings for community project. Community participation involves community member's participation in communal programmes where knowledge and skills are shared. it is the bringing together of villages into a definable social system where individuals concerned with certain aspects of their lives are brought improvement for the advanced of their living standards. The survey revealed low community participation in meetings.

Community participation in meetings aims at fostering partnerships to achieve positive outcome for all members of the community in finding solutions to important issues in the lives of individuals, families and communities. Cooperation leads to development of networks between people and encouraging people to work together and build relationships between different communities.

19.3 Existence Community Groups in the community

In rural areas, community groups take many forms. They include Village leadership institutions., Cultural groups, religious organizations, Self-help groups, Village Banking groups, group centered on health such as Water Supply and Sanitation group (WATSAN), Neighborhood health groups or HIV/AIDS counseling's groups Cooperatives. These groups are a source of information on what is going in the community or planned development activities. Social Networks are part of the substance of life.

Consultations with participants categorized the common types of groups in the communities existing in their communities thus: Village Committees, Village Banking Groups, Cooperative Groups HIV/AIS grips, Community Action Committees and Child Protection Clubs. These community-based groups form part of a larger network in the community with each playing a different role.

The Consultations with participants enhance social relationships build strong interconnectedness, bind whole community and makes people live in harmony, peace, promotes mutual responsibility and help, enhance sense of security, loyalty belongingness, regulate marital customs, rules, regulations, regulates behavior, lead to preservation of cultural identify, provides ways for peaceful settlement of conflicts and lead to family's justice in inheritance.

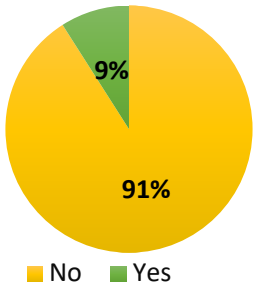
20.0 AVAILABILITY OF ELECTRICITY IN THE COMMUNITIES

20.1 Access to Electricity in the Project Area

The World Bank Electricity Service Access Project is supporting Zambia to improve electrification in rural areas by connecting more households and entrepreneurs to the grid through subsidizing their connection fees. So far, 22,000 rural households and over 8,000 micro and small enterprises have gained access to electricity at reduced connection fees.

Electricity and other forms of modern energy are critical for spurring any country's economic growth. Zambia's overall electrification rate remains at 42%, below the Sub-Saharan Africa average of 47%. While over 75% of urban households in Zambia have access to electricity—almost exclusively through the grid—less than 12% of rural households have any kind of electricity[23].

Electricity remains significantly low in rural areas. Approximately 91% of households in the communities in the study sites do not have access to electricity. Only a paltry 9% have access to electricity. The impact of lack of electricity in rural areas is that it limits economic and social development affecting agricultural productivity, healthcare, small businesses, education and communication.



Graph 35: Availability of Electricity in the communities

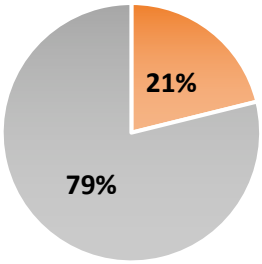
Chipata and Vubwi districts are therefore among the national percent with limited access to electricity. This lack of reliable electricity severely restricts Chipata and Vubwi districts potential for improving per capita GDP and reducing poverty. The survey finding revealed that having access to electricity in Chipata and Vubwi is crucial as it reduces the need for alternative fuels like firewood and charcoal that contribute to deforestation, as well as reducing the use of pollutants like kerosene, diesel, and dry cell batteries. Increasing rural access to modern energy also promotes social cohesion and assists the government in economic development initiatives.

However, the Zambian Government, through the Rural Electrification Authority (REA) and ZESCO is working to improving access to electricity focussing on connecting households and small businesses to the grid.

[23] World Bank Group, Zambia Country Brief 2018

20.2 Participants' Knowledge about the Project

To gauge community member's knowledge of the Zamia Malawi Interconnector, Consultant asked them to comment on whether they had heard about the proposed. Information collected in interviews and consultations showed that the majority were aware about the Project. Statistics revealed that 79% were aware of the project through the meetings that they had attended, 21 % mentioned that they were informed by the Indunas, 6% indicated that they heard about it from radio broadcasts while 10% heard from other sources. This shows that the level of stakeholder engagement was very effective as the majority of community members' knowledge about the project was very high.



Graph 36: Participant Knowledge about the Project

20.3 Household Interest to be connected to ZESCO Grid

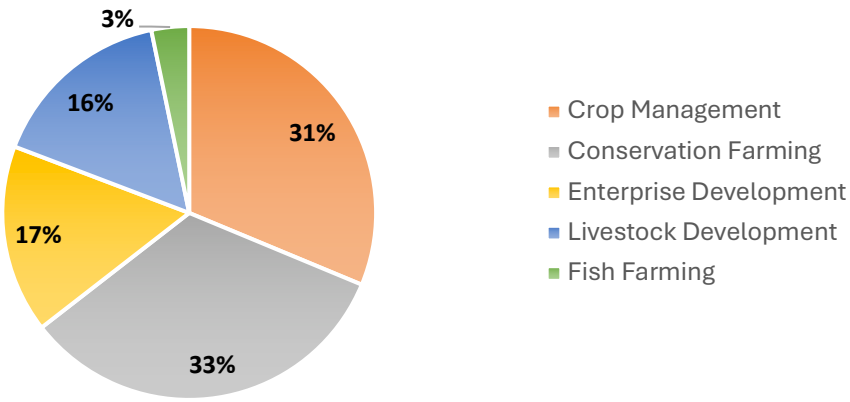
Questions were asked to households whether they would be interested to be connected to the ZESCO Grid. Interviews and consultations showed that all participants demonstrated willingness to be connected to electricity.

FGD consultations reported being connected to power would help them start small income generating business such like making fritters ice blocks. They noted that being connected would improve their quality of life improve security and health services. They observed that at household level they would be able preserve food by refrigerating it and noted its contribution to communication by providing access to communication technologies. This project area very rural and has very little access to electricity, hence their response.

21.0 LIVELIHOOD PROGRAMME CHOICE

Using a participatory selection technique, the surveyed households were presented with five choices of livelihood programmes to choose from. The survey responses showed that crop management, together with conservation farming, was the most preferred livelihood programme and accounted for 64% (combined) In the second place was enterprise development with 17% of the respondents, while the third choice was livestock development with 16% . The forth and least enterprise selected was fish farming with 3% of the respondents.

From the choices made, there is a confirmation that this community is interested in crop farming and livestock livelihoods and enterprise development to a lesser extent.



Graph 10: Livelihood Programme Choice

22.0 HOUSHOLD DECISION MAKING

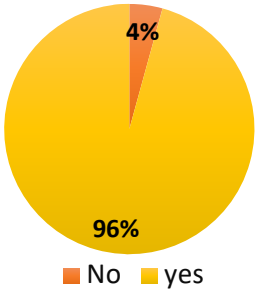
22.1 Decision Making at Household Level

Discussions with women, men, and key informants on equal opportunities for people in decision making produced varied responses. Majority of the people (95%) responded that both men and women have an equal say in decision making on issues that affect or concern the household. Only 5% reported that a man has more power in decision making in the household. The reason why 4% responded negatively was that existing cultural norms do not support the view that women should compete with men in making critical decisions at household level. In these communities, men are perceived as being both superior and are heads of the households. Women are confined to domestic work and raising children while men are left to handle all the decision-making processes. In general, study findings showed that decisions over household property and family income are regarded as belonging to and are controlled by the husband. Often the women decision making were limited to roles based on providing emotional support and maintenance, while men are primarily responsible for economic support and contact with the world outside the home. This perspective limits the participation of women in decision making and in leadership roles.

22.1 Perceptions on Male and Female Equal Access to Education

From the survey carried ninety-seven per cent (96%) agreed that men and women should have access to education and only three per cent (3%) thought otherwise. They feel that boys should be given priority regarding education.The reasons given were that cultural norms do not support this view. Some participants viewed female's children negatively because female children get pregnant and stop school while a male child will continue to carry on the family name. However, it showed

that members in the community visited believe very strongly in equal access to decision-making and access to education for both male and females.

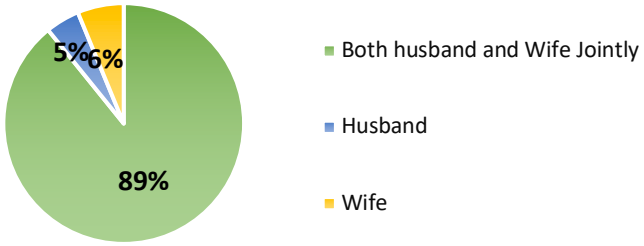


Graph 37: Perceptions on Male and female Equal access to Education

22.1 Decisions on Agricultural Produce

The responses from the survey revealed the 89% of the respondents believe that both husband and wife jointly should make on agricultural production activities, 6% thought wives should decide while the remaining 5% believe that it is the husband's responsibility to decide.

Married women in FGD discussion indicated that they also participated in decision-making on major purposes such as those that involved sale of their produce, purchases of daily household needs, buying materials for housing construction followed by decision-making that involved visits to her family or relatives, and decisions about her own health care.



Graph 38: Decisions on Agricultural Produce

23.0 FINDING ON GENDER BASED VIOLENCE

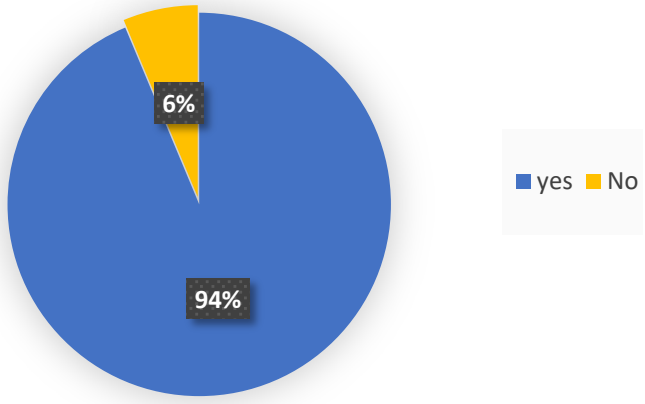
23.1 Existing literature

In the first 3 months of 2022, Eastern province recorded a total of 2, 226 cases of GBV representing 9.2% of national statistics. ZHDS report[24] show that forty-two percentage (42%) women aged 15-49 years have experienced physical violence since age 15years while fourteen percentage (14%) of women aged 15-49 years have ever experienced sexual violence.

GBV in Zambia is widely accepted, 58 percent of women and 40 percent of men believe that a husband is justified in beating his wife under certain circumstances. It is often underreported and survivors who report their experiences risk "scorn" as communities consider sexual violence and IPV private issues.

23.2 Awareness of Gender Based Violence in the Community

An attempt was made to establish if the people in the community were aware of Gender Based Violence in general and 94% of the respondents reported that they were aware. The remaining 6% expressed ignorance.



Graph 11: Awareness of GBV

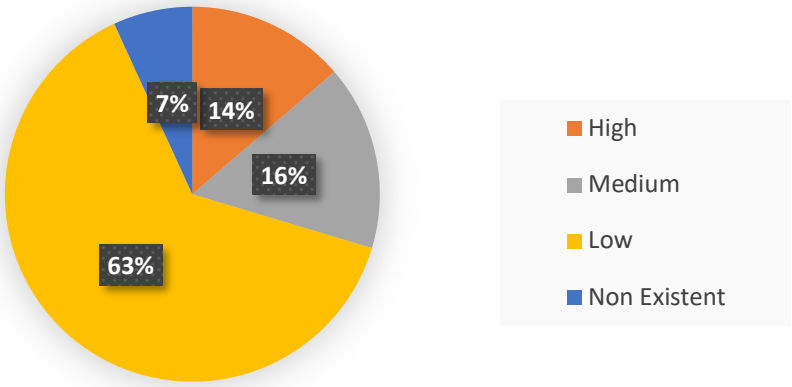
The high level of suggesting a strong recognition of GBV in the community. Conversely, the mention of 6% being ignorant points to a small minority that lacks awareness, which could indicate a need for further education and outreach efforts to ensure that all community members are informed about this critical issue.

23.3 Prevalence Awareness of Gender Based Violence in the Community

The survey tried to gauge people's perception about the prevalence of GBV in the community. The survey revealed that 63% of the respondents believed there is low incidences of GBV, 16% believed it was medium, 7 % indicated that it was non-existence while the remaining 4% believed that it was high. The perceived low incidences of GBV may be an indication of the overall social

[24] Zambia Demographic Health Survey (2018)

and cultural well-being of the community in the project area. However, caution must be taken as studies in the country have shown that incidences of GBV cases seem to be low in rural areas because of gross under reporting.



Graph 12: Prevalence of GBV in the Community

23.4 Drivers of GBV

Stakeholder consultations and other research indicate that there are several drivers of GBV. This section discusses the major GBV drivers that are also prevalent in Eastern Province.

- **Unequal Power Relations:** The root cause of GBV lies in the unequal power relations between women and men, which also results in women having fewer opportunities to participate in key decision-making positions and less access to productive resources. When women feel sidelined in decision and access to household resources and try to take an active role in these matters, the husband / partner may feel threatened, and the result is gender-based violence.
- **Negative gender norms:** Gender roles and norms that condone violence against women are deeply embedded to varying degrees throughout most societies and are responsible for violence perpetration and GBV actions are perceived to be normal.
- **Poverty:** Poverty exacerbates gender-based violence in many ways because it increases the economic vulnerability of women and girls, and perpetuates the dependency syndrome and cycle of violence
- **Alcohol Abuse:** Women whose spouses are associated with alcohol abuse face an increased risk of Intimate partner violence.
- **Patriarchal Values:** These values promote male dominance and reinforces gender imbalance against women by preserving certain benefits in favor of men. Findings revealed single women struggle to access land, increasing their risk of multiple forms of GBV, including property grabbing, physical violence, psychological violence, social isolation, and sexual abuse and exploitation. Widows – and especially childless widows–are particularly vulnerable to GBV. They are commonly humiliated and chased out of land upon the death of their husbands. A woman in an FGD amplified the impact of patriarchal values when she narrated the experience her female relative went through as follows:

'Maureen was married for 10 years and did not have children when her husband died. This was her husband's second marriage, and until then she had a good relationship with his children. Soon after this death, they demanded that she stop using the field she cultivated with her late husband and leave the village. Scared of the verbal abuse and threats of physical violence, Maureen obliged and left for her village 'Testimony of a woman in a FGD in Kauzu Village, Chipata District, December 2024.

23.5 Different Forms of GBV in the Field

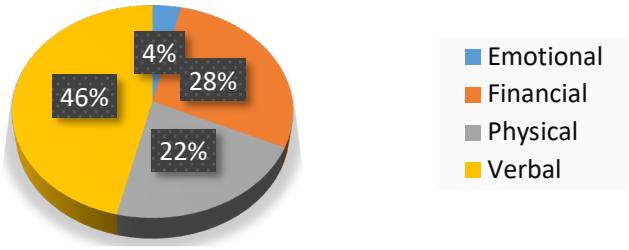
Given below are the National GBV statistics on Forms of Abuse[25]

Form of Abuse	Physical	Sexual	Emotional	Economic	Total
No. of Cases	13,352	3,689	1,558	5,657	24,290

Statistics disaggregated by Sex:

Male	Female	Boys	Girls
M	F	M	F
3,784	14,190	1,289	5,027

The survey results indicate varying perceptions of the most prevalent forms of Gender-Based Violence (GBV). A significant majority, 46%, identify verbal abuse as the most common type, followed by 28% who point to financial abuse. Physical abuse is recognized by 22% of respondents, while only 4% consider emotional abuse to be the most prevalent.



Graph 40: Most Common Form of GBV in the Community

In Chipata, a significant number of Gender-Based Violence (GBV) cases were recorded in the third quarter of 2023, with 643 cases reported, highlighting the prevalence of GBV in the region[26]. The most common form of GBV in Chipata, as reported in the data, is verbal abuse, followed by physical abuse. Eastern Province GBV Statistics Report (Third Quarter 2023)

As reported in the data from the survey, FGD findings show that women, children and elderly people faced different forms of GBV. Evidence collected from consultations with women men and mixed groups of men and women revealed that gender-based violence included economic violence, which includes denial of access, ownership, and inheritance rights, forced displacement, and property grabbing, often accompanied by physical violence

[25] National GBV Statistics (2022)
[26] Launch of 16 Days of Activism (2023) GBV Statistics Report

Women in FGD groups highlighted emotional abuse that involved degrading or humiliating conduct a wife or husband has towards the spouse. Emotional abuse was also experience by both men and women. Within the homes, participant indicated that domestic violence was the most prevalent. Men also suffering from psychological and emotional abuse attributing this to the empowerment of women financially. Husbands were denied conjugal rights, rights to food, laundered clothes etc.

Stakeholders identified negative cultural and social norms, which uphold unequal power between men and women, poverty, alcohol and substance abuse, extra marital affairs as key contributing factors to GBV in the communities.

23.6 Perpetrators of GBV

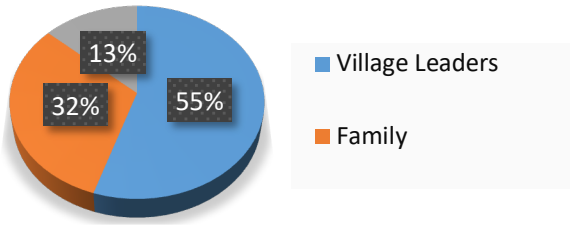
Gender-based violence (GBV) refers to any act done to someone against their will as a result of gender-norms, and unequal power relationships. Issues raised in FGD discussion with people showed that the perpetrators of violence are men, and the victims are mostly female spouses or partners. Interviews with key informants reported that perpetrators of violence against women included spouses or romantic partner, friends, neighbours, strangers and even family members.

23.7 Primary Victims of GBV

The Survey findings revealed that certain groups are vulnerable to violence including children, youth and women at home and the community. Stakeholders interviewed and discussions in FGD revealed that nninety-two per cent (92%) of people that experienced violence were women followed by men at 8%.

23.8 Primary Actors to who cases are reported

The findings in the Survey, show that incidents of GBV cases are present in the project area but cases are reported mainly to the village elders (55%), 32%of the cases are dealt with by family and 13% are taken to the elderly members of the community (traditional counsellors)

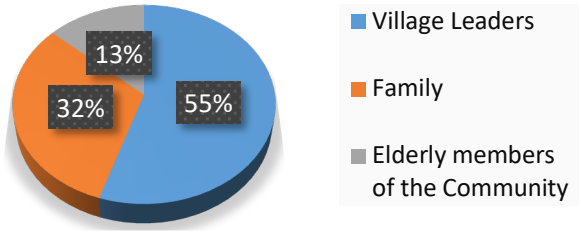


Graph 42: Primary actors to who cases are reported

During FGD, it was reported that normally complaints go to family members and if the issue is not resolved, it is reported to the Village headman. If the headman fails to resolve the issue, they go to the Police GBV desk. Women are more likely to reporting their GBV cases to the police desk than men.

23.9 Reporting and Barriers to Reporting Gender Based Violence

The findings in the Survey, show that incidents of GBV cases are present in the project area but cases are reported mainly to the village elders (55%), 32%of the cases are dealt with by family and 13% are taken to the elderly members of the community (traditional counsellors)



Graph 43: Reporting and Barriers to Reporting GBV

Interviews with women and stakeholders revealed that the majority of GBV cases were not reported. GBV arose in homes because of superstitious beliefs, alcoholism, communication breakdown between husband and wife, and poverty. Multiple reasons were cited by women in an FGD discussion why they do not report GBV cases which included dependency on the abuser for survival for the women and their children, to offer protection to the children, the hope that the abuse will end, fear of losing their home combined with the fear that no one will believe that the abuse happened.

23.10 Gender based Violence Survivors Rights

Existing data shows that GBV continues to be highly prevalent in Zambia, with women in rural areas being more likely to experience sexual violence than those in urban areas. 14% of women aged 15-49 in Zambia have experienced sexual violence[27].

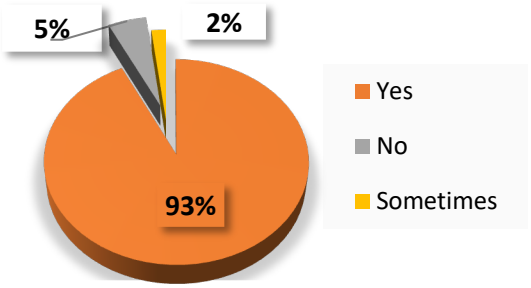
In the Zambian context "Gender-Based Violence Survivors" likely addresses the challenges and support needs of survivors of gender-based violence (GBV), emphasizing the importance of survivor-centered approaches, confidentiality, safety, and access to services. Need for Survivor-Centered Approach entails that all actions should be guided by the survivor's choices, rights, and dignity, prioritizing their safety and well-being.

Survivors have the right to choose who they tell their story to, and they should receive equal and fair treatment regardless of their characteristics; ensuring access to medical care, psychosocial support, legal aid, and other relevant services is crucial. However, limited interventions to address the economic vulnerability of GBV survivors are a concern.

Data reported show weak GBV Information Management System; inadequate Funding; limited Capacity of Service Providers; as well as lack of Accessibility of services like One-Stop Centers (OSCs) and fast-track courts can make it difficult for survivors to access help[28].

The Survey indicates that 93% of the respondents are aware that GBV survivors have rights, 5% said the survivors have no rights while two (2%) thought the only sometimes do survivors have rights.

[27] The World Bank (2022). Zambia Gender-Based Violence Assessment. The World Bank 1818 H Street NW, Washington DC 20433.
[28] Gender-Based Violence Survivors" Report



Graph 44: GBV survivors and rights

FGDs reported Lower levels of education, gender inequality, spouse quarreling, infidelity, beatings, and the practice of "Lobola" (bride price) have been identified as contributing factors to GBV. Also, that in Chipata and Vubwi districts poverty, substance abuse, and inactive law enforcement can fuel acts of violence.

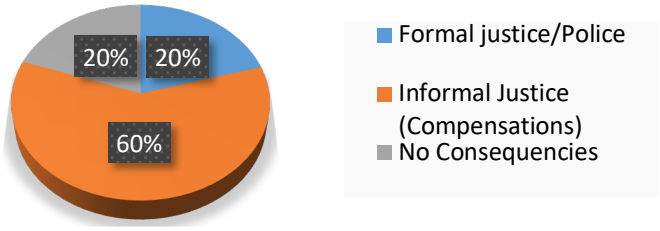
Although the survey indicates that 93% of the respondents are aware that GBV survivors have rights, FGD findings revealed the lack of widespread One-Stop Centers (OSCs) and Village-led One-Stop Centers (VLOSCs), as well as temporary protective shelters, limits access to essential support services for GBV survivors.

FGDs also reveal that fast-track courts, crucial for addressing GBV cases, are not widely accessible, with only six provincial capitals having them, and four more under construction. Inadequate funding for Victim Support Units (VSUs) hindered their ability to effectively respond to GBV cases.

FGDs reveal that some magistrate courts lack the capacity, knowledge, and skills to effectively handle GBV cases, potentially leading to re-victimization. FGD data reported lack of capacity within the health and justice sectors to provide quality, survivor-centered GBV services; and those Limited interventions to address the economic vulnerability of GBV survivors is a cancer.

23.11 Consequences of GBV Perpetrators

In rural Zambia, consequences for perpetrators of GBV can include legal prosecution under the Anti-Gender Based Violence Act if reported to Police, reprimands from traditional leaders, compensation to the victim and social stigma. However, access to justice can be limited due to the long distances to Police stations, cultural norms, and fear of retaliation. All these factors often lead to underreporting of GBV cases. Findings revealed that most people report to elders, family members or leaders.



Graph 41: Consequences for Perpetrators

During the question and answer session in the FGD, more than half (60%) of the respondents prefered informal justice (Compensation), 20% preferred formal justice through the courts of law while (20) reported that there were no consequences for GBV at all. These findings suggested that mediation was the most popular method for settling disputes in families and communities. People that experience difficulties turn first to their families, and if it does not help, they go to the village headman. A local village headman said: 'We have a village committee that call both parties in a conflict to a meeting by the Musasa tree. The purpose of the meeting is to help them settle their differences. Community members can also use friends and family members to help in mediation'. (Local leader in Sekera area of Chipata District, December 2024). The use of mediation emerged prominently as a pivotal measure for the preventing and addressing GBV in many communities visited.

24.0 CONCLUSION

The study population comprised members from 15 villages along the right of way for the proposed transmission line. Agriculture is the main form of land use. Main crops grown include maize, groundnuts, soyabeans, sunflower among others. The respondents have a low education attainment level at 55% primary education; lack of fund was cited as the main challenge in pursuing education. Malaria is the most dominate disease is treatable at the local health centres, but for complicated illnesses people have to travel long distances to reach the District Hospitals in town. The study found the firewood is the most common source of energy for heating and cooking an accounted for 92% energy used in the project area. About 91% of the households in the project area had no access to electricity and only 9% had.

Ownership of land is through inheritance. Regarding irrigation, 91.6% of these farms had no access to irrigate and depended of the seasonal rains. Transport in this project area is not well developed with a use of motorbike being the most common form of transport used. The average household income is low, between ZMK 551 and ZMK 1000, sources of which include sale from crops and general trading. Regarding access to water, 56% of drinking water is from boreholes, only 3% use piped water. In terms of sanitation, 90% used pit latrines; and 3% use septic tank and soakaways. The population was aware of GBV, with married women and girls being the main victims, although men also experience GBV at the lower level. Cases of GBV are mostly handed within the family and not through the formal Government structures. Disruption of household income was in the last two years was caused by loss of employment followed harvest failure attributed to climate change issues. The quality of health care was deemed satisfactory by more 50% of the population and households reported visiting a health centre once in three months. Water for drinking is mainly from wells and artisan wells as potable water is non-existent. Markets are very far from homesteads. Infrastructure such bridges and roads are in poor state of repair in the rural areas of both Chipata and Vubwi Districts.

REFERENCES

Chipata City Council, Joint Integrated Development Plan (Chipata, Chipangali and Kasenengwa): 2021 – 2030, 2021, Chipata
Vubwi Town Council, Vubwi Integrated Development Plan: 2020 – 2030, 2020 Vubwi
Zambia Statistical Agency, Living Conditions Monitoring Survey, 2022, Lusaka
Zambia Statistical Agency, Living Conditions Monitoring Survey, 2015, Lusaka
Zambia Statistical Agency, 2022 Census of Population and Housing: Summary Report, 2024, Lusaka

ANNEXURE

SOCIO-ECONOMIC SURVEY QUESTIONAIRE

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

SOCIO-ECONOMIC SURVEY HOUSEHOLD QUESTIONNAIRE

INTRODUCTION

My name is ---------- from GOPA-intec working in collaboration with ZESCO. We are conducting a Socio-economic survey as part of the Environmental and Social Impact Assessment study for the proposed Malawi - Zambia 400kV Transmission Interconnector Project. The survey seeks to collect social and economic information about the communities along the proposed transmission line route in Chipata and Vubwi districts. Your household has been selected as a respondent to participate in this survey. I would like to ask you some questions. The information you will give me is for the study report only and all information will be kept strictly confidential. The interview will take only 30-40 minutes. Your participation is completely voluntary and you may skip any question you are not comfortable to answer. May I continue?
YES **NO** **(Tick)**

IDENTIFICATION PARTICULARS

Serial No: .....

Date of interview: ……..…

Name of interviewer: .....

Interviewer Code ….....

Household ID: _____

Name of Village: _____

Village Code: _____

Date of Interview: _____

Time – Begin: _____

PART A. BASIC INFORMATION ABOUT THE RESPONDENT

A1	Name of Respondent	*Enter name*
A2	Address of Respondent	*Enter Address*
A3	Phone number of Respondent	*Enter Phone number*
A4	Is the respondent the Head of the Household?	1 (Yes) 3 (No
A5	What is your marital status?	1 Married 2 Single 3 Divorced 4 Widowed
A5b	Is your marriage polygamous or monogamous	1. Polygamous 2. Monogamous
A6	What is your family's resident status?	1 Resident 2 Refugee 3. Other (specify)
A7	How many people currently live in this household?	*Enter number of people*

Household Roster (HR) (only the oldest 5 members of the household should respond to this section. Start with the oldest)

Person Identification	**A8. Gender**	**A9 Relationship to Head of Household**	**A10 Age**		**A11. Highest Level of Education Attained**	**A12 Employment status (adult member)**	**If not employed.** **A13 Economically inactivity status (adult member)**
List all who live and feed in that household that are older	1. Male 2. Female	1. Household Head 2. Spouse		Skip A11 – A13 for household members younger	1.No formal education 2. Nursery	1. Private company	1. Housewife 2. Pensioner, non-worker

than 5 years starting from the head of the household		3. Child 4Grandparents 5. Uncle/Aunt 6. Inlaws 7. Nephew / Niece 8. Parent (to Head of HH or spouse) 9. Sibling (brother or Sister) 10. Grandchild 11. Non-relative 12. Other (Specify)		than 18 years old	3. Primary 4.Secondary 5. Tertiary	2. Commercial /Trade 3.Government 4. Agriculture (farmer, etc) 4. Military service 5. Law enforcement 6. Working on household Farm 7. Student, working 8. Self-employment 9. Economically inactive 10. Other (specify)	3. Student, non-worker 4. Invalids 5. Invalids (temporary) 6. Unemployed, Has profession 7. Unemployed Has no profession 8. Other (specify)
Name of Household member1							
Name of Household member 2							
Name of Household member 3							
Name of Household member 4							
Name of Household member 5							

PART B - EDUCATION

B1 How far are the following from your homestead?	Distance (km) 1. Within 1km 2. 2 km 3 3km – 4km 4. 5km 5. more than 5km
a) Nursery school	
b) Primary School	
c) Secondary School	
d) College	
e) university	

B2 How many members of your household have attained	Indicate the Number	B3 How many members above 4 years of your household have not had access to education. (write number)	B4 Of these, how many are girls and boys?		
1. Primary education			1. Number of Girls	2. Number of Boys	3. Under School going age
4. Secondary education 5.					
6. Tertiary education					
7. Higher education					

B5 What are the reasons for not going to school?

1. Lack of funds
2. Long distance to school
3. Due to disability
4. Lack of school infrastructure
5. Lack of school uniform
6. Lack of teaching staff
7. Lack of sanitary wear

PART C: HEALTH

C1 In the last 12 months, how often did a member of your household have a non-serious illness?

1. Once 2. Usually 3. Several times

C2 In the last 12 months, how often did a member of your household have a serious illness?

1. Once 2. Usually 3. Several times

C3 In the last 2 years, how has the overall health of most of the people in your village changed? (Health status of community members)

1. Improved 2. Worsened 3. I don't know

C4 How much time does it take for members of your household to reach the nearest health centre that can diagnose simple, or treat simple injuries and illnesses and prescribe basic medicines?

1. 30 minutes 2. 1 hour 3. 2 hours 4. Half a day 5. Full day 6. Other (specify)

C5 How much time does it take for members of your household to reach the nearest health centre that can diagnose and treat complicated or serious illness or injuries (can perform surgery)

1. 30 minutes 2. 1 hour 3. 2 hours 4. Half a day 5. Full day 6. Other (specify)

C6 How often does the nearest health centre have enough medical supplies to provide adequate health care?

1. Always 2. Sometimes 3. Never 4. Not sure

C7 Does the nearest clinic have facilities for women's health (eg. Maternity wards, ante natal services) (**Women's health**)

1. Yes 2. No

C8 How many members of your household have had births in the last one year? ----------

C9 Which diseases or ailments has any members in your household had in the last 12 months?

1. diarrhoeal related 2. Chest related 3. Malaria 4. Other (specify)

C10 Who in your family sleeps under a mosquito net?

1. Children under 5 years 2. Pregnant women 3. Everybody in the household 4. None in the household 5. Other (specify)

C11 If anyone does not sleep under a mosquito net, why not?

1. Cannot afford one 2. Health facility did not distribute

3. Only children under 5 were given

C12 Does the household take out medical insurance?

1. No 2. Never 3. Never heard of health insurance (NHIMA) 4. Yes

* Yes should be No. 1 or 2

C13 How many members of your household, including infant children, died in the last 12 months? ----
---

C15 Has the household been educated about HIV/AIDS?

1. Yes 2. No

PART D: MARKET ACCESS

D.1 Do you find it easy to access the market for goods and services?

1. Yes 2. No

D2 If No, what are the challenges

1. Limited distribution network
2. Lack of infrastructure
3. High transport costs
4. No entrepreneurial knowledge

D.3 (Distribution Channels)

How reliable is transport infrastructure in your area for delivery of goods?

1. Excellent 2. Good 3. Fair 4. Poor

D.4 Do you have challenges in storage facilities?

1. Yes 2. No

D.5 Are there regulatory barriers that impact on your ability to operate in the market?

1. Yes 2. No

D.6 To whom do you sell your merchandise?

1. Local Market (within the village) 2. Town Market 3. Don't sell at all

D.6 To whom do you sell your merchandise?

1. Local Market (within the village) 2. Town Market 3. Don't sell at all

PART E: ECONOMIC ACTIVITY

Interview the Head of the Household. If the household head is not available, interview the key informant or spouse.

E1: What is your current employment status?

1. Permanent worker 2. Temporary worker
3. Unemployed → go to E5 4. Seasonal
5. Casual Worker 6. Task-based
7. Other (specify)

E2. What is the type of business you are mainly working in?

1. Farm – Livestock 2. Farm – crops
3. Manufacturing 4. Service provision
5. Administrative or legal 6. Teacher
7. Health Care 8. Other, specify

E3. Who owns the establishment that you are working in?

1. Myself / self-employed -> go to B6 2. Family member
3. Privately owned 4. Government
5. NGO/Non-profit 6. Other specify

E4. Were you paid last month?

1. Yes 2. No 3. Paid in-kind (food, place to sleep)

E5 If Unemployed in E1, what is the main reason for your current unemployment?

1. Illness 2. Maternity leave
3. Attending to a sick person 4. Education / training
5. Weather conditions 6. No work available
7. Dismissed 8. Incapability
9. Attending children 10. Other, specify

E6 If self-employer, how many workers do you employ (excluding family members)?

ENTER NUMBER OF EMPLOYEES ----------

E7 Was the head of the household available for the interview?

1. Yes 2. No

PART F: INCOME AND EXPENDITURE

F.1. What is the financial situation of the family? (**Prompt the answers**)

1. Able to meet all needs
2. Do not have financial difficulties.
3. Barely make ends meet
4. Suffering indigence
5. Don't Know

F2. How did the financial status of your family change in the last year? (**Prompt the answers)**

1. Much worse 2. Worse 3. The same 4. Improved 5. Much improved

F3. What was the average monthly income of your household during the last year?

1. Less than 50 ZMW
2. 50 – 125 ZMW
3. K126 – 225 ZMW
4. 226 – 235 ZMW
5. 326 – 500 ZMW
6. 501 – 551 ZMW
7. 551 – 1,000 ZMW
8. 1,001 – 2,000 ZMW
9. More than 2,000 ZMW
10. I don't Know

F4. Source of household income in the past month in ZMW amount

Enter the amount in ZMW for each source of income. If none, write 0

(Prompt the categories)

S/N	Source of Income	Amount in ZMW
	(i) Agriculture (on-farm income)	
1	Crops	
2	Livestock	
3	Forestry Income (wood, herbs, trees, nuts, etc.)	
	(ii) Off-farm income	
4	Regular income (wages or salaries)	
5	Irregular Income (Example, bonuses, overtime, 13th month/cheque etc.).	
6	Social transfers: Hardship (social), allowance (pension, disability grant, loss of breadwinner, etc) or benefits (to children under 16, guardians of	

	parentless children, low-income families having children under 1 year old, TSA, Funeral or for unemployment etc.	
7	Rental (example, land, apartment, house, store, shop, transport, etc.).	
8	Foreign remittances or help from relatives (example, transfer from gifts, non-foreign remittances	
9	Entrepreneurship – private businesses	
10	Sale of property (land, real estate, durable goods, assets, etc.)	
11	Other (specify)	

F5. How do you estimate current level of expenditure of your family on the following? (**Prompt the categories and answers)**

S/N		**(a) Food Consumption**	**(b) Clothing**	**(c) Utilities**
1	Much less than adequate			
2	Less than adequate			
3	Adequate			
4	More than adequate			
5	Much more than adequate			

F 6. What do you usually use to heat/prepare meals

1. Electricity 2. Gas 3. Wood 4. Kerosene

5. Charcoal 6. Other fuel (specify

F7 Has inflation affected the household's purchasing power over the past year?

1. Yes 2. No

PART G. ASSET STRUCTURE AFOR HOUSEHOLDS

Please specify whether each of the below listed items is present in your household	G1. How many of the (items) does the household own? ENTER NUMBER	G2. When did you acquire the newest (item)? 1. Less than 3 months ago	G3. How did you acquire the (item)? 1. Purchased in full 2. purchased with credit/loan	G4. Value of item (if you bought it, how much money did you spend on it?

Prompt the list one by one		2. 3 – 6 months 3. 6 – 12 months 4. 1 – 2 years 5. 2 – 4 years 6 4 – 6 years 7. 6 – 8 years 8. 8 – 10 years 9. Over 10 years	3. as a gift -> go to next section 4. provided by job/employer -> go to next section 5. other (specify)	Or If you had wanted to sell the item, how much would you be able to sell it for when you received it?
1. Agriculture land (hectares)				
2. House(s)				
3. Trading Depot (Shops, etc.)				
4. Cars				
5. Trucks				
6. Tractors				
7. Agricultural equipment				
8. Motorbikes				
9.Bicycle				
10. Refrigerator				
11. Generator				
12. Video/DVD/CD player				
13. TV				
14. Radio				
15. Computer				
16. Cattle				
17. goats				
18. Poultry				
19. Other livestock				
20. Other (specify)				

PART H. CURRENT PROBLEMS IN THE AREA

H1: Would you please indicate the three to five problems which you have in your area.

(1. "Least severe" and 5. "Most severe". Rate 0 if not applicable and DO NOT prompt the respondents)

S/N	Problem	Ranking					
		0	1	2	3	4	5
1	Insufficient income						
2	Insufficient land						
3	Insufficient farming field and arable land						
4	Harvest failure						
5	Many livestock died						
6.	Insufficient marketing conditions (It is difficulty to sell agricultural produce)						
7.	Environmental Problems (Drought)						
8.	Health problems (disease outbreaks)						
9	Education problems						
10	Social environment problems						
11	Flood problems						
12	Bad road access						
13	Unavailability of electricity services						
14	Unavailability of gas station						
15	Not enough materials for heating						
16	Insufficient water (quality and availability of, and access to clean water						
17	Insufficient irrigation water						
18	Problems with sewage system						
19	Bad or inadequate schools						
20	Unemployment related						
21	No problems						
22	Other (specify)						

H2 What is your main source of drinking water?

1. Water pipeline into the house
2. Water pipeline outside the house
3. Artesian well
4. Water brought by trucks
5. Water is bought
6. Other (specify)
7. I don't know

H3 Which problem with drinking water do you currently face? (select all the apply)

1. Water pipeline missing
2. Water is bad (irregular)
3. Water quality is bad
4. We do not have any problems
5. I don't know

H4 How frequent did you of your family members have water-related disease during the last year?

1. Every week 2. Every month 3. Every 3 months 4. Every 6 months 5. Once a year 6. I don't know
7. Never

H5 When you or your family member(s) were last sick with water-related diseases, where did you or your family member(s) get treatment?

1. Rural health facility
2. District Hospital
3. Self-treatment
4. Not treatment

H6 Which effluent disposal line (sewage system) do have?

1. Pit latrine
2. Centralised effluent disposal line (sewage system)
3. Sewage well outside of the house to the street
4. Sewage well in/outside of the house to the street
5. Sewage well in/outside of the house to the river
6. Sewage well in/outside of the house to the sewer hole
7. Other (specify)

H7 How long did it you, in your last visit to access treatment by the following mode of travel? **(Enter the time in minutes. If not applicable, put 0)**

S/N		**Time (minutes)**
1	Motorbike	
2	Bicycle	
3	Scotch cart	
4	Walking	

H8 Could you please rate the quality of the following items in your area?

S/N	Infrastructure and Services	Ranking				
		1. Not Existing	2. Poor	3. Satisfactory	4. Good	
1	Road access					
2	Bridges					
3	Public transport					
4	Market					
5	Health facilities					
6.	Community centres					
7.	Pre-school					
8.	Primary schools					
9	Secondary schools					
10	Portable water at home					
11	Water supply regularity					
12	Electricity connection					
13	Regularity of electricity					
14	Gas					
15	Health					

H9. How often do you visit a rural health facility?

1. Once a week
2. Once a month
3. Once every 3 months
4. Once in 6 months
5. Once in a year
6. Never visited
7. I don't know

H10 In the past 12months, did you go to a doctor for preventative check?

1. Yes
2. No

H11. Could you please rate the accessibility to rural health facility. (prompt the answer).

1. No access 2. Poor 3. Average 4. Satisfactory 5. Very Satisfactory 6. I don't know

H12. Could you please rate the rural health facility infrastructure. (prompt the answer).

1. Highly Deteriorated 2. Deteriorated 3. Little Deteriorated 4. Fairly good condition 5. Very good condition 6. I don't know

H13 Could you please rate the road accessibility to primary schools. (prompt the answer).

1. No access 2. Poor 3. Average 4. Satisfactory 5. Very Satisfactory 6. I don't know

PART I – ASSOCIATIONS / SOCIETIES

I1. Do you have any nonpolitical organizations, NGOs, associations, or societies in your area?

1. Yes

2. No -> skip to question F3

3. Don't Know -> skip to question No. F5

I2. Over the last 2 months, have you been active in these?

1. Yes

2. No -> skip to question F5

I3. If "Yes" to I2 above, could you specify which organization you have been most active in?

1. WWF 2. Mary's Meals

3. Global Youth Support Organisation 4. Chipata District Women's Organisation

5. Caritas Chipata 6. COLEDEP

7. Others, specify

I4. What is the value of money and/or materials your household gave to the association named in question I3 in the past three months?

Enter amount in ZMW ----------

I5. What is the total time your household spent for the association named in question I3 in the past 3 months?

ENTER NUMBER OF DAYS ----------

I6. What is the main purpose/activity of the association?

1. Poverty Alleviation
2. Infrastructure upgrade
3. Food security improvement
4. Agricultural productivity/Improvement
5. Health improvements
6. Education improvements
7. Conservation farming
8. Other, Specify

PART J – Social Capital

INTERVIEW THE HEAD OF THE HOUSEHOLD. If the head of the household is not available, interview they key informant or spouse.

J1. What is the maximum monthly amount you would pay for electricity?

Enter amount in ZMW ----------

J2. Agree or disagree. In this village it is safe to leave your house to your neighbour when you are travelling?

1. Agree 2. Neither agree nor deny 3. Disagree 4. Do not own a house

J3. If you suddenly had to go away for a day or two, could you think of at least one person from the following: -

1. Members of my extended family
2. Friends
3. Community leaders
4. Members of my religious organizations
5. IDPs
6. Neighbours

J4. According to your experience, if someone forgets to lock a bicycle/motorcycle at night, it will be stolen?

1. Yes 2. No 3. Don't Know

J5. To whom do you usually seek advice/suggestions for processing your harvested commodities or other tradable goods?

1. DACO
2. Municipality
3. Induna
4. Others (specify)
5. Does not apply to me

J6. To whom do you usually seek advice/suggestions when you need a financial loan?

1. Chilimba members
2. Banks
3. Friends and Family
4. Other lending entities or individuals (specify)

J7. How much do you trust ZESCO in the following areas: *Prompt the categories and answer options*

Rate on a scale of 1 – 4 (1 being the lowest). Prompt the categories and answer options

S/N	Description	Rating			
		1	2	3	4
1	Providing electricity to your household and community				
2	Managing conflict				
3	Managing your Grievance Redress Mechanism				

J8. How do the following groups benefit from community decisions?

Prompt the answer categories

S/N	Description	Rating		
		1	2	3
1	The relatively poor			
2	Older people			
3	Friends or family of local leader			
4	People that are well connected to the municipal government			
5	Women headed households			

Rating:

1. Doing better than the average person
2. Average
3. Doing worse than the average person

J9. How influential are you when decisions are made on issues that affect all villagers.? Do you feel that you personally play an influential role in affecting the outcome, for instance when you speak at village meetings or trying to persuade others?

(prompt the answer categories).

1. Not influential
2. Somewhat influential
3. Very influenced
4. I don't know

J10. Generally, what would happen if a household chose not to participate in community activities?

(multiple answers are possible) Prompt he answers

1. Nothing, this work is purely done on a voluntary basis
2. They would be criticized by members of the community
3. The would be criticized by the municipal government
4. They would not be helped in the future if they needed help from their community
5. Other, specify

J11. If you had concerns about how things were going in your village, there are some things that you might be able to do to make things better. I will read out a list of actions that you could take to ty to change the situation in your village.

For each one, I would like you to tell me whether or not you think these things would help?

(Prompt the list of answers)

S/N	**Possible Action**	**Answer**	
		1. Yes	**2. No.**
1	Complain to a village Headman or Headwoman		
2	Complain to a community leader		
3	Complain to a religious leader		
4	Appeal to local NGOs for assistance		
5	Take part in community wide meetings		
6	Express my opinions during elections		

PATH K – FOR HEAD WOMEN IN THE HOUSEHOLD

For the spouse of head of household or woman household head only – Explain to the respondent that the information in this section will not be shared with anyone

K1. Head Woman: How often are you consulted by your husband, father, son, brother or in-laws on financial matters?

1. Often 2. Sometimes 3. Never

K2. If you compare YOUR situation to 2 years ago, would you say that your financial independence within the household has improved?

1. Worsened substantially
2. Not improved at all or slightly worsened

3. Stayed the same

4. Improved just a bit

5. Improved a lot

K3. If you compare the situation of ALL women within your community to 2 years ago, would you say that your financial independence within the household has improved?

1. Worsened substantially

2. Not improved at all or slightly worsened

3. Stayed the same

4. Improved just a bit

5. Improved a lot

K4. How many minutes a day do you spend on? (if not, put '0')' ENTER THE MINUTES SPENT

S/N	Activity	Minutes
1	Fetching Water	
2	Marketing products	
3	Working for agricultural production - crops	
4	Working for agricultural production - animals	
5	Spending time with children	
6	Household chores like cooking, cleaning the house etc.	
7	Community activities	

K5. Have you experienced GBV in any form?

1. Yes 2. No

K6. If Yes, how did you deal with it?

1. Reported to the Police
2. 2.Reported to my family
3. Reported to Village Headman/Headwoman
4. Reported to one-stop GBV Station
5. 5. Kept it to myself

K7. Was the GBV case resolved to your satisfaction?

1. Yes 2. No

K8. If No, did you take the case to a higher office?

1. Yes 2. No

K9. If No to K8, state the reasons ----------

K10. Enumerator: Was there a man present at the time of the interview?

1. Yes 2. No

PART L: FARM PRODUCTIONS AND PRICES

(Interview the head of the household, key informant or spouse)

L1. Specify the size of your land

Indicate “88” if the person does not know and “99” if not applicable.

S/N	Type of Land	Size of Land (Hectares)
1	Household plot	
2	Farm land (rented)	
3	Purchased farm land	
4	Inherited	
5	Rented land from neighbour	
6	Other land (specify)	

L2. If you own farm land, did you sell your land in the past 2 years?

1. Sold the land completely
2. Sold the land partially
3. Did not sell the land
4. Not owning farm land.

L3 How is the farm land used? Don't fill this section if there is no land Don't fill this section if there is no land

S/N	Landuse	Size (Hectares)	Yield in tons of major crop	Estimated Value
1	Irrigated			
2	Non-irrigated			

L 4. Where do you usually sell your products? (There maybe more than one answer). Mark 'yes' in the cell that applies for each column.

S/N	**Selling Place** (select all that apply)	(a)	(b) Crops	(c) Livestock Product
1	Directly to consumers in village/urban centre at the farm gate			
2	To wholesale buyer at farm gate			
3	To wholesale at village/urban centre			
4	Sell products out of the country			
5	Other (specify)			

L5. Do you have access to irrigation facilities?

1. Yes 2. No

L6. Do you have access to farming implements?

1. Yes 2. No

PART M: BANKING FACILITIES

M1. How far is it to reach the closest commercial bank or credit union?

S/N	Mode of Transport	Distance (km)	Time it takes to reach (minutes)
1	Motorbike		
2	Bicycle		
3	Scotch cart		
4	Walking		

M2. Have you taken a loan from any of these institutions in the last 3 years or do you consider taking out a loan? *If **No** to all "current borrowing" skip to next section (N)*

1. Yes 2. No

Prompt table options

Institution	(a) Current Borrowing	(b) For future needs, where will you borrow?
1. Commercial Bank		
2. Credit Union		
3. Relatives/Friends		
4. Money lenders		
5. Others		
6. No borrowing at all		

M3. What was the purpose of the loan? (more than one option possible)

1. Agriculture
2. Food consumption
3. Education
4. Marriage / Death
5. Health related
6. Buying / constructing house
7. Buying machinery
8. Investing in the farm
9. Other (specify)

M4. What are the load details**?**

a. When did you take it out? _____ (year)

b. For how months years is the loan? ---------- months

c. What was the size of the loan? _____ZMW

M5. How do you save money?

1. At home 2. Mobile money 3. At a commercial bank
4. Chilimba/village Banking

5. Family/friends 6. Other, specify

PART N: Economic Disruption in the last 12 months

(INTERVIEW THE HEAD OF THE HOUSEHOLD)

Now, I would like to ask about economic, disorder in the household in the last 12 months

N1. Total loss/reduction of income due to the event in the last 12 months? (in ZMW)

Type of economic disruption ***Prompt the list*** *FOR EACH OF THE OPTIONS 1 – 7 ASK QUESTIONS N1 – N2* *PROMPT THE LIST*	**N1. Total loss/reduction of income due to the event in the last 12 months? (in ZMW)** (POTENTIAL LOST/REDUCED INCOME, EXCLUDING THE MEDICAL EXPENSE, FUNERAL, REPAIR) Write "don't know" if no knowledge	**N2. What was done by this household to cope with the loss of income caused by this event?** **(Prompt as much as possible)**
1. Serious illness of a household member that required hospitalization or frequent medications		1. Sell household assets 2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family 5. Loan or gift from community members 6. Others _____ 7. Nothing
2. Loss of job or business failure experienced by a household member		1. Sell household assets 2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family 5. Loan or gift from community members 6. Others _____ 7. Nothing
3. Loss of business of a household member because of power interruption		1. Sell household assets

		2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family 5. Loan or gift from community members 6. Others _____ 7. Nothing
4. Harvest failure of a household member due to weather		1. Sell household assets 2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family 5. Loan or gift from community members 6. Others _____ 7. Nothing
5. Pest		1. Sell household assets 2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family 5. Loan or gift from community members 6. Others _____ 7. Nothing
6. Reduced household income due to the very low prices of crops/products		1. Sell household assets 2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family

		5. Loan or gift from community members 6. Others _____ 7. Nothing
7. Other _____		1. Sell household assets 2. Use Savings 3. Loan money from parties outside of the household 4. Loan or gift from friends/family 5. Loan or gift from community members 6. Others _____ 7. Nothing

PART O: QUESTIONS ON COMMUNITY PROJECTS

O1. Does your community have experience in implementing a small micro project?

1. Yes 2. No 3. I don't know

O2. Did you participate in a mobilization meeting as part of the community involvement for the project?

1. Yes 2. No

O3. Did you vote in the mobilization meeting?

1. Yes 2. No

O4. When was the community group started?

Enter the year ----------

O5. Is the community group still functioning?

1. Yes 2. No

O6. Does the community have a maintenance/sustainability fund?

1. Yes 2. No

O7. How much is currently in the fund?

1. _____ ZMW (indicate amount)

2. I don't know

O8. Is there electricity in your village/community?

1. Yes 2. No

O9. Have you ever heard about the ZESCO Interconnector Project?

1. Yes 2 No – skip to question O11

O10. Where did you hear about the ZESCO Interconnector Project?

1. Radio 2. Meeting 3. Induna 4. Other (specify)

O11. Would you like to be connected to electricity, if you currently not?

1. Yes 2. No

O12. In what type of project would you be interested in participating?

Please rank your top 4 priorities.

RANK PREFERENCE FROM 1 - 4

S/N	**Project Type**	**Rating**			
		1	**2**	**3**	**4**
1	Conservation Farming				
2	Enterprise Development				
3	Fish Farming				
4	Livestock Development				
5	Crop Management				
6	None				

PART P: CLOSENESS TO ZESCO ADMINISTRATION FOR GRM MANAGEMENT

P1. How many kilometres and time (minutes) do you need to reach the nearest ZESCO Office by road/car/walking

S/N	Mode of Transport	Distance (km)	Time it takes to reach (minutes)
1	Car		
2	Walking		
3	Bicycle or Scotch cart		

PART Q: SPECIAL NORMS & ATTITUDE TOWARDS GENDER EQUALITY

(INTERVIEW Wife and Husband separately)

One interview per household is enough. Ensure the spouse is not present for this section and ensure confidentiality.

Q1. Should men and women have equal rights on access to decision making/ education?

1. Yes 2. No

If No, explain ----------

Q2. Who makes decisions on how to spend money in the household earned from farming activities and other income sources?

1. Husband 2. Wife 3. Both husband and wife jointly

4. Husband, wife and children

Q3. Should men and women have equal rights on access to employment?

1. Yes 2. No

If No, explain _____

Q4. Do you think violence by a man against his partner or spouse is ever justified?

1. Yes 2. No

If yes, give reasons _____

Q5. Do you think violence by a woman against her partner or spouse is ever justified?

1. Yes 2. No

If yes, give reasons _____

Q6. Do you think a woman should be able to refuse to have sex with her partner or spouse?

1. Yes 2. No

Explain why ----------

Q7. Do you think a man should be able to refuse to have sex with his partner or spouse?

1. Yes 2. No

Explain why ----------

Perception on Gender Violence

Q8. Are you Awareness of the existence of Gender-Based Violence (GBV)

1. Yes 2. No

Q9. What is the Prevalence of GBV in communities?

1. High 2. Medium 3. Low 3. None existent

Q10. Are there Cases of Child abuse in your community?

1. Yes 2. No

Prevalence of Physical Violence by Marital Status

Q11. Who are the Primary Victims of GBV?

1. Married women 2. Women 3. Girls
4. Men 5. Boys

Who Are the Primary Perpetrators of GBV?

Q12 Who Are the Primary Perpetrators of GBV?

(1) Partners/spouses 2. Extended family members
3. Other immediate family members

Q13. What is the most common form of GBV in your community

1. Physical violence (fighting) 2. Verbal Violence
3. Financial Abuse 4. Emotional Abuse

Q14. Frequency of GBV Cases Being Reported In Communities

1. Always 2. Often 3. Sometimes 4. Never 5. Rarely

Q15. Primary Actors to whom cases are reported

1. Family 2. Village leaders (headman/woman, Chief)

3. Church leaders 4. Elderly members of the community/ village 5. Police

Q16. Consequence for Perpetrators after cases are reported

1. No consequence

2. Informal justice (compensation)

3. Formal Justice Police investigation/ apprehension)

Q17. Main Reason Why GBV Cases are not reported

1 Lack of awareness about victim rights and available support

2. Cultural reasons

3. Insufficient access/ lack of access to support services

4. Fear of stigma/ discrimination

Q18. If someone experiences GBV, do you think it is their fault?

1. Yes 2. No

Explain why ----------

Q19. Do you think survivors of GBV have rights?

1. Yes 2. No 3. sometimes

PART R. MICRATION TO AND FROM CITIES/TOWNS TO/FROM VILLAGES

R1. How many of your family members migrated within the last 12 months?

ENTER NUMER IN ROW THAT APPLIES

R1. How many of your family members migrated within the last 12 months? ENTER NUMER IN ROW THAT APPLIES	
Migration to and from	Number of Family members
Within Eastern Province	
From a city to a village/rural area	
From a village/rural area to a city	
From Chipata / Vubwi to another district with Eastern Province	
From another town within Eastern Province to Chipata / Vubwi	

From Chipata / Vubwi to another district outside Eastern Province	
From another town outside Eastern Province to Chipata / Vubwi	
From another country to Eastern Province	
From Eastern Province to another country	

PART S: Reproductive Health

(INTERVIEW Wife and Husband separately)

S1 How many children (own) do you have? ----------

S2. How many dependants (not own children) do you have? ----------

S3. How many children would you have loved to have or you would like to have? ----------

Give reasons for your answer ----------

S4 Who has the right to determine the number of children to have?

1) Husband 2. Wife 3. Husband and wife
4. Extended Family 5. Doctors and nurses (hospital)

S5. Do you have access to family planning services?

1. Yes 2. No

S6. If Yes, have you ever used Family Planning services before?

1. Yes 2. No

S7. If yes to S6, where do you get your family planning services from?
1. Local health centre
2. District Hospital
3. Within the community

S8. If No to S5, why don't you access to Family Planning services?

1. The health centre is far from home

2. There is no family planning service provide in our community / village.
3. I have never heard about family planning

ADDITIONAL COMMENTS ON THE SURVEY

THANK YOU FOR THIS INTERVIEW!

/END

WATER QUALITY ASSESSMENT REPORT

ZAMBIA

APR 2025

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

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Executive Summary

A comprehensive baseline water quality assessment was conducted along the 44 km Zambian section of the Zambia–Malawi 400 kV Interconnector corridor to evaluate the physicochemical characteristics of both surface and groundwater sources. The assessment aimed to identify sensitive receptors and potential water quality risks that may arise from construction activities associated with the Interconnector Project.

Sampling Scope and Methods:

Field sampling was performed at eight critical sites, including Mwanza Village Well, Lufazi County BH1, Makangila Primary BH2, Kauzu BH3, Nyonga Stream, Mkaya SN2, Lubwe, and Lutembwe SW6, which represented a mix of surface water bodies and community groundwater sources. Key water quality parameters measured included:

- Nutrients: Nitrates, Nitrites, Phosphates.
- Trace Metals: Copper, Lead, Manganese, Zinc, Cadmium, and Iron.
- Microbial Indicators: Faecal and Total Coliforms.
- On-Site Measurements: pH, Conductivity, Total Dissolved Solids (TDS), and Turbidity.

Key Findings:

Nitrate Contamination: All sites exhibited elevated nitrate levels, with the highest concentration recorded at Mkaya SN2 (26.2 mg/L). This suggests potential contamination from agricultural runoff or sewage effluent.

- Heavy Metal Contamination: Elevated lead levels were detected at Mwanza Village Well (0.16 mg/L), Kauzu BH3 (0.11 mg/L), and Nyonga Stream (0.12 mg/L), exceeding safe drinking water limits.
- Microbial Contamination: Severe faecal contamination was recorded at Kauzu BH3 (9400 CFU/100 mL), indicating direct sewage or animal waste pollution.
- Turbidity and Sedimentation: Nyongo Stream and Lubwe River exhibited elevated turbidity, highlighting the risk of sedimentation and erosion during construction.
- Sensitive Receptors Identified: Nyongo Stream, Lubwe River, Kauzu BH3, Mwanza Village Well, and Lufazi County BH1 were identified as highly sensitive to contamination due to their elevated pollutant levels.

Conclusions:

The assessment reveals that water quality in the project area is vulnerable to contamination from agricultural runoff, sewage, Possible industrial sources, and construction-related sedimentation. Elevated nitrate, lead, and microbial contamination levels pose significant health risks to local communities if not adequately managed.

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1. Introduction

1.1 Background

The Zambia–Malawi 400 kV Transmission Line traverses approximately 44 km through Zambia's Eastern Province, intersecting several seasonal streams, small rivers, and rural community water points. These hydrological features flow west-to-east toward the Luangwa River, ultimately contributing to the Zambezi Basin. The corridor crosses streams such as the Lutembwe, Nyongo, Mwami, Lubwe (Lubwa), Chibila, and Choli, which play critical roles in local water supply, irrigation, and livestock needs.

In addition to surface water, the project area includes community boreholes and protected wells, notably at Makangila Primary School, Mwanza Village, and Mwami. These serve as key rural water sources and were included in the baseline water quality assessment to determine pre-construction environmental conditions. Sampling was conducted at six surface water points and five groundwater points, ensuring that both natural streams and community water infrastructure were well represented.

1.2 Objectives of the Water Quality Assessment

The key objectives of the baseline water quality assessment were to:

- Establish the current physical and chemical characteristics of both surface and groundwater along the transmission corridor;
- Identify any existing contamination or risks to drinking water quality that could be exacerbated by construction.
- Characterise seasonal watercourses that may be sensitive to sedimentation or pollution during tower installation and road works;
- Ensure compliance with national and international water quality standards, especially the Zambia Bureau of Standards – Ambient standards in accordance with the Water Resources Management Act number 21 of 2011;
- Provide baseline reference data for future monitoring during and after construction, to evaluate project-related impacts.

1.3 Drainage Description

The Zambia–Malawi 400 kV Interconnector corridor crosses a network of seasonal streams and minor rivers, forming part of the Luangwa River catchment, which ultimately drains into the Zambezi Basin. These drainage features generally flow in a west-to-east direction, following the natural gradient of the Eastern Province's gently undulating terrain.

Early in the route, the transmission line crosses the Lutembwe River near Chinyauku, a prominent watercourse in the Chipata area. This section is characterized by riparian vegetation and seasonal wetland patches, which support local biodiversity and provide essential water resources to nearby communities.

As the corridor proceeds southeastward into more rural zones, it intersects additional small rivers and streams, including the Nyongo, Mwami, Lubwe (Lubwa), Chibila, and Choli Rivers. These watercourses are narrow and shallow for most of the year, but they expand during the rainy season, forming temporary floodplains and increasing the potential for surface runoff and erosion.

The transmission alignment mostly follows higher ground between drainage valleys, thereby minimizing direct disturbance to riparian systems. Where river crossings are necessary, spans are designed to pass over riverbanks and vegetated buffers, reducing the need for in-stream construction. This approach helps preserve aquatic habitats and natural hydrological functions.

Given the seasonal nature and ecological sensitivity of these streams, special attention is required at crossing points to maintain water quality and bank stability. This includes implementing erosion and sediment control measures, such as silt fences, vegetative buffers, and slope stabilization on approach embankments.

1.4 Equipment used

During the water quality assessment, field teams utilized a multi-parameter water quality meter to record on-site parameters including pH, EC, TDS, temperature, DO, and salinity. Additionally, a portable Eutech turbidity meter was used to assess water clarity and suspended sediment levels. These instruments enabled rapid and reliable baseline data collection from both boreholes and community wells, providing insight into existing surface and groundwater conditions ahead of interconnector construction.

1.5 Site Location

The Zambia–Malawi 400 kV Interconnector Project is located in Eastern Province, Zambia, covering approximately 44 kilometers from the Chipata West Substation to the Malawi border -Figure 1. The transmission line passes through Chipata and Vubwi Districts, following a generally southeasterly direction across predominantly rural and agricultural landscapes.

The corridor avoids major urban centers and supports regional energy connectivity by linking Zambia's grid with Malawi's. It is a key component of the broader initiative under the Southern African Power Pool (SAPP) to enhance cross-border electricity trade and reliability.

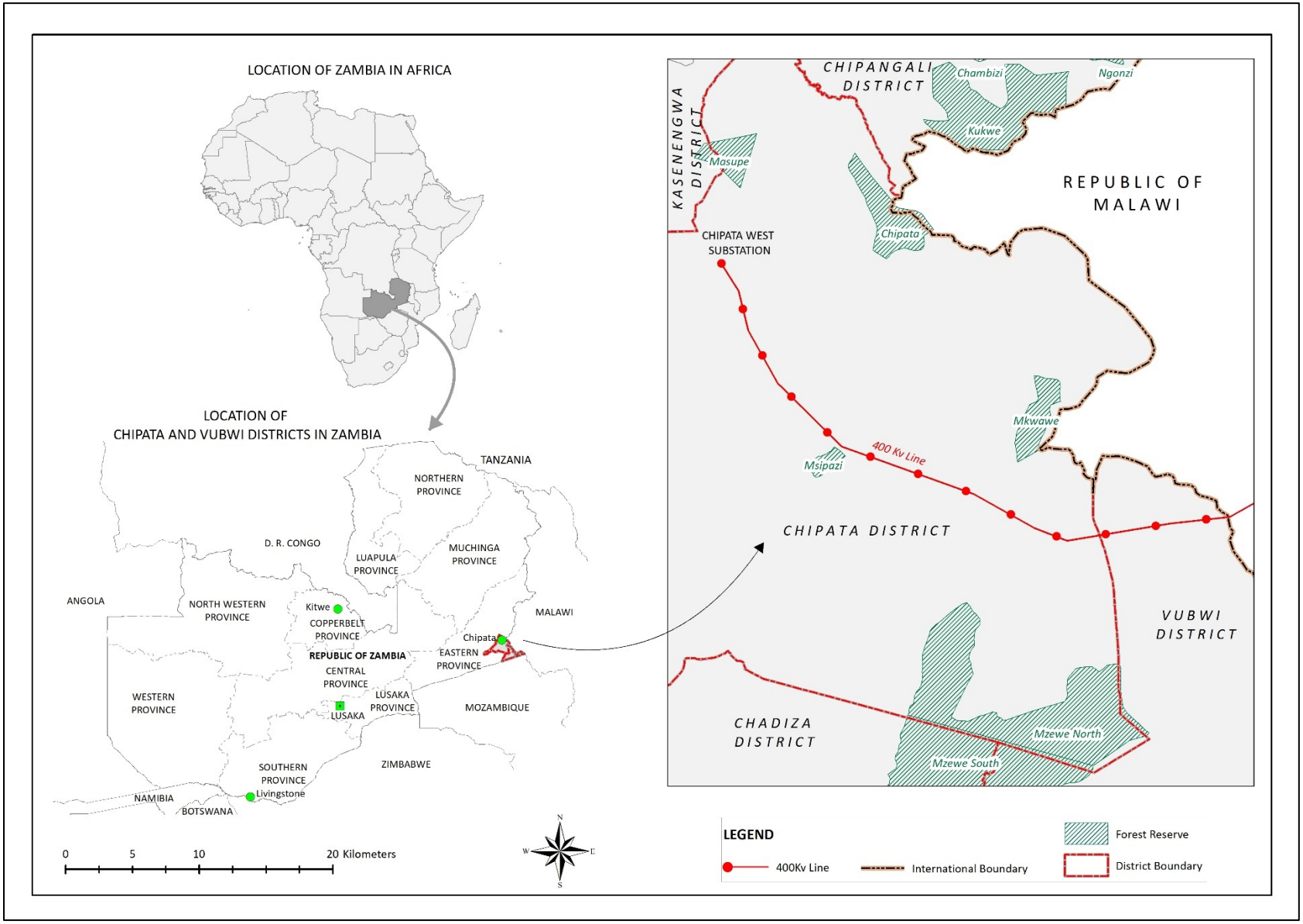

Figure 1:Location Map

2. Methodology for Water Quality Assessment

The water quality assessment for the Zambia–Malawi 400 kV Interconnector project aimed to establish a reliable baseline of both surface and groundwater quality along the 44 km Zambian section of the transmission line. The assessment followed recognized procedures in line with Zambia Bureau of Standards (ZABS) and World Health Organization (WHO) guidelines.

2.1 Sampling Locations

Sampling points were strategically selected to include - Figure 2:

- Streams and rivers at major crossing points (e.g., Lutembwe, Nyongo, Mwami, Lubwe, Chibila, and Choli).
- Community groundwater sources, such as boreholes and protected wells (e.g., Makangila, Mwanza, Mwami, Kauzu, Mkata).

This ensured coverage of both hydrologically sensitive zones and community water-use points.

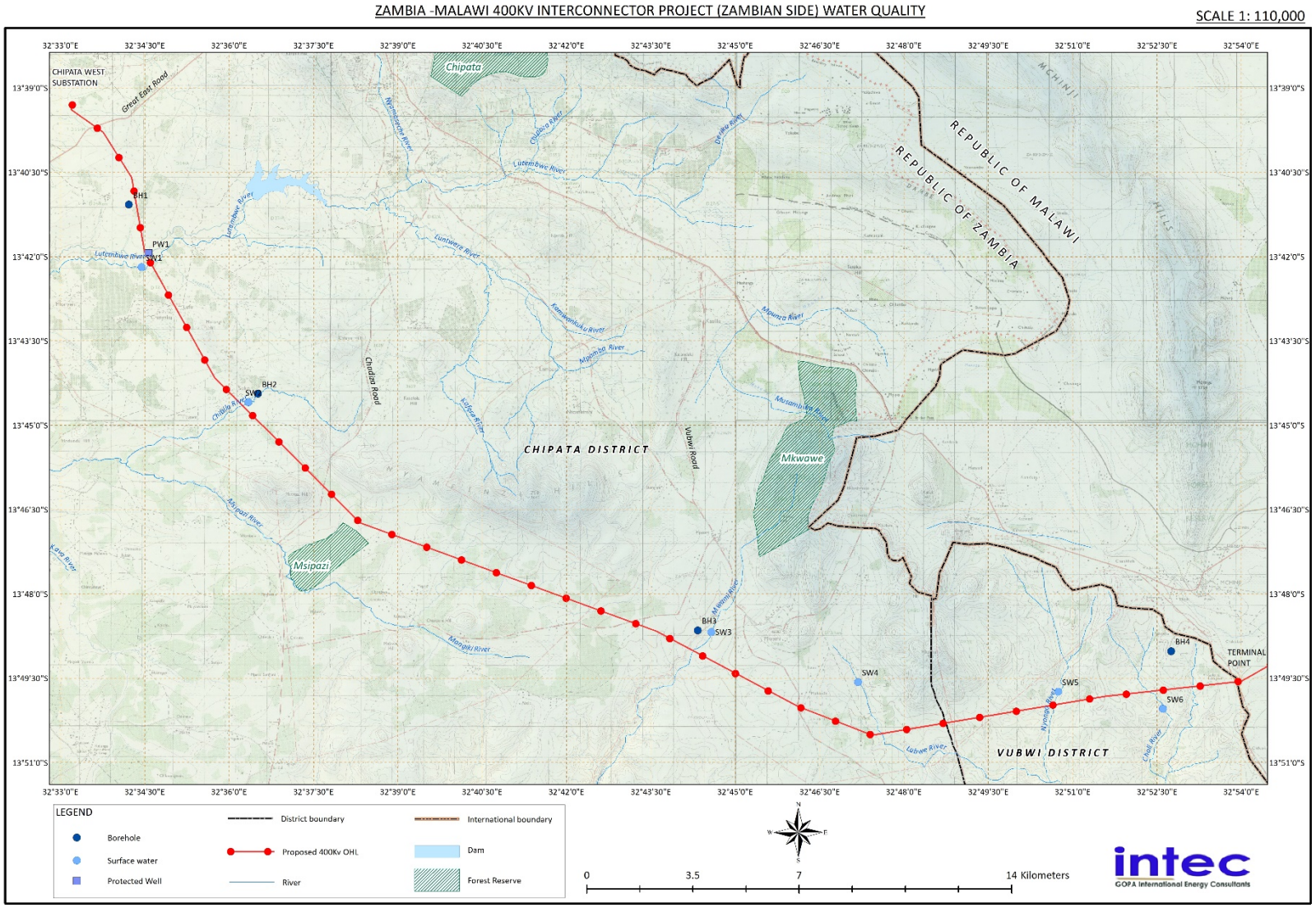

Figure 2: Surface and Groundwater sources identified and sampled

2.2 Field Sampling and In-Situ Measurements

- Water samples were collected using sterile, clearly labelled containers.
- In-situ (on-site) measurements were conducted using portable meters for:

  - pH
  - Electrical Conductivity (EC)
  - Total Dissolved Solids (TDS)
  - Turbidity
  - Dissolved Oxygen (DO)
  - Redox Potential (Eh)
  - Temperature
  - Salinity

Sampling was done during dry conditions to reflect normal baseline water quality.

2.3 Laboratory Analysis for Chemical Parameters

- In addition to field testing, water samples were collected for chemical analysis and transported under controlled conditions to an accredited laboratory.
- Parameters analysed in the lab included selected major ions, nutrients, and potential contaminants, depending on the water source type and intended use (domestic or agricultural).
- Chain-of-custody protocols were observed to maintain data integrity.

2.4 Standards Used for Evaluation

- All results were assessed against ZABS ambient water quality standards for safe use.
- WHO guidelines were also used as secondary references, particularly for drinking water suitability.

2.5 Data Logging and Mapping

- GPS coordinates were recorded for each sampling site using handheld devices.
- Results were logged digitally and visualized using GIS tools to identify patterns or risk zones along the transmission corridor.

This comprehensive methodology ensures the availability of accurate, location-specific baseline data for use in monitoring changes during project implementation and guiding environmental protection strategies.

2.6 Laboratory Analysis of Chemical Parameters and Justification Based on Interconnector Construction

As part of the baseline water quality assessment, specific **chemical parameters** were sent for laboratory analysis to identify potential risks that may arise during the **construction of the Zambia–Malawi 400 kV Power Transmission Line**. The selection was informed by the nature of construction activities such as **vegetation clearing, foundation excavation, equipment operation, fuel and oil handling,** and **temporary worker camps**, all of which could introduce pollutants into surrounding water bodies.

Chemical Parameters and Justification - Error! Reference source not found.

2.7 Laboratory Accreditation and Quality Assurance

The Zambia Agriculture Research Institute (ZARI) - National Soil/Plant/Water/Fertilizer Research Laboratories is a **nationally recognized and internationally accredited laboratory**. As a National Laboratory, ZARI is certified to handle all laboratory-related samples, including soil, water, plant, and fertilizer analysis. The laboratory adheres to standard laboratory procedures and maintains strict compliance with international best practices.

All analyses conducted for this assessment were performed at the ZARI National Laboratory, ensuring that the highest standards of accuracy, reliability, and data integrity were maintained. The laboratory's accreditation guarantees that all test results are credible and compliant with both local and international standards.

Quality Assurance and Quality Control (QA/QC):

- All sample collection, preservation, and analysis were conducted in accordance with internationally recognized standards, including ISO/IEC 17025.
- Calibration of equipment was conducted according to manufacturer specifications, and certified reference materials were used for quality control.
- Analytical procedures were validated, and results were cross-checked to ensure accuracy.
- Chain of custody procedures were strictly followed from sample collection to reporting.

These measures confirm that the water quality results presented are accurate, reliable, and suitable for decision-making.

Parameter	Potential Construction Source/Activity
Nitrate (NO_3^-)	Can result from leaching of organic waste or latrines near construction camps, and disturbance of fertilized soils during vegetation clearing and grading.
Phosphate (PO_4^{3-})	Associated with topsoil disturbance, especially in agricultural zones; may enter water bodies via erosion or sediment runoff near tower foundations.
Ammonia (NH_3/NH_4^+)	May arise from decaying organic matter, human waste, or greywater discharge from temporary construction camps.
Chloride (Cl^-)	May increase due to concrete works, construction wastewater, or improper disposal of cleaning agents or salt-based compounds.
Sulphate (SO_4^{2-})	Commonly leached from cement and concrete mixtures used in tower footings and access road stabilization.
Heavy Metals (Fe, Mn, Zn, Cu, Pb, Cr)	Can be introduced from machinery wear and tear, oil leaks, fuel spills, or galvanized construction materials exposed to rain.
Total Hardness (as $CaCO_3$)	Indicates changes in groundwater chemistry due to exposure of mineral-bearing rocks or soils during excavation or drilling activities.
Coliforms (Total and Faecal)	Linked to sanitation facilities at worker camps, improper waste disposal, or animal access to streambanks disturbed by site activity.

2.8 Purpose and Project Relevance

This targeted set of parameters was selected to capture potential chemical and microbiological impacts that could result from direct construction activities, improper material handling, or temporary land use changes. By establishing these baseline values:

- The project can detect contamination early during construction.
- Mitigation measures (buffer zones, silt traps, containment of fuel storage) can be refined based on actual water sensitivity.
- The ESIA provides traceable evidence of pre-project conditions, ensuring accountability and support for regulatory compliance.

This approach enhances the project's commitment to protecting water quality in a rural, community-dependent setting.

3. Environmental Baseline

Surface Water

Surface water quality monitoring was undertaken at six representative points along the Zambia–Malawi 400 kV Interconnector corridor to establish a pre-construction environmental baseline. These points include Lubwe River, Chibila Stream, Nyongo Stream, Mwami Stream, Choli Stream, and the Lutembwe River. The monitored parameters were compared to ZABS ambient water quality standards to assess suitability for ecological integrity and potential community use (domestic, agricultural, or livestock) - Table 1.

3.1 pH (Range: 6.88 – 7.66)

All sites fall within the acceptable pH range (6–8.5), indicating neutral to slightly alkaline conditions. This suggests minimal acidification and a stable aquatic environment, supportive of aquatic life and community use.

3.2 Electrical Conductivity (EC: 116.4 – 234 µS/cm)

EC values were well below the 400 µS/cm limit, with the Lutembwe River recording the highest value (234 µS/cm). These values reflect moderate mineral content and no indication of salinity intrusion or industrial effluent.

3.3 Total Dissolved Solids (TDS: 58.04 – 118 ppm)

TDS levels were well within the 180 ppm threshold, suggesting good water clarity and low contaminant load. The Lutembwe River again had the highest concentration, potentially due to natural erosion or nearby agricultural activity.

3.4 Dissolved Oxygen (DO: 6.1 – 6.6 mg/L)

All sites demonstrated adequate DO concentrations, supporting healthy aquatic ecosystems. DO levels above 6 mg/L indicate sufficient oxygenation for fish and macroinvertebrate populations.

3.5 Turbidity (8.21 – 126 NTU)

Turbidity values varied significantly:

- Nyongo Stream (126 NTU) and Lubwe River (88.1 NTU) exceeded the recommended 50 NTU limit, indicating potential sediment runoff or upstream disturbance, possibly due to vegetation clearance, agriculture, or natural erosion.
- Other sites like Mwami and Choli streams were within acceptable levels.

3.6 Redox Potential (Eh: -8.9 to -2.1 mV)

Redox values were generally negative, suggesting anaerobic to weakly reducing conditions typical of natural stream environments with organic inputs. Nyongo Stream showed less reduction (-2.1 mV), possibly due to flow dynamics or vegetation cover.

3.7 Temperature (21 – 24.2°C)

Temperature values were consistent with seasonal norms for Eastern Province streams, with slight variation influenced by time of day, shading, and stream flow.

3.8 Salinity (0.05 – 0.11 ppt)

All measured salinity values were low, indicating freshwater conditions with no evidence of salt intrusion or chemical contamination.

Table 1: Onsite Water Quality Results

SURFACE WATER											
Parameters				**pH**	**EC**	**TDS**	**D.O**	**Turbidity**	**Eh**	**Temp.**	**Salinity**
Sampling Point Name	**Ambient Standards**	**Coordinates**		**6 - 8.5**	**400**	**180**		**50**		**25**	
		Latitude	**Longitude**		**µS/cm**	**ppm**	**mg/l**	NTU	**mV**	**(°C)**	
Lubwe River		-13.843093	32.793774	7.47	116.4	58.04	6.3	88.1	-8.9	21	0.05
Chibila Stream		-13.746241	32.606331	7.53	168.7	84.13	6.5	16.6	-7.3	24	0.07
Nyongo Stream		-13.8392	32.843451	6.88	136.2	67.4	6.3	126	-2.1	21.6	0.07
Mwami stream		-13.816337	32.738778	6.99	154.8	74.5	6.6	8.21	-8.5	22.6	0.07
Choli stream		-13.834084	32.876671	7.57	189	94	6.1	14.5	-8	24.2	0.09
Lutembwe River		-13.70215	32.576249	7.66	234	118	6.2	15.2	-7.3	23.2	0.11

Key Observations

- The Lutembwe River, despite slightly elevated EC and TDS, remains within acceptable limits but will require continued monitoring due to its strategic importance and proximity to the alignment.
- Nyongo Stream's high turbidity is notable and may warrant erosion control upstream or sediment barrier measures during construction.
- Overall, the surface water quality is suitable for ecological and potential domestic use, though proactive management of erosion and runoff near tower and access road construction zones will be essential to maintain water quality during project implementation.

This baseline supports future impact assessments and compliance monitoring throughout the lifecycle of the interconnector project.

Groundwater Quality Baseline Assessment

Groundwater samples were collected from five representative boreholes and protected wells situated near the Zambia–Malawi 400 kV interconnector corridor. These water points serve surrounding communities for drinking, domestic use, and livestock watering. The monitoring aimed to characterize pre-construction water quality and assess any potential vulnerabilities ahead of construction activities - Table 2.

3.9 Water Quality Results (Laboratory results for Nutrients, Earth Metals, and Heavy Metals)

This section provides a baseline assessment of critical water quality parameters measured across eight sampling sites: Mwanza Village Well, Lufazi County BH1, Makangila Primary BH2, Kauzu BH3, Nyonga Stream, Mkaya SN2, Lubwe, and Lutembwe SW6. These parameters are essential indicators of water quality, including nutrients (nitrates and phosphates), trace metals (copper, manganese, iron, zinc, cadmium, and lead), and microbial contamination (faecal and total coliforms).

Parameter	Mwanza Village	Lufazi County BH1	Makangila Primary BH2	Kauzu BH3	Nyonga Stream	Mkaya SN 2	Lubwe	Lutembwe SW6
Nitrate mg/L	12.4	9.28	15.06	24.93	19.54	26.2	20.28	14.99
Nitrite mg/L	<0.001	0.07	<0.001	0.02	0.03	0.01	0.01	<0.001
Phosphates mg/L	0.07	0.08	0.06	0.09	0.11	0.1	0.07	0.06
Copper mg/L	0.03	0.13	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese mg/L	0.05	0.07	0.01	0.07	0.04	0.03	0.03	0.01
Iron mg/L	<0.001	<0.001	0.01	<0.001	4.72	<0.001	2.31	0.3
Zinc mg/L	<0.001	0.07	0.05	0.04	0.05	0.03	0.02	<0.001
Cadmium mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	<0.001	<0.001
Lead (Pb) mg/L	0.16	0.01	0.07	0.11	0.12	0.03	0.07	<0.001
Feacal Coliform (CFU/100 mL)	600	680	1200	9400	50	400	0	20
Total Coliform (CFU/100 mL)	20	200	1400	3600	10	10	60	20

Table 2: Groundwater Quality Results

Parameter	Range Observed	Ambient Standard	Remarks
pH	6.77 – 7.76	6 – 8.5	All sites within acceptable range, indicating neutral to slightly alkaline water.
Electrical Conductivity (EC)	156.4 – 434 µS/cm	<400 µS/cm	All but Mwanza Well (434 µS/cm) complied. Higher EC may reflect mineral-rich aquifer or water-rock interaction.
Total Dissolved Solids (TDS)	78.5 – 220 ppm	<180 ppm	Four sites met the standard; Mwanza BH exceeded slightly at 220 ppm. Indicates mild mineral enrichment.
Turbidity	5.17 – 8.9 NTU	<50 NTU	Well within limits across all sites. Low turbidity implies good filtration in subsurface.
Redox Potential (Eh)	–7.9 to +22 mV	Not specified	Variability observed; positive Eh at Kauzu and Mwanza BH indicates more oxidizing conditions.
Temperature	23 – 26.3°C	~25°C (reference)	Slightly above the ambient reference, consistent with typical groundwater profiles.
Salinity	0.09 – 0.20 ppt	Not regulated	All samples showed very low salinity, indicating fresh water conditions.

Interpretation

- Groundwater quality across the corridor is generally suitable for human consumption based on field parameters.
- Mwanza BH recorded slightly elevated EC and TDS, which may suggest natural mineral content or localised geologic influence.
- All sites met turbidity and pH standards, demonstrating good physical quality and minimal turbidity issues.
- Redox values show a range of oxidising and reducing conditions, which may influence the behaviour of certain dissolved metals or nutrients.

Summary

The groundwater quality baseline indicates that aquifers along the project corridor are in good condition, with only minor variations observed. These values will serve as a reference point for future monitoring, particularly to assess any impacts from construction activities such as excavation, fuel storage, sanitation, or accidental contamination near boreholes and wells.

Protective measures should be maintained throughout construction to avoid chemical infiltration, aquifer disturbance, or alteration of water table dynamics in these sensitive rural zones.

4. Results and Discussion – Water Quality (Surface and Groundwater)

4.1 Surface Water Quality

Surface water samples were collected from six key locations intersecting the Zambia–Malawi 400 kV transmission corridor, including the Lubwe, Chibila, Nyongo, Mwami, and Choli streams, as well as the Lutembwe River. These are all seasonal watercourses with community and ecological importance.

All pH values ranged from 6.88 to 7.66 -Figure 3, remaining well within the ZABS recommended range of 6–8.5, indicating generally stable aquatic chemistry.

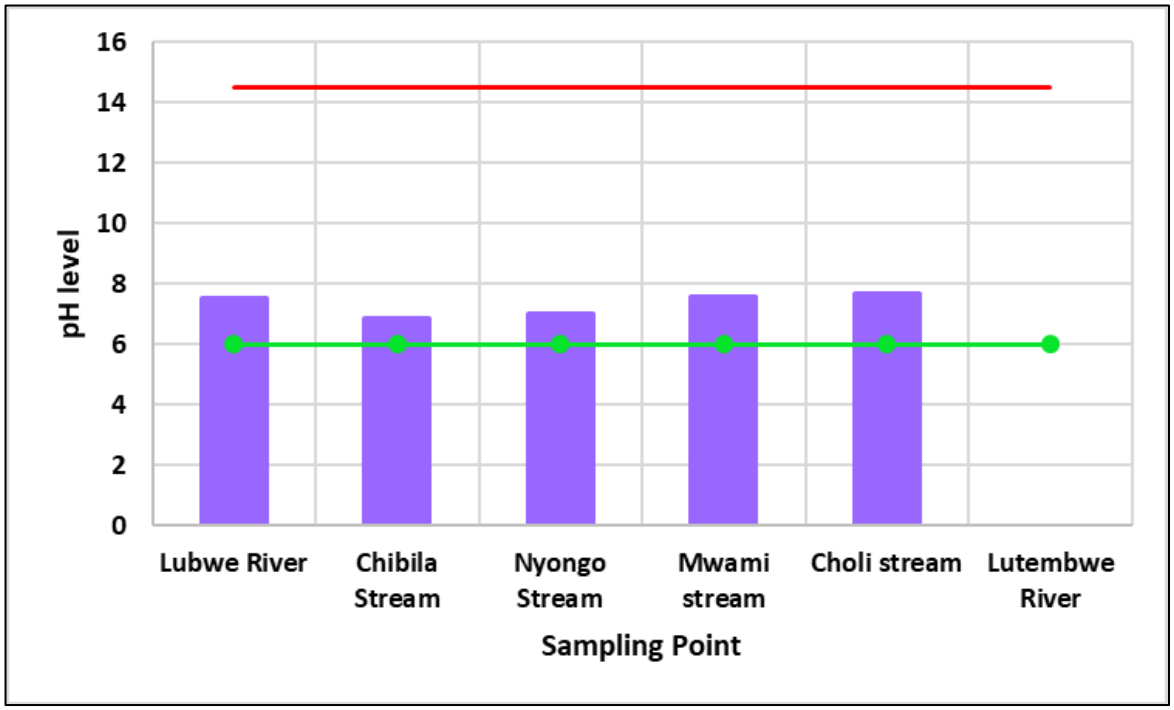

Figure 3: Surface water Points pH

Conductivity

Electrical Conductivity (EC) and Total Dissolved Solids (TDS) were also within acceptable thresholds at all points, with the Lutembwe River exhibiting the highest readings (**EC: 234 µS/cm, TDS: 118 ppm**) -Figure 4 , likely due to localized mineral content or runoff influence.

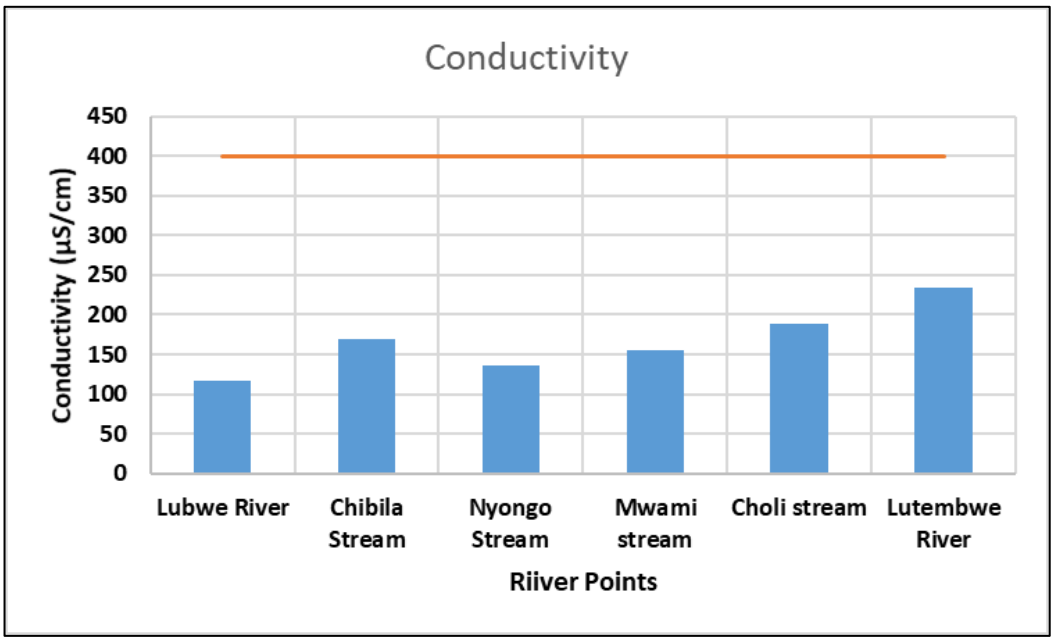

Figure 4: Conductivity

Dissolved Oxygen (DO) levels were healthy across all sites (6.1–6.6 mg/L), supporting aerobic conditions favorable to aquatic life.

Turbidity, however, showed some notable exceedances—particularly at Nyongo Stream (126 NTU) and Lubwe River (88.1 NTU), surpassing the 50 NTU guideline - Figure 5. These elevated values may reflect sediment input from upstream erosion, vegetation clearance, or informal farming near the banks.

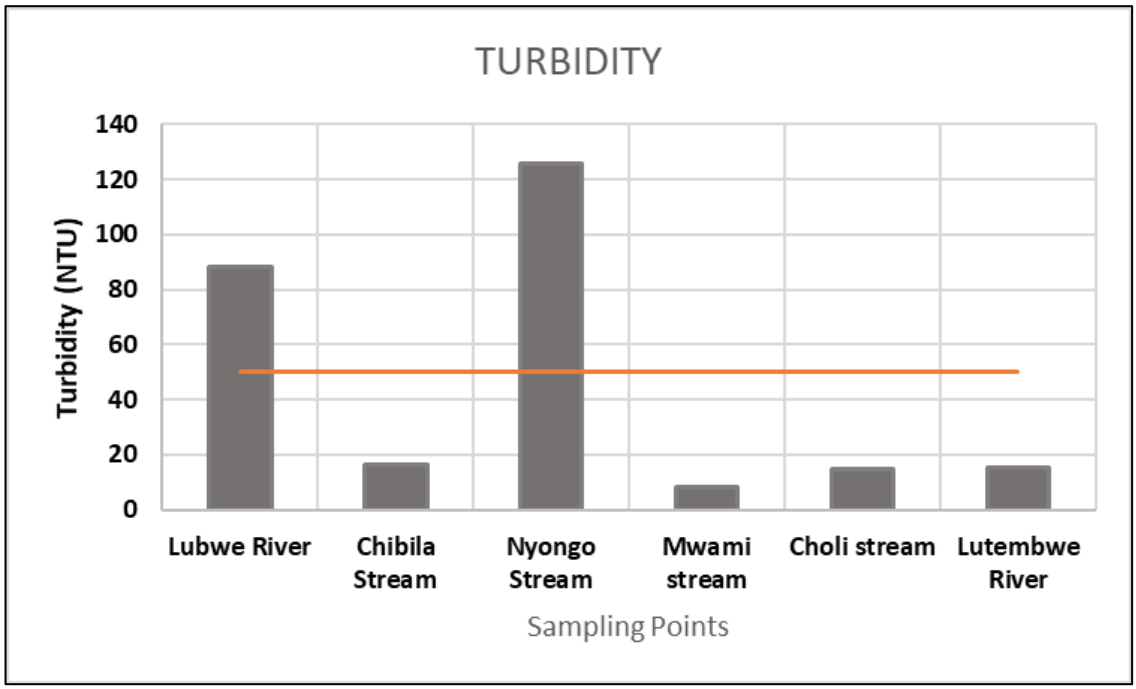

Figure 5: Turbidity

Redox potential (Eh) values were negative at most sites, typical of slightly reducing environments in natural rural streams. Temperature and salinity remained consistent and indicative of unpolluted freshwater systems.

Summary Interpretation: Surface water conditions are largely compliant and ecologically healthy. Localized turbidity spikes suggest the need for erosion control, especially near construction access points or river crossings.

4.2 Groundwater Quality

Groundwater samples were obtained from five boreholes and protected wells located near the project alignment. These include community water sources in Makangila, Mwami, Kauzu, Mwanza, and Mkata villages.

The pH values ranged from **6.77 to 7.76**, well within acceptable limits, reflecting neutral to mildly alkaline water -Figure 6 .

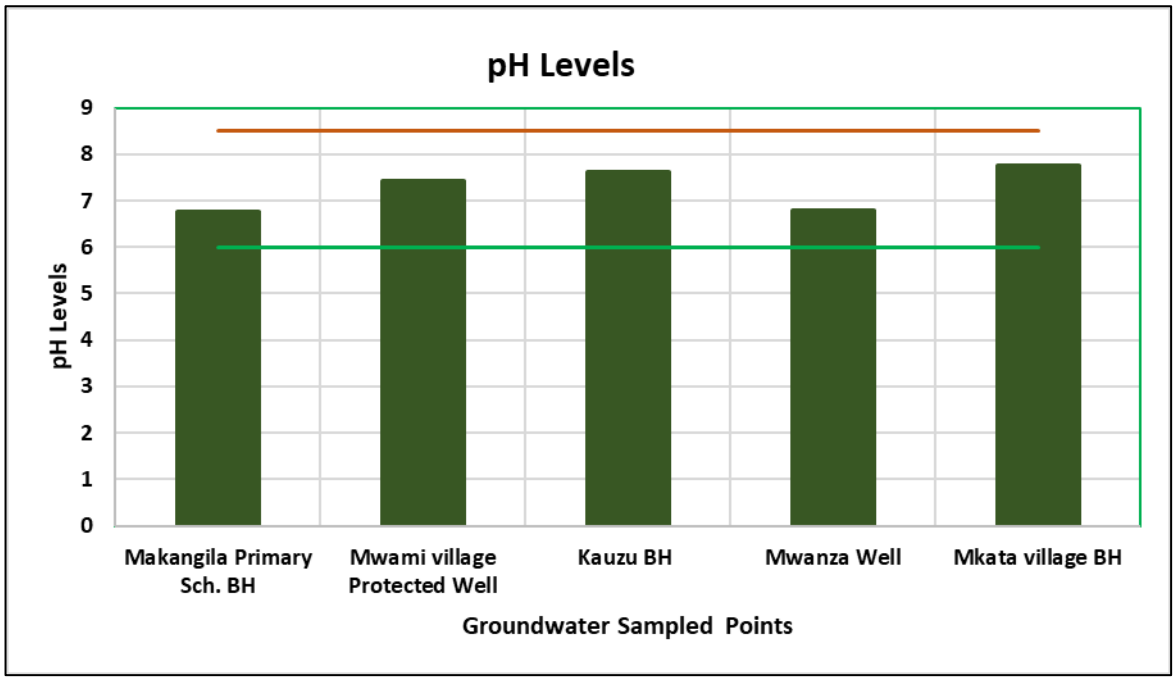

Figure 6: Groundwater pH for some sampled Points

EC values were all under the 400 µS/cm standard, with the exception of Mwanza Well **(434 µS/cm**), which may be influenced by subsurface geology or high mineral content. Similarly, TDS values were within limits, except at Mwanza, where a reading of 220 ppm exceeded the 180 ppm threshold slightly- Figure 7.

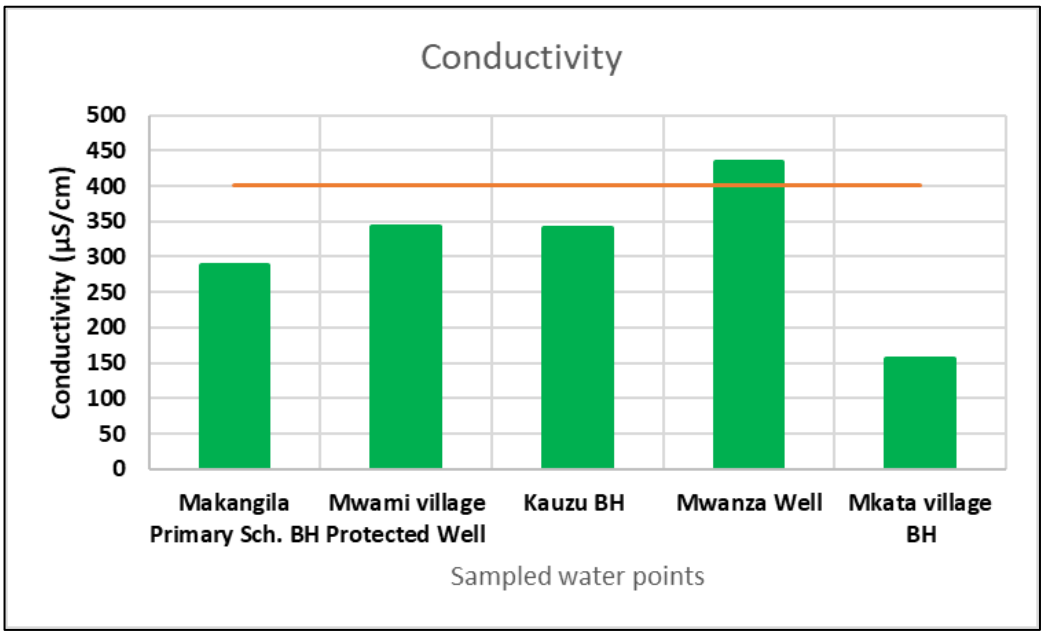

Figure 7: Conductivity

Turbidity levels were low at all sites (5.17–8.9 NTU), well below the 50 NTU standard, suggesting good aquifer filtration and minimal suspended particles. Eh values varied, with positive redox conditions at Kauzu and Mwanza, indicating aerobic groundwater chemistry. Temperature and salinity were stable and reflective of naturally occurring freshwater.

Summary Interpretation: Groundwater is generally of good quality across the sampled locations. Minor exceedances in EC and TDS at Mwanza BH warrant future observation, though no major contamination indicators were detected.

4.3 Comparative Analysis of Water Quality Results (Laboratory results for Nutrients, Earth Metals, and Heavy Metals)

1. Nitrate (NO_3^-) Concentrations:

WHO Standard: <6.0 mg/L (Catchment Highest Value: 9.0 mg/L)

Results: Nitrate values exceeded the standard at all sites:

- Mwanza Village Well: 12.4 mg/L
- Lufazi County BH1: 9.28 mg/L
- Makangila Primary BH2: 15.06 mg/L
- Kauzu BH3: 24.93 mg/L
- Nyonga Stream: 19.54 mg/L
- Mkaya SN 2: 26.20 mg/L
- Lubwe: 20.28 mg/L
- Lutembwe SW6: 14.99 mg/L

Implications: These high nitrate values indicate potential contamination from agricultural runoff, sewage, or leaching fertilizers, posing a health risk.

2. Nitrite (NO_2^-) Concentrations:

WHO Standard: <0.06 mg/L (Catchment Highest Value: 0.07 mg/L)

Results: Nitrite values were generally compliant, except:

- Lufazi County BH1: 0.07 mg/L
- Nyonga Stream: 0.03 mg/L

3. Phosphate Levels:

WHO Standard: <0.4 mg/L (Catchment Highest Value: 2.2 mg/L)

Results: Phosphate values were generally compliant, with minor exceedances:

- Nyonga Stream: 0.11 mg/L
- Mkaya SN 2: 0.10 mg/L
- Kauzu BH3: 0.09 mg/L

Implications: Elevated phosphate can cause nutrient pollution, leading to algal blooms in water bodies.

4. Copper Levels:

WHO Standard: <0.003 mg/L (Catchment Highest Value: 0.003 mg/L)

Results: Copper values exceeded the standard in several locations:

- Mwanza Village Well: 0.03 mg/L
- Lufazi County BH1: 0.13 mg/L

5. Lead (Pb) Concentrations:

WHO Standard: <0.0015 mg/L (Catchment Highest Value: 0.07 mg/L)

Results: Lead levels were significantly high in some locations:

- Mwanza Village Well: 0.16 mg/L
- Kauzu BH3: 0.11 mg/L
- Nyonga Stream: 0.12 mg/L

Implications: Lead is a toxic metal, and its presence above standard limits can pose serious health risks, particularly to children.

6. Manganese Levels:

WHO Standard: <0.2 mg/L (Catchment Highest Value: 0.2 mg/L)

Results: Manganese values were compliant, except for:

- Kauzu BH3: 0.20 mg/L

7. Zinc Levels:

WHO Standard: <0.2 mg/L (Catchment Highest Value: 0.01 mg/L)

Results: Zinc levels were within the standard range across all sites.

8. Microbial Contamination (Faecal and Total Coliforms):

WHO Standard: <0 CFU/100 mL

Results: High levels of microbial contamination were detected at most sites:

- Mwanza Village Well: 600 CFU/100 mL (Faecal), 20 CFU/100 mL (Total)
- Lufazi County BH1: 680 CFU/100 mL (Faecal), 200 CFU/100 mL (Total)
- Kauzu BH3: 9400 CFU/100 mL (Faecal), 3600 CFU/100 mL (Total)
- Nyonga Stream: 50 CFU/100 mL (Faecal), 10 CFU/100 mL (Total)

Implications: This indicates potential contamination from human or animal waste, increasing the risk of waterborne diseases.

5. Overall Conclusion

The water quality assessment conducted across the eight sampling sites within the Interconnector Project area, including Mwanza Village Well, Lufazi County BH1, Makangila Primary BH2, Kauzu BH3, Nyonga Stream, Mkaya SN2, Lubwe, and Lutembwe SW6, has identified significant concerns regarding chemical and microbial contamination. These findings are critical in understanding the baseline water quality conditions along the proposed interconnector route.

The results indicate widespread exceedances of recommended standards, particularly for **Turbidity, nitrates, lead, copper, and microbial indicators (faecal and total coliforms)**. Elevated nitrate levels at all sites suggest potential contamination from agricultural runoff, sewage discharge, or soil leaching, which poses a serious health risk, especially for infants due to the threat of methemoglobinemia. High lead concentrations at Mwanza Village Well, Kauzu BH3, and Nyonga Stream present severe health risks, particularly to children, with potential sources including corroded pipes, agriculture chemicals, or natural geological deposits.

Copper and iron levels were also elevated at specific locations, indicating possible industrial contamination or natural mineral presence in the geological strata. Most concerning is the significant microbial contamination, particularly at Kauzu BH3, where extremely high faecal and total coliform counts point to direct pollution from sewage or animal waste. Such contamination can lead to waterborne diseases, especially for communities relying on untreated water sources.

These findings emphasize the need for targeted interventions in the Interconnector Project area, including:

- **Source Protection**: Identifying and mitigating contamination sources (agriculture, sewage, industrial discharges).
- **Water Treatment:** Implementing appropriate treatment measures, particularly at heavily contaminated sites such as Kauzu BH3.
- **Public Awareness and Education:** Informing local communities about the risks of water contamination and promoting safe water handling practices.
- **Regular Monitoring:** Establishing a robust water quality monitoring program along the Interconnector route to ensure safe water quality over the project's lifespan.

A comprehensive water quality management plan is recommended to safeguard public health, ensure compliance with environmental standards, and support the sustainable operation of the Interconnector Project.

6. Sensitive Receptors in the Interconnector Project Area

The water quality assessment has identified several sensitive receptors in the Interconnector Project area, characterized by high levels of contamination and vulnerability to further pollution. These sensitive receptors include:

- Nyongo Stream and Lubwe River: Elevated turbidity, high iron and phosphate levels, indicating erosion and nutrient pollution risk.
- Kauzu BH3: Severe microbial contamination (Faecal Coliform: 9400 CFU/100 mL) and high lead (0.11 mg/L), posing health risks.
- Mwanza Village Well: High lead (0.16 mg/L), elevated nitrate (12.4 mg/L), and microbial contamination (Faecal Coliform: 600 CFU/100 mL).
- Lufazi County BH1: Elevated copper (0.13 mg/L), nitrate (9.28 mg/L), and microbial contamination.
- Nyonga Stream: High iron (4.72 mg/L), lead (0.12 mg/L), and nitrate (19.54 mg/L), indicating potential industrial or geological contamination.
- Mkaya SN2 and Lutembwe SW6: Elevated nitrate levels, indicating nutrient pollution risks.

Recommendations:

- Erosion Control: Implement silt fences, vegetative buffer zones, and sediment traps near sensitive water bodies.
- Source Protection: Investigate contamination sources (agriculture, sewage, industrial waste).
- Water Treatment: Install appropriate treatment systems at highly contaminated sites.
- Community Education: Raise awareness about protecting water sources.
- Regular Monitoring: Maintain a quarterly monitoring program for all sensitive sites.

Appendix: Photos

Water samples being analysed from the stream (lt) and from Mwami community Well (rt).

Appendix : Laboratory results – Kindly note that physical chemical parameters were done onsite

ZAMBIA AGRICULTURE RESEARCH INSTITUTE
NATIONAL SOIL/PLANT/WTER/FERTILIZER RESEARCH LABORATORIES

WATER ANALYTICAL RESULTS

Customer:	Mr. Matokwane	**Sample Type**	Water	**Date Received:**	14/04/2025
Address:	Shimabala	**Crop Stage:**	N/A	**Analysis Date:**	17/04//2025
Farm Name	N/A	**Comments:**	-	**Report Date:**	30/04/2025
Contact Person	Mr. Mulenga	**Condition:**	-	**Sample ID:**	25 / 191- 202

NOTE: Test results are based on customer's sampled samples and information on analytical method used is given out on the client's request.

SAMPLE REF:	Mwanza Village - Well	Lufazi County - BH 1	Makangila Primary - BH 2	Kauzu – BH 3	Chibila Stream	Mwami River - SW 3	Chikoka - SN 1
LAB #	25/191	25/192	25/193	25/194	25/195	25/196	25/197
pH	-	-	-	-	-	-	-
Conductivity Us/cm	-	-	-	-	-	-	-
TDS mg/L	-	-	-	-	-	-	-
Turbididty	-	-	-	-	-	-	-
Hardness	-	-	-	-	-	-	-
Carbonates me/L	-	-	-	-	-	-	-
Bicarbonates me/L	-	-	-	-	-	-	-
Chlorides me/L	-	-	-	-	-	-	-
Sulphates me/L	-	-	-	-	-	-	-
Sodium mg/L	-	-	-	-	-	-	-
Nitrate (NO_3^-) mg/L	12.40	9.28	15.06	24.93	5.29	23.78	16.22
Nitrite (NO_2^-) mg/L	<0.001	0.07	<0.001	0.02	<0.001	0.05	0.01
Phosphates mg/L	0.07	0.08	0.06	0.09	0.06	0.12	0.10
Copper mg/L	0.03	0.13	0.01	<0.001	<0.001	<0.001	<0.001
Manganese mg/l	0.05	0.07	0.01	0.07	0.01	0.03	0.20
Iron mg/L	<0.001	<0.001	0.01	<0.001	0.72	3.78	0.59
Zn mg/L	<0.001	0.07	0.05	0.04	0.05	0.06	0.05
Cd mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb mg/L	0.16	0.01	0.07	0.11	0.01	0.06	0.06
Ni mg/L	-	-	-	-	-	-	-
Feacal (Cfu)	600.00	680.00	1200.00	9400.00	0.00	6700.00	500.00
T. Coliform(Cfu)	20.00	200.00	1400.00	3600.00	60.00	1800.00	30.00

SAMPLE REF:	Nyonga Stream	Mkaya - SN 2	Lubwe	Lutembwe SW 6				WHO Critical Levels
LAB #	25/198	25/199	25/201	25/202				
pH	-	-	-	-				6.5 – 8.5
Conductivity Us/cm	-	-	-	-				<1500
TDS mg/L	-	-	-	-				<500
Turbididty NTU	-	-	-	-				< 5
Hardness mg/L	-	-	-	-				<60
Carbonates me/L	-	-	-	-				< 3
Bicarbonates me/L	-	-	-	-				< 8
Chlorides me/L	-	-	-	-				< 7.5
Sulphates me/L	-	-	-	-				< 5.0
Sodium mg/L	-	-	-	-				< 12
Nitrate (NO_3^-) mg/L	19.54	26.20	20.28	14.99				< 50
Nitrite (NO_2^-) mg/L	0.03	0.01	0.01	<0.001				< 0.2
Phosphates mg/L	0.11	0.10	0.07	0.06				<0.5
Copper mg/L	<0.001	<0.001	<0.001	<0.001				<0.02
Manganese mg/l	0.04	0.03	0.03	0.01				<0.2
Iron mg/L	4.72	<0.001	2.31	0.30				<0.5
Zn mg/L	0.05	0.03	0.02	<0.001				<0.2
Cd mg/L	<0.001	0.01	<0.001	<0.001				<0.01
Pb mg/L	0.12	0.03	0.07	<0.001				<0.07
Ni mg/L	-	-	-	-				
Feacal (Cfu)	50.00	400.00	0.00	20.00				< 0 CFU/100 mL
T. Coliform(Cfu)	10.00	10.00	60.00	20.00				< 0 CFU/100 mL

END of Water Analytical Results

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) AND RESETTLEMENT AND COMPENSATION ACTION PLAN (RAP) FOR THE MALAWI - ZAMBIA 400 KV TRANSMISSION INTERCONNECTOR PROJECT

ARCHAEOLOGICAL AND CULTURAL HERITAGE RESOURCES SURVEY REPORT

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EXCUTIVE SUMMARY

Project Background

ZESCO Limited and ESCOM, power utilities in Zambia and Malawi respectively, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia. The RoW of the line will be 50 m wide in Zambia and 55 m in Malawi.

ZESCO will construct the power line on the Zambian side and ESCOM will construct the section of the power line in the Malawian territory. On the Zambian side the power line traverses Chipata and Vubwi districts.

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

Archaeological and Cultural Heritage Survey

An Archaeological and Cultural Heritage Survey was undertaken in December, 2024 as part of the overall Environmental and Social Impact Assessment (ESIA) for the proposed project on the Zambian side, 44km long. This study revealed some active graveyards and Gule wa Mkulu (Nyau) initiation and performance sites along the proposed power line corridor, although most of them are outside the right of way (wayleave).

While the graveyards are of local areas significance, the Nyau masquerade of Eastern Province has been listed under the United Nations Scientific and Cultural Organization (UNESCO), along with Likishi of North Western Province, as intangible cultural heritage in Zambia in 2006. Therefore, it is not only of national and regional but of international significance.

The survey forms part of the Environmental and Impact ESIA process as required by the Zambia Environmental Management Agency (ZEMA) regulations and other international protocols.

The entire stretch of the power line corridor, from Chipata West Substation in Musekera area of Chipata District to Chikoka village in Vubwi District, including adjacent areas to the proposed power line route, were covered in this study.

Methodology

The survey was preceded by several individual, focus groups and public community consultation meetings arranged through the Traditional Community Committee (TDC) which is composed of the representatives of the Paramount Chief Mpezeni of the Ngoni people and Chief Pembamoyo of the Chewa speaking people of Vubwi District. Consent to survey the sites was obtained through their Indunas and village headmen.

After obtaining consents from the traditional leaders, site visits were made to all sections of the proposed line route. Site visits were made in the company of local traditional leaders or people assigned by the headmen.

Findings

Despite the absence of “Ancient Heritage” as per National Heritage Conservation Commission Act (NHCC - CAP173) of the Laws of Zambia, 10 graveyards and two Nyau ritual sites were

identified along the proposed power line, for the assessment carried in one km radius from the center line. Out of these only one graveyard was found in the wayleave corridor and one ritual site very close to the transmission line, though outside wayleave. Some of these sites date from 1950s when a number of these areas were settled as villages or farming settlements to present. These cultural resources identified along the power line route are mainly communal, family, religious and ritual sites. All of these graveyards are still in use with none abandoned.

These graves are of major importance to local communities as they are regarded as a dwelling place for their deceased members and relations. Family members occasionally visit the graveyards to spiritually connect with their ancestors. The Nyau ritual sites are equally important for the communities' cultural heritage and legacy. The survey revealed a total number of 8 (eight) graveyards active along the power line route and adjacent areas. More than 1,000 graves were estimated in the 8 graveyards. While most of the graveyards are not directly affected by the proposed power line, one graveyard in the Kauzu zone and its adjacent Nyau ritual site are directly affected. Although the Nyau ritual site is about 100m away from the center of the proposed power line, the cutting of trees and other construction works will erode the sacredness of the ritual site and expose it to the outside world directly, which may be perceived as desecration by the local community.

The affected graveyard and adjacent ritual site will necessitate a minor adjustment of the power line route as the graveyard contains more than 150 single graves (as per physical count) and the Nyau ritual site is the only one in Kauzu area, belonging to the Chewa speaking communities settled in Chipata District. Following the site visits and consultations with the traditional leaders, the following are recommended:

- re-routing of the power line route in Kauzu zone after crossing the Lusaka Road in order to preserve the graveyard and adjacent Nyau ritual site.
- local gatekeepers or cultural specialist should be present during bush (vegetation) clearing near cultural sites to ensure that the sites are not desecrated.
- Presence of an archaeologist and an environmental technician, especially during the excavation works, is highly recommended. This is because some archaeological sites and debris can only be discovered or revealed by soil removal during the project works.
- While the proposed power line avoids most of the identified cultural sites, maximum care should be exercised to ensure that they are not affected by auxiliary project activities such as the construction of access roads and borrow pits.

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Acronyms:

EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMA	Environmental Management Act
ESIA	Environmental and Social Impact Assessment
ERB	Energy Regulatory Board
ESCOM	Electricity Supply Commission of Malawi
ESS	Environmental Social Standards
GPS	Geographical Position System
IFC	International Finance Cooperation
NHCC	National Heritage Conservation Commission
PS	Performance Standards
RoW	Right of Way
SAPP	Southern African Power Pool
SoWs	Scope of Works
ToRs	Terms of Reference
UNESCO	United Nations Education Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change

1. INTRODUCTION

1.1. Background

ZESCO Limited and ESCOM, power utilities in Zambia and Malawi respectively, intend to construct a 400kV Interconnection transmission power line between Chipata West 330/132 kV Substation in Zambia and Nkhoma 400/132 kV Substation located in Lilongwe of Malawi. The total length of the power line is approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia. The RoW of the line will be 50 m wide in Zambia and 55 m in Malawi. The project is funded by Swedfund.

ZESCO will construct the power line on the Zambian side and ESCOM will construct the section of the power line in the Malawian territory. On the Zambian side the power line traverses Chipata and Vubwi districts.

The objective of the Project is to promote regional integration and to facilitate electricity trading between the two countries and other countries in the region.

Because of its magnitude, the project is subject to the Environmental Management Act (EMA) of 2011, which mandates that developers to ensure compliance with environmental regulations prior to the commencement of any development activities. Specifically, the Act requires that an Environmental Impact Assessment (EIA) study be conducted to identify potential environmental and social impacts, followed by the recommendation of mitigation measures to eliminate or minimize such impacts. In accordance with the EIA regulations, a comprehensive report must then be submitted to the Zambia Environmental Management Agency (ZEMA) for review and approval. Section 3(1) of the EMA stipulates that “A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter.”

This Archaeological and Cultural Heritage Survey was conducted as part of the Environmental and Social Assessment (ESIA) process as required by the Environmental Management Act and other international protocols.

1.2. Objectives of the Archaeological and Cultural Heritage Survey

The main objective of the survey was to identify archaeological and heritage resources that are located within a defined 50m wide wayleave and the immediate surrounding area which could be affected by the construction of the proposed power line. The study area is about 44km long from Chipata West Substation in Msekera area of Chipata District to Chikoma in Vubwi District at the border with Malawi.

The specific objectives of the archaeological and heritage survey were:

i. to identify and define the extent of known archaeological and heritage resources within the study area;

ii. to establish, from existing evidence, the likely archeological and heritage potential of the study area; and

iii. to make recommendations on the need for (and scope of) further evaluation and mitigation as necessary.

This report summarizes the results of an archaeological field and desk-based assessments.

1.3. Description and Location of Project Area

The project area for the Malawi-Zambia 400kV Transmission Interconnector is geographically situated within the Chipata and Vubwi districts of Zambia. The area is located between the coordinates of latitudes 13°39'7.626" South and 13°50'50.673" South, and longitudes 32°33'27.619" East and 32°54'18.967" East. This area is characterized by its unique topography and rural agricultural landscape, which plays a significant role in the local economy and way of life.

The topography of the project area is relatively uniform, with gently rolling flatlands that are interspersed with occasional hills. These flatlands are primarily utilized for small-scale, family-run farms, which dominate the local landscape. These farms are a vital component of the local economy, providing livelihoods for a significant portion of the population. The agricultural activities in this region are typically subsistence-based, focusing on crops such as maize, groundnuts, and various vegetables, which are grown for both local consumption and sale in nearby markets.

The landscape is also marked by the presence of small streams and seasonal rivers that traverse the area. These water bodies are crucial for the agricultural activities, providing necessary irrigation for crops, particularly during the dry season. However, the streams are often seasonal, with water levels fluctuating significantly between the wet and dry seasons. The hills that partially surround the farmland contribute to the area's natural drainage system, influencing both the flow and availability of water in the project area.

The natural vegetation in the project area consists largely of miombo woodlands, a type of savanna woodland common in the region. These woodlands are characterized by a mix of deciduous trees and shrubs, which provide important ecosystem services, including fuelwood, non-timber forest products, and habitat for local wildlife. However, much of the original vegetation has been cleared for agricultural purposes, leading to a landscape that is a mosaic of cultivated fields and patches of natural vegetation.

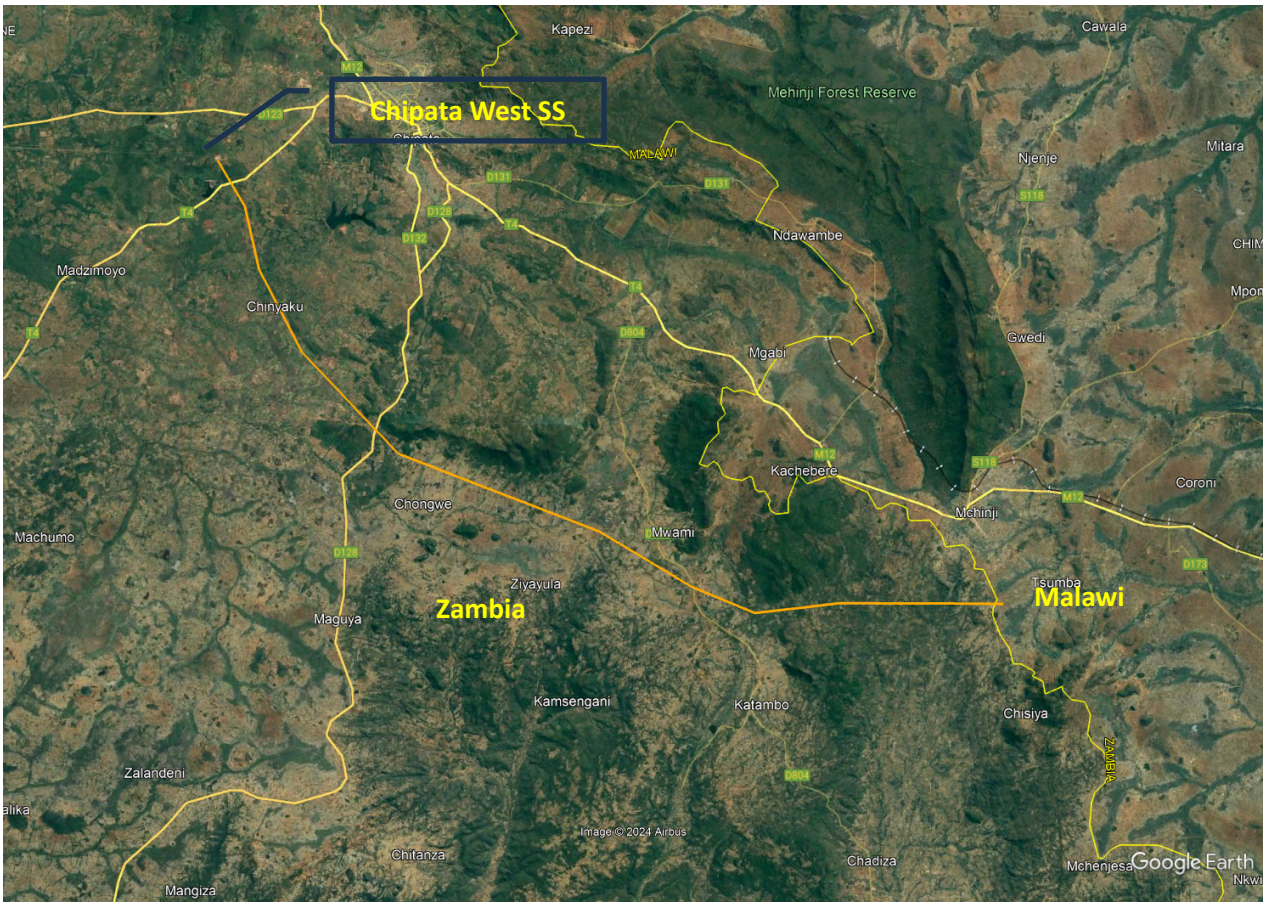
The human settlement pattern in the Chipata and Vubwi districts is typically rural, with scattered homesteads and small villages dotting on the landscape. These settlements are often closely associated with the agricultural plots they depend on, leading to a dispersed population density. The local communities are primarily engaged in farming, with some involvement in small-scale trading and other informal economic activities.

The project area is also culturally rich, with a population that includes various ethnic groups, each with its own traditions, languages, and social practices. These communities have a deep connection to the land, and their cultural practices are often closely tied to the agricultural calendar and the natural environment. Chipata District is habited by Ngoni people under the leadership of Paramount Chief Mpezeni while Vubwi is dominated by the Chewa people under Chief Pembamoyo.

The proposed power line covers a distance of 44km with a wayleave size of 50m.

The main project locations for the full project are shown in the map in Figure 1 below.

Figure 1: Proposed alignment of the Malawi-Zambia 400kV Interconnector Project



1.4. Project Description and Project Activities

The works for the proposed construction of the 400kV transmission line will include the following activities;

- Carrying out bush (vegetation, trees and anthills) clearing, route survey and profiling, tower spotting, conductor profiling;
- Supplying and erection of all foundations complete with stubs;
- Supplying and erection of towers;
- Supplying and erection of insulators, fittings and hardware;
- Supplying and stringing of conductors, earth wires and OPGW;
- Supplying and installation of earthling counterpoise wire; and
- Supplying bolts, nuts, washers and other materials.

Chipata West Substation will be expanded to accommodate a new busbar arrangement and associated infrastructure. The works shall include the following:

- Bush clearing, including anthills and all trees, if available;
- Earthwork on the platform;
- Necessary drainage;
- Transformer oil pits, bund walls, fire walls and foundations;
- Support and Gantry foundations, including holding-down bolts;
- Cable ducts and covers;
- Control building, with battery room, Relay and Control Room
- Perimeter fence;
- Landscaping and replanting of vegetation (trees and grass).

2. RELEVANT LEGISLATIVE AND ADMINISTRATIVE FRAMEWORK

There are a number of legislative provisions govern the construction of infrastructure projects. However, this report focuses on legislation and policies directly relevant to archaeological and cultural heritage resources.

2.1. National Legislation

(a) Environmental Management Act, N°. 12 of 2011.

The principal legislation governing environmental management in Zambia is the Environmental Management Act (EMA) of 2011. The Act provides for the sustainable management of natural resources, protection of the environment, and the prevention and control of pollution. It demands for environmental assessments for projects, and to carry out monitoring and inspections.

***Relevance*:** Of particular significance to the project is Section 29 of the Act, which demands that development projects that have an effect on the environment shall not undertake without a written approval of the Agency and shall be implemented in accordance with any conditions imposed in the approval letter.

***Compliance*:** The Archaeological and Cultural Heritage survey was carried as part of the ESIA process for the Malawi- Zambia 400kV Transmission Interconnector project.

(b) The Environmental Impact Assessment (EIA) Regulations, SI 28 of 1997.

The Environmental Impact Assessment (EIA) Regulations, Statutory Instrument (SI) 28 of 1997, Section 29 (1) of the Act states that 'A developer shall not implement a project for which a project brief or an environmental impact statement is required under these Regulations, unless the project brief or an environmental impact assessment has been concluded in accordance with these Regulations and the Council has issued a decision letter, and except in accordance with any conditions imposed in that approval". In Zambia, it is a legal requirement under these Regulations that before a developer commences implementing a project, an EIA report must be prepared and submitted to ZEMA for review and approval.

Relevance: According to the First Schedule (Regulation 3(2) of the EIA Regulations, the proposed Project falls within the category which requires an ESIA study to be undertaken and submitted for approval.

***Compliance*:** During the detailed study, all the negative environmental and social impacts likely to result from the project will be identified and mitigated in accordance with these regulations.

(c) The Environmental Management Act (Amendment) Act No.8 of 2023:

This amendment to the Environmental Management Act introduces updates and enhancements to the existing environmental management framework, addressing emerging environmental challenges and strengthening regulatory mechanisms.

Relevance: It ensures that environmental management practices and regulations remain current, effective, and responsive to evolving environmental issues, including those related to energy infrastructure construction.

***Compliance*:** Compliance involves incorporating new provisions and requirements introduced by the amendment into energy infrastructure construction projects, updating environmental management plans, and ensuring adherence to revised standards and procedures.

(d) Environmental Licensing Regulations (SI No.112 of 2013)

These regulations establish the requirements and procedures for obtaining environmental permits or licenses for activities with potential environmental impacts, including energy infrastructure construction.

Relevance: They ensure that construction projects meet specified environmental standards and requirements before they can proceed, promoting environmental protection and compliance with regulatory standards.

Compliance: Compliance involves applying for and obtaining environmental licenses or permits as required by the regulations, demonstrating adherence to environmental standards, mitigation measures, and monitoring requirements throughout the project lifecycle.

(e) The National Heritage Conservation Act No. 23 of 1989 and National Heritage Conservation Commission Amendment Act No. 13 of 1994

The National Heritage Conservation Act establish the National Heritage Conservation Commission (NHCC) and provides for the conservation of ancient, cultural and the natural heritage, relics, and objects of aesthetic, historical, pre–historical, archaeological, or scientific interest. The NHCC is also responsible for enforcing the World Heritage Convention 1992, under which the heritage sites (such as significant waterfalls) are included in the World Heritage list as World Heritage Sites.

Relevance: Construction works on the project may lead to the discovery of ancient heritage or relics which have to be reported to the Commission for identification and conservation

***Compliance*:** During construction, the contractor shall pay particular attention to establishing the presence of any artefacts or objects of archaeological significance along the project corridor. The Commission will be informed about any findings.

2.2. International Policies

There are a number of international Environmental and Social Standards (safeguards) that are applicable to the construction of a transmission power line to ensure the effective management of environmental and social risks. Compliance with these standards is essential for promoting sustainable development and minimizing adverse impacts on communities, workers, and the environment. This project, funded by Swedfund, the EIB Standards are applicable

This section covers international standards which are applicable to archaeological and cultural heritage resources:

World Bank Environmental and Social Safeguards

ESS8: Cultural Heritage:

Description: ESS8 focuses on the protection and preservation of cultural heritage sites, monuments, and resources affected by World Bank-funded projects. It aims to avoid, minimize, and mitigate adverse impacts on cultural heritage and promote its conservation, documentation, and sustainable management.

Applicability: Construction works on the project may lead to the discovery of ancient heritage or relics which have to be managed according to this Standard and in collaboration with national regulations.

Compliance: During construction, the contractor shall pay particular attention to establishing the presence of any artefacts or objects of archaeological significance along the project corridor in accordance with this Standard. The relevant local authority will be informed about any findings.

International Finance Cooperation (IFC)

IFC PS 8: Cultural Heritage:

Description: PS8 focuses on the protection and preservation of cultural heritage sites, monuments, and resources affected by project activities. It requires clients to identify and assess potential impacts on cultural heritage, develop measures to avoid or minimize adverse impacts, and implement plans for the conservation and management of cultural heritage resources.

Applicability: PS8 is relevant to the transmission power line construction projects that may impact cultural heritage sites, archaeological sites, or cultural landscapes.

Compliance involves conducting cultural heritage assessments and developing heritage resources conservation plans.

UNESCO Environmental and Social Standards

ESS8: Cultural Heritage

Description: ESS 8 recognizes that cultural heritage**,** in its tangible and intangible forms, is a valuable and irreplaceable community connection between past, present, and future**.**

Applicability: ESS8 is relevant to energy infrastructure construction projects that may impact cultural heritage sites, archaeological sites, cultural landscapes, tangible and intangible cultural resources. The Nyau masquerade is on the World Heritage List of Intangible Cultural heritage both in Zambia and Malawi.

Compliance involves conducting cultural heritage assessments, identifying and protecting cultural heritage resources, implementing measures to avoid or minimize impacts, and documenting and monitoring cultural heritage sites throughout the project lifecycle.

UNESCO 1971 Convention on the Protection and Preservation of Cultural and Natural Heritage

Under this Convention, the Nyau masquerade is on the World Heritage List of Intangible Cultural heritage both in Zambia and Malawi.

European Investment Bank Environmental and Social Standards

EIB Performance Standard No. 5: Cultural Heritage

Description: This standard recognizes the significance of cultural heritage as part of individual and collective identity, its central role in supporting the objectives of sustainable development and the promotion of cultural diversity and aims to protect irreplaceable cultural heritage and to provide guidance for protecting cultural heritage throughout a Project's life cycle.

Applicability: This Standard is relevant to energy infrastructure projects that may impact cultural heritage sites, archaeological sites, cultural landscapes, tangible and intangible cultural resources.

Compliance involves conducting cultural heritage assessments, identifying and protecting cultural heritage resources, implementing measures to avoid or minimize impacts, and documenting and monitoring cultural heritage sites throughout the project lifecycle.

3. METHODOLOGY

3.1. Methods

3.1.1. Tasks requiring data

In preparation of the report, the following activities were done:

- Identifying cultural and heritage resources (archaeological, shrines and graves) in the proposed power line wayleave and adjacent areas;
- Holding individual, focus group and public meetings with relevant authorities and village cultural custodians;
- Identifying the official custodians of the would-be negatively impacted cultural and heritage resources;
- Establishing the state of the cultural resources (archaeological, shrines and graves) prior to construction
- Mapping the identified sites through the GPS coordinates
- Creating a database of these specific cultural and heritage resources for planning purposes.
- Recommending appropriate action as per recognized national and international protocol requirements for the preservation of cultural and heritage resources during of the power line.

3.1.2. Assumptions

- Recent studies in various areas of developments have revealed that cultural and heritage resources get affected by various developments (Mwata Consultants, 2014; Chikumbi,2006; 2009; 2010; 2012;2015; 2017; 2023; 2024); and
- Surviving relations and specific communities have various attachments to the deceased relations and traditional and ceremonial sites.

3.1.3. Levels of Significance

According to the Heritage Management Policies and Guidelines of the National Heritage Conservation Commission (NHCC), the significance of any heritage resource is assessed on 4 levels namely, International, National, Regional (Province) and Local (District). The cultural resources surveyed and assessed met the local criteria significance of “a district as per current national administrative arrangement and/or to an area as a unit of geographical functional, social and cultural reasons at inters district level within a specific geographical area” (NHCC Policies, 1996). The Nyau masquerade are of international significance as they are UNESCO World Heritage Intangible Cultural Heritage.

The cultural and heritage resources are significant at district levels which is Chipata and Vubwi Districts, national and international levels.

3.1.4. Primary, Secondary and Field Data

Primary sources of data included the results of consultations with key stakeholders i.e. institutional, local and traditional leaders using individual and group focus discussions, key informants and questions.

Key stakeholders consulted include:

- Council Secretary
- District Commissioners (Chipata and Vubwi)
- Various government departments and officials (Chipata and Vubwi Districts)
- Director of Public Health (Environmental Technician- Chipata and Vubwi Councils)
- Their Royal Highness- (Chiefs Mpezeni and Pembamoyo of Chipata and Vubwi respectively)
- Headmen/Women and Community Representatives; and
- Ward Councilors,
- NHCC (East-Central Region)

Both individual and focus group discussions and interviews were held with the Chiefs, headmen/women and their traditional royal councilors. Further, public interviews and meetings were also conducted with communities along the power line corridor.

Table 1: List of Stakeholders Consulted

S/N	Category	Area	Institution	Name / Designation	Coordinates	Phone Number
1	Government	Lusaka	NHCC	Mr. Muyumbwa Ndiyoi Acting Executive Director		0975112523
2	Government	Lusaka	NHCC	Mr. MacMillan Mudenda Acting Regional Director (East-Central Region)		0976796078 0965796078 0955796078
3	Government	Chipata	Provincial Office	Cultural and Traditional Affairs Officer		0977885691
4	Farm Area	Chipata	Msekela area	Mrs. Lombe Food Cost Farm		0979350425
5	Farm Area	Chipata	Chipangali River Area	Mrs. Mwanza Private Farmer		0979147744
6	Traditional	Chipata	Cultural Site Kalonje Village Graveyard	Samson Tembo Gatekeeper	Adjacent to the power line	0970712792

7	Traditional	Chipata	Feni Village	Chief Induna to Paramount Chief Mpezeni	Royal Palace	0771565973
8	Traditional	Chipata	Mukosi, Dawula and Kaimfwa Villages Graveyard	Ululani Tembo Headman/Gatekeeper	454571 E 8481119 N	
9	Traditional	Chipata	Chundama Village Graveyard	Chundama Headman/Gatekeeper	461681 E 8475832 N	0977192413
10	Traditional	Chipata	Pashane Village Graveyard	Pashane Headman /Gatekeeper	454535 E 8483525 n	
11	Traditional	Chipata	Kauzu Zone Graveyard and Nyau Site	Taison Zulu (Chairman) Timothy Nyirenda (Vice Chairman) Gideon Nyirenda (main gatekeeper for Nyau ritual Site)	453470 E 8488024 (graveyard) 453441E 8587934 (Nyau ritual site 0	0962205822 0772788978 0776806220
12	Traditional	Chipata	Yonke Village graveyard	Yonke Headman / Gatekeeper	461511 E 8474922 N	
13	Traditional	Vubwi	Chikota Village graveyard	Chikota II Headman / Gatekeeper	489403E 8469551 N	
14	Traditional	Vubwi	Chikota and Kunga Villages Nyau ritual sites	Lewis Phiri	488474 E 8669733 N (initiation area) 488716 E 8469713 N (Exiting point) 488909 E 8469660 N	0773197051

					(Performing area)	
15	Traditional	Chipata	Mphande Village graveyard	Mphande III Headman / Gatekeeper	475490 E 8470967 N	
16	Traditional	Chipata	Lifazi Village graveyard	Sikanyika Headman / Gatekeeper	471759 E 8473716 N	0777572734
17	Traditional	Chipata	Induna Representative of Paramount Chief Mpezeni	Simbani Chibwe Headman / Induna		0776813409

Secondary data included archival, reports, diagrams and sketches. These were reviewed and studied to obtain the secondary data.

Field data was obtained by undertaking actual field surveys and assessments. To assist the Archaeology and Cultural Heritage Expert, two specialists and 3 local field assistants, including a local traditional councilor, were engaged. These assisted both in the field surveys and with public and individual interviews where information on the occurrence of cultural and heritage sites was obtained.

All the significant cultural and heritage resources along in the proposed power line corridor and the surrounding areas were mapped and recorded.

The Specialist team surveyed all the cultural and heritage resources along the proposed power line route and mapped them on GPS. GPS coordinates were picked and entered in the hand-held GPS and any features of cultural and heritage significance were recorded in relation to the proposed power line route.

Additional data was obtained through literature reviews and preliminary field reconnaissance studies. All known information was collected from various sources; this information included maps, books, reports, theses, public and personal records, photographs and sketches to mention.

The literature review was followed up by carrying out personal interviews with traditional leaders and custodians, historians, civic authorities and other identified executives and professional of relevant institutions. These were followed by actual field reconnaissance. The field excursions were aimed at physically locating, assessing and mapping out sites where they existed.

3.2. Archaeology (methodology) and source of data

The proposed route of the power line indicated the possible presence of archaeological and cultural resources as per NHCC Regional Director Pers. Com May 2024 NHCC National Register and preliminary field survey. The uniqueness context of potential existing cultural resources influenced investigations and the approach of field assessment. There has not been inventory and field work in the recent past as few development-related assessments have taken place against a background of so many decades of no documented field work (NHCC Regional Director Pers. Com May 2024).

The investigations were simply to assess any encountered surface collections and document the presence of already understood archaeological information. The field inspection of the proposed power line route involved collecting artifacts for analysis and to determine the density and postulate the impact on the same.

3.3. Cultural Traditional/Ritual Site (Methodology) and Sources of Data

The cultural sites are primarily known for their significance in the traditional ceremonies, rituals and ethnic continuity of life styles of local communities residing in any given area. A number of these sites and their importance especially in certain geographical areas have been highlighted especially in the recent studies (Chikumbi, 1995; 1997; 2010; 2012; 2015; 2022; and 2024).

The major source of information was interviews with local traditional authorities, traditional councilors, headmen/women, spiritual leaders and ordinary villagers. The selection of respondents was based on age, sex and length of stay in the particular place. Principally, elderly persons were interviewed at great length to obtain information about perceptions and knowledge of historical, ritual and archeological sites.

Interviews formed the basis of the primary information collected and analyzed in this report. Field surveys were undertaken for a period of 7 days along the preferred route. Site selection was based on demographic distribution of human dwellings.

3.4. Data sources used in the preparation of this report

Data sources

(a) National Heritage Conservation Commission

A comprehensive list of heritage sites, monuments and other sites of historical interest resources including abandoned settlements, burial places, traditional areas of ceremonies, trees and anthills of spiritual significance to communities and other sacred places where public access is prohibited which are located in the project area were obtained.

(b) National Museums Board of Zambia

Database on cultural artifacts or collections recorded in the proposed project area, documents from previous studies such as EIS Reports, overview of heritage and archeological resources of Eastern Province, and Chipata and Vubwi districts in particular, were consulted.

(c) Interviews from residents along the proposed Power Line

Local people living along the proposed line route were interviewed to identify historical issues, graveyards resources, included abandoned settlements, burial places, areas of traditional ceremonies, trees and anthills of spiritual significance to communities and other sacred places where public access is prohibited which are located along the proposed power line route and archeological information. A total of 8 graveyards and two adjacent Nyau ritual sites were identified.

4. EXISTING ENVIRONMENT

An environmental and social baseline establishes the state of the environment prior to the execution of any project. The proposed project area has not been well studied regarding archaeological and cultural in the past and only scant information exists on the subject matters.

4.1. Archeological and Heritage Baseline Data

Existing data shows very scant baseline information about the archaeological and heritage resources in the study area. Earlier works (NHCC National Register) suggest that little works have been undertaken in archaeology of Eastern Province of Zambia compared to other regions that depict human development in the prehistoric periods. However, other works have indicated that there is some evidence of pre-existence of late stone age technology that shows human development dating as far back as 400 years ago in eastern part of a country now called Zambia (NHCC National Register).

(a) Stone Age period

The Stone Age narratives are formed through the analysis of some of the tools associated with early human technology. Research in Livingstone areas and northern Zambia provides some leads on Stone Age human development with able micro lithic tools such as pebbles, cutting stones and hand axes.

Recent studies also demonstrate that the eastern part of the Zambia has been inhabited by human settlement exploiting natural environments from the Stone Age through Iron Age periods time to the recent past (Phillipson 1973).

(b) Early and Middle Stone Age prehistoric periods

Iron Age storylines in Zambia indicate that the Chafishi and Chaingo hills sites in Chipata provides the first dated occurrence of Early Iron Age artefacts (Phillipson, 1974); that can be postulated to have spanned into northwestern part of Rhodesia. Thereafter, knowledge of the post-Early Iron Age archaeology of Zambia has hitherto been largely restricted to the Southern Province. With recent works (e.g. Robertson, 2001) that argue that the Luangwa tradition appears to have been established by the eleventh or twelfth century A.D., making a sharp typological break with the preceding Early Iron Age traditions can be noted in other parts of the country. This means detailed studies would reveal more information in the study area though Iron Age sites ceramics of the Luangwa tradition on the side of the study area.

(c) Later Iron Age period

Iron Age (IA) people seem to have entered Zambia around the third Century A.D. These people are associated with settled life and food production (agriculture and domestication of animals). The cultural material and artefacts associated with this period include pottery, Iron tools, tuyere (Clay pipes), and beads. In the eastern Zambia of the study area, prehistoric settlement sites have been located at Chaingo hills, Chafishi and Kalemba caves (NHCC National Register).

4.2. Archaeological Sites in the Project Area

A two stepwise comparative approach to identify archaeological sites was adopted. This meant, a list of heritage sites of national, regional and local significance obtained from National Heritage Conservation Commission and National Museums Board were compared with information from interviews to ascertain the presence of such sites. From the aforementioned approach on the current baseline survey, only one Archaeological site was identified and documented outside the proposed power line corridor. A site visit indicated that the rocky sites are highly degraded by the locals who prospect for mineral deposits. The archaeological sites are denoted by "AC".

Table 2: Location of Archaeological Sites of Local Significance in the Study Area

S/N	Location Name	Resource Type	Key Issue	Significance	Country/Area
AC 1	Chaingo Hills	Late Stone Age/Early Iron Age	Prehistoric	National	Zambia/Chipata
AC 2	Chinjela Hills	Late Stone Age/Early Iron Age	Prehistoric	National	Zambia Chipata
AC 3	Chafishi	Late Stone Age/Early Iron Age	Prehistoric	National	Zambia/Chipata

Source. NHCC Heritage Profile 1996

4.3. The People and Culture of the Project Area

The project area covers two districts, Chipata and Vubwi, in the Eastern Province of Zambia. Chipata District is inhabited by the Ngoni group of people while Vubwi is occupied by the Chewa people.

(a) The Ngoni People

The Ngoni people are an ethnic group living in Chipata and the surrounding districts, including Mchinji on the Malawian side. They trace their origins to the Nguni and Zulu people of South Africa and migration was triggered by political strife in the Zulu kingdom. The great leader of the Ngoni people in Zambia is His Royal Highness Paramount Chief Mpezeni and he has subordinate chiefs and headmen who help him rule the chiefdom.

The Ngoni people express their culture through the Ncwala Ceremony which is held in Mtenguleni Village every year in February. Ncwala "is a thanksgiving ceremony that pays homage to their god, ancestral spirits and Chief Mpezeni for the gift of the first fruits and food. The ritual ceremony has been passed on to current generations by Ngoni ancestors who originated from old Zulu culture" (Zambia Travel, 2024).

During the Ncwala Ceremony traditional leaders and elders offer prayers to their ancestors for blessings, guidance and protection. This creates a sense of reverence and connection to the ancestors.

The traditional ceremony is accompanied "with mesmerizing dances performed by warriors and maidens adorned in vibrant traditional attire, accompanied by rhythmic drumming and singing. These rituals reflect the Ngoni's pride, bravery, and unity as a community." The warriors and maidens who are "adorned in vibrant traditional attire, showcase their graceful movements and intricate footwork, accompanied by rhythmic drumming and singing". (Zambia Immigration Portal, 2024)

Figure 2: Ngoni Warriors Performing during the Ncwala Ceremony in 2024

Source: Zambia Immigration Portal, picture by Marcus Richards 2024

(b) The Chewa People

The Chewa people are a Bantu ethnic group that migrated from the Democratic Republic of Congo many years ago and settlement in Malawi, Zambia and Mozambique. In Zambia, the Chewas are found in Katete, Vubwi and the surrounding districts of Eastern Province. His Royal

Highness Paramount Chief Kalonga Gawa Undi is the leader of the Chewa people and he has subordinate chiefs under him in the three countries where his chiefdom extends.

The Kulamba Traditional Ceremony is a tradition ceremony for the Chewa people and is held annually in the month of August in Katete to pay homage to their Chief, Kalonga Gawa Undi, and to honour their ancestors.

The Kulamba Ceremony is custodian to one of Zambia's unique cultural practices called the Gule Wa Mkulu which has been recognized by UNESCO as "artifacts of intangible heritage". "The Chewa deeply value their spiritual and cultural traditions. Through this annual ceremony, they maintain a powerful connection to their heritage, with rituals that reflect their reverence for the spiritual world and their commitment to preserving their cultural identity". (Nkwazi Magazine, 2024)

The traditional ceremony, Gule Wa Mkulu, is an expression of "the incredible craftsmanship of the Chewa artisans. The vivid, symbolic Nyau masks are particularly striking, crafted with deep cultural significance. In addition to the masks, Chewa artisans produce stunning beadwork and intricate carvings, each piece carrying its own symbolic meaning connected to the beliefs and traditions of the Chewa people". (Nkwazi Magazine, 2024)

Figure 3: Nyau Dancers in Gule Wa Mkulu Attire

Source: Wahga.com and www.bing.com

5. FINDINGS

5.1. Cultural resources

Both surveys and interviews were held along the proposed power line route. Identification of historical sites, graveyards resources including abandoned settlements, burial places, sites for traditional ceremonies, trees and anthills of spiritual significance to communities and other sacred places where public access is prohibited which are located along the proposed power line route and archaeological information were assessed and inventoried.

The following cultural sites were identified.

i. Kauzu Zone: Active graveyard with over 150 burials within the power line wayleave.

Location: 453470 E and 8488024 N

ii. Kauzu Zone: Nyau Ritual Site adjacent to the power line wayleave.

Location: 453441 E and 8487934 N

Figure 4: Gatekeepers of the Graveyard and Adjacent Nyau Ritual Site at Kauzu

Figure 5: Kauzu Nyau Ritual and Ceremonial Site within the Power Line Wayleave

Figure 6: Part of Kauzu Zone Graveyard within the Power Line Wayleave

Iii. Pashane Village active graveyard of over 150 burials

Location: 454535 E and 8483525 N

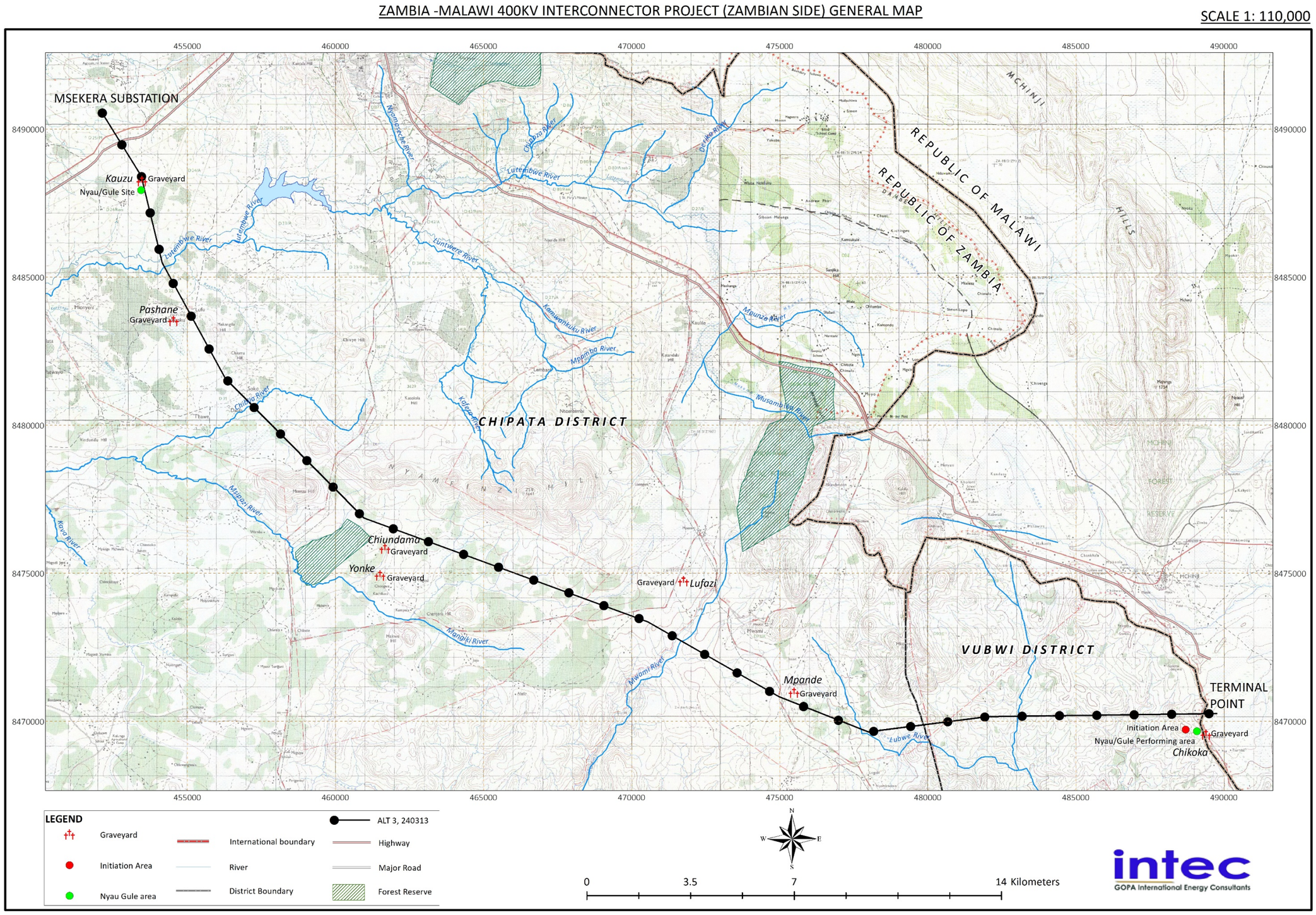
Figure 7: Village Headman and Gatekeeper at Mukosi, Dawula & Kaimfwa Village Graveyard

Figure 8: Nyau Masquerade of the Chewa People

Table 3: Identified Archaeological and Cultural Heritage Sites

S/N	Site Location (Village)	Description	GPS Coordinates		Distance from the Centre of Line	Distance from Chipata West S/S
			Eastings	Northings		
1.	Kauzu	Graveyard	453470.00	8488024.00	13 meters	2.8Km
2.	Kauzu	Nyau / Gule cultural site	453441.00	8487934.00	114 meters	3.1Km
3.	Pashane	Graveyard	454535.00	8483525.00	606 meters	7.5Km
4.	Chundama	Graveyard	461681.00	8475832.00	747 meters	18.4Km
5.	Yonke	Graveyard	461511.00	8474922.00	1.7Km	19.3Km
6.	Lufazi	Graveyard	471759.00	8474737.00	1.83Km	28.7Km
7.	Mpande	Graveyard	475490.00	8470967.00	324 meters	32.34Km
8.	Chikoka	Graveyard	489403.00	8469551.00	544 meters	46.3Km
9.	Chikoka	Initiation area	488716.00	8469713.00	650 meters	46.4Km
10	Kaunga (Chikoka area)	Nyau / Gule Performing Area.	489091.00	8469660.00	640 meters	46.5Km

Figure 9: Cultural Resources in the Proposed and Adjacent Power Line Route



6. SIGNIFICANCE OF CULTURA RESOURCE

6.1. Introduction

Before outlining impacts and recommending mitigating measures of any resource, it is important to determine the significance of any resource. Mitigatory measures, to a large extent, will depend on the significance of such resources. It is important that the value of such resources either in their use or role in the wider context in which they are found is evaluated for significance.

6.2. Significance

Traditional cultural resources in any proposed area of development are significant for the following reasons:

- Traditional sites possess historical significance to the understanding of the culture of local communities;
- Traditional sites play a mortal link between the past and current traditional life styles of the communities;
- Traditional sites and rituals are a source of education and initiation for the younger generations of communities;
- Traditional sites are important centers for present day cultural activities; and
- Traditional sites and rituals are important bases of local ethnic aspirations.

On the other hand, archaeological resources are:

- The only primary source of understanding and extrapolation of history before the advent of literacy;
- They are of scientific value in understanding distinct cultures and past environments;
- They are important in education;
- The have marked aesthetic value and some are tourist destinations; and
- They are a source of national aspiration, identity and value.

Both these resources may possess a combination of some or all of the above values. Their protection and conservation may not only be associated with physical attachment but with intangible and emotional value also. (Chikumbi, 1995).

6.3. Levels of Significance

The known archaeological and heritage resources have been graded according to their degree of significance and importance. This can be a very subjective process, the outcome of which can reflect many different processes. The interests of those categorizing the site, and the available information may all have a bearing on the eventual result. It should, therefore, be remembered that this grading is purely an arbitrary classification designed to allow choice over the relative importance of sites. Based on the findings and the recommendations proposed in this report which include changing of the line route in order to avoid the archaeological and cultural sites, level of significance will be low.

Table 4: Basis for Evaluation of Levels of Significance

Significance	**High A**	**Medium B**	**Low C**	**Negligible D**	**Unknown E**
Description	Internationally and Nationally important resources, legally protected	Regionally important resources not legally protected, of a reasonably defined extent, nature and date and significant in a regional context	Locally important resources of low or minor importance	Resources which have little or no archaeological or historical value, or where remains may have been previously destroyed	Resources whose archaeological importance is unknown, sites of uncertain character or date
Examples	Internationally listed sites, buildings or Intangible Cultural Heritage (Nyau and Likishi masquerades)	Graveyards, burial sites of chiefs	Historical sites and fields	Cultivated landscape or destroyed sites with no more value	Single find spots, unidentified features on aerial photographs
Mitigation measures	Avoidance recommended	Avoidance recommended	Avoidance recommended with further investigations to assess likely impact	Avoidance unnecessary	Avoidance unnecessary

7. IMPACT ASSESSMENT AND EVALUATION

Within the principles of best practice, potential impacts of the proposed power line project on heritage and archaeological resources in the proposed area was guided by literature search on similar projects and the consultant's experience. However, most (more than 95%) of the cultural site of significance are outside the proposed work site and as such, the project envisages low impact levels.

7.1. Impacts

The impact of the proposed power evacuation route has been assessed by comparing its land-take with the locations of the known cultural and archaeological resources. Of all sites evaluated, two sites are likely to interact with the activities of the project. The rest of the known sites will not be directly or indirectly be impacted by the project activity cycles as they are outside the wayleave of the power line.

The magnitude of any impact has been assessed according to the scale set out below:

Table 5: Evaluation of Impacts of the Project on the Identified Archaeological and Cultural Heritage Sites

Name of site	Impacts	Impact measure	Expected Impact	Direct	Indirect
Kauzu zone graveyard 453470 E 8488024 N	Severe	Complete	Almost destruction of the site	Direct	
Kauzu Zone Nyau ritual site 453441 E 8487934 N	Moderate	Partial or complete avoidance (side is just outside the wayleave)	Partial destruction of site from construction activities	Direct	
Pashane village graveyard 454535 E 8483525 N	None	Site will not be affected, it is far from the proposed power line.	No expected impact	No expected impact	No expected impact
Mukoshi, Dawula and Kaimfwa villages graveyard	None	Site will not be affected, because it is far from the	No expected impact	No expected impact	No expected impact

455716 E 8481119 n		proposed power line.			
Chundama village graveyard 461681 E 8475832 N	None	Site will not be affected. It is far from the proposed power line.	No expected impact	No expected impact	No expected impact
Yonke village graveyard 461511 E 8474922 N	None	Site is not be affected. it is far from the proposed power line	No expected impact	No expected impact	No expected impact
Chikoka village graveyard 489403 E 8469551N	None	Site is not be affected. it is far from the proposed power line.	No expected impact	No expected impact	No expected impact
Kunga village Nyau ritual site 488474 E 8669733 N initiation ceremony centre 488716 E 8469713 N Exiting point after initiation 489091 E 8469660 N Performing arena	Minor	Survey and construction workers may stray or trespass in this multiple purpose ritual site	Desecration of site	No expected impact	Indirect
Mphande village graveyard	None	Site is not be affected. it is far from the	No expected impact	No expected impact	No expected impact

475490 E 8470967 N		proposed power line. n			
Lifazi village graveyard 471759 E 8473716	None	Site is not be affected, because of distance from the proposed development, or method of construction	No expected impact	No expected impact	No expected impact

The potential impact of the proposed development on the said grave yards will either be:

(a) Direct

- Physical damage, including compaction and or removal of biophysical material on site;
- Disturbance of heritage and cultural features on site and desecration of ritual sites. Most of the disturbance will occur during the construction phase: removal of topsoil and vegetation, movement of heavy equipment.

(b) Indirect

- Visual intrusion that would in some way affect aesthetic settings of the landscape features;
- Disturbances causes by vibrations and movement of construction material;
- Eroding sacredness of the cultural landscape by regular movements of construction workers along or near the sites (graveyards).

7.2. Significance of the impacts

The significance of the impact has been assessed (as in section 7.1) by comparing the importance of the known cultural or archaeological resources against the magnitude of the impacts upon them. The factors affecting significance would include:

- Proportion of site against features to be disturbed;
- The integrity of the site or features; impacts may be reduced if there is preexisting damage or disturbance on site;
- Nature, potential and heritage value of the site or feature.

7.3. Management measure

Measures need to be taken to minimize the impacts of the project on the social-cultural and heritage resources as much as humanly possible. Based on the above, four management measures are available for the identified graveyards and initiation sites (cultural resources):

(i) Avoidance: This option entails completely avoiding disturbance of these locations where feasible. Depending on the importance of the resource and the economic viability of preservation, site conservation may be the only option available to the developer.

(ii) Mitigation and partial conservation: This option focuses on a combined approach of avoidance and conservation. Portions of a site that cannot be avoided may be managed through cultural study, including such actions as detailed documentation and mapping. Local leadership may be involved to help plan the management of the area. In areas where avoidance is feasible, conservation efforts should mainly consider significant site features.

(iii) Site mitigation: The entire site is mitigated through appropriate cultural study and documentation before destruction.

(iv) Site destruction: If a site is of little or no cultural heritage significance, it may be destroyed.

Two options can be considered in the mitigation and management of the sites in this report.

I. Option I, which entails the conservation and protection of sites in their original location, is the preferred course. If the transect of the power line is minimally shifted within a distance of > 20m.

When this is not practically or economically viable for significant sites, Option II is recommended as:

II. The pylon of the power line can be mounted in the graveyard itself on portions that are bare. A detailed mapping of the sites may be necessary to circumvent the damage.

7.4. Mitigation measures

- The developer will develop a site-specific Heritage Management Plan (HMP) that describes the location of known cultural heritage sites in the project area and actions for managing those sites.
- The contractors, subcontractors and employees should be sensitized to the procedures that must be followed in case of discovery and the potential presence of archaeological resources that may be discovered during land-clearance and mechanical excavation activities.
- Develop and implement a plan for “unforeseen discoveries” (chance find) procedures of significant archaeological, cultural or historic features revealed during construction and operational activities.
- Periodic reviews of the integrity of cultural heritage and sacred sites around the operations.

7.5. Heritage Resources Monitoring Plan

Heritage resources are not fully studied especially in the proposed project area. There is need for a monitoring plan to be in place to manage unforeseeable discoveries and how best current

heritage and cultural resources evolve in the project cycle. The monitoring plan should consist of the following:

- Cultural and social integration component: this allows affected social grouping (local communities) to fully express their feeling on the development in the medium- and long-term life of the project. This lowers the possibility of vandalism if the community fully gets integrated in the process.
- Reporting mechanism in place: deliberately put in place a mechanism that allows contractors and others associated with the project to report any finds or suspected cases of archaeological nature to NHCC, Museums or authorities for further investigations.

8. CONCLUSION AND RECOMMENDATION

This report presents the findings of the field survey conducted in Chipata and Vubwi districts to identify cultural and archaeological resources within the project area. From a heritage perspective, all recorded sites hold national and international significance. In particular, the graveyard and adjacent Nyau ritual site in the Kauzu area require preservation, necessitating a minor adjustment to the power line alignment to prevent disturbance to these culturally significant locations.

To mitigate potential impacts, this report recommends rerouting the transmission line or adjusting the Angle Point Tower to entirely avoid archaeological and cultural sites. Additionally, if previously undetected prehistoric materials are discovered during construction or decommissioning, the developer should immediately notify the NHCC East-Central Region offices in Lusaka for professional guidance and, if necessary, rescue excavations.

With the proposed realignment of the power line and adherence to the recommended mitigation measures, the overall level of significance of heritage impact will be low. In conclusion, the project is expected to have minimal impact on cultural heritage resources and can proceed in compliance with heritage preservation guidelines.

REFERENCES

1. Ardito, J.A. (1993). Reducing the effect of heavy equipment consumption through a program of in-site preservation. New York State office of National Parks, New York.
2. Brydal Thomas (2015). Journal of Water and Health 13 (2) 285 – 301.
3. Chikumbi D.C. (1992). The 1989 Heritage Act: Archaeological Implications unpublished M.Phil. Thesis. University of Cambridge.
4. Chikumbi D.C. (1994). Archaeological Resources in the Lower Kafue: An Assessment of Paleontological and Archaeological impacts of the proposed Hydro-Power Project, ZESCO, Lusaka.
5. Chikumbi D.C. (1995) Report on the Cultural Resources around the Victoria Falls on the Zambian side, SEA report, IUCN-ROSA, Harare.
6. Chikumbi D.C. (1998). Specialist study on Archaeology and Cultural History Issues: Special Report of the Environmental Impact Statement for the proposed Sun International Hotel developmental Victoria falls, Zambia. CSIR, Pretoria.
7. Chikumbi D.C. (2010). Archaeological and Cultural Heritage Specialist Study (ESIA) of the proposed Kazungula Bridge Project, Botswana-Zambia, Zambian side, LOCI Environmental Consulting, Gaborone.
8. Chikumbi D.C. (2023). Cultural Resources Assessment (Graves and Graveyards Inventory) of the Proposed Upper Lunsemfwa Dam Project, ULDP, Mkushi
9. Clark, J.D. (1949). Stone Age Culture in Northern Rhodesia, Cape Town.
10. Clark, J.D. (1990). Stone Age Man at the Victoria Falls. In: Phillipson, D.W., Mosi-OTunya: A Hand Book to the Victoria Falls, Longman Group Ltd, Harare.
11. Coastal & Environmental Services, February 2011: Trident Copper, Nickel project, North Western Province, Zambia. Cultural Heritage and Archaeological Specialist Report, CES, Grahamstown.
12. Croyn, J.M. (1990). The Elements of Archaeological Conservation, Routledge, London.
13. Darvill, T. (1995). ´´Value Systems in Archaeology´´ in Cooper, M.A. et.al.(eds) Managing Archaeology, Routledge, London.
14. Derricourt, R.M. (1985). Manon the Kafue: Archaeology of the Ithezi-tezhi Area, Ethnographica, London.
15. Fagan, B., Phillipson, D.W.,Daniel, S.G.H. (1966). Iron Age Cultures in Zambia Vol.2: Dambwa, Ingombe Ilede and the Tonga. Chatto and Windus, London
16. Fagan, B. (1967). Iron Age Cultures in Zambia Vol 1: Kalomo and Kangila. Chatto and Windus, London.
17. Inskeep, R. R. (1962). ´´Some Iron Age Sites in Northern Rhodesia´ ´South African Archaeological Bulletin 17, 136-180.
18. Katanekwa, N.M. (1994). The Iron Age in Zambia: Some New Evidence and Interpretations. A paper presented at the International Conference on the Growth of Farming Communities in Africa from the Equator Southwards, Cambridge.
19. Lipe, W. (1984). “Value and Meaning in Cultural Resources”. In: Cleere, H.F (ed). Approaches to the Archaeological Heritage, Cambridge: Cambridge University.
20. Livingstone Tourism Association, Eco-Tourism Guidelines for Tour Operators, Livingstone.
21. Mudenda, S. (1997). Archaeological Survey of Zambia Consolidated Copper Mines Limited (ZCCM) Mining License Areas, World Bank Mining Sector/ZCCM Report, Ndola.
22. Phillipson, D.W. (1974). “The Iron Age History in Zambia” Journal of African History 15, 1, 1-15.

23. Some Iron Age Sites in Northern Rhodesia´ ´South African Archaeological Bulletin 17, 136-180.
24. Lipe, W. (1984). “Value and Meaning in Cultural Resources”. In: Cleere, H.F (ed). Approaches to the Archaeological Heritage, Cambridge: Cambridge University.
25. Livingstone Tourism Association, Eco-Tourism Guidelines for Tour Operators, Livingstone.
26. National Heritage Conservation Commission Policies, 1996 Livingstone.
27. Nkwazi online Magazine (2024)
28. Phillipson, D.W. (1974). “The Iron Age History in Zambia” Journal of African History 15, 1, 1-15.
29. Zambia Immigration and e-visa Portal (2024), Ministry of Home Affairs.
30. Zambia Travel Magazine (2024), Ministry of Tourism.

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AIR, NOISE AND WATER QUALITY RAW DATA

1. **Air and Noise Quality Assessment locations.**

Site Code	Description	Coordinates		Distance from Activity	Community Nearby
		Latitude	Longitude		
AQ1	Near ZESCO substation - Chipata West	-13.654374	32.557004	0 m (on-site)	Yes, 471 m on the East side
AQ2	Great East Road (Leeward)	-13.664082	32.563096	0 m (on-site)	No
AQ3	Kauzu Village (near Kauzu Primary)	-13.683094	32.570319	130m	Yes
AQ4	Chinyauku (clustered rural Huts) village settlements	-13.718171	32.585565	0 m (on-site)	Yes
AQ5	Daula Village (Access road)	-13.741106	32.600861	0 m (on-site)	Yes
AQ6	Chadiza road (Cross Point)	-13.769164	32.628706	0 m (on-site)	No
AQ7	Chibwe Village (Scattered rural huts nearby)	-13.811408	32.7204	88 m	Yes
AQ8	Near regenerating Forest Zone and farms	-13.84166	32.78863	0 m (on-site)	Yes
AQ9	Chichele village (Forest and Farms)	-13.820545	32.83565	105 m	No
AQ10	Galamukani village	-13.821777	32.862824	40 m	yes
AQ11	Chikoka Village	-13.823116	32.877842	0 m (on-site)	yes

Note: The above air sampling locations are the same locations used for noise except that the site codes for the noise is NSP1 to NSP11 as illustrated below in the noise section.

2. Air quality assessment

Monitoring Period		April 3 - 11, 2025															
Time Range		Morning Each Day: 08:00 - 12:00 hrs; Afternoon: 13:00 - 18:00 hrs; Monitoring was conducted in 15-minute intervals for a minimum duration of 30 minutes per session															
Parameters		POLLUTANTS															Remarks
		Sulphur Dioxide			Nitrogen Dioxide (NO_2)			Carbon Monoxide			Formaldehyde (HCHO)			TVOC			
WHO		20 µg/m³ (per 24 hours)			120 µg/m³ (per hour)			30 mg/m³ (per hour)			0.5 mg/m³ (8 hours)			0.5 mg/m³ (8 hours)			
ZEMA		350 µg/m³ (per hour)			400 µg/m³ (per hour)			30 mg/m³ (per hour)									
		Measured average Values															
Time		Morn	Aft	Avg	Morn	Aft	Avg	Morn	Aft	Avg	Morn	Aft	Avg	Morn	Aft	Avg	
Sampling Point																	
AQ1		ND	ND	ND	2	ND	1.5	ND	ND	ND	0.011	0.009	0.01	0.058	0.035	0.047	Normal
AQ2		ND	ND	ND	8	3	5.5	ND	ND	ND	0.02	0.009	0.029	0.08	0.038	0.059	Normal
AQ3		ND	ND	ND	ND	3	1.75	ND	ND	ND	0.01	0.016	0.013	0.043	0.063	0.053	Normal
AQ4		ND	ND	ND	8	ND	4.25	ND	ND	ND	0.007	0.008	0.008	0.008	0.033	0.021	Normal
AQ5		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.008	0.03	0.02	0.032	0.12	0.08	Normal
AQ6		ND	ND	ND	10	ND	5.25	ND	ND	ND	0.008	0.014	0.011	0.035	0.06	0.047	Normal
AQ7		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0073	0.03	0.019	0.03	0.097	0.064	Normal
AQ8		ND	ND	ND	2.5	4	3.25	ND	ND	ND	0.015	0.01	0.013	0.037	0.056	0.046	Normal
AQ9		ND	ND	ND	18	5.25	11.63	ND	ND	ND	0.015	0.017	0.016	0.06	0.08	0.07	Normal
AQ10		ND	ND	ND	2.3	1.3	1.82	ND	ND	ND	0.014	0.04	0.027	0.056	0.172	0.114	Normal
AQ11		ND	ND	ND	1.5	1.67	1.58	ND	ND	ND	0.013	0.016	0.015	0.053	0.07	0.062	Normal

Measured gaseous composition

Gas	Standard (%)	Measured Ambient Gaseous Composition (%)										
		AQ1	AQ2	AQ3	AQ4	AQ5	AQ6	AQ7	AQ8	AQ9	AQ10	AQ11
Oxygen (O_2)	21	20.5	20.7	21	20.8	20.9	20.5	20.5	20.8	20.4	20.5	20.9
Carbon Dioxide CO_2	0.04	0.45	0.2	0.04	0.4	0.1	0.2	0.4	0.04	0.4	0.2	0.04
Humidity		46	58	60	44	49	47	35	42	37	44	38
Draft		0.22	0.064	0.028	0.169	0.084	0.08	0.044	0.02	0.446	0.024	-0.003
wind Direction		NW	SE, NW	NNW	NW	NW	NW	NW	NW	NW	NW	SW
Remarks	O_2 21.0: 20.4 – 21.0 Normal atmospheric range CO_2 ~0.04: 0.04 – 0.45 Slight elevations near settlements											

Particulate matter measured

Monitoring Period		April 3 - 11, 2025							
Time Range		Morning Each Day: 08:00 - 12:00 hrs; Afternoon: 13:00 - 18:00 hrs; Monitoring was conducted in 15-minute intervals for a minimum duration of 30 minutes per session							
Air Quality Standards					PM 2.5 (µg/m3)			PM 10 (µg/m³)			AQI	Remarks
U.S EPA	Good				0 - 15.4			0 -54			0 - 50	
	Moderate				15.5 - 40.4			55 - 154			51 - 100	
	Unhealthy for sensitive Groups				40.5 - 65.4			155 - 254			101 - 150	
	Unhealthy				65.5 - 150.4			255 - 354			151 - 200	
	Very Unhealthy				150.5 - 250.4			355 - 424			201 - 500	
	Hazardous				250.5 - 500.4			425 - 604			301 - 500	
WHO					25			50				
ZEMA					15 (12 months)			70 (24 hours)				
Time			Morning	Afternoon	Average	Morning	Afternoon	Average				
Sampling Points												
AQ1			2.1	5	3.6	3.6	8.5	6.1	13	Normal		
AQ2			2.7	2.6	2.7	4.2	4.2	4.2	12	Normal		
AQ3			2.6	3.9	3.3	4.3	6.6	5.5	15	Normal		
AQ4			5.6	5.7	5.7	9	9.4	9.2	16	Normal		
AQ5			3.7	5.2	4.5	6	8.5	7.3	18	Normal		
AQ6			3	2.9	3	4.8	4.6	4.7	16	Normal		
AQ7			2.6	4	3.3	4.4	7.1	5.6	11.3	Normal		
AQ8			2.1	2.9	2.5	3.7	4.5	4.1	15	Normal		
AQ9			4.6	4	4.3	7.3	6.6	7	16	Normal		
AQ10			4.2	2.9	3.6	6.8	4.9	5.6	17	Normal		
AQ11			2.8	3.1	3	5	8.9	7	18	Normal		

3. Noise Baseline Assessment

Noise Level Standard Limits	NOISE							Remarks
	Minimum			Maximum			Average	
Duration	30 minutes			30 minutes			8 hours	
ZEMA	The maximum limit for the reference duration is 85 (dB) A							
	Measured average Values - 15 minutes Intervals							
	Morning	Afternoon	Average	Morning	Afternoon	Average		
NSP1	37	36	37	70.2	70	70	53.2	Within limits, peak 80 dBc background freq
NSP2	41	40.3	41	97	38	68	55	Within limits, peak 83 dBc background freq
NSP3	43.3	37	40.2	97	64.4	81	61	Within limits, peak 89.8 dBc background freq
NSP4	43	42	43	86	60	73	58	Within limits, peak 90.2 dBc background freq
NSP5	45	37.1	41	68.3	72.3	70.3	56	Within limits, peak 90 dBc background freq
NSP6	39	38	39	75.1	69.4	72.3	56	Within limits, peak 85 dBc background freq
NSP7	48	38.2	43	84	80.4	82.2	63	Within limits, peak 97 dBc background freq
NSP8	37	35.1	36	64.5	66.2	65.4	51	Within limits, peak 81 dBc background freq
NSP9	36	35	36	70	61	66	51	Within limits, peak 85 dBc background freq
NSP10	38	39.1	39	63.2	81	72.1	56	Within limits, peak 84 dBc background freq
NSP11	40	42.2	41	68	73	71	56	Within limits, peak 78 dBc background freq

4. Water Quality Assessment

SURFACE WATER											
Parameters				**pH**	**EC**	**TDS**	**D.O**	**Turbidity**	**Eh**	**Temp.**	**Salinity**
Sampling Point Name	**Ambient Standards**	**Coordinates**		**6 - 8.5**	**400**	**180**		**50**		**25**	
		Latitude	**Longitude**		**µS/cm**	**ppm**	**mg/l**	NTU	**mV**	**(°C)**	
Lubwe River		-13.843093	32.793774	7.47	116.4	58.04	6.3	88.1	-8.9	21	0.05
Chibila Stream		-13.746241	32.606331	7.53	168.7	84.13	6.5	16.6	-7.3	24	0.07
Nyongo Stream		-13.8392	32.843451	6.88	136.2	67.4	6.3	126	-2.1	21.6	0.07
Mwami stream		-13.816337	32.738778	6.99	154.8	74.5	6.6	8.21	-8.5	22.6	0.07
Choli stream		-13.834084	32.876671	7.57	189	94	6.1	14.5	-8	24.2	0.09
Lutembwe River		-13.70215	32.576249	7.66	234	118	6.2	15.2	-7.3	23.2	0.11

Ground water quality assessment

Parameter	Mwanza Village	Lufazi County BH1	Makangila Primary BH2	Kauzu BH3	Nyonga Stream	Mkaya SN 2	Lubwe	Lutembwe SW6
Nitrate mg/L	12.4	9.28	15.06	24.93	19.54	26.2	20.28	14.99
Nitrite mg/L	<0.001	0.07	<0.001	0.02	0.03	0.01	0.01	<0.001
Phosphates mg/L	0.07	0.08	0.06	0.09	0.11	0.1	0.07	0.06
Copper mg/L	0.03	0.13	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese mg/L	0.05	0.07	0.01	0.07	0.04	0.03	0.03	0.01
Iron mg/L	<0.001	<0.001	0.01	<0.001	4.72	<0.001	2.31	0.3
Zinc mg/L	<0.001	0.07	0.05	0.04	0.05	0.03	0.02	<0.001
Cadmium mg/L	<0.001	<0.001	<0.001	<0.001	<0.001	0.01	<0.001	<0.001
Lead (Pb) mg/L	0.16	0.01	0.07	0.11	0.12	0.03	0.07	<0.001
Feacal Coliform (CFU/100 mL)	600	680	1200	9400	50	400	0	20
Total Coliform (CFU/100 mL)	20	200	1400	3600	10	10	60	20

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Ecological Survey Raw Data

Plot 1

Tree Species

Species		DBH (cm)	Height (m)	Count	Crown % Cover m^2	
Azanza garkeana		7	7	1	15	
Acacia nigrescens		13	3.2	1	3	
Acacia nigrescens		5	5.1	1	6	
Acacia nigrescens		4	9	1	32	
Anona senegalensis		10	4.2	1	6	
Anona senegalensis		8	4.2	1	6	
Anona senegalensis		7	4.2	1	6	
Anona senegalensis		4	4.5	1	7	
Acacia sieberana		4	3	1	2	
Bauhinia petersiana		13	9	1	13.3	
Bauhinia petersiana		11	9	1	13.3	
Bauhinia petersiana		9	9	1	13.3	
Bauhinia petersiana		10	9.2	1	35	
Bauhinia petersiana		4	3.1	1	10	
Bauhinia petersiana		2.5	2.1	1	6	
Bauhinia Petersiana		3	3.1	1	6	
Bauhinia petersiana		2	1.5	1	6	
Bauhinia petersiana		6	5.1	1	6	
Bauhinia petersiana		13	11	1	63	
Bauhinia petersiana		10	15	1	15	
Bauhinia petersiana		5	9	1	6	
Bauhinia petersiana		5	4.5	1	18	
Bauhinia petersiana		6	4.9	1	24	
Bauhinia petersiana		4.3	3.2	1	6	
Bauhinia petersiana		3.2	5.1	1	15	
Bauhinia petersiana		3	1.2	1	3.3	
Bauhinia petersiana		2	1.2	1	3.3	
Bauhinia petersiana		2	1.2	1	3.3	
Bauhinia petersiana		5	1.2	1	2.6	
Bauhinia petersiana		2	1.2	1	2.6	
Bauhinia petersiana		1.5	1.2	1	2.6	
Bauhinia petersiana		3.2	5.1	1	2	
Bauhinia petersiana		7	4.5	1	32	
Bauhinia petersiana		10	4.5	1	15	

Bauhinia petersiana		12	11	1	15	
Bauhinia petersiana		13	4.5	1	56	
Bauhinia petersiana		12	4.5	1	56	
Bauhinia petersiana		12	6.1	1	20	
Bauhinia petersiana		7	10	1	2	
Bauhinia etersiana		9	7.2	1	12.6	
Bauhinia petersiana		10	7.2	1	12.6	
Bauhinia petersiana		9	7.2	1	12.6	
Bauhinia petersiana		10	7.2	1	12.6	
Bauhinia petersiana		7	7.2	1	12.6	
Bauhinia petersiana		33	16	1	63	
Bauhinia petersiana		1	2	1	2	
Bauhinia Petersiana		6	2.5	1	3	
Bauhinia petersiana		4	4	1	4.5	
Bauhinia petersiana		2	4	1	4.5	
Bauhinia petersiana		3	4	1	4.5	
Bauhinia petersiana		1	4	1	4.5	
Bauhinia petersiana		10	6.2	1	20	
Bauhinia petersiana		10	6.2	1	15	
Bauhinia petersiana		7	6.2	1	15	
Bauhinia petersiana		10.2	15	1	8	
Bauhinia petersiana		8	15	1	8	
Bauhinia petersiana		10	15	1	8	
Bauhinia petersiana		5	7.2	1	2	
Bauhinia petersiana		6	5.2	1	12	
Bauhinia petersiana		5	4.1	1	6	
Bauhinia petersiana		8	4.2	1	3	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		5	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		10	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		3	6.2	1	2	
Bauhinia petersiana		9	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		6	6.2	1	2	
Bauhinia petersiana		8	6.2	1	2	
Bauhinia petersiana		7	6.2	1	2	
Bauhinia petersiana		4	4.2	1	6	
Bauhinia petersiana		6.2	3.2	1	3	
Bauhinia petersiana		2.5	3.2	1	3	
Bauhinia petersiana		7	5.2	1	7.5	
Bauhinia petersiana		9	5.2	1	7.5	

Bauhinia petersiana		5	3.3	1	2	
Bauhinia petersiana		7	3.2	1	7.5	
Bauhinia petersiana		5	3.2	1	7.5	
Bauhinia petersiana		3.9	4.1	1	6	
Bauhinia petersiana		4.3	5.2	1	12	
Bauhinia petersiana		14	6.1	1	2.2	
Bauhinia petersiana		4	6.1	1	2.2	
Bauhinia petersiana		2.5	6.1	1	2.2	
Bauhinia petersiana		10	6.1	1	2.2	
Bauhinia petersiana		10	6.1	1	2.2	
Bauhinia petersiana		6	6.1	1	2.2	
Bauhinia petersiana		5	6.1	1	2.2	
Bauhinia petersiana		6	6.1	1	2.2	
Bauhinia petersiana		6	6.1	1	2.2	
Bauhinia petersiana		5	5.3	1	5	
Bauhinia petersiana		6	5.3	1	5	
Bauhinia petersiana		3	5.3	1	5	
Bauhinia petersiana		2	2.1	1	1.5	
Bauhinia petersiana		2	2.1	1	1.5	
Bauhinia petersiana		6	6	1	4	
Bauhinia Petersiana		7	6	1	4	
Bauhinia petersiana		7	6	1	4	
Bauhinia petersiana		6	5	1	6.6	
Bauhinia petersiana		4	5	1	6.6	
Bauhinia petersiana		3	5	1	6.6	
Brachystegia speciformis		40	18	1	140	
Brachystegia spiciformis		3	2.1	1	1	
Brachystegia spiciformis		14	9	1	140	
Cassia abbreviata		6	4	1	6	
Cassia abbreviata		25	13	1	45	
Combtretum molle		18	15	1	24	
Combretum molle		14	13	1	12	
Combretum molle		9	8.2	1	18	
Combretum molle		23	15	1	112	
Combretum molle		11	9	1	14	
Combretum molle		12	9	1	14	
Combretum molle		10	3.5	1	6	
Combretum molle		32	22	1	36	
Combretum molle		17	22	1	36	
Combretum molle		17	22	1	36	
Combretum molle		33	22	1	36	
Combretum molle		12	22	1	36	
Combretum mossambicense		0.3		1		
Combretum zeyheri		4	2.1	1	2	
Combretum zeyheri		13	6	1	35	
Combretum zeyheri		3	2.1	1	2	

Combretum zeyheri		5	4.5	1	6	
Combretum zeyheri		1.5	2	1	1	
Combretum zeyheri		4	6	1	2	
Combretum zeyheri		5	5.1	1	4	
Combretum zeyheri		3	5.1	1	4	
Combretum zeyheri		5	5.1	1	4	
Diospyros batocana		12	5	1	3	
Diospyros batocana		38	9	1	48	
Dichrostachys cinerea		11	9	1	10	
Diplorhynchus condylocarpon		25	18	1	99	
Diplorhynchus condylocarpon		6	8	1	6	
Diplorhynchus condylocarpon		11	3.4	1	12	
Diplorhynchus condylocarpon		4	2.2	1	2	
Diplorhynchus condylocarpon		10	11	1	16	
Diplorhynchus condylocarpon		4	9	1	12	
Dichrostachys cinerea		5.5	4.1	1	12	
Erythrophleum africanum		3	4.5	1	3	
Erythrophleum africanum		2	8	1	2	
Julbernardia globiflora		12	10	1	6	
Julbernardia paniculata		20	4.3	1	75.2	
Julbernardia paniculata		3	2.4	1	5	
Julbernardia paniculata		7	3.9	1	6	
Julbernardia paniculata		20.3	4.2	1	30	
Julbernardia paniculata		3	2.1	1	2	
Julbernardia paniculata		9	4	1	20	
Julbernardia paniculata		13	4.5	1	6	
Julbernardia paniculata		2	2.1	1	1	
Julbernardia paniculata		2	2	1	1	
Julbernardia paniculata		3	2.9	1	1	
Julbernardia paniculata		2	2.1	1	1	
Julbernardia paniculata		3	2.7	1	1	
Julbernardia paniculata		7	4.1	1	2	
Julbernardia paniculata		9	4.9	1	4	
Julbernardia paniculata		1	2	1	1	
Julbernardia paniculata		3	2.1	1	1	
Julbernardia paniculata		6	3.2	1	6	
Julbernardia paniculata		3	3	1	1	
Julbernardia paniculata		3	2.8	1	1	
Julbernardia paniculata		6	4.5	1	2	
Julbernardia paniculata		5	5.1	1	2	
Julbernardia paniculata		16	6	1	3	
Julbernardia paniculata		3	3	1	2.5	
Julbernardia paniculata		6	6.1	1	6	
Julbernadia paniculata		2	2.1	1	1	
Julbernadia paniculata		10	8	1	20	
Julbernadia paniculata		6	5	1	1	

Julbernadia paniculata	3	3.8	1	2	
Julbernadia paniculata	4	3.8	1	2	
Julbernadia paniculata	2	2.4	1	1	
Julbernadia paniculata	5	3.5	1	9.2	
Julbernadia paniculata	6	5	1	6	
Julbernadia paniculata	3	3	1	1	
Julbernadia paniculata	4	3	1	1	
Julbernadia paniculata	12	8	1	54	
Julbernadia paniculata	9	10	1	72	
Julbernadia paniculata	10	11	1	120	
Julbernadia paniculata	10	8	1	24	
Julbernadia paniculata	4	9	1	12	
Julbernadia paniculata	8	10	1	6	
Julbernadia paniculata	4	8	1	6	
Julbernadia paniculata	8	12	1	99	
Julbernadia paniculata	16	4	1	3	
Lannea stuhlmannii	27	12	1	99	
Lannea stuhlmannii	27	17	1	99	
Lannea stuhlmannii	21	9	1	30	
Lannea stuhlmannii	4	1.8	1	16	
Lannea stuhlmannii	9	6	1	24	
Markhmia acuminata	9	9	1	4	
Markhmia acuminata	7.2	5.1	1	3	
Ochna pulchra	3	1.9	1	2	
Ochna pulchra	1	2	1	1	
Ochna pulchra	3	2.5	1	1	
Ochna pulchra	8	4	1	6	
Ochna pulchra	6	9	1	6	
Pericopsis angolensis	4	3.5	1	2	
Parinari curatellifolia	40	12	1	137	
Parinari curatellifolia	15	22	1	280	
Parinari curatellifolia	12	8	1	90	
Pseudolachnostylis maprouneifolia	38	17	1	143	
Pseudolachnostylis maprouneifolia	3	2	1	2	
Pseudolachnostylis maprouneifolia	7	7	1	3	
Piliostigma thonningii	36	12	1	99	
Piliostigma thonningii	30	13	1	126	
Piliostigma thonningii	15.6	11	1	28	
Piliostigma thonningii	25	9.4	1	28	
Strychnos cocculoides	10	4	1	2	
Strychnos cocculoides	3	4	1	2	
Swartzia madagascariensis	18	4.2	1	12	
Swartzia madagascariensis	1	2	1	1	
Swartzia madagascariensis	6	7	1	24	

Senegalia polyacantha		16	18	1	15	
Senegalia polyacantha		3	2.1	1	1	
Senegalia polyacantha		13	13	1	2	
Senegalia polyacantha		50	21	1	224	
Ximenia africana		5	3.1	1	2	
Zizphus abyssinica		10	11	1	6	
Ziziphus abyssinica		19	8.2	1	15.4	
Ziziphus abyssinica		13	8.2	1	15.4	
Ziziphus abyssinica		17	8.2	1	15.4	
Ziziphus abyssinica		13	8.2	1	15.4	
Ziziphus abyssinica		17	8.2	1	15.4	
Ziziphus abyssinica		19	8.2	1	15.4	
Ziziphus abyssinica		9	8.2	1	15.4	
Ziziphus abyssinica		26	15	1	90	
Zanha africana		28	4.9	1	2	
Zanha africana		14	6	1	6	
Zanha africana		6	12	1	16	
Zanha africana		8	6	1	2	

Grasses and Herbs	
Grasses	count
Setaria sphacelata	42
Setaria hirta	26
Setaria parviflora	12
Setaria viridis	5
Setaria verticillata	35
Hyarrehenia hirta	12
Hyarrehenia filipendula	2

Birds	Count
Rednecked Francolin	2
Long tailed widow	1
Ring nected dove	3
Black eared seed eater	1
Swamp Boubou shrike	1
Camine bee eater	3
Flapet Lark	1
Red eyed dove	1
Red eyed bulbul	1
Collard Sunbird	3
African emerald cuckoo	1
Black backed puffback	1
Black crowned Tchagra	1
Emerald spoted dove	1
White winged widow	1

Black winged bishop	1
Masked weaver	5
Fire fitch	2
Miombo Grey Tit	3
Blue Waxbill	1
Tawnyflanked Prinia	1
Insects	**Count**
Carpenter ant	1
Western honey bee	1
Linnes cicada	1
Common wasp	1
Grsshopper	1
Western Thatching Ants	11
Sugar ant	11
Giant African centipede	1
House fly	1
Cabbage white buffterfly	1
Stink bug	1
Swaloowtail butterfly	1
Mopane bee or sweat bee	1
Giant African millipede	1
Widow spider	2
Huntsman spider	3
Armed spider	1
Recluse spider	1
	41

Mammals	**Count**
Vervet Monkey	1
Civet cat	1
Common duicker	1

Reptiles	**Count**
	0
Amphibians	**Count**
	0

Plot 2

Tree Species

Species	DBH (cm)	Height (m)	Count	% Cover	
Acacia natalensis	6	4.1	1	2	
Acacia polyacantha	8	4.2	1	99	
Annona senegalensis	2.1	2.4	1	24	
Annona senegalensis	4.5	4.1	1	32	
Annona senegalensis	1.8	1.9	1	1.7	
Annona senegalensis	2	1.9	1	1.7	
Annona senegalensis	5	2.1	1	15	
Annona senegalensis	2	2	1	1	
Brachystegia boehmii	10	2.5	1	3	
Brachystegia boehmii	3	1.9	1	1	
Brachystegia boehmii	7	3.5	1	3	
Brachystegia boehmii	9	1.9	1	6	
Brachystegia bussei	3.6	2.9	1	3	
Brachystegia bussei	2	2.9	1	2	
Brachystegia bussei	2.3	2.9	1	2	
Brachystegia bussei	3	2.9	1	2	
Brachystegia bussei	1	1.9	1	1	
Brachystegia bussei	3.2	3.1	1	2	
Brachystegia bussei	4	3	1	4	
Brachystegia bussei	7	6	1	6	
Brachystegia bussei	1.3	2	1	1	
Brachystegia bussei	3	2.1	1	1	
Brachystegia bussei	2	2	1	1	
Brachystegia bussei	2	2	1	1	
Brachystegia bussei	2	2	1	1	
Brachystegia bussei	2	3	1	1.5	
Brachystegia bussei	1.9	3	1	1.5	
Brachystegia bussei	3	3	1	4	
Brachystegia bussei	4	4	1	3	
Brachystegia bussei	9	4	1	12	
Brachystegia bussei	4	5	1	8	
Brachystegia floribunda	12	8	1	42	
Brachystegia longifolia	4	3	1	8	
Brachystegia longifolia	4	4	1	6	

Brachystegia longifolia	6	3	1	2	
Brachystegia longifolia	6	3	1	6	
Bauhinia petersiana	4.5	2.5	1	1	
Bauhinia petersiana	9	3.5	1	58.5	
Bauhinia petersiana	8	3.5	1	58.5	
Bauhinia petersiana	7	3.2	1	6	
Bauhinia petersiana	3	3	1	2	
Bauhinia petersiana	3	2.1	1	1	
Bauhinia petersiana	9	2.5	1	12	
Bauhinia petersiana	6	3.5	1	10	
Bauhinia petersiana	4	3.7	1	4	
Bauhinia petersiana	4	2.7	1	12	
Bauhinia petersiana	13	2.5	1	117	
Bauhinia petersiana	6	3	1	4	
Bauhinia petersiana	7	3	1	4	
Bauhinia petersiana	3	3	1	4	
Bauhinia petersiana	2	3	1	2	
Bauhinia petersiana	3	3	1	2	
Bauhinia petersiana	2	3	1	2	
Bauhinia petersiana	4	3	1	2	
Bauhinia petersiana	3	4	1	10	
Bauhinia petersiana	4	4	1	10	
Bauhinia petersiana	6	4	1	10	
Bauhinia petersiana	4	4	1	10	
Bauhinia petersiana	4	2	1	6	
Bauhinia petersiana	3	1.5	1	3	
Bauhinia petersiana	7	2.3	1	6	
Brachystegia spiciformis	2	3	1	2	
Cassia abbreviata	3	3.5	1	1	
Cassia abbreviata	2	4	1	2	
Cassia abbreviata	9	7	1	24	
Combretum elaeagnoides	2	3	1	2	
Combretum elaeagnoides	3	3	1	2	
Combretum elaeagnoides	6	3	1	2	
Combretum molle	6	4	1	6	
Combretum molle	4	6	1	20	
Diospyros batocana	14	4.2	1	45	
Diospyros batocana	4	3.5	1	2	
Diospyros batocana	5	3.5	1	2	
Diospyros batocana	3	3.5	1	2	
Diospyros batocana	3	3.5	1	2	
Diospyros batocana	5	2.8	1	12	
Diospyros batocana	4	3.2	1	2	
Diospyros batocana	3	2.1	1	2	
Diospyros batocana	2.5	2.1	1	2	
Diospyros batocana	3.1	4	1	1	

Diospyros batocana	3	2	1	1	
Diospyros batocana	2	2	1	1	
Diospyros batocana	2	2	1	1	
Diospyros batocana	4	1.9	1	1	
Diospyros batocana	6	2.2	1	1	
Diplorhynchus condylocarpon	10	2.8	1	2	
Diplorhynchus condylocarpon	3	2.1	1	4	
Diplorhynchus condylocarpon	3	3	1	2	
Diplorhynchus condylocarpon	2	3	1	2	
Diplorhynchus condylocarpon	2	3	1	2	
Diplorhynchus condylocarpon	2	3	1	1	
Diplorhynchus condylocarpon	4	5	1	2	
Diplorhynchus condylocarpon	3	5	1	2	
Diplorhynchus condylocarpon	4	5	1	2	
Diplorhynchus condylocarpon	3.5	3.4	1	1	
Erythrophleum africanum	9	3.5	1	10	
Erythrophleum africanum	6	3.1	1	15	
Erythrophleum africanum	13	5.1	1	36	
Julbernadia paniculata	8	6	1	24	
Julbernadia paniculata	8	6	1	12	
Julbernadia paniculata	9	4	1	6	
Julbernadia paniculata	6	7	1	12	
Julbernadia paniculata	4	3	1	2	
Julbernadia paniculata	8	11	1	36	
Julbernadia paniculata	8	4	1	2	
Julbernadia paniculata	4	3	1	6	
Julbernadia paniculata	9	4	1	12	
Lannea discolor	1	2.8	1	3	
Lannea discolor	5	3.5	1	6	
Lannea discolor	2	3.5	1	6	
Lannea discolor	2.8	3.5	1	6	
Ochna pulchra	4	3	1	12	
Pericopsis angolensis	3	2.8	1	1	
Pericopsis angolensis	5	2.5	1	6	
Peltophorum africanum	6	3.5	1	2	
Pseudolachnostylis maprouneifolia	26	4.5	1	12	
Pseudolachnostylis maprouneifolia	6	3	1	1	
Pseudolachnostylis maprouneifolia	4	2.1	1	1	
Piliostigma thonningii	7	5.1	1	60	
Piliostigma thonningii	6	5.3	1	2	
Piliostigma thonningii	4	2.1	1	2	
Piliostigma thonningii	3	2.1	1	2	
Piliostigma thonningii	3.5	2.1	1	2	
Piliostigma thonningii	3	2.1	1	2	

Piliostigma thonningii	5	2.5	1	24	
Piliostigma thonningii	12	4.8	1	63	
Piliostigma thonningii	3	2.8	1	12	
Piliostigma thonningii	17	5.2	1	15	
Piliostigma thonningii	18	5.5	1	28	
Piliostigma thonningii	2.5	3.2	1	1	
Piliostigma thonningii	4	4.5	1	6	
Piliostigma thonningii	3	2	1	2	
Piliostigma thonningii	6	4	1	4	
Rhus tenuinervis	7	6.2	1	3	
Rhus tenuinervis	5	6.2	1	3	
Rhus tenuinervis	5	6.2	1	3	
Rhus tenuinervis	2	6.2	1	3	
Rhus tenuinervis	5	2.8	1	1	
Rhus tenuinervis	8	5.5	1	6	
Syzygium cordatum	8	3.1	1	2	
Syzygium cordatum	7	4	1	1	
Syzygium cordatum	5	2.2	1	2	
Syzygium cordatum	4.2	2.2	1	2	
Syzygium cordatum	3.5	2.2	1	2	
Strychnos cocculoides	4	3	1	2	
Strychnos cocculoides	4	6	1	36	
Terminalia sericea	6	4.5	1	23.3	
Terminalia sericea	9	4.5	1	23.3	
Terminalia sericea	4.5	4.5	1	23.3	
Ziziphus abyssinica	3.5	2.5	1	6	
Ziziphus abyssinica	4	8	1	4	
Ziziphus abyssinica	2	8	1	4	
Ziziphus abyssinica	3	8	1	4	

Grasses		Count
Sporobolus africanus		56
Pennisetum purpureum		191
Aristida stitata		69
Eragrostis superba		38
Hyparrhania hirta		63
Andropogon gayanus		47

Birds		Count
Go away bird		1
Singing cisticola		1
Copper sunbird		1

White-browed sparrow weaver		107
Black headed heron		2
Red eyed bulbul		1
African Hawk eagle		1
Harlequin quail		1
Tawny flanked prinia		1
Blue waxbill		3
Red eyed bulbul		1
Puffback		1
Black sunbird		1
Green pigeon		1
Red bishop		3
fire fitch		4
Yellow rumped widow		4
Red necked francolin		5
Emerald spoted dove		1
Miombo barbet		1

Insects		Count
Harvester Ant		6
Giant African millipede		3
Centpede		2
Ground beetle		3
Common shinning cockroach		5
Argentine ant		10
Water scavenger beetle		3
Wolf spider		1
Centipede		2
Field cricket		1

Mammals		**Count**
		0
Reptiles		**Count**
Monitor Lizard		1
Amphibians		
		0

Plot 3

Tree Species

Species	DBH (cm)	Height (m)	Count	Crown % Cover m^2
Anisophyllea boehmii	5	3	1	2
Annona senegalensis	4	3	1	6
Annona senegalensis	3	3.5	1	6
Annona senegalensis	4	3.5	1	6
Annona senegalensis	3	2	1	1
Burkea africana	4	4	1	2
Brachystegia boehmii	5	5	1	8
Brachystegia boehmii	3	3	1	2
Brachystegia boehmii	5	4	1	8
Brachystegia boehmii	5	4	1	2
Brachystegia boehmii	4	3	1	3
Brachystegia boehmii	7	3	1	6
Brachystegia boehmii	4	3	1	6
Brachystegia boehmii	3	2	1	1
Brachystegia boehmii	5	4	1	2
Brachystegia boehmii	3	2	1	2
Brachystegia boehmii	2	2	1	2
Brachystegia boehmii	8	4	1	2
Brachystegia boehmii	4	4	1	2
Brachystegia boehmii	2	2	1	1
Brachystegia boehmii	2	2	1	1
Brachystegia boehmii	4	2	1	2
Brachystegia boehmii	4	2	1	2
Brachystegia boehmii	4	3	1	3
Brachystegia boehmii	5	3	1	6
Brachystegia boehmii	5	3	1	9
Brachystegia boehmii	6	3	1	1
Brachystegia boehmii	4	2	1	2
Brachystegia bussei	2	2	1	1
Brachystegia bussei	3	4	1	4
Brachystegia bussei	3	2	1	2
Brachystegia bussei	4	4	1	2
Brachystegia bussei	4	3	1	2
Brachystegia bussei	3	4	1	1

Brachystegia bussei	5	5	1	8	
Brachystegia bussei	3	4	1	1	
Brachystegia bussei	3	2	1	1	
Brachystegia bussei	4	2	1	2	
Brachystegia bussei	4	4	1	6	
Brachystegia bussei	2	3	1	1	
Brachystegia bussei	5	3	1	2	
Brachystegia bussei	6	3	1	2	
Brachystegia bussei	4	3	1	2	
Brachystegia bussei	4	2	1	1	
Brachystegia bussei	4	3	1	1	
Brachystegia bussei	6	4	1	2	
Brachystegia bussei	5.5	3	1	12	
Brachystegia bussei	4	2	1	1	
Brachystegia bussei	3	4	1	1	
Brachystegia bussei	2	2	1	1	
Brachystegia bussei	2	3	1	1	
Brachystegia bussei	2	2	1	1	
Brachystegia longifolia	4	5	1	6	
Brachystegia longifolia	4	3	1	2	
Brachystegia longifolia	3	3	1	2	
Brachystegia longifolia	5	4	1	2	
Brachystegia longifolia	3	4	1	6	
Brachystegia longifolia	2	3	1	4	
Brachystegia longifolia	3	3	1	5	
Brachystegia longifolia	4	6	1	6	
Brachystegia longifolia	3	2	1	1	
Brachystegia longifolia	4	3	1	1	
Brachystegia longifolia	5	3	1	1	
Brachystegia longifolia	6	4	1	2	
Brachystegia longifolia	2	4	1	2	
Brachystegia longifolia	4	4	1	2	
Brachystegia longifolia	5	3	1	1	
Brachystegia longifolia	4	2	1	1	
Brachystegia longifolia	5	3	1	1	
Brachystegia longifolia	4	4	1	1	
Brachystegia longifolia	6	3	1	1	
Brachystegia longifolia	3	2	1	2	
Brachystegia longifolia	4	3	1	2	
Brachystegia longifolia	2	2	1	1	
Brachystegia longifolia	4	2	1	3	
Brachystegia longifolia	4	2	1	2	
Brachystegia longifolia	3	2	1	1	
Brachystegia longifolia	3	2	1	1	
Brachystegia longifolia	3	2.5	1	1	
Brachystegia longifolia	4	2	1	2	

Brachystegia longifolia	3	2	1	2	
Brachystegia manga	5	5	1	1	
Cussonia arborea	5	4.5	1	2	
Cussonia aborea	10	4	1	6	
Cussonia aborea	11	5	1	6	
Cussonia aborea	13	4	1	2	
Cussonia arborea	10	3	1	3	
Cussonia arborea	10	5	1	6	
Canthium glaucum	4	3	1	1	
Canthium glaucum	8	4	1	6	
Combretum collinum	10	7	1	15	
Combretum collinum	9	3	1	3	
Combretum collinum	9	3	1	2	
Combretum collinum	13	5	1	12	
Combretum collinum	7	5	1	8	
Combretum collinum	8	4	1	6	
Combretum collinum	8	4	1	6	
Combretum collinum	3	2	1	2	
Combretum elaeagnoides	5	4	1	1	
Croton gratissimus	13	5	1	12	
Combretum molle	7	3	1	1	
Combretum zeyheri	2	3	1	6	
Combretum zeyheri	4	5	1	6	
Diospyros batocana	1	1.5	1	1	
Diospyros batocana	4	6	1	6	
Diospyros batocana	5	3	1	1	
Diospyros batocana	10	3	1	1	
Diospyros batocana	5	3	1	1	
Diplorhynchus condylocarpon	4	2	1	1	
Diplorhynchus condylocarpon	4	4	1	1	
Diplorhynchus condylocarpon	5	3	1	2	
Diplorhynchus condylocarpon	4	3	1	2	
Diplorhynchus condylocarpon	3	4	1	2	
Diplorhynchus condylocarpon	3	3	1	1	
Diplorhynchus condylocarpon	3	5	1	1	
Diplorhynchus condylocarpon	2	2.5	1	1	
Diplorhynchus condylocarpon	2	2	1	1	
Diplorhynchus condylocarpon	2	3	1	2	
Diplorhynchus condylocarpon	6	5	1	1	
Diplorhynchus condylocarpon	3	4	1	6	
Diplorhynchus condylocarpon	3	3	1	1	
Diplorhynchus condylocarpon	8	3	1	1	
Diplorhynchus condylocarpon	3	2	1	4	
Diplorhynchus condylocarpon	6	3	1	1	
Diplorhynchus condylocarpon	7	4	1	6	
Diplorhynchus condylocarpon	2	2	1	1	

Diplorhynchus condylocarpon	2	2	1	1	
Diplorhynchus condylocarpon	7	4	1	6	
Diplorhynchus condylocarpon	2	2	1	1	
Dichrostachys cinerea	4	3	1	8	
Dichrostachys cinerea	4	3	1	2	
Diospyros mespiliformis	15	4	1	1	
Dalbergiella nyasae	5	3	1	1	
Dalbergiella nyasae	2	2	1	2	
Erythrophleum africanum	2	4	1	2	
Erythrophleum africanum	4	2	1	2	
Erythrophleum africanum	3	4	1	2	
Erythrophleum africanum	5	3	1	6	
Flacourtia indica	2	4.5	1	2	
Faurea saligna	8	4	1	2	
Faurea saligna	9	9	1	6	
Gardenia spatulifolia	4	4	1	2	
Julbernadia paniculata	3	3	1	6	
Julbernadia paniculata	2	3	1	2	
Julbernadia paniculata	3	3	1	2	
Julbernadia paniculata	3	1.7	1	2	
Julbernadia paniculata	2	1.6	1	1	
Julbernadia paniculata	2	2	1	2	
Julbernadia paniculata	2	2	1	6	
Julbernadia paniculata	3	5	1	2	
Julbernadia paniculata	3	5	1	2	
Julbernadia paniculata	3	5	1	2	
Julbernadia paniculata	2	1.8	1	1	
Julbernadia paniculata	4	2	1	6	
Julbernadia paniculata	1	1.5	1	1	
Julbernadia paniculata	3	3	1	2	
Julbernadia paniculata	3	2	1	2	
Julbernadia paniculata	5	3	1	1	
Julbernadia paniculata	3	3	1	1	
Julbernadia paniculata	4	3	1	1	
Julbernadia paniculata	2	2	1	1	
Julbernadia paniculata	3	2	1	6	
Julbernadia paniculata	3	3	1	2	
Julbernadia paniculata	4	4	1	6	
Julbernadia paniculata	2	3	1	1	
Julbernadia paniculata	3	3	1	1	
Julbernadia paniculata	4	3	1	6	
Julbernadia paniculata	6	3	1	3	
Julbernadia paniculata	4	3	1	3	
Julbernadia paniculata	2	2	1	2	
Julbernadia paniculata	3	2	1	6	
Julbernadia paniculata	5	3	1	2	

Julbernadia paniculata	3	2	1	1	
Julbernadia paniculata	5	4	1	2	
Julbernadia paniculata	2	2	1	2	
Julbernadia paniculata	4	3	1	6	
Lannea stuhlmannii	3	3	1	2	
Lannea stuhlmannii	2	2.5	1	1	
Lannea stuhlmannii	5	3	1	2	
Lannea stuhlmannii	4.3	3	1	6	
Lannea stuhlmannii	2	2.5	1	2	
Lannea stuhlmannii	10	7	1	6	
Lannea stuhlmannii	6	3	1	1	
Lannea stuhlmannii	5	2	1	2	
Lannea stuhlmannii	6	3	1	2	
Lannea stuhlmannii	4	3	1	4	
Lannea stuhlmannii	4	2	1	2	
Lannea stuhlmannii	5	4	1	1	
Lannea stuhlmannii	4	2	1	1	
Lannea stuhlmannii	3	2	1	6	
Lannea stuhlmannii	2	2	1	1	
Maprounea africana	4	3	1	3	
Maprounea africana	4	3	1	6	
Maprounea africana	8	7	1	15	
Maprounea africana	3	2	1	2	
Maprounea africana	3	2	1	2	
Monotes glaber	2	2	1	1	
Ochna pulchra	6	3	1	8	
Ochna pulchra	3	2	1	1	
Ochna pulchra	3	3	1	1	
Ochna pulchra	3	2	1	1	
Ochna pulchra	2	2	1	1	
Ochna pulchra	1	2	1	1	
Ochna pulchra	2	2	1	1	
Ochna pulchra	3	2	1	1	
Ochna pulchra	4	3	1	2	
Ochna pulchra	5	4	1	2	
Ochna pulchra	7	3	1	1	
Ozoroa reticulate	4	4	1	2	
Ozoroa reticulate	4	4	1	2	
Ozoroa reticulate	3	4	1	2	
Ozoroa reticulate	2	4	1	2	
Pericopsis angolensis	1	2	1	2	
Pericopsis angolensis	5	4	1	6	
Pericopsis angolensis	3	2	1	2	
Pericopsis angolensis	4	3.5	1	6	
Parinari curatellifolia	4	5	1	6	
Parinari curatellifolia	4	3	1	1	

Parinari curatellifolia	2	3	1	2	
Parinari curatellifolia	8	3	1	2	
Parinari curatellifolia	7	6	1	6	
Pseudolachnostylis maprouneifolia	2	2	1	1	
Pseudolachnostylis maprouneifolia	15	4	1	12	
Pseudolachnostylis maprouneifolia	4	3	1	6	
Pseudolachnostylis maprouneifolia	6	4	1	1	
Pseudolachnostylis maprouneifolia	5	3	1	6	
Pseudolachnostylis maprouneifolia	11	6	1	6	
Pseudolachnostylis maprouneifolia	2	2	1	1	
Pseudolachnostylis maprouneifolia	6	2	1	1	
Pseudolachnostylis maprouneifolia	6	3	1	2	
Pseudolachnostylis maprouneifolia	3	3	1	1	
Piliostigma thonningii	4	2	1	2	
Syzygium cordatum	3	2	1	3	
Syzygium cordatum	2	2	1	3	
Syzygium cordatum	4	3	1	2	
Syzygium cordatum	6	4	1	6	
Syzygium cordatum	3	5	1	6	
Syzygium cordatum	8	4	1	6	
Syzygium cordatum	10	2	1	1	
Syzygium cordatum	7	3	1	6	
Strychnos spinosa	2	1.6	1	1	
Strychnos spinosa	2	3	1	4	
Strychnos spinosa	2	3	1	6	
Securidaca virosa	2	1.9	1	1	
Securinega virosa	2	2	1	1	
Securinega virosa	6	4	1	6	
Securinega virosa	2	2	1	3	
Securinega virosa	3	2	1	1	
Terminalia randii	8	5	1	10	
Terminalia randii	3	3	1	6	
Terminalia randii	3	4	1	2	
Terminalia randii	3	4	1	2	
Terminalia sericea	3	1.7	1	2	
Terminalia sericea	12	11	1	24.7	
Terminalia sericea	11	11	1	24.7	
Terminalia sericea	9	11	1	24.7	

Terminalia sericea		3	11	1	24.7	
Uapaca kirkiana		4	3	1	2	
Uapaca kirkiana		5	4.5	1	6	
Uapaca kirkiana		7	3	1	2	
Uapaca kirkiana		4	3	1	2	
Uapaca kirkiana		2	3	1	2	
Uapaca kirkiana		3	3	1	2	
Uapaca kirkiana		4	2	1	2	
Uapaca kirkiana		10	5	1	32	
Uapaca kirkiana		10	4	1	12	
Uapaca kirkiana		9	4	1	6	
Uapaca kirkiana		4	4	1	6	
Uapaca kirkiana		10	5	1	4	
Uapaca kirkiana		5	2	1	2	
Uapaca kirkiana		15	6	1	14	
Uapaca kirkiana		12	6	1	14	
Uapaca nitida		3	4	1	1	
Uapaca nitida		5	5	1	1	
Uapaca nitida		3	4	1	4	
Uapaca nitida		9	4	1	4	
Uapaca nitida		3	4	1	2	
Uapaca nitida		4	4	1	2	
Uapaca nitida		9	4	1	2	
Uapaca nitida		3	4	1	2	
Uapaca nitida		8	4	1	15	
Vangueriopsis lanciflora		6	2	1	1	
Vitex payos		4	4	1	1	
Ziziphus abyssinica		6	3	1	6	
Ziziphus abyssinica		3	3	2	6	

Grass Species	n
Tristachya rehmannii	399
Stipagrostis zeyheri	28
Eragrostis obtusa	14
Eriochloa stapfiana	89
Digitaria eriantha	36
Aristida stitata	598

Bird Species	Count
Abdim's Stork	37
Turtle Dove	2
Burchell's Coucal	1
Greater Stripped Swallow	1
Blue Waxbill	4

Yellowbilled Kite	1
Redeyed Bulbul	4
Flappet Lark	1
Hammer Kop	1
Yellow rumped Widow	1
Ashly Tit	1
Lilac breasted Roller	1
Pied Crow	1
Tawnyflanked Prinia	1
Blackmasked Weaver	6
Fire Fitch	3
Whitewinged Widow	1
Greyheaded Sparrow	1
Greyheaded Heron	1

Insect Species	Count
Carcass beetle	2
Small black Sugar ant	6
Spotted Sugar ant	5
White spotted fruit chafer	1
Harvest ant	2
Bal-byter sugar ant	3
Striped toktokkie	4
Metalic tree darkling beetle	1
Spotted Sugar ant	1
Widow Spider	1
Stick Mantid	1
Frican Black Beetle	1
Sindle toktokkie	1
Recluse spider	2
Giant African millipede	1

Mammals		**Count**
		0
Reptiles		**Count**
Monitor Lizard		1
Amphibians		**Count**
		0

Plot 4

Tree Species

Species		DBH (cm)	Height (m)	Count	% Cover m2	
Anona Senegalensis		2	2	1	4	
Anona Senegalensis		7	3.8	1	6	
Anona Senegalensis		2	2	1	1	
Brachystegia boehmii		2	1.9	1	1	
Brachystegia boehmii		7	4	1	2	
Brachystegia boehmii		9	5	1	2	
Brachystegia boehmii		2	2.2	1	2	
Brachystegia boehmii		5	3	1	6	
Brachystegia boehmii		6	3.5	1	6	
Brachystegia boehmii		9	5	1	12	
Brachystegia boehmii		13	6	1	30	
Brachystegia boehmii		5	3	1	8	
Brachystegia boehmii		6	9.5	1	6	
Brachystegia boehmii		6	3	1	8	
Brachystegia boehmii		2	1.7	1	1	
Brachystegia boehmii		6	3	1	6	
Brachystegia boehmii		5	4	1	2	
Brachystegia boehmii		7	3.5	1	6	
Brachystegia boehmii		2	4	1	1	
Brachystegia boehmii		3	3	1	6	
Brachystegia boehmii		3	2.5	1	1	
Brachystegia boehmii		5	4	1	2	
Brachystegia boehmii		3	2	1	1	
Brachystegia boehmii		3	3	1	2	
Brachystegia boehmii		7	5	1	6	
Brachystegia boehmii		15	6	1	15	
Brachystegia boehmii		8	6	1	15	
Brachystegia boehmii		8	4	1	2	
Brachystegia boehmii		6	6	1	12	
Brachystegia boehmii		8	3	1	4	
Brachystegia boehmii		11	4	1	6	
Brachystegia boehmii		4	3	1	2	
Brachystegia boehmii		6	3	1	2	
Brachystegia boehmii		6	3.5	1	2	
Brachystegia boehmii		7	4	1	6	
Brachystegia boehmii		6	4	1	28	
Brachystegia boehmii		3	1.6	1	12	

Brachystegia boehmii		17	5	1	28	
Brachystegia boehmii		3	3.5	1	1	
Brachystegia boehmii		3	2.5	1	1	
Brachystegia boehmii		8	4	1	2	
Brachystegia boehmii		4	2	1	1	
Brachystegia boehmii		10	12.5	1	12	
Brachystegia boehmii		11	5	1	6	
Brachystegia boehmii		10	6	1	4	
Brachystegia boehmii		12	5	1	6	
Brachystegia boehmii		10	4	1	6	
Brachystegia boehmii		9	4	1	6	
Brachystegia boehmii		6	6	1	2	
Brachystegia boehmii		7	6	1	2	
Brachystegia boehmii		2	2	1	1	
Brachystegia boehmii		2	2.5	1	1	
Brachystegia boehmii		5	5	1	4	
Brachystegia boehmii		6	4	1	6	
Brachystegia boehmii		2	2	1	2	
Brachystegia boehmii		18	10	1	35	
Brachystegia boehmii		11	3.5	1	20	
Brachystegia boehmii		1	1.6	1	1	
Brachystegia boehmii		2	2	1	1	
Brachystegia boehmii		2	2	1	1	
Brachystegia boehmii		22	12	1	20	
Brachystegia boehmii		6	3.5	1	3	
Brachystegia boehmii		4	3.5	1	3	
Brachystegia boehmii		7	2.4	1	6	
Brachystegia boehmii		7	3	1	6	
Brachystegia boehmii		7	4	1	12	
Brachystegia boehmii		3	2.5	1	2	
Brachystegia boehmii		1	1.5	1	1	
Brachystegia boehmii		6	3.5	1	4	
Brachystegia boehmii		3	4	1	3	
Brachystegia boehmii		9	5	1	12	
Brachystegia boehmii		10	4	1	12	
Brachystegia boehmii		4	2	1	3	
Brachystegia boehmii		3	1.5	1	1	
Brachystegia boehmii		8	4	1	3	
Brachystegia boehmii		8	4	1	8	
Brachystegia boehmii		4	4	1	1	
Brachystegia boehmii		9	3.5	1	2	
Brachystegia boehmii		2	1.6	1	1	
Brachystegia boehmii		4	3.5	1	1	
Brachystegia boehmii		6	3	1	6	
Brachystegia boehmii		4	3	1	2	
Brachystegia boehmii		3	2	1	1	

Brachystegia boehmii		2	2	1	4	
Brachystegia boehmii		7	4	1	6	
Brachystegia boehmii		6	4	1	4	
Brachystegia boehmii		31	8	1	16.5	
Brachystegia boehmii		19	8	1	16.5	
Brachystegia bussei		4	5	1	6	
Brachystegia floribunda		9.2	2.2	1	6	
Brachystegia floribunda		6	3	1	6	
Brachystegia floribunda		4	2.5	1	2	
Brachystegia floribunda		13	5	1	25	
Brachystegia floribunda		17	7	1	30	
Brachystegia floribunda		4	2	1	1	
Brachystegia floribunda		3	3	1	2	
Brachystegia floribunda		5	2	1	2	
Brachystegia floribunda		3	2.5	1	2	
Brachystegia floribunda		22	7	1	7	
Brachystegia floribunda		10	7	1	7	
Brachystegia floribunda		8	7	1	7	
Brachystegia floribunda		3	3	1	2	
Brachystegia floribunda		3	3	1	1	
Brachystegia floribunda		3	3	1	1	
Brachystegia floribunda		3	2	1	1	
Brachystegia floribunda		2	2	1	1	
Brachystegia floribunda		2	1.6	1	1	
Brachystegia floribunda		6	4	1	2	
Brachystegia floribunda		2	2	1	1	
Brachystegia floribunda		6	4	1	8	
Brachystegia floribunda		3	2	1	1	
Brachystegia floribunda		7	6	1	6	
Brachystegia floribunda		1	1.7	1	1	
Brachystegia floribunda		3	2	1	2	
Brachystegia floribunda		2	2	1	1	
Brachystegia floribunda		4	3	1	1	
Brachystegia floribunda		3	2	1	1	
Cassia abbrevita		4	3	1	3	
Casia abbreviata		4	2.5	1	2	
Combretum collinum		12	8	1	35	
Combretum molle		4	6	1	3	
Combretum molle		6	6	1	6	
Combretum molle		2	2	1	2	
Cussonia arborea		3	1.7	1	1	
Diospyros batocana		4	3	1	2	
Diospyros batocana		5	3	1	3	
Diospyros batocana		5	3	1	3	
Diospyros batocana		6	2	1	2	
Diospyros batocana		9	3.5	1	2	

Diospyros batocana		4	7	1	2	
Diospyros batocana		9	3	1	2	
Diospyros batocana		5	3	1	1	
Diplorhynchus condylocarpon		8	5	1	6	
Diplorhynchus condylocarpon		2	2	1	1	
Diplorhynchus condylocarpon		3	3	1	1	
Diplorhynchus condylocarpon		9	4	1	6	
Diplorhynchus condylocarpon		4	3	1	2	
Diplorhynchus condylocarpon		2	1.5	1	1	
Diplorhynchus condylocarpon		2	1.5	1	1	
Diplorhynchus condylocarpon		17	7	1	6	
Diplorhynchus condylocarpon		7	3.5	1	2	
Diplorhynchus condylocarpon		5	3.5	1	2	
Diplorhynchus condylocarpon		3	3.5	1	2	
Diplorhynchus condylocarpon		3	3	1	4	
Dichrostachys cinerea		2	1.5	1	2	
Dichrostachys cinerea		4	3.5	1	12	
Dichrostachys cinerea		4	3	1	8	
Dichrostachys cinerea		4	3	1	6	
Dichrostachys cinerea		4	3	1	3	
Dichrostachys cinerea		2	3	1	3	
Dichrostachys cinerea		3	3	1	2	
Dichrostachys cinerea		2	2	1	2	
Dichrostachys cinerea		4.3	2	1	8	
Dichrostachys cinerea		3	2	1	3	
Dichrostachys cinerea		7	3	1	7.5	
Dichrostachys cinerea		4	3	1	7.5	
Dichrostachys cinerea		6	4	1	8	
Dichrostachys cinerea		5	3	1	2	
Dichrostachys cinerea		4	3	1	2	
Dichrostachys cinerea		7	3	1	2	
Dichrostachys cinerea		5	3	1	8	
Dichrostachys cinerea		2	4	1	2	
Dalbergiella nyasae		5	3	1	1	
Dalbergiella nyasae		7	5	1	3	
Dalbergiella nyasae		4	5	1	3	
Dalbergiella nyasae		2	2	1	1	
Dalbergiella nyasae		6	4	1	2	
Dalbergiella nyasae		3	3	1	1	
Dalbergiella nyasae		10	4.5	1	6	
Diospyros whyteana		8.6	5	1	20	
Ekebergia banguelensis		4	2	1	6	
Ekebergia banguelensis		2	1.7	1	1	
Ficus craterostoma		10	6	1	12	
Flacourtia indica		1	2	1	1	
Garcinia livingstonei		3	1.7	1	1	

Harungana madagascariensis		4	2.5	1	1	
Harungana madagascariensis		3	3	1	1	
Julbernardia globiflora		2	2	1	1	
Julbernardia globiflora		2	2	1	2	
Julbernardia globiflora		2	2	1	2	
Julbernardia globiflora		2	3	1	6	
Julbernardia globiflora		4	4	1	12	
Julbernardia globiflora		1	2	1	1	
Julbernardia globiflora		2	2.5	1	2	
Julbernardia globiflora		2	1.8	1	1	
Julbernardia globiflora		2	2	1	1	
Julbernardia globiflora		6	5	1	6	
Julbernardia globiflora		9	4	1	30	
Julbernadia paniculata		3	3	1	2	
Julbernadia paniculata		3	3	1	2	
Julbernadia paniculata		4	3	1	2	
Julbernadia paniculata		2	3	1	2	
Julbernadia paniculata		4	2	1	6	
Julbernadia paniculata		4	4	1	3	
Julbernadia paniculata		3	2.5	1	3	
Julbernadia paniculata		2	2.5	1	3	
Julbernadia paniculata		4	3	1	2	
Julbernadia paniculata		7	3	1	2	
Julbernadia paniculata		5	3	1	2	
Julbernadia paniculata		4	3	1	2	
Julbernadia paniculata		15	5	1	15	
Julbernadia paniculata		3	4	1	3	
Julbernadia paniculata		4	4	1	3	
Julbernadia paniculata		5	4	1	6	
Julbernadia paniculata		3	3	1	2	
Julbernadia paniculata		2	2	1	1	
Julbernadia paniculata		1	2	1	1	
Julbernadia paniculata		2	1.6	1	1	
Julbernadia paniculata		7	6	1	12	
Julbernadia paniculata		3	2.5	1	2	
Julbernadia paniculata		2	2.5	1	1	
Julbernadia paniculata		5	4	1	6	
Julbernadia paniculata		4	3.5	1	6	
Julbernadia paniculata		2	2.5	1	1	
Julbernadia paniculata		3	3	1	1	
Julbernadia paniculata		4	3.5	1	2	
Julbernadia paniculata		3	2.5	1	6	
Julbernadia paniculata		2	2	1	1	
Julbernadia paniculata		7	10	1	8	
Julbernadia paniculata		4	3.5	1	6	
Julbernadia paniculata		4	3.5	1	2	

Julbernadia paniculata		4	4	1	48	
Julbernadia paniculata		5	3.8	1	1	
Julbernadia paniculata		16	6	1	15	
Julbernadia paniculata		2	1.5	1	2	
Lannea stuhlmannii		4	3	1	6	
Lannea stuhlmannii		4	3	1	1	
Lannea stuhlmannii		2	2	1	6	
Lannea stuhlmannii		2	1.5	1	1	
Monotes glaber		3	3	1	1	
Monotes glaber		5	5	1	2	
Monotes glaber		9	5	1	6	
Monotes glaber		7	4	1	2	
Monotes glaber		5	3.5	1	1	
Monotes glaber		3	2.5	1	3	
Ochna pulchra		1	1.5	1	1	
Ochna pulchra		1	1.6	1	1	
Ochna pulchra		5	4	1	2	
Ochna pulchra		4	4	1	2	
Ochna pulchra		5	4	1	2	
Ochna pulchra		5	3	1	2	
Parinari curatellifolia		2	1.8	1	1	
Parinari curatellifolia		2	1.7	1	1	
Parinari curatellifolia		5	3	1	1	
Parinari curatellifolia		8	4	1	2	
Parinari curatellifolia		3	2	1	1	
Parinari curatellifolia		4	2	1	1	
Parinari curatellifolia		22	7	1	49	
Parinari curatellifolia		16	7	1	49	
Parinari curatellifolia		23	10	1	30	
Parinari curatellifolia		53	12	1	165	
Parinari curatellifolia		5	2	1	2	
Parinari curatellifolia		4	2	1	2	
Parinari curatellifolia		4	2	1	1	
Pseudolachnostylis maprouneifolia		18	7.5	1	9.3	
Pseudolachnostylis maprouneifolia		19	7.5	1	9.3	
Pseudolachnostylis maprouneifolia		15	7.5	1	9.3	
Pseudolachnostylis maprouneifolia		2	2	1	1	
Pseudolachnostylis maprouneifolia		1	2	1	1	
Pseudolachnostylis maprouneifolia		3	2	1	1	
Pseudolachnostylis maprouneifolia		2	2	1	1	
Piliostigma thonningii		11	9	1	14	
Piliostigma thonningii		9	9	1	14	
Piliostigma thonningii		13	9	1	14	
Piliostigma thonningii		4	3	1	1	
Piliostigma thonningii		6	3	1	6	
Piliostigma thonningii		10	6	1	33	

Piliostigma thonningii		15	6	1	33	
Piliostigma thonningii		16	6	1	33	
Piliostigma thonningii		11	3	1	6	
Piliostigma thonningii		9	4	1	6	
Piliostigma thonningii		3	3	1	1	
Syzygium cordatum		7	3.6	1	2	
Swartzia madagascariensis		5.5	7.8	1	6	
Strychonos madagascariensis		2	2	1	2	
Terminalia sericea		5	2.5	1	6	
Uapaca kirkiana		5	4	1	2	
Uapaca kirkiana		4	2	1	2	
Uapaca kirkiana		7	4	1	1	
Uapaca kirkiana		5	3	1	1	
Uapaca kirkiana		5	4	1	1	
Uapaca kirkiana		12	4	1	6	
Uapaca kirkiana		3	3.5	1	1	
Uapaca kirkiana		17	5	1	12	
Uapaca kirkiana		10	5	1	12	
Uapaca kirkiana		9	3.5	1	6	
Uapaca kirkiana		6	4	1	2	
Uapaca kirkiana		6	3	1	1	
Uapaca kirkiana		4	2	1	1	
Uapaca kirkiana		11	4.5	1	6	
Uapaca kirkiana		7	4.5	1	6	
Uapaca kirkiana		3	2	1	2	
Uapaca kirkiana		3	2	1	2	
Uapaca kirkiana		6	3.5	1	4	
Uapaca nitida		19	7	1	16	
Uapaca nitida		17	7	1	16	
Uapaca nitida		18	7	1	16	
Uapaca nitida		8	7	1	16	
Uapaca nitida		6	3	1	1	
Uapaca nitida		20	7	1	63	
Uapaca nitida		22	6	1	15	
Uapaca nitida		17	9	1	25	
Uapaca nitida		18	9	1	25	
Uapaca nitida		10	3.5	1	2	
Vangueriopsis lanciflora		3	3	1	2	
Vangueriopsis lanciflora		2	1.8	1	1	

Grasses	Count
Sporobolus africanus	599
Digitaria velutina	58
Digitaria ternata	51

Chloris mossambicensis	34
Setaria sphacelate	77
Setaria sphacelate	82
Eragrostis superba	28
Panicum volutans	46
Andropogon gayanus	53
Setaria incrassata	19
Setaria	10

Birds	Count	
Red eyed Bulbul	5	
Southern musked weaver	6	
Blue waxbill	4	
Tawnyflanked prinia	1	
Turtle Dove	3	
Pied Crow	1	
Lilac Breasted Roller	1	
Southern Greyheaded King Fisher	1	
Red billed Oxpecker	1	
Ashley Tit	2	
Grey headed Sparrow	1	
Yellow Rumped Widow	1	
Abdim's Stork	39	
Flappet lark	2	
Long tailed widow	1	
Yellow bishop	1	
Fire fitch	3	
Miombo barbet	1	
Black sunbird	1	
Collard sunbird	1	

Insects	Count
Velvet ant	1
Grass mantid	1
Bal-byter sugar ant	1
Luck ant	4
Bark Cockroach	1
Chequered beetle	1
Sweat bee	1
Harvester ant	6
Trilobite cockroach	1
Grey coffee snoot beetle	1
Jumping Spider	2

Cicadas		3
Tiny Black Ants		10
Monarch Butterflies		5
Mammals		**Count**
		0
Reptiles		**Count**
Side-striped chameleon		1
Mozambique Rough-Scaled Lizzard		4
Pancake Tortoise		1
		6
Amphibians		**Count**
Bocage's Burrowing tree frog		1

Plot 5

Tree Species

Species	DBH (cm)	Height (m)	Count	Crown % Cover m^2
Anisophyllea boehmii	2	2.5	1	1
Anisophyllea boehmii	3	3	1	1
Anisophyllea boehmii	5	4	1	1
Anona Senegalensis	5	3.5	1	2
Anona Senegalensis	4	3	1	2
Anona Senegalensis	2	3	1	1
Anona Senegalensis	3	2	1	2
Anona Senegalensis	5	3	1	1
Anona Senegalensis	5	2.5	1	6
Brachystegia boehmii	2	2	1	1
Brachystegia boehmii	3	4	1	1
Brachystegia boehmii	6	4	1	2
Brachystegia boehmii	3	4	1	2
Brachystegia boehmii	6	3.5	1	10
Brachystegia boehmii	5	4	1	6
Brachystegia boehmii	7	4.5	1	8
Brachystegia boehmii	6	5	1	2
Brachystegia boehmii	10	4	1	12
Brachystegia boehmii	6	4	1	2
Brachystegia boehmii	4	3	1	2
Brachystegia boehmii	5	3	1	12
Brachystegia boehmii	6	3	1	8
Brachystegia boehmii	3	3.5	1	1
Brachystegia boehmii	3	3.5	1	1
Brachystegia bussei	13	7	1	15
Brachystegia bussei	6	5.5	1	6.6
Brachystegia bussei	6	5.5	1	6.6
Brachystegia bussei	4	5.5	1	6.6
Brachystegia bussei	4	3	1	1
Brachystegia bussei	5	3	1	1
Brachystegia bussei	9	9	1	12
Brachystegia bussei	5	6	1	2
Brachystegia bussei	4	3.7	1	2
Brachystegia bussei	2	2	1	1
Brachystegia bussei	6	4.5	1	6
Brachystegia bussei	5	3.2	1	1
Brachystegia bussei	4	4	1	4
Brachystegia bussei	4	4	1	1

Brachystegia bussei		4	4	1	1	
Brachystegia bussei		7	5	1	6	
Brachystegia floribunda		3	3	1	2	
Brachystegia floribunda		10	5.5	1	6	
Brachystegia floribunda		2	2.5	1	4	
Brachystegia floribunda		2	2.5	1	1	
Brachystegia floribunda		3	3	1	2	
Brachystegia floribunda		3	3	1	1	
Brachystegia floribunda		1	2	1	2	
Brachystegia floribunda		2	2	1	2	
Brachystegia floribunda		2	2.5	1	2	
Brachystegia floribunda		4	4	1	2	
Brachystegia floribunda		4	3	1	3	
Brachystegia floribunda		2	1.6	1	1	
Brachystegia floribunda		3	4	1	2	
Brachystegia floribunda		4	4	1	2	
Brachystegia floribunda		2	1.6	1	1	
Brachystegia floribunda		3	3	1	1	
Brachystegia floribunda		4	7	1	2	
Brachystegia floribunda		7	4	1	2	
Brachystegia floribunda		5	4	1	3	
Brachystegia floribunda		5	4	1	6	
Brachystegia floribunda		4	3.5	1	6	
Brachystegia floribunda		3	3	1	2	
Brachystegia floribunda		4	5	1	5	
Brachystegia floribunda		4	3	1	6	
Brachystegia floribunda		3	3	1	2	
Brachystegia floribunda		2	2	1	1	
Brachystegia floribunda		4	3	1	2	
Brachystegia floribunda		4	4	1	2	
Brachystegia floribunda		4	4	1	1	
Brachystegia floribunda		5	4	1	1	
Brachystegia floribunda		3	4	1	2	
Cassia abbreviata		2	1.7	1	1	
Cassia abbreviata		3	1.7	1	2	
Cassia abbreviata		3	2.5	1	1	
Croton megalobotrys		3	2	1	4	
Diospyros batocana		5	3	1	1	
Diospyros batocana		6	1.5	1	1	
Diospyros batocana		3	3.5	1	2	
Diplorhynchus condylocarpon		3	4	1	1	
Diplorhynchus condylocarpon		5	4	1	1	
Diplorhynchus condylocarpon		9	9	1	4	
Diplorhynchus condylocarpon		9	9	1	4	
Diplorhynchus condylocarpon		8	9	1	4	
Diplorhynchus condylocarpon		7	3	1	24	

Diplorhynchus condylocarpon	5	3	1	2	
Diplorhynchus condylocarpon	2	3	1	1	
Diplorhynchus condylocarpon	3	4	1	6	
Diplorhynchus condylocarpon	4	3.5	1	6	
Dichrostachys cinerea	7	4.5	1	2	
Dichrostachys cinerea	8	7	1	12	
Dalbergiella nyasae	5	4.5	1	2	
Dalbergiella nyasae	4	4.5	1	2	
Flacourtia indica	3	2.5	1	3	
Isoberlinia angolensis	5	4	1	9	
Isoberlinia angolensis	5	4	1	6	
Julbernadia paniculata	5	4	1	2	
Julbernadia paniculata	3	3	1	2	
Julbernadia paniculata	2	2.5	1	1	
Julbernadia paniculata	6	5	1	6	
Julbernadia paniculata	3	4	1	1	
Julbernadia paniculata	4	2	1	2	
Julbernadia paniculata	3	3	1	1	
Julbernadia paniculata	4	3.6	1	6	
Julbernadia paniculata	3	4	1	1	
Julbernadia paniculata	3	3	1	6	
Julbernadia paniculata	5	5	1	2	
Julbernadia paniculata	4	3	1	1	
Julbernadia paniculata	3	4	1	6	
Julbernadia paniculata	6	3	1	6	
Julbernadia paniculata	7	5.5	1	6	
Julbernadia paniculata	7	5	1	12	
Julbernadia paniculata	3	1.7	1	1	
Lannea stuhlmannii	8	3	1	6	
Lannea stuhlmannii	9	4.5	1	6	
Lannea stuhlmannii	2	2	1	4	
Lannea stuhlmannii	4	4	1	1	
Lannea stuhlmannii	6	3	1	12	
Lannea stuhlmannii	8	9	1	63	
Lannea stuhlmannii	2	2	1	2	
Lannea stuhlmannii	4	3	1	1	
Lannea stuhlmannii	3	2.5	1	1	
Ochna pulchra	2	2	1	1	
Ochna pulchra	2	1.8	1	1	
Ochna pulchra	5	5	1	2	
Ochna pulchra	4	5	1	2	
Ochna pulchra	4	5	1	6	
Ochna pulchra	2	1.7	1	1	
Ochna pulchra	3	2	1	3	
Ochna pulchra	9	3	1	6	
Ochna pulchra	2	3	1	1	

Ochna pulchra		5	3.5	1	2	
Ochna pulchra		2	2	1	1	
Pericopsis angolensis		3	1.6	1	1	
Pericopsis angolensis		3	2	1	2	
Pericopsis angolensis		4	3	1	2	
Pericopsis angolensis		3	3	1	2	
Pericopsis angolensis		2	3	1	2	
Parinari curatellifolia		5	4	1	2	
Parinari curatellifolia		3	2	1	1	
Parinari curatellifolia		5	4	1	6	
Parinari curatellifolia		4	2	1	2	
Parinari curatellifolia		4	3.5	1	2	
Parinari curatellifolia		6	4	1	2	
Pseudolachnostylis maprouneifolia		5	3.5	1	1	
Pseudolachnostylis maprouneifolia		9	4.5	1	2	
Pseudolachnostylis maprouneifolia		3	3	1	8	
Pseudolachnostylis maprouneifolia		8	3.5	1	15	
Pseudolachnostylis maprouneifolia		2	2	1	6	
Pseudolachnostylis maprouneifolia		8	4	1	8	
Pseudolachnostylis maprouneifolia		5	4	1	6	
Pseudolachnostylis maprouneifolia		2	3	1	4	
Pseudolachnostylis maprouneifolia		4	3	1	2	
Piliostigma thonningii		2	1.4	1	4	
Piliostigma thonningii		7	3	1	6	
Piliostigma thonningii		3	1.7	1	2	
Piliostigma thonningii		2	2	1	1	
Piliostigma thonningii		8	7	1	24	
Piliostigma thonningii		9	7	1	6	
Piliostigma thonningii		3	1.7	1	2	
Syzygium cordatum		4	6	1	6	
Syzygium cordatum		4	3	1	2	
Syzygium cordatum		18	6	1	63	
Strychnos spinosa		9	6.5	1	8	
Securinega virosa		9	7	1	99	
Securinega virosa		5	2	1	15	
Securinega virosa		5	3	1	2	
Securinega virosa		4	3	1	18	
Securinega virosa		4	3.6	1	9	
Terminalia Mollis		2	2	1	1	

Uapaca kirkiana		3	3.5	1	4	
Uapaca kirkiana		4	3.5	1	4	
Uapaca kirkiana		9	5	1	20	
Uapaca kirkiana		4	4	1	1.5	
Uapaca kirkiana		2	1.6	1	1	
Uapaca kirkiana		7	4	1	12	
Uapaca kirkiana		5	4	1	2	
Uapaca kirkiana		8	5	1	2	
Uapaca kirkiana		8	5	1	2	
Uapaca kirkiana		4	5	1	2	
Uapaca kirkiana		3	2.5	1	6	
Uapaca kirkiana		5	3	1	3	
Uapaca kirkiana		4	3	1	3	
Uapaca kirkiana		4	2.5	1	2	
Uapaca nitida		8	5	1	5.3	
Uapaca nitida		8	5	1	5.3	
Uapaca nitida		4	5	1	5.3	
Vitex payos		7	5	1	2	
Vitex payos		2	1.7	1	1	
Vitex payos		11	3.5	1	12	
Vitex payos		7	4	1	6	
Vitex payos		4	3	1	1	
Ziziphus abyssinica		4	2	1	2	

Grasses	Count
Hyparrhania hirta	118
Eragrostis lehmanniana	314
Eragrostis curvula	115
Panicum volutans	136
Sporobolus africanus	56
Chloris mossambicensis	43
Eragrostis superba	69
Digitaria ternata	63

Birds	Count
Eastern Kestrel	1
Blue Waxbill	2
Red eyed bulbul	2
Ashly tit	1
Fire fitch	1
Grey headed sparrow	1

Pied crow		2
Miombo barbet		1
Tawnyflanked prinia		1
Masked weaver		7
White winged widow		1
Red eyed dove		1
Black headed heron		1
Turtle Dove		1
Burchell's Coucal		1
Singing cisticola		2

Insects		Count
Cicadas		4
Grass Hopper		2
Moths		5
Eastern Subterranean Termites		14
Jumping Spider		3
Balbyter Ants		8
Wolf Spider		1
Tiny Black Ants		12
Pentatomid Bug		1
Common Flies		5
Sweat Bees		8
Small Pugnacious Ants		4
Small Yellow Ants		6
Carpenter ants		7

Mammals		Count
Elephant shrew		1
Common Hare		1
Reptiles		Count
Pancake Tortoise		1
Amphibians		Count
		0

Environmental and Social Impact Assessment (ESIA) and Resettlement and Compensation Action Plan (RAP) for the Malawi - Zambia 400 kV Transmission Interconnector Project

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List of Abbreviations

AoI	Area of Influence
EIB	European Investment Bank
ESIA	Environmental and Social Impact Assessment
ESCOM	Electricity Supply Corporation of Malawi Limited
ESMP	Environmental and Social Management Plan
FS	Feasibility Study
GBV/SEA	Gender Based Violence/Sexual Exploitation and Abuse
GIS	Geographic Information System
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
kV	Kilovolt
NGO	Non-Governmental Organization
OHL	Overhead Line
PAP	Project Affected Person
PIU	Project Implementation Unit
PM	Project Manager
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
RoW	Right of Way
SADC	Southern African Development Community
SAPP	Southern African Power Pool
SEP	Stakeholder Engagement Plan
S/S	Substation
ToR	Terms of Reference
WB	World Bank
ESS	Environmental and Social Standards
ZEMA	Zambia Environmental Management Agency
WARMA	Water Resources Management Authority

1. Introduction

Southern Africa has been facing a severe power crisis for decades, caused by ageing infrastructure, insufficient investment in new power generation, growing demand, and climate impacts on hydropower. These power shortages have resulted in widespread economic, social, environmental, and infrastructural problems, along with political and regulatory challenges.

The Southern African Power Pool (SAPP) was established to promote cooperation among Southern African countries to address these power issues and ensure a stable, reliable, and affordable electricity supply. SAPP's strategy focuses on promoting regional power transmission lines to enhance grid interconnectivity, optimize resource use, and improve power stability across the Region. This approach aims to build a resilient and sustainable power system that supports economic growth, enhances quality of life, and mitigates environmental impacts.

The proposed Malawi-Zambia 400KV interconnection transmission line, managed by ZESCO Limited (Zambia) and ESCOM (Malawi), is a key component of SAPP's response to the regional energy crisis. The Project involves constructing a 400kV transmission line between the Chipata West 330/132kV Substation in Zambia and the Nkhoma 400/132kV Substation in Lilongwe, Malawi, spanning approximately 188 km (144 km in Malawi and 44 km in Zambia). This initiative aims to promote regional integration and facilitate electricity trading between the two countries and other nations in the Region.

1.1 Background

The Southern African Development Community (SADC) was established in 1992 to foster socio-economic integration, political stability, and security cooperation. Spanning nearly 9.09 million square kilometers, the SADC region is home to over 280 million people across 16-member countries.

A critical challenge in Southern Africa is inadequate electricity access, which hampers efforts to end extreme poverty and boost shared prosperity. The Region's electricity access rate is around 28 percent, below the continental average of 31 percent, and would drop to 17 percent—the lowest among African sub-regions—if South Africa were excluded. Countries like Madagascar, Zambia, Lesotho, Tanzania, the Democratic Republic of Congo (DRC), and Malawi have less than 20 percent of their populations with electricity access, with DRC and Malawi reporting rates below 10 percent. Expanding electricity access is essential for poverty reduction and is central to national development plans in these Countries. For instance, Malawi aims to achieve an electricity access rate of 30 percent by 2020 to support its goal of reaching middle-income status, while Zambia targets expanding access to 66 percent by 2030.

Increased electricity access requires a substantial boost in power supply. Therefore, enhancing energy access and availability is key to SADC’s developmental agenda. This necessity has driven the plan for the Malawi-Zambia Interconnector, which aims to improve the Region’s energy sector, by enhancing grid interconnectivity and increasing power supply.

Swedfund International and the European Union have provided financing for environmental and technical feasibility studies for the Malawi-Zambia Interconnector, a 400kV cross-border transmission line spanning approximately 188 kilometers. This interconnector project involves

constructing a 330/400kV line from the Nkhoma 400/132kV Substation in Lilongwe, Malawi, to the Chipata West 330/132kV Substation in Zambia. Of the total distance, 144 kilometers are in Malawi and 44 kilometers in Zambia.

The Project will be managed by the respective national power utilities, ZESCO Limited in Zambia and ESCOM in Malawi, reinforcing regional cooperation and integration. This Interconnector will not only facilitate electricity trading between Malawi and Zambia but also support broader regional integration and stability. It will help address the critical power shortages in Southern Africa, fostering economic growth, improving living standards, and reducing environmental impacts through a more reliable and interconnected power grid.

1.2 Scope of this Stakeholder Engagement Plan

The primary objective of this Stakeholder Engagement Plan (SEP) is to guarantee a consistent, thorough, and coordinated strategy for engaging stakeholders and disclosing project information throughout the project's lifecycle. Additionally, it aims to showcase the Project's dedication to adopting an 'international best practice' approach to stakeholder engagement. Following current international best practices, this SEP intends to ensure stakeholder engagement is conducted using timely, relevant, and easily accessible information, while ensuing inclusivity in project development. The SEP aims to provide stakeholders ample opportunity to express their opinions and concerns, ensuring these concerns are reflected in project decisions.

This SEP aims for inclusive engagement with all relevant stakeholders throughout the project lifecycle and this includes:

- Relevant Government departments and agencies
- Civic Leaders
- NGOs and CSOs
- Local and international development agencies
- Traditional leaders
- Local community members
- Project impacted and interested persons

1.3 Stakeholder Engagement Objectives

The Stakeholder Engagement Plan (SEP) for this power transmission project ensures effective, transparent, and inclusive engagement with all relevant stakeholders throughout the project lifecycle. The SEP objectives are presented below:

Table 1: The SEP objectives

Objectives	Description
Promote Transparency and Trust	Maintain continuous, open, honest, and transparent communication with stakeholders about project developments, impacts, and benefits. Build and sustain trust by making information accessible and addressing stakeholder concerns proactively.
Foster Inclusivity	Ensure that the engagement process is inclusive and participatory by considering all voices, particularly vulnerable and marginalized groups. Tailor communication and consultation approaches to reach these groups

Objectives	Description
	and ensure their active participation.
Enhance Social Acceptance	Actively involve local communities, Government entities, NGOs, and other stakeholders in project decisions to address concerns, mitigate conflicts, and enhance public acceptance. Foster community ownership through shared decision-making.
Ensure Compliance	Ensure full adherence to National legal frameworks, such as Zambia's Environmental Management Act, and international best practices such as EIB standards and World Bank guidelines. Maintain compliance throughout the project's lifecycle.
Ensure Understanding	Guarantee that stakeholders are well-informed about the Project, its impacts, and benefits by providing clear, timely, and comprehensive information. Facilitate open dialogue and respond to queries or concerns in an accessible manner.
Identify Key Stakeholders	Conduct a thorough stakeholder identification process to recognize individuals and groups affected by the Project or with the ability to influence project outcomes. Engage them early and continually during the Project cycle.
Identify Approach and Methods	Determine and implement the most effective methods for disseminating Project information, such as public meetings, focus groups, social media, or printed materials, ensuring that all communication is accessible, transparent, and appropriate.
Involve Stakeholders in the Assessment	Include stakeholders in assessing the Project's environmental and social impacts by engaging them in scoping sessions and incorporating their local knowledge into the Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP).
Provide Input Opportunities	Allow stakeholders to actively contribute to the planning and design phases of the Project by soliciting feedback through consultations, surveys, and public hearings. Use this input to refine Project plans and mitigation measures.
Establish Grievance Redress Mechanism	Implement formal and accessible grievance mechanisms to ensure stakeholders can voice concerns, complaints, or suggestions. Provide clear procedures for lodging grievances and ensure they are addressed in a timely and transparent manner.
Manage Expectations	Proactively manage stakeholder and community expectations by disseminating accurate, easy-to-understand, and realistic information about Project timelines, potential impacts, and benefits to avoid misinformation or false hopes.

1.3.1 Rationale for the Stakeholder Engagement Plan

Public and stakeholder consultations are crucial in project planning. According to the Zambia Environmental Management Act No. 12 of 2011, read together with the Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, Statutory Instrument No. 28 of 1997, citizens have the right to full consultation and to express their views

in the planning and implementation of environmental policies and projects that affect them. It is also a constitutional right in Zambia to disclose relevant information and consult with individuals and communities directly affected by any development project involving displacement or loss of property.

The environmental impact assessment process under ZEMA requires public consultation as part of the study. The project must conduct and provide evidence of meaningful consultation (free, prior, and informed) with communities likely to be affected by environmental and social impacts, as well as with other local stakeholders. Consultation should begin at the project identification stage or early during project preparation, continue throughout the project, and be based on a stakeholder analysis. It should be conducted promptly, in an appropriate language (including local languages), and be fully informed through the prior disclosure of project information. The consultation results should be reflected in project design and documentation. Consultation must occur with the release of environmental and social information.

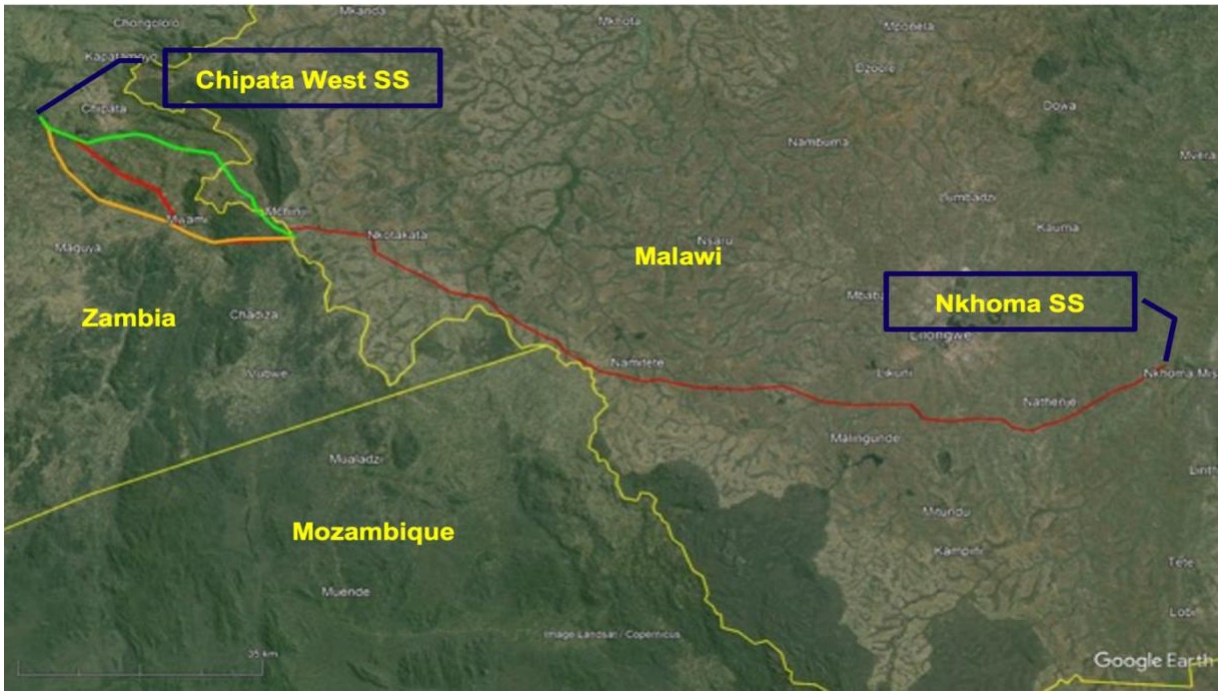
2. Brief Project Description

2.1 Project Objectives

The objective of the Project is to facilitate better regional integration and to promote the exchange of electricity between the two countries. Cross-border exchange of electricity has been taking place at distribution level since the year 2000 via a 33kV line, which is not enough for the expected demand, hence the need for the proposed 400kV line to meet the increasing demand for electricity.

2.2 Project Description

The Project is located in Malawi and Zambia. The proposed Interconnection Line between Chipata West Station and Nkhoma Substation will have a total length of approximately 188 km, of which 144 km will be in Malawi and 44 km in Zambia. The potential Interconnection Line route in Malawi, between Lilongwe and Mchinji, is located in a densely populated, slightly undulating high plateau area with altitudes of 1050-1200 m.



Proposed Figure 1: Proposed alignment of the Malawi-Zambia 400kV Interconnector Project

3. Requirements for Stakeholder Engagement & Information Disclosure

3.1 Zambian National Regulations

3.1.1 ESIA Engagement and Disclosure

Legal and Policy Framework

The Environmental Management Act (EMA) No. 12 of 2011, as read together with the Statutory Instrument (SI) No. 28 of 1997, Environmental Impact Assessment Regulations, it is mandatory that all development plans, policies and projects undergo a process of Environmental Impact Assessment (EIA). Specifically, the EIA Regulations, states that:

"A developer shall not implement a project for which a project brief or environmental impact statement is required under these Regulations, unless the project brief or the environmental impact statement has been concluded in accordance with these regulations and the Zambia Environmental Management Agency has issued a decision letter."

Summarised Procedure for Conducting EIA Studies for Projects

Stage 1: Screening Exercise

This is done to confirm whether the proposed project requires an Environmental Impact Statement (EIS) or and Environmental Project Brief (EPB). This involves review of the project proposals and relevant sections of the EIA Regulations which lead to the establishment of the nature and extent of the EIA studies for the proposed project.

Stage 2: Scoping Meeting (or Identification of Potential Impacts)

This helps to determine the scope of works and extent of specialist studies required. Deliberations of the scoping meetings and discussions within the ESIA study team provided insight on the expertise and methodology required to conduct the ESIA studies as well as the major contents of the ESIA report.

Scoping is done through public/community consultation to allow the interested and affected parties and key stakeholders to present their views and concerns about the project. The result of this stage is a scoping report which includes the concerns raised by the public/community and the interested and affected parties. The issues raised during the scoping exercise will facilitate the preparation of the Terms of Reference (ToRs) for the ESIA studies. The Scoping Report and draft are submitted to *ZEMA for approval* before proceeding with other stages in the ESIA study process.

Stage 3: Baseline Studies

Upon approval of the ToRs by ZEMA, specialist studies are conducted from which environmental and social impacts shall be determined and mitigation measures proposed.

Stage 4: Preparation of Draft ESIA Report

A draft ESIA report is compiled.

Stage 5: Disclosure Meeting

During the Disclosure Meeting the draft ESIA report is presented to the Stakeholders for review and to ensure that all the concerns that were raised during the scoping meeting and other consultative meetings have been adequately addressed.

Stakeholders to be invited to the disclosure meeting will include all those who attended the scoping meetings and any other interested and affected parties.

The process leading to the actual disclosing meeting will more or less cover the following:

- Identification and securing of a venue for the meeting.
- Identification of targeted individuals and stakeholders to be invited to the meeting.
- Preparation of invitation letters.
- Appropriate adverts for the disclosure meeting in print and electronic media.
- Preparation of appropriate agenda.
- Preparation of a simplified Executive Summary in an appropriate clear and specific language.
- Holding of the meeting.
- Taking and preparation of Minutes of the disclosure meeting to be incorporated in the draft ESIA.

At this stage the developer should ensure that the concerns raised in the scoping meetings are adequately addressed during the disclosure meeting.

Stage 6: Draft ESIA Report Submitted to ZEMA

A draft ESIA report is submitted to ZEMA for review and comments.

Stage 7: Final ESIA Report Submitted to ZEMA

A final ESIA report is submitted to ZEMA with the incorporated ZEMA comments.

Stage 8: Decision Making by ZEMA

8(a) Public Hearing

If the identified concerns or impacts are not adequately addressed ZEMA “Arbitration” will call for a public hearing related to the proposed project.

8(b) Decision Letter

ZEMA decides whether to approve the project, reject or defer it. The final outcome of the process is a *Decision Letter* which states whether the project is approved or rejected with conditions. If rejected, reasons are given and if approved, conditions of approval are given.

Planning for the Disclosure Meeting Program

Salient Points to note:

- What will be the Agenda?
- Who will chair the meeting?
- What are the objectives?
- Who should be involved?
- What information does the public/community need?
- How will we get people/community involvement?
- What staff and skills will the team need?
- Which community consultation techniques will be used?

3.2 International Lender Requirements and Applicable International Standards

Disclosure Statement, the Operating Principles for Impact Management Swedfund International AB, April 8, 2024

PRINCIPLE 9:

Publicly disclose alignment with the Impact Principles and provide regular independent verification of the alignment. The Manager shall publicly disclose, on an annual basis, the alignment of its impact management systems with the principles and, at regular intervals, arrange for independent verification of this alignment. The conclusions of this verification report shall also be publicly disclosed. These disclosures are subject to fiduciary and regulatory concern.

EIB Requirements:

The relevant EIB requirements are spelt out in different Standards, as presented below:

Key Areas	EIB Standards	Aspects to Covered/Undertaken
Transparency and Information Disclosure	EIB Standard 2: Stakeholder Engagement.	The requirement to disclose project-related information in a timely and accessible manner aligns with this standard. It emphasizes the importance of making information available to stakeholders early in the project and throughout its lifecycle.
Inclusivity	EIB Standard 2 EIB Standard 7: Rights and Interests of Vulnerable Groups.	EIB places special emphasis on the inclusion of vulnerable groups in project planning and implementation. Standard 7 reinforces the need for stakeholder engagement to be inclusive, ensuring marginalized groups have equal access to the process.
Grievance Redress Mechanism (GRM)	EIB Standard 2 and EIB Standard 6: Involuntary Resettlement and	EIB Standard 2 requires that a formal grievance mechanism be in place to allow stakeholders to voice concerns and seek redress, particularly for those affected by environmental or social impacts. EIB Standard 6 provides for the amicable resolution of grievances arising from involuntary resettlement.

Key Areas	EIB Standards	Aspects to Covered/Undertaken
Monitoring and Reporting:	EIB Standard 1: Environmental and Social Impacts and Risks EIB Standard 2 EIB Standard 6 EIB Standard 7 EIB Standard 8: Labour Rights EIB Standard 10 Cultural Heritage	EIB Standard 1 emphasizes the importance of continuous monitoring and reporting on environmental and social impacts. EIB Standard 2 requires ongoing monitoring of stakeholder engagement activities and regular public reporting on the outcomes of consultations and grievances. EIB Standard 6 provides for establishment of a monitoring system (i.e. resources, staff, and procedures) commensurate to the scale of the resettlement and the risks involved. EIB Standard 7 provides for the assessment, management and monitoring project impacts, risks, and opportunities related to Indigenous Peoples as well as persons or groups that are vulnerable, marginalised or discriminated against due to their socioeconomic characteristics. It also calls for consideration of gender-differentiated impacts and risks and need for a gender-responsive approach. EIB Standard 8 provides for the assessment, management and monitoring of labour-related impacts and risks associated with projects. EIB Standard 10 provides for the identification, assessment, management and monitoring cultural heritage-related impacts and risks associated with the projects.
Engagement Methods	EIB Standard 2 EIB Standard 10	EIB Standard 2 specifies the need to adopt a variety of engagement methods, tailored to the local context, and ensure that information is communicated in a culturally appropriate manner. EIB Standard 10 provides for meaningful consultation with and provide timely and adequate information to affected communities who use or have used the cultural heritage within living memory for longstanding cultural purposes, with due attention to intangible cultural heritage.

Following the applicable policies and standards, the initial consultation with some of the stakeholders during the Scoping Phase of this Project was undertaken. More engagements will be carried out and shall be proposed for all upcoming phases for this Project.

4. Summary of Engagement Activities Carried Out

Following the objectives set out for this SEP, the Consultant engaged stakeholders from the beginning. Below is a summary of engagement activities undertaken so far by the Consultants, capturing the key issues raised by the stakeholders.

Table 2: Summary of engagement activities undertaken

Date	Topic	Stakeholder	Location	Key issues raised by stakeholder
03/06/2024	Site investigation inaugural meeting	ZESCO project staff	Nyamfinzi hotel - Chipata	To investigate all the three routes and choose the most favourable one
03/06/2024	Introduction of the project team	ZESCO Senior Area Manager – Milton Hamombe	ZESCO Eastern Area Office, Chipata	Appreciated the commencement of the project and looked forward to further collaboration
03/06/2024	Introduction of the ESIA project and team	Chipata District Commissioner – Elidah Mwanza	District Commissioner's Office	Ensure that displaced people are properly compensated to avoid complaints
03/06/2024	Introduction of the ESIA project and team	Chipata Town Clerk – Aaron Kamalondo Acting Director – Planning – Willard Makwelele Director Legal Services, Chipata Town Council – Lyn Galapa	Chipata Town Clerk's office	Ensure that traditional authority is properly consulted to avoid agitating the communities
03/06/2024	Introduction of the ESIA project and team	Chief Planner (Socio-economic), Provincial Planning Unit Idah Njovu Senior Physical Planner, Provincial Planning Unit – Bwalya Kamwa	Eastern Provincial Administration (Provincial Planning Unit) Provincial Administration Physical Planning Office	Ensure that local communities in the project area are not disadvantaged

Date	Topic	Stakeholder	Location	Key issues raised by stakeholder
		Physical Planner, Provincial Planning Unit – Christopher Chewe		
04/06/2024	Introduction of the ESIA project and team	Headman Mushamune – Stephen Mphanza (Paramount Chief Mpezeni's Representative)	Headman Mushamune's home in Uweka Village, Chipata District	To inform Chief Mpenzeni, who had travelled out, about the project. Continue with consultation so that local people can benefit from the project.
04/06/2024	Introduction of the ESIA project and team	Vubwi District Commissioner – Mr. Gideon Sakala District Agricultural Coordinator (DACO), Vubwi District – Phillimon Lungu Vubwi District Socio-economic Planner – Norman Nyendwa	Vubwi District Commissioner's Office	Welcomed the project
04/06/2024	Introduction of the ESIA project/team	Chief Pembamoyo District Agricultural Coordinator (DACO), Vubwi District – Phillimon Lungu	Chief Pembamoyo's Palace	To be updated about the project so that he meets the headmen and the community to inform them about it. Will it be possible for communities to tap power from the project interconnector?
05/06/2024 to 06/06/2024	In-person Interviews	Local people	Three project alternative routes	Welcomed the project.

Date	Topic	Stakeholder	Location	Key issues raised by stakeholder
				Local people should be employed on the project Those who will suffer damages should be compensated.

5. Identification and Analysis of Stakeholders

The SEP describes the timing and methods of engagement with stakeholders of the project as agreed, distinguishing between project-affected and other interested parties. The SEP sets out how communication with stakeholders would be handled throughout project preparation and implementation.

5.1 Stakeholder Identification

Stakeholders are individuals or groups directly or indirectly affected by a project or those who may have interests in it and the ability to influence its outcomes, either positively or negatively. Stakeholders fall into two main categories:

Project-affected parties: Those affected or likely to be affected by the project.

Other interested parties: Individuals or groups with an interest in the project but not directly impacted.

Stakeholders can include locally affected communities, their formal and informal representatives, national and local Government authorities, politicians, religious leaders, civil society organizations, special interest groups, the academic community, and business entities.

Key Stakeholder Categories

- Project-affected persons: Individuals whose land or assets may be impacted by the project.
- Small business owners: Particularly women-led local businesses in the project area.
- Locally affected communities: These include representatives such as schools, local businesses, community and religious leaders, village chiefs, and village development committees.
- Government authorities: At the national, provincial, and local levels.
- Politicians and religious leaders: Those with influence over community or governmental decisions.
- Civil society organizations (CSOs) and special interest groups: Those advocating for specific environmental or social causes.
- Academic institutions and business entities: Stakeholders with potential research or economic interests in the project.
- Other interested parties: Government ministries related to energy, green economy, environment, gender, social welfare, agriculture, land, and tourism.
- State or parastatal organizations: Entities involved in environmental management and oversight.
- Traditional chiefs and local headmen: Local authorities in the project area.
- NGOs: Focused on environmental and social issues, such as biodiversity conservation, gender-based violence (GBV), humanitarian aid, disability support, and youth/women-led business development.
- Media outlets: National, regional, and local platforms for information dissemination.
- International organizations: Including UN agencies like UNHCR, UN Women, UNICEF, and UNEP.

Systematic Approach to Stakeholder Identification

A comprehensive and dynamic approach is essential to ensure inclusivity from the start of the project. The list of stakeholders will evolve over time, ensuring the most relevant groups are identified and engaged throughout the project's lifecycle. The following principles guide this process:

Principals Guiding	Stakeholder Identification
Vulnerable or disadvantaged groups	These groups require special consideration due to heightened vulnerabilities and the need for enhanced participation.
Dependency	Stakeholders reliant on project-affected activities, assets or resources for their livelihoods or well-being.
Influence	Entities that can impact project outcomes, including financiers, civic organizations, and Government bodies.
Responsibility	Stakeholders with legal, operational, or ethical duties, including project-affected communities and financiers.
Diverse Perspectives	Groups offering a variety of viewpoints, crucial for decision-making, such as environmental groups and development partners.
Legitimacy	Stakeholders legitimately representing key interests, such as marginalized communities and future generations.

Criteria for Stakeholder Selection

Key criteria for selecting relevant stakeholders include:

- **Interest**: Their level of interest in the project.
- **Influence**: Their ability to affect project outcomes.

Since stakeholder interest and influence can shift over time, continuous monitoring of stakeholder dynamics is essential. Stakeholder mapping helps identify:

- Who is affected by the project and how they are affect.
- Formal and informal community leaders and their representativeness.
- Stakeholders' support, neutrality, or opposition to the project.
- Key interests and concerns of each stakeholder.
- How different stakeholders influence the project and the risks or opportunities they present.

Stakeholder Mapping

The process of stakeholder mapping helps in understanding:

- Who is affected by the project and how they are impacted?
- Representativeness of community leaders, both formal and informal.
- Stakeholder attitudes (support, neutrality, or opposition) toward the project.

- Key interests and concerns of each stakeholder group.
- Influence: The potential of different stakeholders to impact the project positively or negatively.

Key stakeholders include those who have the most influence and/or those who are most affected or interested in the project.

5.2 Stakeholder Profiling and Analysis

Once relevant stakeholder groups are identified, their interests are analyzed to assess the project's potential impact on them. Key questions include:

1. How does each group perceive the problem and proposed solutions?
2. What are their key concerns and interests regarding the project?
3. What are their expectations of the project?
4. What does each group stand to gain or lose from the project?
5. What conflicts might arise with a particular project strategy?
6. How do different groups relate to each other?
7. Where is there convergence/divergence between their interests and expectations?

The Malawi-Zambia ESIA project involves several key stakeholders, from local communities directly affected to those with interests in the project and those with the potential to influence its outcomes. Some stakeholders identified and consulted during the initial ESIA site investigation process include project-affected communities in **Chipata and Vubwi** Districts.

Based on stakeholder identification during the site investigation of alternative line routes and additional baseline review, more comprehensive and expanded stakeholder groups were identified and discussed below. This list is not exhaustive or final but an ongoing activity requiring further refinement through additional reviews, interviews, and analysis of stakeholders' potential roles, responsibilities, interests, and influence over the project's development. Stakeholders directly or indirectly affected by the proposed interconnector project are generally categorized as:

- **Primary stakeholders:** Beneficiaries of the development intervention or those directly affected by it, including local populations (individuals and community-based organizations) in the project area, especially poor and marginalized groups traditionally excluded from development efforts. Project sponsors, including financiers are also primary stakeholders.
- **Secondary stakeholders:** Those who influence a development intervention or are indirectly affected by it, including Government, through relevant line ministries (such as Ministry of Energy), project staff, implementing agencies, local governments, civil society organizations, private sector firms, and other development agencies.

Local Communities: Comprising project-affected persons, their community organizations, and representatives. They are primary stakeholders, directly affected by the Malawi-Zambia Interconnector project and beneficiaries of forthcoming mitigation measures. Their active participation and consultation are crucial.

Local Administrations: Representing Chipata and Vubwi Districts administrations. Key to the success of the Project. They occupy strategic positions within political and administrative functions and are units for planning and implementing development efforts.

Project Sponsor: ZESCO as the country's national power utility firm, is a primary stakeholder of the ESIA process for Malawi-Zambia Project, having great influence and interest.

Key Government Agencies: Agencies with interest in and influence over the Malawi-Zambia ESIA Project, including ZEMA, National Heritage Conservation Commission, Tourism Development Agency, Ministry of Green Economy and Environment, Department of National Parks and Wildlife, Ministry of Community Development and Social Welfare, Ministry of Agriculture, Ministry of Water Development, WARMA, universities, research institutes, and local Government administrations.

Vulnerable Stakeholders: Groups likely to experience impacts differently due to their marginalized and/or disadvantaged status, requiring differential needs and priorities for participation in engagement and consultation activities. The project can disproportionately affect disadvantaged or vulnerable individuals and groups due to various factors such as race, gender, age, culture, citizenship status, health status, economic status, disability, sexual orientation, dependence on others, or reliance on resource-based livelihoods. This includes:

- Individuals without income, no formal title to land, the very poor, and children/youth in these households who may need to work for others to support family income.
- Persons with disabilities (intellectual or physical disabilities and those with mobility challenges who may find it difficult to access consultation venues).
- Female-headed households.
- Illiterate individuals.
- Local businesses run by women, youth, and the elderly.
- Households led by destitute or nearly destitute individuals.
- Linguistic, cultural, and religious minorities.
- Rural residents, including the elderly and women/youth , who lack access to basic services like electricity and information/communication technology.
- Those leasing land for agricultural or pastoral activities and other resource-dependent livelihoods.
- Internally displaced persons, refugees, and those fleeing conflict.
- Registered and unregistered immigrants and migrant workers, including women and youth who may be excluded from formal employment systems.
- Those practicing traditional livelihoods requiring access to seasonal lands, such as transhumant pastoralists.
- Sexual and gender minorities.
- Individuals engaged in sex work within the project area(s).

Consultation and information disclosure activities will consider logistical and cultural factors such as language, physical access, gender roles, literacy levels, time availability, and the ability of such groups to participate actively. Meetings and focus groups involving women will be held at convenient times to avoid precluding participation due to paid work, household, or childcare commitments. Meeting invitations and key project information will be posted in locations frequented by women. Meeting venues will have accessible and comfortable seating for elderly and disabled participants, with audio-visual equipment where feasible. Interpreters and translated consultation documentation will be provided as needed.

NGOs and Civil Society Organizations (CSOs): Local and international NGOs and CSOs with interest in and influence over the project and its social and environmental impacts. Identified key players include Save the Children, Care International, Feed the Future, and Catholic Relief Services.

Media: National and community radio and television channels, private and public print media, social media, etc. Media play a crucial role in information disclosure to stakeholders and the public, news coverage, and awareness-raising.

International Stakeholders: Project financiers, international development agencies, and global civic organizations. Their legitimate responsibility to represent the voiceless (marginalized groups) and the environmental protection gives them considerable influence over large-scale infrastructure development projects.

The detailed summary of all key stakeholders, along with their respective potential roles, responsibilities, interests, and influence over the project, is presented in Table 3 below. This preliminary list will be updated following the establishment of the project management office and as additional stakeholders are identified.

Table 3: Stakeholder Groups, Interests and Influence and Potential Roles and Responsibilities

Stakeholder Group	Category of Stakeholder	Interest	Influence	Potential Roles/Responsibilities
Local Communities				
Project affected persons	Primary	Beneficiary	High	Participation in planning and implementation of community engagement/RAP
Local Community organizations	Primary	Benefit monitoring	High	Participation in assessment, planning, design, implementation and follow up of RAP and environmental mitigation
Chiefs and Headmen	Primary	Benefit monitoring	High	Participation in assessment, planning, design, implementation and follow up of RAP and environmental mitigation
Local Administration (Chipata and Vubwi District administrations), including Civic leaders)	Secondary	Design and planning of community engagements/ RAP	Medium	Facilitation, coordination, joint planning, implementation and monitoring of the project ESMP/RAP Land acquisition and resettlement

Stakeholder Group	Category of Stakeholder	Interest	Influence	Potential Roles/Responsibilities
Project Sponsor (ZESCO / Swedfund / SAPP)	Primary	Compliance to local and international financial, procurement and environmental regulations	High	Project owner, financing, coordinating and compliance monitoring the implementation of the project
Regulatory Agencies				
ZEMA	Secondary	Compliance to environmental regulations	High	Environmental management, regulation, licensing and compliance monitoring
WARMA	Secondary	Compliance to water resources conservation	High	Water resources management, regulation, licensing and compliance monitoring
Key Government Ministries/Departments				
Ministry of Green Economy and Environment Forestry Department	Primary	Compliance with environmental regulations, Environmental protection	High	Environmental legislation/guidelines, environmental protection and conservation
Ministry of Agriculture	Secondary	Crops, livestock and land use changes	Medium	Facilitation of agricultural policies and practices Land use planning
Ministry of Community Development Department of Social Welfare	Secondary	Compensation and resettlement of affected households	High	ESMP, RAP & GRM design, implementation and monitoring
Ministry of Energy	Secondary	Regulatory & technical support	Medium	Monitoring compliance to standards and guidelines

Stakeholder Group	Category of Stakeholder	Interest	Influence	Potential Roles/Responsibilities
Ministry of Local Government and Rural Development Department of Chiefs Affairs	Secondary	Conservation of cultural heritage	High	Conservation of cultural heritage, indigenous culture and tourism
Department of National Parks and Wildlife	Primary	Wildlife conservation	High	Wildlife protection and conservation Compliance monitoring
Other Stakeholders				
NGOs & CSOs (National and Local NGOs/CSOs)	Secondary	Sustainable community development and equity	High	Regular ESMP and RAP monitoring
Media (National/Regional/Local and community print and electronic media organizations)	Secondary	Project information dissemination for Sustainable Community development	High	Project information dissemination for awareness creation, disclosure (including planned meeting and RAP activities)
Human Rights Groups	Secondary	Protection of human rights of project affected persons	High	Monitoring and oversight of ESMP and RAP implementation
Environmental groups	Primary	Protection of natural resources and environmental rights		Public awareness and mobilization Compliance monitoring

6. Stakeholder Engagement Planning

Various methods of engagement are proposed to be used as part of the project's interaction with the stakeholders, to ensure that different stakeholder groups are successfully reached and are involved in the process of consultation, decision-making and the development of impact management solutions.

Information that is communicated in advance of public consultations primarily includes an announcement thereof in the public media – local, district and national, as well as the distribution of invitations and full details of the forthcoming meeting well in advance, including the agenda. It is crucial that this information is widely available, readily accessible, clearly outlined, and reaches all areas and segments of the target community.

6.1 Overview

Purpose and Timing of Stakeholder Engagement

The Stakeholder Engagement Plan (SEP) for the Malawi-Zambia 400kV power interconnector transmission line project aims to foster a constructive and ongoing dialogue among all relevant stakeholders, throughout the project's lifecycle. The key objectives of the stakeholder engagement program are:

- **Establishing Constructive Dialogue:** Facilitating communication between the Project Implementation Unit, ZESCO, Government Ministries and agencies, NGOs, technical and financial partners, local organizations, and representatives of local communities.
- **Effective Information Disclosure and Consultation:** Ensuring stakeholders are appropriately and effectively involved in the information disclosure and consultation process, adhering to principles of public participation, non-discrimination, and transparency.
- **Inclusive Access and Participation:** Guaranteeing that all relevant stakeholders, particularly those marginalized by gender, poverty, educational background, or other forms of social exclusion, have equal access to information and the opportunity to voice their opinions and concerns. These inputs will be carefully considered in project decisions.
- **Monitoring and Evaluation:** Assessing the quality and effectiveness of any engagement processes, including those undertaken by third parties on behalf of the project to ensure they meet established standards.

Timing and Planning

Effective stakeholder consultations require meticulous timing and planning to ensure that information is accessible to affected parties and that diverse groups are adequately represented and engaged. To achieve this, the ESIA project, will employ various methods and techniques tailored to the needs of stakeholders at different stages of the Project. This approach will be based on a comprehensive assessment of stakeholder needs, ensuring timely and relevant engagement throughout the project's development and implementation phases.

6.2 Planned Stakeholder Engagement Activities

The table below shows the planned stakeholder engagement activities from project inception to the operational phase.

Table 4: Planned Stakeholder Engagement Activities

Consultation Subject	Method	Location & Dates	Target Audience	Responsible
A. Preparation & Inception				
Project benefits & risks Institutional arrangements Identification of implementing partners Project Financing Other donor interests in the project	Focus Group Discussions Interviews Formal meetings Video Conferences Letters & memos	Project Area, offices and hotels Throughout Project preparation	Development partners & financiers (SAPP, Swedfund & EIB) Utilities (ZESCO & ESCOM)	PIU, ZESCO Consultants
Project design & route selection	Focus Group Discussions Interviews	Project Area & offices March to June 2024	Government departments, Civic Leader, Traditional leaders, community members	PIU, ZESCO Consultants
B. Development of Project documents e.g. ESIA, SEP & RAP				
Scoping exercise to facilitate preparation of Scoping report and ToRs.	Public meetings Key informant interviews Focus Group Discussions	Project area & offices. July 2024	Government departments, Civic Leader, Traditional leaders, Local community members Women groups	PIU/Consultants
Project benefits Environment and Social Impacts & risks	Key informant interviews Focus Group Discussions Women groups meetings	Selected places in the project area August to September 2024	Government Technical Departments & Implementing Partners (ZESCO)	PIU/Consultants

Consultation Subject	Method	Location & Dates	Target Audience	Responsible
Stakeholder Consultation requirements Gender Vulnerable groups Grievance Mechanism Procedures including SEA/SH reporting procedure Potential Land requirements for project activities	Meetings with the affected households		Local Communities NGOs active in the community Vulnerable groups, including women and youth	
ESIA & RAP Disclosure Environment and Social Impacts & risks Grievance Mechanism Procedures including SEA/SH reporting procedure	Public meeting Focus Group Discussions Women groups meetings facilitated by a female facilitator Meetings with the affected households	Selected places in the project area September to October 2024	Government Departments & Implementing Partners (ZESCO) Local Communities NGOs active in the community Vulnerable groups, including women and youth	PIU/Consultants
Implementation Phase				
Sensitisation of stakeholders on project beneficiaries, environmental, health and Safety Instruments Compensation and resettlement implementation	Meetings Workshops Community/local radios, televisions & print media Women only meetings in communities	Project Area Throughout the project implementation phase 2025 - 2026	Government Departments NGOs, CSOs, Partners Local Communities Vulnerable groups, including women	PIU/Consultants Government Departments
ZESCO & ESCOM participating in the implementation of the Environmental & Social measures	Workshops Meetings	Project Area Throughout Project preparation/ Implementation	Power Utilities ZESCO & ESCOM Government Departments	PIU/Consultants

Consultation Subject	Method	Location & Dates	Target Audience	Responsible
			Development Agencies Research organisations NGOS & CSOs	
Operational Phase				
Communities' participation in the environmental, health & Safety measures during the operational phase	Public meetings Focus Group Discussions	Project Area Throughout the project operation phase	NGOs & CSOs Development partners Local Communities	PIU/Consultants
ZESCO/ESCOM participation in the Environmental, health & Safety measures during operational phase	Workshop Meeting	Project Area Throughout Project preparation	Power Utilities ZESCO & ESCOM Government Departments Development Agencies Research organizations NGOS & CSOs Partners Local communities	PIU/Consultants

6.2.1 ESIA Scoping Engagement

The Environmental and Social Impact Assessment (ESIA) scoping engagement for the Malawi-Zambia 400 kV Interconnector Transmission Line Project aims to identify and assess the potential environmental and social impacts and risks of the proposed Project. This process involves engaging with a wide range of stakeholders to ensure their concerns and inputs are considered in the development of the ESIA. The primary objectives of the scoping engagement are to establish a clear scope for the ESIA, identify key environmental and social issues, and outline the methodology for addressing these issues.

6.2.2 ESIA Strategy for Information Disclosure

The stakeholder engagement strategy for the Environmental and Social Impact Assessment (ESIA) of the Malawi-Zambia 400 kV Interconnector Project will be structured around the following phases of the project management cycle:

1. **Preparation of Terms of Reference (TORs)**
   - Clearly outline the scope, objectives, and methodologies for the ESIA.

- Engage relevant stakeholders early to gather input on the ToRs to ensure comprehensive coverage of all potential environmental and social impacts/risks.

2. **Research and Development of Studies**
   - Conduct thorough environmental and social studies as per the defined ToRs.
   - Regularly update stakeholders on the progress of the studies, ensuring transparency in methodologies and preliminary findings.
   - Use multiple channels (e.g., public meetings, community briefings, online platforms) to disseminate information and gather feedback.
3. **Monitoring Phase**
   - Implement a robust monitoring framework to track the project's environmental and social performance.
   - Provide periodic reports to stakeholders on monitoring results and any corrective actions taken.
   - Facilitate stakeholder access to monitoring data to ensure continuous engagement and transparency.
4. **Completion, Validation, and Final Disclosure**
   - Finalize the ESIA report, incorporating feedback from stakeholders.
   - Validate the report through consultations with key stakeholders, ensuring that their concerns and suggestions have been adequately addressed.
   - Publicly disclose the final ESIA report and related documents through accessible platforms (e.g., Government websites, public libraries, community centers).
   - Organize public meetings and briefings to present the final findings and discuss the implications and mitigation measures with the affected communities and other interested parties.

This strategy aims to ensure that all relevant stakeholders, including marginalized and vulnerable groups, are informed and actively engaged throughout the ESIA process. By maintaining transparency and inclusiveness, the project can effectively address environmental and social concerns, fostering trust and cooperation among all parties involved.

6.3 Engagement Methods and Techniques

Public Meetings and Workshops: Organize meetings and workshops in affected communities to present information about the ESIA and RAP, and to gather feedback.

Focus Group Discussions: Conduct targeted discussions with specific groups, such as women, youth, and vulnerable populations, to understand their unique perspectives and concerns.

Surveys and Questionnaires: Conduct surveys to collect quantitative and qualitative data on stakeholder views and concerns using questionnaires.

Interviews: Conduct one-on-one interviews with key stakeholders, including Government officials, community leaders, and NGO representatives.

Online Platforms: Utilize digital platforms to disseminate information and gather feedback from stakeholders who may not be able to attend in-person meetings.

6.3.1 Key Issues to be Addressed

Environmental Issues: Potential impacts on biodiversity, land use, water resources, air quality, and noise levels.

Social Issues: Land acquisition and resettlement, impacts on local communities, health and safety concerns, and cultural heritage.

Economic Issues: Employment opportunities, local economic development, and impacts on local businesses.

Regulatory Issues: Compliance with national and international environmental and social regulations and standards.

6.3.2 RAP Specific Engagement

Identification of Affected Persons: Identify individuals and households that will be affected by land acquisition and resettlement.

Compensation and Resettlement Plans: Develop and discuss compensation packages and resettlement plans with affected persons to ensure fair and adequate compensation.

Livelihood Restoration: Engage with affected communities to develop and implement livelihood restoration programs to help them rebuild their lives post-resettlement.

Grievance Redress Mechanism: Establish a transparent and accessible mechanism for affected persons to raise concerns and seek redress.

6.3.3 Disclosure of Information

Draft ESIA and RAP Reports: Prepare and disclose draft ESIA and RAP reports, summarizing potential impacts, proposed mitigation measures, and resettlement plans.

Public Consultations: Hold public consultations to present the draft reports, gather feedback, and address any concerns raised by stakeholders.

Final Reports: Incorporate stakeholder feedback into the final ESIA and RAP reports, and disclose these reports to all relevant stakeholders.

Continuous Updates: Provide continuous updates to stakeholders throughout the project cycle, ensuring they are informed about project progress and any changes.

6.3.4 Reporting and Feedback

Documentation: Document all stakeholder engagement activities, including meetings, workshops, and consultations, to ensure transparency and accountability.

Feedback Integration: Incorporate stakeholder feedback into the ESIA and RAP, and ensure that concerns are addressed in the final project design and implementation.

Follow-Up: Conduct follow-up engagements to inform stakeholders about how their feedback has been integrated and to update them on project progress.

The ESIA and RAP engagement and disclosure process is essential for ensuring that the project is developed in an environmentally and socially responsible manner. By actively involving stakeholders and addressing their concerns, the project can mitigate negative impacts, promote sustainable development, and build trust with affected communities. This approach aligns with national and international standards, ensuring a transparent and inclusive project development process.

6.3.5 Proposed Strategy for Information Disclosure

Table 5 below gives the proposed strategy for information disclosure for ESIA/RAP.

Table 5: Proposed Strategy for Information Disclosure

Project Status	Information to be Shared	Engagement Strategy	Date/Location	Target Stakeholders	Percentage	Responsible
Preparation and Design	Project Document ESIA, SEP & RAP	Official website Letters Emails WhatsApp websites District level Publications Workshop Meetings	Project area Throughout project April to September 2024	ZESCO ESCOM Ministries Agencies Departments Research organizations NGOs & CSOs Partners Local Communities	100%	PIU/Project team
Implementation Phase	ESIA, RAP, SEP and other instruments	Official websites District level Publications Workshop Meetings Local disclosure	Project area 2025 - 2026	ZESCO ESCOM Ministries Agencies Departments Research organizations NGOs CSOs Partners Local Communities	100%	PIU/Project team

Project Status	Information to be Shared	Engagement Strategy	Date/Location	Target Stakeholders	Percentage	Responsible
Completion Stage	Completed reports of the ESIA & RAP and final disclosure	Official websites District level Publications Workshop Meetings Local disclosure	Project area 2026 and beyond	ZESCO ESCOM Ministries Agencies Departments Research organizations NGOs & CSOs Partners Local Communities	100%	PIU/Project team

6.3.6 Proposed Strategy to Incorporate the View of Vulnerable Groups

The stakeholder engagement plan for the Malawi-Zambia 400kV interconnector will prioritize inclusiveness, transparency, participation, and accessibility, particularly for vulnerable individuals and groups. Recognizing that vulnerable status may prevent some individuals or communities from openly participating in large meetings, or due to mobility and other disabilities, the project will organize separate small group discussions at easily accessible venues. Measures will include providing interpreters if needed, using large print materials, giving verbal presentations for illiterate participants, offering transportation assistance, and scheduling meetings to accommodate women/child headed households or work obligations.

This approach ensures that groups typically underrepresented in general community gatherings have their voices and concerns heard throughout the project lifecycle, thereby integrating their considerations into the project's design and technical assistance activities.

6.3.7 Strategies for Reaching Vulnerable Groups

Identify Leaders: Engage with leaders of vulnerable and marginalized groups to facilitate outreach.

Database Maintenance: Maintain a database of marginalized groups through existing vulnerable people associations, including associations of persons with disabilities, refugees, migrants, and women-led businesses.

Leverage Existing Projects: Use systems from existing projects that include vulnerable populations to identify and engage these groups.

Social Baselines in Studies: Ensure social baselines adequately capture the constraints of various vulnerable groups. This includes understanding women's availability, religious observances, language preferences, and ensuring interpreters or facilitators who speak the local languages. Additionally, having women-led facilitators to discuss sensitive issues such as gender-based violence or project-related risks.

Engage Community and Religious Leaders: Collaborate with community leaders, religious leaders, CSOs, and NGOs working with vulnerable groups.

Face-to-Face Focus Group Discussions: Organize direct focus group discussions with affected communities to ensure their input is thoroughly considered.

By implementing these strategies, the project aims to foster a more inclusive engagement process, ensuring that all stakeholders, especially those who are vulnerable and marginalized, are effectively involved and their concerns are addressed throughout the project's development and implementation.

6.4 Engagement Methods and Tools

Effective stakeholder engagement is crucial for the successful completion of the Environmental and Social Impact Assessment (ESIA) for the Malawi-Zambia 400 kV Interconnector Transmission Line Project. The engagement methods and tools outlined below are designed to ensure inclusive, transparent, and meaningful participation from all stakeholders throughout the project lifecycle.

Key Informant Interviews (KIIs): Conduct interviews with key stakeholders, including Government officials, community leaders, NGO representatives, and technical experts to gather in-depth insights and specialized knowledge.

Informal Interviews: Engage in casual conversations with community members during site visits to capture unstructured feedback and build trust.

(a) Information Dissemination

Project Brochures and Flyers: Distribute printed materials summarizing the project, its impacts, and the engagement process to ensure stakeholders have access to concise and understandable information.

Information Boards: Set up boards in community centers, local Government offices, and other strategic locations with project updates and contact information for further inquiries.

(b) Digital and Media Engagement

Project Website: Create a dedicated website with comprehensive information about the project, including ESIA reports, engagement schedules, and contact details. Provide a platform for online feedback submission.

Social Media: Utilize social media channels to share project updates, announce public meetings, and engage with a wider audience.

Radio Announcements: Use local radio stations to broadcast project information, especially in remote areas where access to digital platforms may be limited.

(c) Forums/Workshops and Training Sessions

Thematic workshops will be organized around a specific topic where relevant local and national level stakeholders will be involved.

Capacity Building Workshops: Organize workshops to enhance the capacity of local stakeholders, including community representatives and local authorities, to engage effectively in the ESIA process.

Technical Training Sessions: Provide training for project staff and local consultants on best practices for stakeholder engagement and communication.

(d) Feedback and Grievance Mechanisms

Grievance Redress Mechanism (GRM): Establish a formal mechanism for stakeholders to submit grievances and receive timely responses. Ensure the GRM is accessible, transparent, and responsive.

Feedback Forms: Provide forms at all engagement events for stakeholders to submit written feedback, ensuring their concerns are documented and addressed.

(e) Monitoring and Reporting

Engagement Logs: Maintain detailed logs of all engagement activities, including participant lists, discussion points, and outcomes. Use these logs for monitoring and evaluation.

Progress Reports: Regularly publish reports summarizing engagement activities, stakeholder feedback, and how this feedback has influenced project decisions.

The stakeholder engagement methods and tools are designed to foster an inclusive, transparent, and participatory process. By employing a variety of engagement techniques, the project aims to ensure that all stakeholders, especially vulnerable and marginalized groups, are adequately informed and have the opportunity to contribute to the project's development and implementation.

6.5 Costs of SEP implementation

Financial resources will be set aside for the organisation of the stakeholder engagement activities and the disclosure of project information to the PAPs and other interesting parties. A preliminary cost estimate is provided in Annex 5.

7. Grievance Redress Mechanism

This chapter documents the proposed grievance redress mechanism for the proposed Malawi-Zambia 400kv Power Interconnection Project as per requirement of EIB ESS2, ESS6, ESS7, ESS8 and ESS9.

Project implementation inevitably gives rise to grievances among the affected communities over issues ranging from labour relations, social welfare, livelihood disruption, to occupational and com-munity hazards. Timely redress of such grievances is vital to the satisfactory implementation and completion of the project on schedule.

A Grievance Redress Mechanism (GRM) is defined as an accessible and inclusive system, pro-cess, or procedure that receives and acts upon complaints, queries, inquiries, and suggestions for improvement in a timely fashion, and facilitates resolution of concerns and grievances arising in connection with a project. An effective GRM provides affected parties with redress and helps ad-dress issues at an early stage. When effectively implemented, a GRM will improve overall project performance.

The project will set up a project-specific Grievance Redress and Feedback Mechanism for people to report concerns or complaints if they feel unfairly treated or are affected by any of the sub com-ponents. Accessibility, Predictability, Fairness, Appeal, Transparency and Consensus and negotiations, Accountability, Gender equality, Equity and Justice are the key principles that will underpin the grievance redress mechanism for the Project.

7.1 Objectives of Grievance Redress Mechanism

The Grievance Mechanism describes the process that affected stakeholders and interested parties affected by the Malawi-Zambia power interconnectivity project activities can raise their grievances and concerns to the project management's attention for resolution, in an impartial, effective, efficient and in a transparent process. The primary objectives of the Grievance Redress Mechanism (GRM) are presented below.

Provide a Transparent Process	Ensure that all grievances are addressed in a transparent and impartial manner.
Ensure Accessibility	Facilitate easy access to grievance redress for all stakeholders, especially the affected communities.
Promote Trust and Goodwill	Build trust among stakeholders through consistent, fair, and timely handling of complaints.
Identify and Address Issues Early	Allow for the early identification and resolution of potential issues to minimize project delays and social conflicts.

Enhance Project Performance	Improve the project's environmental and social performance by addressing grievances efficiently and effectively.
Ensure Compliance	Ensure compliance with national regulations and international best practices in grievance handling.

7.2 Grievance Redress Mechanism

The GRM will provide both informal and formal channels for grievance redress and will operate within a specified timeframe to ensure timely resolution of complaints.

(a) Informal Grievance Redress Channel

Community Liaison Officers (CLOs): CLOs will be stationed in the project area to serve as the first point of contact for community members to raise concerns informally. They will document and attempt to resolve grievances on the spot. CLOs will be appointed early in the project so that complaints arising from the RAP process are dealt with expeditiously.

Grievance Log: All grievances received informally will be logged, including the nature of the grievance, actions taken, and resolution status.

If the grievance is unresolved at this stage, the complainant is advised to visit the Project Office to formally submit the complaint.

(b) Formal Grievance Redress Channel

Submission of Grievances: Stakeholders can submit grievances through multiple channels such as:

- **In-person -** At designated project offices and community centers.
- **Written -** Via mail to the project office.
- **Online -** Through the project's website or email.
- **Hotline -** A dedicated phone line for grievance submissions.
- **Local level –** Project officers in the field will provide an opportunity to collect complaints in person and will provide a local number to local community members and other stakeholders to lodge complaints/ask questions (including via text/WhatsApp).
- Local communities can also lodge complaints with the **traditional leadership, Ward or Village Development Committee** who will contact the Grievance Coordinator (Communication Specialist) or any other designated officer.
- All stakeholders will also be able to reach the project directly via **email, toll free number or SMS/WhatsApp.**

Grievances that can be addressed by project officers, will be recorded in the grievance register, including the action taken to resolve the issue. However, complaints which are more complex will be referred to the Project Implementation (PIU) Grievance Resolution Committee (GRC).

Project Implementation Unit (PIU) Grievance Resolution Committee

The PIU Grievance Resolution Committee (GRC) will comprise the Project Manager, Site Engineer, Environmental Officer, Social Specialist, Human Resources Officer, Safety Officer and other experts deemed essential. Grievances that cannot be resolved by field officers will be referred this PIU Grievance Resolution Committee for resolution. When a grievance is resolved at this level, feedback will be provided to the complainant. If the grievance is not resolved at this level, it will be referred to the district level.

The PIU Grievance Resolution Committee will be composed of the following members to ensure balanced representation and expertise:

- **Project Site Manager:** Chairperson of the GRC.
- **ESIA (Environmental) Specialist:** To provide insights on environmental issues.
- **GBV/SEA/Social Specialist:** To address social concerns, including gender, labour and cultural issues.
- **Communication Specialist:** To act as grievance coordinator receiving the grievances, recording them and preparing minutes of their resolution.
- **RAP Expert:** To deal with issues related to the assessment of affected property.
- **Community Representatives:** Including local leaders and representatives from affected communities to ensure their interests are considered.
- **NGO Representative:** From a relevant NGO to provide an external perspective and enhance transparency.
- **Chipata and Vubwi District Council representative**
- Department of Community Development and Social Welfare

Project Steering Committee (PSC)

The Project Steering Committee will receive unresolved grievances from the PIU Grievance Resolution Committee. When a grievance is resolved at this level, feedback will be provided to the complainant. If the grievance is not resolved, the aggrieved party has the liberty to seek judicial arbitration.

The Grievance Resolution Committee at PSC level will be composed of high-level representatives from selected Government ministries and departments, human rights groups, ZESCO representative, NGOs, religious groups and other institutions deemed relevant. It will be chaired by the Ministry of Energy Permanent Secretary or his/her representative. Members of the PSC GRC include:

- Ministry of Energy
- Ministry of Community Development and Social Welfare
- Provincial Administration
- Director from ZESCO
- NGO
- Human Rights Commission
- Religious organisation

Arbitration

In the event that the complaint cannot be resolved within the project's grievance resolution process, the committee shall refer the dispute to arbitration which will be conducted in accordance with the Arbitration Act No. 19 of 2000. The decision of the arbitration panel shall be final and binding where the parties to a dispute agree to resolve a difference through arbitration. Where there is no consent, the aggrieved party may take the case to the courts of law to have the dispute resolved. However, costs associated with the court processes will be borne by complainants themselves and the Project will bear its own legal costs.

However, the aim of the Grievance Redress Mechanism is to ensure that all grievances are resolved in an amicable, timely and efficient manner, preferably at the first level of the GRM process.

(c) Commitments of the Grievance Redress Mechanism

Acknowledgment: All grievances will be acknowledged within 14 days of receipt.

Investigation: A thorough investigation of the grievance will be conducted within 14 days of acknowledgment. This may involve site visits, interviews, and review of relevant documents.

Resolution: A resolution will be proposed within 21 days of acknowledgment, and the complainant will be informed in writing.

Appeal: If the complainant is not satisfied with the proposed resolution, they can appeal to the Grievance Redress Committee (GRC) at a higher level or to the courts of law.

Reporting: The PIU Grievance Redress Committee is required to prepare monthly, quarterly and annual reports about all the GRM activities for submission to the Project Steering Committee.

Resources: Financial resources will be allocated in the project budget to deal with costs associated with the GRM activities at all levels.

(d) Role of Grievance Redress Committee (GRC)

The GRC will play a crucial role in ensuring the effective functioning of the GRM:

1. **Review and Resolve Appeals:** The GRC will review grievances that have not been resolved through the formal grievance redress channel and provide a final resolution.
2. **Monitor and Evaluate:** The GRC will monitor the implementation of resolutions and evaluate the effectiveness of the GRM.
3. **Report:** The GRC will prepare periodic reports on the status of grievances, resolutions provided, and overall effectiveness of the GRM. These reports will be shared with stakeholders to promote transparency.
4. **Policy Recommendations:** Based on the grievances received, the GRC will recommend policy or procedural changes to the project management to prevent recurrence of similar issues.
5. **Stakeholder Engagement:** The GRC will engage with stakeholders to raise awareness about the GRM process and encourage the use of grievance channels.

By implementing this detailed grievance redress mechanism, the Malawi-Zambia 400KV Transmission Interconnector Project aims to address and resolve grievances efficiently and effectively, ensuring the smooth progress of the project while maintaining positive relations with all stakeholders.

In order to pay attention to this aspect, the ESIA/RAP Consultant and ZESCO will establish a grievance register once SEP is approved and shall start recording and resolving grievances during the ESIA/RAP development process. The process is envisaged to be continued during the construction supervision stage of the Project, whether the supervision consultant will work closely with the PIU in registering all types of grievances including SEAH and GBV among others. Such register will be reviewed later by external parties on regular basis. It is recommended that a summary of all types of grievances and the solution provided shall be shared with the external parties.

(e) Confidentiality

The complainants will be assured of confidentially. The grievances (complaints) received will be handled with strict confidentiality. Confidentiality is important to void harassment and intimidation from other members of the community, project staff and the contractor's workers. It also accords an opportunity to those who cannot speak in public meetings to submit their grievances privately. GBV and other sensitive issues will be handles with uttermost confidentiality.

(f) Simplicity

Literacy levels among the people in the project area are different. Therefore, a simple procedure will be adopted to facilitate easy lodging of complaints and/or submitting suggestions or comments. The document shall be made accessible and in simple language to make them understandable to all project stakeholders' especially marginal groups, poor farmers and female beneficiaries. A summarized grievance GRM shall be translated into local languages which shall be displayed in the communal areas such as health centres, schools and markets in the project area.

(g) Grievance Related to SEAH and GBV

The case related to SEAH, GBV and any other cases needing intervention of the police or social service departments, shall be reported to the relevant authorities without delay. Such grievances need to be tackled differently. The guiding principles will include confidentiality, non-retaliation, accessibility and timeliness. The grievances related to SEAH and GBV shall be reported through multiple channels to ensure accessibility and confidentiality:

By Using a Toll-free Number: A toll-free hotline will be established, managed by trained personnel who understand SEAH and GBV issues.

At the Field Level: Designated local leaders or trusted community members will serve as focal points (Community Liaison Officers) where grievances can be reported. These individuals will be trained in handling SEAH and GBV cases sensitively.

Grievance Boxes: Confidential grievance boxes will be placed in key project locations for anonymous reporting.

In-Person Reporting: Survivors or witnesses can report directly to the project's social safeguard team or designated Gender Officer.

NGOs/CBOs: Local NGOs and Community-Based Organizations (CBOs) working in GBV prevention will act as intermediaries for reporting grievances.

Upon receiving a complaint, the following immediate actions shall be taken:
Survivor Protection: The survivor's safety will be ensured, and immediate psychosocial support, health care, and legal assistance will be provided; and
Referral to Support Services: Survivors will be referred to specialized service providers, including medical, legal, and psychosocial support services, through a well-established referral pathway.

Investigation and Resolution:
A trained SEAH/GBV Response Committee, including the project's Gender Expert, legal advisor, and local stakeholders, will carry out a confidential investigation of the case. Investigations will be conducted in a way that ensures the survivor's privacy, safety, and dignity. Based on the investigation's findings, appropriate actions will be taken, which will include among others: referral to law enforcement if a criminal offense has been committed, disciplinary action against the perpetrator if they are project staff or contractor personnel and support for the survivor through legal and administrative processes.

7.3 GM Monitoring Reporting

All program activities will be documented by the Project, and consolidated reports will be made available to stakeholders and relevant authorities. The Project's Communication Expert, with the support of other members of the PIU Grievance Resolution Committee, will have the primary responsibility for coordination of the management and monitoring of the implementation of the SEP.

To this end, PIU Grievance Resolution Committee will consult with all stakeholders to ensure the proper implementation of this SEP to achieve all the expected results. In addition to drafting the minutes of meetings and workshops, these experts will ensure the sharing and dissemination of these minutes and summary reports on the processing of complaints to the various stakeholders. In addition, they are also required to ensure the dissemination and communication of the results and impacts of the SEP according to a communication plan developed at the start of the project.

7.3.1 Reporting to Stakeholder Groups

Monthly summaries and internal reports on public grievances, investigations, and related incidents, as well as the status of implementation of associated corrective/preventive actions, will be compiled by the team and forwarded to project senior management.

Information on public engagement activities undertaken by the Project during the year will be conveyed to the stakeholders in two possible ways:

i) Publication of a standalone annual report on project's interaction with the stakeholders and meetings with stakeholders to discuss the report in community meetings and workshops;

ii) Publication of the reports on the project website, social and mainstream media through the PIU office; and

iii) Finally, the quarterly activity reports, on the stakeholder engagement will be shared with relevant stakeholders, including the Swedfund. In addition, the Grievance mechanism register will also be shared with the stakeholders, including Swedfund, every quarter.

8. Monitoring, Evaluation and Reporting

8.1 Involvement of Stakeholders in Monitoring Activities

8.1.1 Reporting Back to Stakeholder Groups

The Malawi – Zambia ESIA/PIU will have oversight over the SEP implementation. The communication expert, the project coordinator and the environmental and social impact expert and the SEA and RAP experts of the project will monitor the Stakeholder Engagement Plan (SEP).

- Every month data for monitoring of the SEP activities, will be collected through self-reporting, following a schedule, and using standardized forms and procedures and sent to the PIU. This information will be collected through monitoring visits by the consultants and assigned staff from implementing ministries and ZESCO.
- Regular consultations will be held with women associations and girls/youth to establish and then to help monitor the effectiveness of the Grievance mechanism procedures, including those specifically designed to address SEA/SH risks, and whether the Grievance mechanism is in fact accessible, safe, and adequate to address the needs and risks of these stakeholders. These consultations should not seek out or discuss personal experiences of violence or abuse of individual survivors but ask for overall feedback from women and girls/youth.
- In addition to the monitoring responsibilities by the Consultants and the respective implementing ministries and ZESCO, independent third parties like NGO, firms will also be engaged periodically to monitor progress and performance of the SEP implementation. The criteria for selection of these third parties will be clear and based on their experiences.

The SEP will be periodically revised and updated as necessary during project implementation to ensure that the information presented herein is consistent and is the most recent, and that the identified methods of engagement remain appropriate and effective in relation to the project context and specific phases of the development. Any major changes to the project related activities and to its schedule will be duly reflected in the SEP.

Monthly summaries and internal reports on grievances, enquiries, and related incidents, together with the status of implementation of associated corrective/preventative actions will be collated by responsible staff and referred to the senior management of the project. The monthly summaries will provide a mechanism for assessing both the number and the nature of complaints and requests for information, along with the Project's ability to address those in a timely and effective manner. Information on public engagement activities undertaken by the Project during the year may be conveyed to the stakeholders in two possible ways:

- Publication of a standalone annual report on project's interaction with the stakeholders; and
- A number of Key Performance Indicators (KPIs) will also be monitored by the project on a regular basis.

8.1.2 Monitoring Indicators

The following indicators will be used to monitor and evaluate the effectiveness of the mobilization activities:

- Number of stakeholders mobilized by category;
- Number of meetings of different types (public consultations, workshops, meetings with stakeholders).
  - Leaders or association representatives held with each stakeholder category and the number of participants; and
  - Number of suggestions and recommendations received by the PMU through various **feedback** mechanisms;
- Number of publications covering the project in the media; and
- Number of complaints and grievances received and addressed.

8.1.3 Continuous Improvement of the SEP

To ensure the SEP remains effective and responsive throughout the project lifecycle, a commitment to continuous improvement will be embedded in its implementation. This involves regular reviews, incorporation of feedback, and a focus on transparency and accountability.

Regular Review:

- Frequency: The SEP will be formally reviewed at regular intervals, ideally every 6 months or after major project milestones.
- Scope: The review will assess the SEP's performance against its stated goals and objectives, as well as the effectiveness of specific engagement methods and activities.
- Process: The review will involve:
  - Analysis of monitoring and evaluation data).
  - Soliciting feedback from stakeholders through surveys, interviews, and feedback forms.
  - Consultation with the project team and key stakeholders to identify lessons learned and areas for improvement.
- Outcomes: The review will result in recommendations for updating and refining the SEP, which will be documented and implemented in a timely manner.

Feedback and Adaptation:

- Feedback Mechanisms: Multiple channels will be established for stakeholders to provide feedback on the SEP and its implementation, including:

  - Feedback forms and surveys distributed during engagement activities.
  - Dedicated email address or online platform for submitting comments and suggestions.
  - Regular check-ins with key stakeholders and community representatives.

- Incorporation of Feedback: Stakeholder feedback will be carefully considered and, where appropriate, incorporated into the SEP through:
  - Adjustments to engagement methods and strategies.
  - Refinement of communication materials and messaging.

- Modification of timelines and priorities for engagement activities.

- Adaptive Management: The SEP will be viewed as a living document, subject to ongoing adaptation and improvement based on changing project circumstances, stakeholder needs, and lessons learned.

Transparency and Accountability:

- Public Disclosure: The SEP, along with progress reports, annual reports, and evaluation findings, will be made publicly available on the project website and through other appropriate channels.
- Stakeholder Communication: Regular updates on the SEP's implementation and outcomes will be communicated to stakeholders through various channels (e.g., newsletters, community meetings, social media).
- Accountability: The project team will be held accountable for implementing the SEP and achieving its stated objectives. Performance against measurable indicators will be tracked and reported transparently.

Continuous Learning and Improvement:

- Learning Culture: The project team will foster a culture of continuous learning and improvement, encouraging open communication, reflection on lessons learned, and innovation in stakeholder engagement practices.
- Capacity Building: Ongoing training and capacity building will be provided to the stakeholder engagement team to enhance their skills and knowledge in effective engagement, conflict resolution, and adaptive management.

Through continuous improvement, the project will ensure that the SEP remains a dynamic and effective tool for fostering meaningful stakeholder engagement throughout the project lifecycle.

ANNEXES

Annex 1: Project Information Leaflet

Public Notice

Environmental and Social Impact Assessment Study for the Malawi - Zambia 400kV Transmission Interconnector Project

ZESCO intends to construct a 44km, 400kV interconnection line between Chipata West 330/132kV Substation, in Chipata District and the Zambia - Malawi border in Vubwi District. This is aimed to facilitate the development of the proposed 188km Malawi – Zambia 330/400kV Transmission Interconnector Project will connect between Nkhoma 400/132kV Substation (in Lilongwe, Malawi) and Chipata West 330/132 kV Substation (in Chipata District, Zambia). The two portions of the lines, Chipata West 330/132kV Substation to the Zambia - Malawi border in Vubwi District and Zambia – Malawi border to Nkhoma 400/132kV Substation, will be developed by the respective national utilities, ZESCO and ESCOM. Before such a project is implemented, an Environmental and Social Impact Assessment (ESIA) study ought to be undertaken in accordance to Environmental Management Act (No. 12 of 2011), read together with the amended Environmental Management Act No.8 of 2023.

Project Overview:

- **Location:** Chipata and Vubwi Districts, Zambia
- **400kV Interconnection Line**
- **Length in Zambia:** Approximately 44km (144km in Malawi and 44km in Zambia)

Public Consultation: In accordance with the Environmental Management Act (No. 12 of 2011) read together with the amended EMA No. 8 of 2023 and Environmental Protection and Pollution Control (Environmental Impact Assessment) Regulations, Statutory Instrument No. 28 of 1997, ZESCO hereby invites members of the general public to scoping meetings to discuss and provide input on key issues that should be taken into consideration in the development of the Environmental Impact Statement (EIS) and the Resettlement Action Plan (RAP) for the project's ESIA study. The Scoping meetings will be held in the places, dates and time stated below.

Meeting Details

	DATE	TIME	VENUE	TARGET GROUP
Chipata District				
1	Monday 29th July 2024	09.30 hours	Eastern Comfort Lodge	Chipata DDCC members
2	Monday 29th July 2024	14.30 hours	Kauzu Primary School	Community members around Chipata West substation
3	Tuesday 30th July 2024	09.30 hours	Katandala Primary School	Katandala community members
4	Tuesday 30th July 2024	14.30 hours	Mgabi Catholic Church	Mgabi community members
5	Wednesday 31st July 2024	09.00 hours	Feni Community Museum	Feni community members
6	Wednesday 31st July 2024	14.30 hours	Kayeke Primary School	Kayeke Community members
7	Friday 2nd August 2024	10.00	Mtowe Primary School	Mtowe Community members
8	Friday 2nd August 2024	14.30	Lunyike Primary School	Lunyike Community members
9	Saturday 3rd August 2024	10.00	Chipata South Satellite City (Jenda Primary School)	Jenda Community members
10	Saturday 3rd August 2024	14.30	Makwelelo Community School	Chinyaku community members
Vubwi District				
11	Thursday 1st August 2024	09.30 hours	Vubwi Council Chamber	DDCC members
12	Thursday 1st August 2024	14.30 hours	Chisiya (Vubwi/Malawi Border) Mzigawa Primary School	Chisiya Community members

For further enquiries, please contact the following:

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Annex 2: Engagement Action Plan for ESIA Disclosure

Stakeholder consultation Template

Date of the Consultation:

Location of consultation:

Subject of the consultation:

Stakeholders consulted:

Name of Organization:

Name and function / title of people present:

1.

2.

3.

4.

5.

6.

7.

8.

Women/men present (numbers) and total participants

Discussion points

-
-
-
-

Recommendations

Annex 3: Sample Grievance Form and Grievance Log

Template-Complaints Form

Date: _____ Recorded by: _____

Complainant's Last name and first name(s): _____

Place of residence (Town/village): _____

Location where the complaint is being lodged: _____

Contact information: _____

Preferred method of contact: (phone/WhatsApp/email/other): _____

Reason for the complaint: -

_____
_____
_____
_____

Detailed description of the concern/question/grievance presented by the complainant

_____
_____
_____
_____
_____

Prepared by: _____

Date: _____

Annex 4: Grievance Monitoring and Tracking Log (for non-SEA/SH Complaints)

Case no.: _____ Date: _____ Time Claim Received: _____

Name of Person Receiving Complaint: _____

Where/how the complaint was received: _____

Name & contact details of complainant (if known): _____

Type of Claim: _____

_____

**Add content of the claim (include all grievances, suggestions, inquiries).*

***Please note if the complaint was related to the project. If not, note it here and refer complainant to PIU for further processing.*

Was Receipt of Complaint Acknowledged to the Complainant? (*Y/N – if yes, include date, method of communication & by whom*):

_____

_____

Expected Decision Date: _____

Decision Outcome (*Include names of participants and date of decision*)

_____

_____

Was Decision communicated to complainant? (*Y/N – If yes, state when, by whom and via what method of communication*)

_____

_____

Was the complainant satisfied with the decision? (*Y/N State the decision. If no, explain why and if known, will pursue appeals procedure, any follow up action by whom and by what date)*?

_____

_____

Annex 5: Indicative cost of SEP implementation

No.	Project Phase	Engagement Activity	Objective	Targeted Stakeholders	Budget ($)
1	Project Preparation Phase	Statutory Consultations	Provide feedback on approved project design, inform on progress and request support	High level project meetings with ZEMA, WARMA, other public administration, District Councils and Community Leaders	10,000
		Public Consultations	Inform on project design, impacts and mitigation measures, mobilize and prepare target communities for project implementation	Detailed consultations with PAPs, Affected communities, traditional, religious and political leaders, Vulnerable groups, NGOs, CBOs and other interested stakeholders	50,000
		Operationalize and manage the Grievance Redress Mechanism	Provide and set up systematic ways of receiving, recording and resolving grievances from Project Affected Persons (PAPs) and other Aggrieved Parties	Project Affected People at community, District and National levels	50,000
		Information Disclosure	Provide and get periodic feedback on project preparation progress and any emerging issues	Disclosure meetings with selected stakeholders from National, District and Community level	20,000
		Project monitoring	Provide and obtain on going information and support on project performance	National, district, and community level stakeholders	30,000

No.	Project Phase	Engagement Activity	Objective	Targeted Stakeholders	Budget ($)
2	Project Close Out Phase	Project close out meetings	Engage stakeholders on project exit strategy	Beneficiary communities and groups, national and district stakeholders	20,000
3	Project Implementation Phase	Communication and Information – visibility	Engage beneficiaries and implementers and document progress.	Communities, district and national level stakeholders	50,000
			Disseminate to achieve visibility through systematic outreach activities		
		Manage the Grievance Redress Mechanism	Improve and manage systematic ways of receiving, recording and resolving grievances from Project Affected Persons (PAPs) and other Aggrieved Parties	Project Affected People at community, District and National levels	70,000
TOTAL					**300,000**