



ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

FOR

LAST MILE CONNECTIVITY PROJECT PHASE III

PREPARED BY

SAFETY, HEALTH & ENVIRONMENT DEPARTMENT (SHE) - KPLC

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List of Acronym

AfDB	Africa Development Bank
AIDS	Acquired Immunodeficiency Syndrome
ARAP	Abbreviated Resettlement Action Plan
EA	Environmental Assessment
EIA	Environmental Impact Assessment
EMCA	Environmental Management Act – 1996
ESAP	Environmental and Social Assessment Procedures
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ESSF	Environmental and Social Screening Form
FRAP	Fill Resettlement Action Plan
HIV	Human Immunodeficiency Virus
IESIA	Integrated Environmental and Social Impact Assessment
IP	Indigenous People
ISTS	Integrated Safeguard Tracking System
KP	Kenya Power
KPLC	Kenya Power& Lighting Company Ltd
LMCP	Last Mile Connectivity Project
NEC	National Environment Council
OP	Operational Procedure
OS	Operational Safeguards
PBO	Project Based Programs
RAP	Resettlement Action Plan
RoW	Right of Way
RPF	Resettlement Policy Framework
PCB	polychlorinated biphenyl
PIT	Project Implementation Team
SESA	Strategic Environmental & Social Assessment
SHE	Safety, Health & Environment
ToR	Terms of Reference
UN	United Nations
UNCLOS	UN Convention on the Law of the Sea
WB	World Bank
WRMA	Water Resources Management Authority

Executive Summary

A. Introduction and Background

The country's long-term development blue print, Vision 2030 aims at transforming Kenya into a globally competitive newly industrialized middle income and prosperous country. The Second Medium Plan 2013-2017 identifies energy as one of the enablers for transformation into "a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment" Efficient, accessible and reliable infrastructure is identified as an enabler for achieving sustainable economic growth, development and poverty reduction by lowering the cost of doing business and improving the country's global competitiveness.

The Government of the Republic of Kenya is seeking the financial support of US\$150 million from the Africa Development Bank for the Last Mile Connectivity Project-III (LMCP-III). The proposed implementation period is 5 years. The project would aim to improve the power systems and electricity access and reliability, in line with the Kenya Growth and Development Strategy.

Over the past two decades or so, Kenya has seen a steady growth in electricity connections both in urban and rural areas. According to the Kenya National Bureau of Statistics (KNBS) Population census, 50.4 percent of households in overall were connected to power in 2019 as opposed to 23% in 2009. In rural areas the change is from 5percent to 26.3percent while in urban areas this is from 50% to 88.4percent.

To reduce the cost burden of increased connectivity on KPLC, as well as reduce the amount paid by the customer, the strategy proposed was to extend the distribution network to as near the customer as possible through government funding. This is being achieved by extending the low voltage network on existing and other upcoming distribution transformers to reach households lying within transformer protection distance (maximization) under the Last Mile Connectivity Program.

In a situation, where sub-projects or activities are in different development locations or regions of the country with varying geographical, topographical and socio-economic conditions, and their specific locations is not known, there is need to prepare a document that will 'guide' the planning, design and construction elements of sub-projects and such a document is the ESMF. The ESMF will help in integrating and harmonizing the environment and social management principles in the various stages of KPLC for LMCP-III project preparation and execution. The Environment and Social Management Framework will form part of the comprehensive environmental and social management approach that will be adopted for addressing the potential environmental and social impacts from this project, even when these are considered minor in nature.

Following the requirements for environmental management in most KPLC projects, and in line with The Integrated Safeguards System (ISS) of the African Development Bank, this environmental and social management framework (ESMF) has been prepared to provide a mechanism to carry out appropriate environmental and social assessments in line with Bank's safeguard policies and Government of Kenya (GoK) legislation.

This ESMF has been prepared because the actual sub projects of LCMP-III are not yet known. The ESMF was prepared because LCMP-III consists of a series of subprojects, and the impacts cannot be determined until the subproject details have been identified. The ESMF defines how environmental and social safeguards will be considered and managed for all project activities that may have safeguards requirements.

B. KPLC Last Mile Connectivity Project Description

Last mile Connectivity Phase III is geared towards scaling up access and network improvement to accelerate connectivity, improve system reliability and quality electricity supply. The Project is broadly packaged into six key components, reflecting on the prevailing electricity supply industry circumstances, in line with the GoK efforts of achieving universal access to electricity, building on the achievements, and lessons learned under the Development

Projects-supported previous and ongoing last-mile connectivity operations in Kenya. The components are described below

	Component Name	Component Description
1.	Medium Voltage(MV) system upgrade and uprating	This component involves the construction of new 33/11 kV substations, 33 kV switching stations, and 33 kV lines.
2.	Grid extensions	This component will comprise of densifications, intensifications including distribution transformer maximizations, and last-mile connections. It will involve construction of low-voltage lines and the installation of energy meters.
3.	Project administration and management	It comprises both consulting and non-consulting services namely consultancy supervision services, Environmental and Social (ES) audits, and financial, operational and compliance audits.
4.	Institutional support and capacity building	Providing technical assistance to develop and support KPLC's internal capacity in undertaking bankable proposals, feasibility studies, and PPPs.
5.	Promoting Energy transition	Promoting the transition from using polluting fuels (such as firewood, charcoal, and kerosene) to modern energy (particularly electricity) in cooking.
6.	Environmental and Social risks management	Besides the E&S impacts that will be managed and monitored under components in (3 and 4) above, the ESMMP implementation will cover the Resettlement Action Plan (RAP) related activities including gender- responsive compensation and resettlement of Project Affected Persons (PAPs) where applicable.

The projects encompass engineering, procurement and construction of the Low voltage line, Medium Voltage Lines, Transformer installation, primary substation construction & upgrade, network reinforcement and metering. Implementation of the project will be on a Turnkey basis.

C. Approach and Methodology

Several methods were involved in the preparation of this ESMF to meet the requirements. For the purpose of achieving these targets, the following approach and methodology was used:

A. Literature review - of existing policies and legislation of Government of Kenya and of AfDB Safeguard Standards, other ESMFs in the areas of electrical power network infrastructures;

- A. AFDB Requirements, National and international Policy, institutional and Regulatory Framework analysis- The safeguard team has reviewed the relevant guidelines, policy, regulatory and institutional framework related to ESMF in the context of the Kenya's Last Mile Connectivity Project (LCMP). These include guidelines and environmental and social standards from the Africa Development Bank, international goals, treaties and conventions on environment, and national regulatory and institutional framework that can influence or be influenced by the implementation of LMCP. This helps to elucidate problems that will need special attention during the implementation of this project.
- B. Site visit- The KPLC has deployed professionals to the selected project site to carry out site visits. This was done between November 2022 and July 2023 at Regions and counties where the future potential areas for proposed LCMP-III implementation. The field surveys enabled the team to identify the environmental and social settings of the similar projects area under the LCMP-I and II and identify some of the existing conditions and

potential bottlenecks at the time of the implementation of the project components (Construction of low voltage (LV) distribution lines, installation of energy meters, etc.)

- C. Key Sstakeholders' Engagement, Consultation and analysis A detailed CPP/community engagement for LMCP Phase III was carried out in 9 Counties in 8 different Kenya Power service regions and was held between 20th June 2023 - 8th July 2023. In total, during consultation process a total of 42 stakeholder forums were held in 9 counties The Engagement was undertaken at two levels:
 - Public meetings which included a variety of stakeholders:

The consultations with key stakeholders ranging from relevant Ministries, Government Agencies, County Government officials, NGOs, AfDB and the general public including project affected persons was carried from 20th June 2023, 26th June 2023 and 2nd – 8th July 2023. 39 public stakeholder forums were held in Nakuru, Kisii, Kakamega, Transnzoia, Embu, Garissa, Machakos, Makueni and Taita Taveta Counties. These counties were considered based on their geographical locations and representing the eight regions as per KPLC administrative boundaries. Further some of the counties (Trans Nzoia and Garissa) visited are inhabitant of the indigenous people which are key in the implementation of this project. These were chaired by the area chiefs, Assistant Chief and Village elders. A total of 2242 stakeholders were engaged comprising of 1341 male and 901 female.

 Civil Society Organizations, NGOs, Key Government Agencies and state departments meeting: Two Forums for CSOs, NGOs and Key Government state departments/ Institutions and Agencies in Nairobi and Machakos Counties and A total of 70 stakeholders were engaged comprising of 39 male and 31 female.

During consultation, stakeholders were asked of their views and concerns about the project. This helped to identify salient issues and concerns that affect different stakeholders and reach agreement on the understanding of these issues and grievances. The safeguards team ensured a favourable environment free of coercion and intimidation, gender inclusive and inclusive to vulnerable and disadvantaged groups.

All stakeholders were supportive of the project since it will provide communities with a number of advantages with minimum or no impacts. The stakeholders also appreciated that the importance of the proposed project in the enhancement of household incomes and strengthening of self-reliance due to advantage from access to electricity. The stakeholders also pointed out the contribution the project on improving communities' access to energy services and improvement of the social well-being. During the consultation with stakeholders' participants raised specific project benefits, impacts, mitigation measures and concerns.

Most of the attendees in all the meetings expressed their concerns that they have waited for too long to be connected to electricity, welcomed the project and requested connection to be done soonest without delays. They also requested to be given first priority (schemes where public consultations were done) once project implementation starts. They also requested that the contractor should call for an entry meeting before any construction starts and that the locals be given priority for all the jobs they qualify for in the project. They also requested KPLC to be considerate and factor how the disadvantaged in the society like orphans and the aged/very poor who could not even afford wiring cost could get connected to electricity.

KPLC representatives assured the members present that their concerns would be captured in minutes for the meetings and the company in liaison with the contractor would assess the vulnerable members in the society and ensure no one is left out or disadvantaged by the proposed last mile project.

D. Baseline Information

The proposed project will rolled out in the entire country within the 45 counties hence the baseline information presented is for the entire country but not site specific.

Kenya is located on the East Coast of Africa bordering the Indian Ocean to the east, Sudan and Ethiopia to the north, Somalia to the northeast; Uganda to the west, and Tanzania to the south. It covers an area of 582,646 sq

km and ranks number 47 in the world in terms of size, with a population of more than 47.6 million in the 2019 census.

Kenya has diverse physical features, which are divided into Low Lying Arid and Semi-arid Lands, Coastal Belt, Plateau, Highlands and the Lake Basin around Lake Victoria. Nairobi, the capital city of Kenya is also the seat of government as well as the financial and service hub of East Africa. Nairobi's Jomo Kenyatta International Airport (JKIA) is the largest and busiest airport in East and Central Africa. Other cities are Mombasa, Kisumu and Nakuru. Eldoret and Thika are other major industrial towns

E. Legal, Regulatory, Administrative and Framework

A detailed review of relevant institutional and legal as well as policy framework that bears significance or implication to the AfDB LMCP-3 project have been analyzed. The AfBD Safeguard Operational standards applicable to the project as well as the international laws and conventions that bear relevance to the implementation of this project have also been highlighted. In Kenya, The Environmental Management and Co-ordination Act, No.8 of 1999 provides for the establishment of an appropriate legal and institutional framework for the management of the environment and associated matters.

The KPLC is committed to complying with all applicable legal requirements as well as the AfDB ISS, and other international standards for environmental and social governance and management. This also includes the International Labor Organization ("ILO") Core Labor Standards, the ILO Basic Terms and Conditions of Work. Prior to commencement of any project, an ESIA assessment will be done and will include determined gaps that exist between the applicable local legal requirements, international standards and the requirements of this ESMF. The most stringent requirements will be applied.

F. Environmental and Social Screening Process and preparation of assessments

The objective of the Environmental and Social Screening Process (the screening process) is to ensure that the projects are designed and implemented in an environmentally and socially sustainable manner, taking into account Kenya's relevant sector legislation as well as the donors' Safeguard Policies.

KPLC will be responsible for completing the Environmental and Social Screening Form, and based on the screening results, the appropriate level of environmental work will be determined by KPLC's Environment unit and carried out by qualified KPLC staff. The screening process has been developed because the locations and types of the distribution component for the projects which are not known prior to the appraisal of the LMCP-3 project, and therefore potential adverse localized environmental and social impacts cannot be precisely identified. The objectives of the screening process are to:

- Facilitate the review and approval of the screening results and separate ESMP reports (the screening form would be looking at planned construction and rehabilitation activities);
- Determine the appropriate environmental category as per AfDB OS1 environmental assessment and Kenyan legal framework;
- Based on the assigned environmental category, determine the appropriate level of environmental work required
- Determine potential adverse environmental and social impacts of the proposed project, including impacts on physical cultural resources, solid and liquid waste generation, including hazardous wastes CCA, social impacts due to land acquisition and indigenous peoples, if applicable
- Determine appropriate mitigation measures for addressing adverse environmental and social impacts, which will follow the Environmental and social impact and management section of this ESMF; and
- Indicate the need for a Resettlement Action Plan (RAP), which would be prepared in line with the KPLC Resettlement Policy Framework (RPF);

In terms of the ESIA report, AfDB ESIA report content as outlined in the Integrated Safeguards System Guidance Materials Volume 1 on General Guidance on Implementation of OS 1 do not vary considerably from NEMA requirements for a CPR and an Environmental Impact Assessment Study Report (SR). However, AfDB requires more emphasis on impacts and assessment of their significance, as well as comprehensive coverage of residual effects which will need to be adhered to in the preparation of ESIAs. The content of an SPR is however found lacking when AfDB policies are applied. The higher safeguard will apply when divergence is found.

The ESA Report will be discussed extensively with the affected/neighbouring community as part of the stakeholder consultations and the County. The improved draft is then presented to AfDB for review and clearance. Upon clearance, the PIT will finalize the report and submit to NEMA for EIA licensing

After Approval by NEMA, ESIA study reports for the subproject shall be disclosed in-country by the client in formats that are accessible to all project stakeholders and on the African Development Bank external website

G. Environmental and Social Impacts and ESMP

An environmental or social impact is defined as any alteration of existing conditions, adverse or beneficial, caused directly or indirectly by a Project that results in a specific consequence to a resource/ receptor. Impacts are dependent on two key factors: the sensitivity/importance of the surrounding environment and the magnitude of change caused by the project. Potential impacts will be assessed through the Environmental & Social assessment process, as the nature, sensitivity and importance of receptors and resources will vary from one project to the next.

Some of the environmental and socio-economic benefits expected to accrue from the project are discussed below.

•	Employment opportunities	•	Communications
•	Education outcomes improvement	٠	Improved gender relations at homes and
•	Reduction of pollution associated with use of		communities
	thermal power, kerosene and wood fuel:	٠	Enhanced gender and social Inclusion
•	Improved standard of living	•	Improved health outcomes
•	Opportunity for business development	•	Enhanced security
•	Increase in government Revenues		-

Despite the various socio economic and environmental benefits outlined, the project will also have some negative impacts.

Ne	gative Impacts Pre and During Construction				
• • • •	 Land Acquisition and Displacement Impact on Natural Vegetation and Biodiversity Impacts on air quality Increased Solid and liquid waste Generation Occupation safety and health hazards Public health and Safety risk Risk of fire, Electric shocks and electrocution. Construction material sourcing (wooden poles) and Quarrying Impacts 		 Risk of Gender Based Violence, Sexual Harassment and Sexual Exploitation and Abuse Child Labour and Exploitation Labour Influx and associated impacts Negative Cultural exchange and Social ills: Interruption of existing installations, services and utilities Impact on archaeological and other cultural properties Impact 		
Noise during construction					
Ne	gative During Operations	r —			
•	 Occupational Health and Safety 		Increase in Hazardous Waste		
	 Live power lines 		 Oil Leaks from transformers 		
	 Working at height 		 Contamination from Copper Chromate 		
	 Exposure to Electric and magnetic fields 		Arsenate (CCA)-treated poles		
	 Exposure to chemicals 				

•	Public S	Safety Risk of sparks/fire from live conductors Electric shocks and electrocution of people	•	Visual Impacts and Aesthetics Landscape Impacts Avian and Bat Collisions and Electrocutions Aircraft Navigation Safety
	0	Electromagnetic interference Noise and Ozone	•	Risk of Flooding

After environmental and social screening, mitigation measures will be identified for each negative impact identified. The Mitigation measures during construction will be implemented by the contractor based on LOT specific CESMP to be developed by contractor with monitoring done by KPLC PIT, KPLC's Environment and Social Unit, and regional staff. KPLC will be in charge of the pre-construction related works e.g., land acquisition.

Towards addressing the land acquisition, displacement and resettlement impacts that may occur, the project has prepared a Resettlement Policy Framework (Annex 14). The purpose of the policy framework is to clarify resettlement principles, organizational arrangements, and design criteria to be applied during the implementation LMCP Phase III. The RPF outlines the guiding principles to be followed when involuntary land acquisition and Resettlement and or compensation is undertaken. It prescribes the process from the preparation, through review and approval to implementation of the sub-projects that will ensure that the substantive concerns of all African Development Bank's Operational Safeguards and relevant Kenyan policy and legal frameworks will be adequately addressed.

H. Institutional Capacity for Environmental Management

KPLC will be the Implementing Agency of the project. KPLC has the necessary technical and managerial ability to implement projects as demonstrated by the on-going projects financed by development partners. The project will be managed by Project Implementation Unit (PIU). KPLC will be committed to the implementation of the commitments of E&S Policy and will uphold these through visible leadership, appropriate allocation of resources and supporting the actions needed to manage and continually improve E&S performance. KPLC will take direct responsibility for E&S related activities and management as well as requiring the same of the Project contractors who will help in project implementations.

KPLC has a functional Safety, Health and Environment (SHE) department. The SHE staff will be included in Project Implementation Team (PIT). KPLC PIT staff with help from regional staff will be involved day to day in the implementation of the environmental screening process for projects. The subcomponent on strengthening KPLC PIT staff will include support for capacity building in environmental and social management as regards the rehabilitation and construction of distribution network lines for last mile connectivity. Selected KPLC staffs are proposed to undergo training in environmental management systems and impact assessment, implementation of the environmental and social screening process outlined in this ESMF, hazardous waste management and pollution control and occupational safety and Health, and AfDB's ISS as part of capacity building.

The ESMF build on experience gained under previous projects in KPLC, which underlines the fact that environmental and social screening processes should be an integral part of a service delivery sub-project cycle. It is also based on the understanding of the environment and what constitutes degradation. Issues related to water resources, de-forestation and loss of fertile soils have been rated as important as far as the environment is concerned.

The project cycle for each project that requires each activity will be screened for potential adverse environmental and social effects and that this process will be integrated as a routine activity within the project cycle processes.

I. Monitoring and Reporting

KPLC will monitor the overall implementation of the ESMF, most particularly the:

- Timely preparation of environmental and social screening forms for all subprojects (list of subprojects by risk category by date);
- Timely preparation and clearance of subproject ESIAs and ESMPs, as needed (list of instruments with dates);
- Management of prior review requirements of the AfDB (non-objection requests with dates);
- Monitoring of ESMP implementation, including monitoring of mitigation measures and monitoring of contractors environmental and social performance (indicators);
- Training of project staff, implementing partners, and contractors (list of persons, dates and places); KPLC will
 prepare:
- Quarterly reports summarizing monitoring results, to be included in the Project's Quarterly Reports to the AfBD
- Reports that aggregate and analyse monitoring results ahead of regular AfDB implementation support missions
- Annual reports of all environmental and social monitoring activities that will be submitted to the AfDB as part
 of overall project implementation

The SHE Department will conduct onsite visits subprojects at least once in a quarter to monitor the implementation of their ESMP.

As part of their regular activities, KPLC staff will monitor and document (including pictures) contractor environmental and social performance for each subproject throughout construction. This will involve both spot check visits to work locations, and reviews of records kept by the contractor and of reports submitted. The frequency of site visits should be commensurate with the magnitude of activities and their associated environmental and social impacts but at minimum once a quarter. Each visit and interaction with a contractor should be documented in the database, including identification of contractor noncompliance, the significance of the non-compliance, and guidance provided on actions to be taken. KPLC will follow up as needed to ensure timely resolution of issues of noncompliance with environmental and social clauses.

Contractors and the Supervising engineer will submit monthly reports.

The project Grievance Redress Mechanism (GRM) will provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts.

J. ESMF Implementation Budget

The ESMF implementation budget refers to all costs that will be incurred to implement the requirements or recommendations of the ESMF. The ESMF requirements ensure that implementation of the projects integrates environmental and social issues for the sustainability of the project as well as the sub-projects. Among other things the ESMF recommends the following key issues, namely; training, capacity building, screening, ESIA Studies, GRM, Stakeholder engagement reviewing and monitoring mechanisms. The total cost for ESMF is approximately **Kes 295,812,000 (inclusive of 40,000,000 for land acquisition).** A part from the ESMF costs there will costs associated with RPF and RAP implementations which will cater for land acquisition and compensation of property, trainings on RPF and RAP components executions. It is estimated to Cost **Kshs. 244,200,000.00.** The estimates for both ESMF and RPF reflect the level of cost but the actual costs will be determined during the implementation phase, when the specific number of people required for training or affected will be identified and the level of technical assistance required.

K. Conclusion and Recommendations

This ESMF requires that the implementation of this project should ensure procedures for environmental and social screening, planning, review and approval prior to implementation of sub-projects to be financed under the Project are followed; furthermore, appropriate roles and responsibilities, for managing and monitoring environmental and social concerns related to sub-projects should also be followed. KPLC will develop an overall Environmental and

Social Management System (ESMS) that envelops all of the individual Sub-Activities, Environmental and Social Impacts, Climate Change and Procedures for assessing the Impacts.

1 INTRODUCTION

1.1 Background

The country's long-term development blue print, Vision 2030 aims at transforming Kenya into a globally competitive newly industrialized middle income and prosperous country. The Second Medium Plan 2013-2017 identifies energy as one of the enablers for transformation into "a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment" Efficient, accessible and reliable infrastructure is identified as an enabler for achieving sustainable economic growth, development and poverty reduction by lowering the cost of doing business and improving the country's global competitiveness.

The Government of the Republic of Kenya is seeking the financial support of US\$150 million from the Africa Development Bank for the Last Mile Connectivity Project-III (LMCP-III). The proposed implementation period is 5 years. The project would aim to improve the power systems and electricity access and reliability, in line with the Kenya Growth and Development Strategy.

Over the past two decades or so, Kenya has seen a steady growth in electricity connections both in urban and rural areas. According to the Kenya National Bureau of Statistics (KNBS) Population census, 50.4% of households in overall were connected to power in 2019 as opposed to 23% in 2009. In rural areas the change is from 5percent to 26.3percent while in urban areas this is from 50% to 88.4percent.

The above shift has been driven by a combination of various factors chief among them being the incoming of a new political dispensation in 2002. The regime at that time demanded that the company accelerate connectivity, which called for a totally new approach in the connectivity model within KPLC. In 2004, a new connection policy was developed to address this new challenge and also take cognizance of the more enlightened customer. Other factors supporting the increased pace of electrification, includes off-grid solutions such as solar, the fruits of the State's last-mile connectivity programme, which was launched in 2014 mainly targeting rural areas, as well as the cost for installation of electricity was dropped from Sh35,000 down to only Sh15, 000 to speed up the Government's agenda to have at least 75% of Kenyan households connected to electricity by 2022.

The Government of Kenya aims at stimulating economic growth and accelerates job creation to improve the wellbeing of Kenyans. Among the many interventions to achieve this is expansion of the power distribution system to be within reach and thus enable more Kenyans to connect to the grid at affordable cost and hence initiate economic activities at the micro-economic level.

To reduce the cost burden of increased connectivity on KPLC, as well as reduce the amount paid by the customer, the strategy proposed was to extend the distribution network to as near the customer as possible through government funding. This is being achieved by extending the low voltage network on existing and other upcoming distribution transformers to reach households lying within transformer protection distance (maximization) under the Last Mile Connectivity Program.

Despite the successes noted in electricity connection, recently a number of challenges have emerged. First, the exponential growth in demand and particularly the last-mile connectivity projects have not been followed by corresponding investments in the transmission and medium voltage distribution infrastructure thereby compromising the power supply reliability. For instance, on average, power outages in 2021/22 were restored within 2.74 hours (i.e., Customer Average Interruption Duration Index – CAIDI), and during the same period, a customer experienced, on average, a total outage of 104.43 hours. Second, in reference to electricity last-mile connectivity, the original target of achieving universal by 2022, is has been extended to 2027. Following the period

between 2014 and 2018 whereby the national access rate increased from 32% in 2014 to 75% in 2018, there has been a modest growth in the number of connections since then. Third, the lack of adequate investments in the distribution infrastructure to keep pace with the population growth is partly responsible for the slowed increase in electricity access. Fourth, an impact assessment of Phase 1 of the Last Mile Connectivity Project in Kenya has established a need for the African Development Bank-supported initiative to encourage the productive use of electricity by beneficiaries, in addition to basic household consumption. Impact Evaluation of the AfDB Supported Kenya Last Mile Connectivity Project Phase 1 found that within 2-3 years after connection electricity consumption by beneficiaries has remained low, with beneficiaries mainly using the electricity for lighting and charging phones. The assessment, conducted by the bank's Independent Development Evaluation unit (IDEV) 2022, recommends that the Kenya Power and Lighting Company (KPLC) should find ways to "stimulate" additional demand for electricity by households and businesses in rural areas. The report recommends programs to link electricity access with income-generating activities such as promoting small businesses

It is with this background that the African Development Bank (AfDB) has offered to partner with The Kenya Power and Lighting Company PLC (Kenya Power) to fund the KPLC's Last Mile Connectivity Project Phase III to increase on-grid electricity access for households, social-based infrastructure facilities, and MSMEs to the tune of US\$ 150 million (exclusive of taxes, Levies and duties). With this in mind, a criterion has been proposed to define which parts of the country will benefit from the fund. The number of customers to be reached with the proposed funding is 150, 000 at total cost of USD 150 million.

The capital works will contribute to improving the reliability of power supplies by reducing the frequency and duration of power supply interruptions in the 45 Counties. KPLC plans to use the funds to strengthen the power distribution network in the entire County, to improve the network efficiency and reliability, and to meet growing and new demands for electricity. Planning and design of the network upgrade is underway by KPLC and it's Engineers which include upgrading the proposed works to be co-financed by the AfDB Credits include –maximum utilization of existing Transformers to improve electricity access to low end customers or households.

To reduce the cost burden of increased connectivity on KPLC, as well as reduce the amount paid by the customer to connect to the grid, the strategy proposed is to extend the distribution network to as near the customer as possible using external or government funding. This can initially be achieved by extending the low voltage network on existing and other upcoming distribution transformers to reach households lying within transformer protection distance (maximization). This model would involve building low voltage lines both single phase and three phases (to a small extent) along rural access roads,

In a situation, where sub-projects or activities are in different development locations or regions of the country with varying geographical, topographical and socio-economic conditions, and where the exact location of some of the sub projects are not known, there is need to prepare a document that will 'guide' the planning, design and construction elements of sub-projects and such a document is the ESMF. The ESMF will help in integrating and harmonizing the environment and social management principles in the various stages of KPLC for LMCP-III project preparation and execution. The Environment and Social Management Framework will form part of the comprehensive environmental and social management approach that will be adopted for addressing the potential environmental and social impacts from this project, even when these are considered minor in nature.

Following the requirements for environmental management in most KPLC projects, and in line with The Integrated Safeguards System (ISS) of the African Development Bank, this environmental and social management framework (ESMF) has been prepared to provide a mechanism to carry out appropriate environmental and social assessments in line with Bank's safeguard policies and Government of Kenya (GoK) legislation.

This ESMF has been prepared because the actual sub projects of LCMP-III are not yet known or are not yet identified and the technical designs and details have not yet been developed. It is important to note that LCMP-III

consists of a series of subprojects, and the impacts cannot be determined until the subproject details and their locations have been fully identified. The ESMF defines how environmental and social safeguards will be considered and managed for all project activities that may have safeguards requirements.

Given that the Kenya as a country is an extremely heterogeneous area stretching from Turkana to Coastal region of Mombasa, with varied landscape, biodiversity, climate and socio-economic conditions and diverse and localized ethnic groupings the setting and context of each of the projects that KPLC will develop is highly variable and location-specific due to difference in environmental and climatic settings.

As a result, The KPLC proposes to manage environmental, social and safety issues in a way that is both consistent and tailored, with an emphasis on the use of risk-based approaches that are appropriate to local conditions and context and application of adaptive management processes. This will take into account the way that potential environmental and social risks and impacts of each project will vary depending on location and context. KPLC will identify and address these challenges by adopting a comprehensive Environmental and Social Management framework that is guided by the African Development Bank (AfDB)'s Integrated Safeguards System (ISS which includes the Operational Safeguards – OS), the IFC Performance Standards, the requirements of the Kenyan statutory and regulatory standards and Good International Practice.

1.2 ESMF Requirement and Purpose

There is a growing concern in Kenya and at global level that many forms of development activities cause damage to the environment. Development activities have the potential to damage the natural resources upon which the economies are based. Environmental Impact Assessments are therefore useful tools for protection of the environment from the negative effects of developmental activities. It is now accepted that development projects must be economically viable, socially acceptable and environmentally sound.

The ESMF particularly is prepared for AfDB operations that finance multiple, small-scale subprojects whose route, location, and designs are not precisely known at the time the Bank appraises and approves the operation. Consequently, necessary environmental and social assessments and other safeguard measures can only be established during program implementation.

The African Development Bank (AfDB) environmental assessment policy requires the borrower to prepare an Environmental and Social Management Framework (ESMF) that is to establish the mechanism whereby Kenya Power will determine and assess the future environmental and social impacts of its proposed activities before undertaking them, and to set out, in general, the mitigation, monitoring and institutional measures to be taken during implementation and operation of the program to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable minimal levels.

The purpose of the ESMF is to provide a procedure for environmental and social screening and assessment of the proposed KPLC projects. ESMF was selected because the footprint of the project is not known, and those few known sites design and other details about the investment are not available prior to appraisal of the project. For instance, the location for the proposed lines, transformers to be maximised, new transformer sites, and sub stations of which land has not been identified. It will guide KPLC in determining the appropriate level of environmental and social assessment required for current and future projects and in preparing the necessary environmental and social mitigation measures for these projects during the preconstruction, construction and operational phases.

1.3 Objectives of the ESMF

The objective of this ESMF is to ensure that the implementation of the Last Mile Connectivity Project (LMCP) AfDB Phase III, of which the sub-project sites are unknown at this stage, will be carried out in an environmentally and socially sustainable manner. The ESMF will provide Kenya Power with an environmental and social screening process that will enable to identify, assess and mitigate potential environmental and social impacts of sub-project activities, including through the preparation of a site-specific Environmental and Social Impact Assessment (ESIA) where applicable.

The screening results will indicate whether additional environmental and/or social assessment will be needed or not. Thus, the ESMF is designed to ensure an appropriate level of environmental and social management, which could range from the application of simple mitigation measures (through the environmental checklists) to the preparation of an EIA Report (according to Kenya's Environmental Impact Assessment & Audit Regulations of 2003 and in line with Operational safeguard 1 – Environmental and social assessment of AfDB). More specifically, the objectives of ESMF are:

- To establish clear procedures and methodologies for the environmental and social screening, planning, review, approval and implementation of sub-projects to be financed under the Project;
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to sub-projects;
- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF;
- To establish the Project funding required to implement the ESMF requirements; and
- To provide practical information resources for implementing the ESMF.

The screening process has been developed because the locations and types of subprojects to be funded under the Last Mile Connectivity are not yet known fully identified and designed and therefore potential impacts cannot be accurately identified. However, Kenya Power has been running such projects hence the impacts are well known from experience. Thus, it is expected that most sub-project activities will have short-term, site-specific, confined and reversible negative environmental and social impacts that can be managed through well-defined simple mitigation and monitoring measures. It will be the responsibility of the Kenya Power to ensure that the requirements of the ESMF are implemented. Where ESMF related approvals are required under national legislation, the responsible authority is the National Environmental Management Authority (NEMA).

1.4 Scope of ESMF

This Document applies to all sub projects in which KPLC will implement under the fund, as well as all third party contracting organizations employed by KPLC to implement the various sub projects under the Last Mile Connectivity Project.

The scope of the LCMP-III will cover 45 counties in 8 service regions and where project preliminary or detailed designs and line routings has not been done yet. Therefore, the appropriate environmental and social management tool at this stage of project preparation is an Environmental and Social Management Framework (ESMF).

An ESMF is prepared for Bank operations that finance multiple, small-scale sub-projects whose location, scope and designs are not precisely known at the time the Bank appraises and approves the operation. Consequently, environmental and social assessment and other safeguard measures can be confirmed during project implementation phase. The ESMF establishes a unified process to address pertinent environmental and social safeguards. The ESMF will enable potential social and environmental concerns of the proposed sub-projects to be thoroughly assessed in the planning/design phase and will allow for appropriate measures to be Need for Environment and Social Management Framework.

1.5 ESMF APPROACH AND METHODOLOGY

An ESMF was developed in 2019 which was cleared by AFDB, but due to delay in project implementation as a result of COVID 19 pandemic coupled with change in the scope of the project has necessitated the updating of the ESMF to capture all the environmental and social risk likely to be presented by the new/ expanded scope of system reinforcement.

This ESMF has been updated based on previous experience on more or less similar projects such as the Last Mile connectivity project phases I & II, Kenya Electricity Modernization Project, Kenya Off grid Solar Access Project among others. ESMF will be a continuous document that will be subject to periodic review to address specific concerns raised by stakeholders, and emerging policy requirements. It will complement the Environmental Impact Assessment and Environmental Audits guidelines provided for operationalization of provisions of the Environmental Management and Coordination Act of 1999 and Amendment Act of 2015 which guide environmental protection and management.

An ESMF is meant to provide a screening process for the potential environmental and social impacts for the planned future project activities and recommend a platform for management plan for addressing the potential positive and negative impacts associated with the project. For the purpose of achieving these targets, the following approaches were used:

1.6 Detailed & In-depth Literature Review

This was done through a thorough review of the project appraisal documents focusing on project description, project components, project target areas, institutional and implementation arrangements, and monitoring and evaluation of outcomes. Some key baseline information on Kenya's recent macroeconomic developments especially in the energy sector development was reviewed from project documents. The review also covered Kenya's policy, legal, regulatory and administrative frameworks relevant to the proposed Last Mile connectivity distribution project. AfDB's Integrated Safeguards System was reviewed focusing on requirements for an ESMF.

Bearing in mind that Last Mile Connectivity distribution subproject sites were unknown at the time of the preparation of this ESMF, literature review further encompassed the overview of Kenya's physiographic and climatic issues, the state of the general environment and population and population dynamics just to inform Last Mile Connectivity Project.

Review on the existing baseline information and literature material was undertaken and helped in gaining a further and deeper understanding of the proposed project. A desk review of the Kenyan legal framework and policies was also conducted in order to identify the relevant legislations and policy documents that should be considered during project implementation. The framework also takes into account findings of the AfDB funded LMCP-1 and LMCP-2 and other partners, the Country Environmental Analysis and similar environmental and social assessments and frameworks undertaken for related initiatives such as the KEMP project, AFD transformer densification and WB KOSAP.

1.7 Review of ESMF AfDB Requirements, National and international Policy, institutional and Regulatory Framework

The safeguard team has reviewed the relevant guidelines, policy, regulatory and institutional framework related to ESMF in the context of the Kenya's Last Mile Connectivity Project (LCMP). These include guideline and environmental and social standards from the Africa Development Bank, international goals, treaties and conventions on environment, and national regulatory and institutional framework that can influence or be influenced by the implementation of LMCP. This helps to elucidate problems that will need special attention during the implementation of this project.

1.7.1 Review of National Policy institutional and Regulatory Framework related to ESMF

At the national level, the safeguard team has reviewed relevant existing laws, policies, regulations frameworks and guidelines about environmental and social risk management, and policy, programs and projects associated with the Energy sector. This helped to prepare a summary of Local legislative and regulatory and administrative regimes within which the project will be implemented. Following documents were reviewed:

1.7.2 Review of African Development Bank Environmental and Social Standards (ESSs)

The safeguard team has reviewed the AfDB Environmental and Social Standards (ESSs) applicable to the ESMF for LMCP III and demonstrated how these standards will be complied with considering the local context. The AfDB ESSs apply to this project for the sake of interests of beneficiaries, clients, stakeholders and that of the Bank. Applying these standards allows avoiding adverse impacts on the environment and people's lives, minimizing and mitigating potential unfavorable environmental and social risks and impacts. These AfDB standards are:

1.7.3 Field Surveys and visits

The safeguard team conducted field in Kenya Powers eight region covering 9 County Governments 'visits from 2nd to 8th July, 2023. Relevant government and non-government institutions including village commercial centres selected in consultation with the NGAOs and based on the proposed Counties which will be covered by this project, while the centres and villages which were selected and visited were those with low to no access to the electricity and are on the list as possible areas to be covered by the project. The section of the counties were done ensuring the 8 Kenya Power regions were covered. These counties included Nakuru County in Central Rift region, Kisii County in South Nyanza region, Kakamega County in Western Kenya region, Transnzoia County in North Rift Region, Embu County in Mt Kenya Region, Garissa County in North Eastern region, Machakos and Makueni Counties in Nairobi region and Taita Taveta in Coast region. Counties with IPs were Garissa and Transnzoia. There was also care to include rural and urban populations as well as agricultural and pastoral counties/areas.

1.7.4 Approach to field data collection

The KPLC has deployed professionals to the selected project site to carry out site survey and data collection. This was done between November 2022 and July 2023 at Regions and counties where the future potential sites for

proposed LCMP-III implementation were identified. The field surveys enabled the team to identify the environmental and social settings of the proposed projects area under the LCMP-III and identify some of the existing conditions and potential bottlenecks at the time of the implementation of the project components (Construction of low voltage (LV) distribution lines, installation of energy meters, etc.)

The safeguard team visited above said sites with target to collect information on location, status of infrastructure, and views and concerns of local people, respectively. Special attention was paid to key stakeholders (County National Government Administrative officials and County Government officials) and local people that may be involved or affected by the project. This exercise through established interview guide helped in identifying criteria that will need special attention in the implementation of this project. The exercise also helped in identifying the capacity gaps and needs for the implementation of, and ensuring compliance with, environmental and social aspects of the project.

1.7.5 Stakeholder Engagement, Consultations and Analysis

Consultations and engagements were conducted with stakeholders who were directly or indirectly affected by and or related to the project to better understand the environmental and social systems in the country and the environmental and social concerns of stakeholders from 20th June to 8th July 2023. During consultation, stakeholders were asked of their views and concerns about the project. This helped to identify salient issues and concerns that affect different stakeholders and reach agreement on the understanding of these issues and grievances. The safeguards team ensured a favourable environment free of coercion and intimidation, gender inclusive and inclusive to vulnerable and disadvantaged groups.

These stakeholders were identified from across the major stakeholder classes with a focus on those with high interest and influence on the project, as well as likely to be affected by the project.

Interviews and consultations with key stakeholders - from relevant Ministries, Government Agencies, County Government officials, NGOs, and AfDB staff this was carried from 20th June 2023, 26th June 2023 and 2nd – 8th July 2023. During consultation process a total of 42 stakeholder forums were held in 9 counties comprising of 2 forums for CSOs, NGOs and Key Government state departments/ Institutions and Agencies in Nairobi and Machakos Counties and 40 public stakeholder forums in Nakuru, Kisii, Kakamega, Transnzoia, Embu, Garissa, Machakos, Makueni and Taita Taveta Counties. A total of 2055 stakeholders were engaged comprising of 1207 male and 848 female. The issues discussed during the forums included why ESMF and RPF, Project description, Project Impacts (Positive and Negative), Mitigation Measures, Gender mainstreaming, Electrical safety, Electricity application process, the Dos and Don'ts, GRM, incident reporting using *977# just to mention a few.

1.7.6 Organization of the Framework

The Framework is organized as follows:

- 1. Chapter 1: Introduction
- 2. Chapter 2: KPLC'S Last Mile Connectivity Project Description
- 3. Chapter 3: Baseline Information
- 4. Chapter 4: Policy, Legal And Administrative Framework
- 5. Chapter 5: Public Consultation And Participation
- 6. Chapter 6: The Environmental And Social Screening and Assessment Process For LMCP III Sub Projects
- 7. Chapter 7: Environmental And Social Impacts, And Procedures For Assessing The Impact
- 8. Chapter 8: Measures To Develop Environmental And Social Management Plans (ESMPS)
- 9. Chapter 9: ESMF Implementation Arrangement And Institutional Capacity For Environmental Management
- 10. Chapter 10: ESMF Monitoring & Reporting

- 11. Chapter 11: ESMF Implementation Budget
- 12. Chapter 12: Conclusion And Recommendations

2 KPLC'S LAST MILE CONNECTIVITY PROJECT DESCRIPTION

2.1 Introduction

The Government of Kenya has identified energy as one of its key enablers to its long-term development plan the "Kenya Vision 2030. The aim of the Vision is to make Kenya a globally competitive and prosperous country with a high-quality life to all Kenyans by 2030. Towards this end, the Government set the goal of achieving universal access to electricity by 2030.

Kenya Power supports the efforts of the Government of Kenya in the Electrification Schemes and system reinforcement schemes. Kenya Power projects normally results in significant amount of construction work for distribution and transmission lines, substation and access roads to substations but with minimal environmental impacts. All these projects shall be subjected to environmental screening so as to determine its impacts and propose various mitigation measures on the impacts to be identified and implemented in compliance with the donors' safeguard policies as well as relevant national environmental legislation.

2.2 Background and Rationale

Kenya has greatly increased electricity access over the last few years, from 2.3 million connections in 2013 to 8.9 million by the end of June 2022 thereby achieving an electricity access rate of over 70%. To achieve 100% access by 2030, Kenya needs to accelerate grid and grid-equivalent connections to \sim +0.8 million household connections per annum between 2023 and 2030, and thereafter increase significantly to accommodate the growing population. It is estimated that Kenya currently has \sim 14 million households of which \sim 5 million are not connected to the grid. This figure is expected to rise to \sim 17 million households requiring connections by 2030, as depicted in Figure 1 below.



Figure 1: Household connections required to achieve universal access by 2030

To accelerate electricity connectivity towards universal access, the scaling-up access initiatives (including the Last mile connectivity Programme) have proved vital and with positive economic and social impacts. However, the rapid expansion has not been accompanied by a corresponding reinforcement of the electricity backbone infrastructure, particularly at the medium voltage level. Consequently, the distribution system is characterized by a longer

distribution network, overloaded transformers and overstretched distribution substations. This has led to unreliable and poor quality of electricity service, high cost of operations and maintenance, and a rapid increase in system losses. This unenviable situation has had a major negative impact on KPLC's financial performance.

	2011/1 2	2012/1 3	2013/1 4	2014/1 5	2015/1 6	2016/1 7	2017/1 8	2018/1 9	2019/2 0	2020/2 1	2021/2 2
Energy Purchased (GWh)	7,670.3	8,087.2	8,839.9	9,279.6	9,817.0	10,204. 1	10,702. 3	11,492. 6	11,462. 4	12,100. 9	12,652. 7
Sales (GWh)	6,341.3	6,488.7	7,244.3	7,655.5	7,911.9	8,271.8	8,458.5	8,768.8	8,773.2	9,202.8	9,813.3
System Losses (GWh)	1,329.0	1,598.5	1,595.6	1,624.1	1,905.1	1,932.2	2,243.8	2,723.8	2,689.2	2,898.0	2,839.4
System Efficiency	82.7%	80.2%	81.9%	82.5%	80.6%	81.1%	79.0%	76.3%	76.5%	76.1%	77.6%
System Losses	17.3%	19.8%	18.1%	17.5%	19.4%	18.9%	21.0%	23.7%	23.5%	23.9%	22.4%
Technical Losses	12.56%	12.44%	12.46%	12.40%	12.38%	12.20%	10.84%	12.56%	12.44%	12.46%	12.40%
Non-Technical Losses	10.87%	12.01%	11.24%	11.18%	10.85%	12.55%	12.33%	10.87%	12.01%	11.24%	11.18%

Table 2-1: System Losses

Furthermore, frequent power interruptions result in many entities opting for self-generation within their premises to meet their electricity needs. These self-generation equipment are mainly diesel generators that have high greenhouse gas emissions and are expensive to run.

Attaining the goal of universal access will require complementing efforts for extending and upgrading the national grid and implementing system reinforcement projects. These will significantly improve the quality of supply to customers by reducing the frequency of power outages and irregular supply, ultimately reducing overall power system losses.

2.3 **Project Objectives**

The project development objective (PDO) is "to increase on-grid electricity access for households, social-based infrastructure amenities, and MSMEs." The PDO will be assessed through the number of new grid-connected households, directly attributed to the Project, from which the share of the population (i.e., gender disaggregated) with access to electricity will be projected based on the average household size in Kenya. Also, the progress towards achieving the PDO will be measured by outcome indicators regarding the number of newly electrified social-based infrastructure (namely education and health facilities) and MSMEs. Equally important, annual greenhouse gas (GHG) emissions avoided, by replacing fossil fuels with electricity, is one of the key outcome indicators through which the PDO will be evaluated.

The program is an enabler for the achievement of Vision 2030 and will contribute to promoting sustainable economic growth and reducing poverty in Kenya leading to the Government making major strides toward achieving sustainable development goals (SDGs).

Last mile Connectivity Project Phase III is designed to meet the following objectives

- 1. Increasing access to electricity through maximization of new and existing transformers.
- 2. Improve system reliability through reinforcement of the system by extension of the Medium Voltage lines, construction and upgrade of the distribution substations with aim of reducing losses.

2.4 Project Scope

Last mile Connectivity Phase III is geared towards scaling up access and network improvement to accelerate connectivity, improve system reliability and quality electricity supply. The Project is broadly packaged into six key components, reflecting on the prevailing electricity supply industry circumstances, in line with the GoK efforts of achieving universal access to electricity, building on the achievements, and lessons learned under the Development Projects-supported previous and ongoing last-mile connectivity operations in Kenya. The components are described in table 2-2 below

	Component Name	Component Description
	Construction of low- voltage distribution lines and metering	This component includes the procurement of contractors for the construction of low- voltage lines and the installation of energy meters
1.	Ŭ	This component will comprise of densifications, intensifications including distribution transformer maximizations, and last-mile connections. It will involve construction of low-voltage lines and the installation of energy meters.
2.	Supply of Prepaid meters and Metering Accessories	This component includes the procurement of Suppliers of Single-Phase Meter and Metering Accessories
3.	System Reinforcement	It entails the construction of new 33/11 kV substations, 33/11 kV switching stations, upgrading of existing 33/11kV substations and extension of associated 11 and 33 kV lines.
4	Capacity Building and Institutional Support	The component is meant to promote sustainable development of electricity supply industry (i) comprising technical assistance to MoEP for monitoring and evaluation of rural electrification schemes, (ii) consultancy services to undertake feasibility studies for strengthening the distribution network and expand electricity access for productive use, and (iv) capacity building for KPLC and MoEP and NT staff in sustainable development of the electricity supply industry.
т.		Providing technical assistance to develop and support KPLC's internal capacity in undertaking bankable proposals, feasibility studies, and PPPs.
		Capacity building program for KPLC staff and technical assistance towards quality supply, system losses reduction and improved customer service delivery, prepare a distribution system benchmarking template.
	Consultancy services	Project supervision and management by a consultancy firm to assist KPLC during the project implementation.
		Recruitment of public and media relations experts/firms to create customer awareness and promote the productive use of electricity and other sustainable uses.
5.		Providing technical assistance to develop and support KPLC's internal capacity in undertaking bankable proposals, feasibility studies, and PPPs.
		It comprises both consulting and non-consulting services namely consultancy supervision services, Environmental and Social (ES) audits, and financial, operational and compliance audits.

Table 2-2:	Project	Components
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Component Name	Component Description
	Environmental and Social risks management including the ESMMP implementation covering the Resettlement Action Plan (RAP) related activities including gender-responsive compensation and resettlement of Project Affected Persons (PAPs) where applicable.

2.5 **Project Description Works**

The projects encompass engineering, procurement and construction of the Low voltage line, Medium Voltage Lines, Transformer installation, primary substation construction & upgrade, network reinforcement and metering. Implementation of the project will be on a Turnkey basis.

Engineering Works have been categorized into two components:

- **Component A: Distribution Maximization:** MV line densification, MV line extension, construction of low-voltage distribution lines and metering
- **Component B: System Reinforcement:** Construction of new substations, upgrading of existing substations and extension of associated lines.

2.5.1 Component A: Distribution Maximization

2.5.1.1 Target Transformers and Customers for Maximization

The program will focus on maximizing the utilization of 2,160 transformers to be identified to connect approximately 150,000 households, equivalent to an estimated population of 0.6 million people, across 45 counties with limited access to the electricity grid. However, Nairobi and Mombasa counties will be excluded from the program.

No of existing TXs to be Maximized	New Hook Up TX	New TX with HT line	Targeted Number of Transformers	Targeted Nur Commerciall customers to Connected u AfDB III	mber of y viable o be nder LMCP	Targeted Number of Households to be Connected under LMCP AfDB III	
		1.21/11/1		Male	Female-	Male Headed	Female-
				Heaueu	Heaueu	Heaueu	Heaueu
744	874	542	2,160	6,733	3,787	89,268	50,212

Table 2-3 [.] The	Summary of	Target [·]	Transformers	and Customers
	Ourninary or	rurgot	riansionners	

From this data, the transformers were distributed as per *Annex 2*. Based on the penetration of the MV network in each county, the criteria of selection is based on four new transformers and one for maximization. 58% of the project transformers will be shared equally among the constituencies, while the remaining 42% shared based on the access rate. However, despite the high number (47,536) of transformers pending maximization, many households remain out of reach of the MV network and existing distribution transformers. Therefore, the project proposes the extension of MV lines and the installation of new transformers to ensure wider coverage.

Based on the internal simulation model, it is estimated that the average cost of customer connection for the project will be KSh. 72,104.10. The estimated cost for the maximization component is KSh. 10,815,615,199.2, and this will enable the project to connect 150,000 households.

2.5.1.2 Cost Estimation and Preliminary Bill of Quantities for 150,000 Households.

Tables 2-4 below show the summary Bill of Quantities and Cost Estimation based on Construction Units in previous projects. The material specification required during construction has been provided in *Annex 3*.

Description	Units	Quantity
Targeted Number of Household	No.	150,000
Maximization Transformers	Pcs	744
New Hookup Transformers	Pcs	874
New Transformers with HT extension	Pcs	542
Total Transformers	Pcs	2,160
New HT extension KM	KM	650
Low Voltage Lines extension	KM	6,798

Table 2-4: Summary Bill of Quantities

2.5.1.3 Component A: Productive use of Electrical Energy by Potential Customers

It is worth noting that in the past rural electrification programs, the beneficiaries tended to utilize energy household lighting and social benefits only. In order to realize the aims of the government to uplift the living standards of the people living in rural areas through the implementation of last-mile connectivity projects, the project to be implemented shall seek to incorporate public awareness that will focus on productive use of electrical energy by the potential customers. This shall be achieved education the public during the different stages of consultations to enable them gain Knowledge and skills for small, micro-business and households on how to use the newly found electrical power for profitable enterprise.

2.5.2 Component B: System Reinforcement and Upgrade

The exponential growth of Kenya's electric power distribution network, since 2013 to date, has necessitated high levels of investments necessary to ensure such demand for electricity is met. The distribution sub-sector has been a minor beneficiary of such investments in comparison to the generation and transmission sub-sectors.

Accelerated connectivity programs such as the Last Mile have resulted in the deterioration of Grid performance owing to overloaded feeders and associated equipment, very long distribution network, among others. In this regard, significant investments in the distribution sub-sector are necessary to improve the performance of the Grid and Quality of Service.

a) Overloaded feeders and substations

With feeder and equipment loading having a direct correlation to technical losses, initiatives geared towards deloading highly loaded equipment will aid in loss reduction. Furthermore, the deployment of such equipment on the power distribution network will result in an increase in system reliability and improved quality of power supply.

b) Long distribution lines

The accelerated connectivity programs have resulted in very long Medium voltage feeders (and spurs) in certain areas. Such feeders have had the highest number of incidences recorded.

Tables' 2-5and 2-6 below indicate samples of the 11kV and 33kV longest feeders.

No	11 kV Feeders Name
1.	Ndaragwa 11 kV ex Nyahururu 33/11kV sstn
2.	Kitui Rural ex Kitui 33/11kV ssstn
3.	Chepkanga ex Chepkoilel 33/11kV sstn
4.	Siongiroi ex Bomet 33/11kV sstn
5.	Kaptumo ex Kapsabet 33/11kV sstn
6.	Mulot ex Bomet 33/11kV sstn
7.	Loitoktok ex Loitoktok 33/11kV sstn
8.	Sanganyi ex Ikonge 33/11kV sstn
9.	Endebess ex Kitale 33/11kV sstn
10.	Shimoni ex Msabweni 33/11kV sstn
11.	Kwale ex Diani 33/11kV s/stn

Table 2-6: Longest 33 kV feeders

No	33 kV Feeders Name
1.	DCK Narok 33kV ex Suswa 132/33kV sstn
2.	Nyahururu-Maralal 33kV L2 ex Lanet 132/33kV sstn
3.	Kibwezi-Makindu 33kV line ex Kiboko 132/33kV sstn
4.	Kitui ex Mwingi
5.	Moi Barracks –Kitale 33kV line
6.	Kabimoi 33kV line ex Eldama Ravine
7.	Lessos-Eldoret 33kV ex Lessos 132/33kV sstn
8.	Sotik ex Chemosit 132/33kV sstn
9.	Mwingi ex Mwingi
10.	Lessos-Flouspar ex Lessos 132/33kV ssstn
11.	Maua 33kV line ex Meru 132/33kV s/stn

2.5.2.1 The proposed list of substation Projects from the Distribution Master Plan

KPLC's Distribution Master Plan, an important guide on investments in network expansion and reinforcement, is prepared through a consultative approach incorporating various departments in KPLC. First done in 2012-2013 by a consultant Parsons Brinkerhoff (PB) UK, it has undergone a series of updates and revisions; with the 2022-2026 Distribution Master Plan being the most current.

It proposes a number of interventions, in addition to those proposed and committed to in the 2012-2017 Distribution Master Plan, intended at improving grid reliability and quality of electrical power supply. These sub projects that involve the upgrade/reinforcement of the existing network that are proposed for consideration/implementation under LMCP III. This involves the construction of new primary substations, upgrade of existing substations and extension of low and medium voltage lines as shown in table 2-7 below.

2.5.3 Sub Projects Exclusion List

LMCP III is classified as a Category 2 project in line with the African Development Bank Integrated Safeguards System (ISS) operational safeguard 1 on environmental and social assessment (OS1) and the Bank's Environmental and Social Assessment Procedures (ESAP).

This largely means high risk sub projects as per the ISS categorization (and in country legislation) are largely excluded under the funding.

N o	County	Project Type	Name/Location	Asset Type	Proposed	Description
1	Kwale	New	Mtongwe 33/11, 2x7.5 MVA	Substation	33/11, 2x7.5 MVA	Improve supply reliability
2	Bomet	New	Mogogosiek (Bomet) – Olenguruone/ Kiptagich 33kV link	Overhead Line	33kV, 75mm2 ACSR OHL	Improve supply reliability
3	Tharaka Nithi	New	Kathwana/Kanjuki 33kV switching	Switching Station	33kV switching	Improve reliability & shorten Marima 33kV feeder
4	Kilifi	Upgrade	Casuarina Ex Malindi	Overhead Line	11kV 150mm2 ACSR	proposed uprating from 75-150ACSR
5	Makueni	Upgrade	Mtito Andei	Substation	1x2.5+1x7.5MV A	Improve reliability & operation flexibility
6	Meru	Refurbish	Marania/Kiiru	Substation	33/11kV, 1x7.5	To deload Embori & Meru 33/11kV ss
7	Meru	New	Maua	Switching Station	33kV switching	Improve reliability & shorten Maua 33kV feeder
8	Meru	New	Mikinduri – Maua link	Overhead Line	33kV, 75mm2 ACSR	Alternative supply to Maua 33kV switching & reliability
9	Kitui	New	Mutomo/Ikutha 33/33kV	Switching Station	33kV switching	Improve reliability & shorten Kiboko/ Kibwezi 33kV feeder
10	Bungoma	New	Kimilili 7.5mva 33/11kv substation	Substation	33/11, 1x7.5 MVA	Improve supply reliability
11	Baringo	Upgrade	Kabarnet 33/11kV, 1x1.5+x2.5MVA	Substation	33/11kV, 2x2.5MVA	Additional Substation Capacity
12	Uasin Gichu	New	Turbo	Station	33kV switching	Relieve & improve reliability on the long Moi Barracks Ex. Eldoret 33kV fdr
13	Elgeyo Marakwet	New	Nyaru	Station	33kV switching	Relieve & improve reliability on the long Flouspar Ex. Lessos feeder.
14	Uasin Gishu	New	Turbo Ex. Webuye 132/33kV, 33kV feeder	Overhead Line	33kV, 150mm2 ACSR	Dedicated supply to Turbo 33kV switching station
15	Kisumu	New	Kisian – Kombewa 33kV link	Overhead Line	33kV, 150mm2 ACSR	33kV supply to Kombewa switching ss
16	Migori	New	Kehancha 33/11kV, 1x7.5	Station	33kV switching	Improve reliability & shorten long Migori Ex. Awendo 33kV feeder
17	Kajiado	New	Namanga	Primary ss	33/11kV, 1x7.5MVA TX	Improve reliability & operation flexibility
18	Bomet	New	Bomet – Ololunga 33kv link	Overhead Line	33kV, 150mm2 ACSR	Improve supply reliability
19	Kericho	Refurbish	Sosiot/Kericho Ex. Muhoroni 33kV line	Overhead Line	33kV, 75mm2 ACSR	Improve supply reliability
20	Elgeyo Marakwet	New	Nyaru Ex. Kabarnet 132/33kV, 33kV feeder	Overhead Line	33kV, 150mm2 ACSR	Dedicated supply to Nyaru 33kV switching station

Table 2-7: List of proposed potential areas to be considered for implementation under the LMCP Phase III

N o	County	Project Type	Name/Location	Asset Type	Proposed	Description
21	Homabay	New	Adiedo/Kendu Bay	Station	33kV switching	Improve reliability on long Katito Ex. Muhoroni & Sondu Ex. Chemosit fdrs

At this point it is key to note that the actual sub projects is yet to be decided upon. The above list includes general geographical areas where customers have e.g. noted poor service and thus form part of the potential areas for sub projects. KPLC is yet to make a decision on the geographic location of specific sub projects and their design.

2.6 Summary of the estimated Project Costs.

Project/Program	Counties	MV [Estimated km]	LV [Estimated km]	New Consumers Targeted	Proposed estimated number of Substations	Capital Costs (Kes.) (based on previous experiences)	Cost per Consumers
Component A: Distribution Maximization	45	650	6,571	150,000	0	10,920,615,199.2	Kes. 72,804.10
Component B: System Reinforcement and Upgrade		211			21	3,135,147,500	
2.7 Project Activities

Under this project, some of the activities to be undertaken will include:

2.7.1 Design Stage

The design stage will involve detailed surveys to locate the routes of the distribution powerlines lines. Gender assessment, to pinpoint possible gender risks and suggest mitigation measures. Vegetation along the corridor will be cleared and any other tall trees within the falling distance of the line will also be cut. Pole locations will be staked, and the line profile drawings prepared.

2.7.2 Materials and Specifications

Distribution lines will be constructed using 12m high wooden poles, which are mostly CCN treated, with average spacing of 100m. The foundation for the wooden poles will consist of 0.35 m diameter and 2.0m depth. In wetland areas, the pole foundations will be compacted using gravel material ferried as a backfill. Steel wire (7/4.00) stay sets will be installed at angels, T-off and terminal structures and anchored by a stay block buried 2.0m depth. The stay blocks will consist of 0.3m x 0.3m x 0.3m concrete block. H-type section poles erected 2m from each other will be installed every 1.5km together with four stay sets installed along the line corridor. At heavy angles, the stay wire will be installed at 45° angles from the pole. For the Low Voltage (LV) at selected centres, the pole height will be 9m with average span of 50m. The foundation for the LV pole consists of 0.2m diameter and 1.6 m depth. Steel wire (7/2.64) stay sets will be installed at angles, T-off and terminal structures and anchored 1.6m depth.

2.7.3 Pole hole Digging

Holes to receive wooden poles will be dug to depths between 1.5-2m. Most of the excavation works will be done manually. Pneumatic hammers will only be used where hard rock will be encountered. However, in waterlogged areas and at small river crossings, bucket excavators will be used.

2.7.4 Pole Framing, Erection and Installation of Stay wires

Wooden poles will be drilled and hardware installed and the erection of poles will be done manually. The poles will be plumbed using ropes attached to their tops and insulator support steelworks fixed. Steel wire stay sets will be installed at angles, T-off and terminal structures will be anchored by a stay block. Conductor configurations using either line post insulators or suspension insulators will be installed. The distribution system will be energized at 33 kV, and is designed as a three wire, grounded wire system, with earth return. The single-phase distribution system will use single wire earth return (SWER) design and construction, tapping one phase off the main line. The poles will be treated wood, and of the eucalyptus types.

2.7.5 Conductor

The majority of the lines will be built with 100mm²Aluminum Conductor Steel Reinforced (ACSR) conductors, with a rated current carrying capacity of 300 amps. Some smaller lines and minor taps will be with 50mm² conductor, with a rated capacity of 200 amps. Stringing will be done using conventional methods and thereafter, between support structures, the wires will be pulled and tensioned on the guyed structures using pull lifts.

2.7.6 Transformers

In addition to gas detection, oil temperature, winding temperature, pressure release and oil level relay devices, transformers shall be equipped with current differential protection and restricted earth fault on two or more windings where applicable as main protection. As back-up protection, transformers shall have non-directional over-current protection and restricted earth fault on all windings.

2.7.7 Line hardware

The framing of the structures and the specification of the actual hardware (bolts, insulators, etc.) will follow KPLC specifications. These specifications have proven to be not only adequate but the economic use of materials for rural electric systems in all cases in which they have been employed.

2.7.8 Service drops

The residential service drops will be between 15 and 25m in length with a maximum length of 30 meters and will mostly be of 16mm² copper duplex. All kWh meters will be socket-based type to help prevent meter tampering. Service drops to larger, industrial type customers will use larger conductors, such as 50mm² or 25mm², as needed, but will always be of covered multiplex type conductors.

2.7.9 Post Construction Clean up

Excess and waste material shall be removed from the right of way and disposed at designated areas.

2.7.10 Operation and Maintenance

The system will be equipped with several devices such as auto reclosers to turn off power when a fault occurs on the line like in a rainy storm, tree branches falling on the line or whenever a certain pole collapses. The auto reclosers therefore, protect the line from damage and make it safer to the users. The transformers are also equipped with surge arresters and fused isolators to protect them from voltage surges that can occur during lightning of switching in the system. Maintenance of the line will be done routinely every year or as deemed necessary by the system operator. The activities will include line clearance along the Right of Way; repair damaged structures, conductors and cracked or broken insulators. The maintenance will also include selective tree trimming depending on their growth rate and weeding around poles for a radius of 1 meter to protect them from bush fires. Emergency maintenance will also be carried out including technical breakdown done whenever there is a fault on the line or after severe wind/lighting storm. This will be done to replace damaged poles and to determine if conductors, insulators or poles have been damaged.

2.7.11 Decommissioning

It is anticipated that the distribution line facilities will be continuously maintained and repaired and will be operated for a number of years. Because of their long useable life, the circumstances under which, they might be decommissioned are not likely to be foreseen at this stage as such, a general decommissioning approach is considered in this ESMP. The process of decommissioning will involve the deconstruction of distribution lines in a reverse order from their construction, using similar equipment and techniques.

It is further proposed that, the contractor undertakes to decommission the site by:

- a. Relocating all un-used equipment to their central stores outside the site preferably to other sites where the contractor could be doing similar projects;
- b. Any equipment that has gone into waste should be treated as waste and disposed of in appropriate through best acceptable international practices;
- c. Demolishing any additional structures that could have been constructed/installed by the contractor. The site should be levelled and any additional structures may be left onsite after securing a written request to do so from the landlord;
- d. Dispose of all the generated waste in accordance with the waste management plan and waste management regulations;
- e. Clean up the site; and
- f. Handover the site to the Landlord and demobilize/withdraw all personnel that had been posted to the yard including the security personnel. Handover acknowledgement should be written/ documented.

2.8 Project implementation, supervision and management

KPLC will be the Implementing Agency of the project. KPLC has the necessary technical and managerial ability to implement projects as demonstrated by the on-going projects financed by development partners. The involvement of the Supervision and Management consultant to be recruited through competitive bidding process will reinforce the capability of the Project Implement Team. The project is planned to be implemented in 18 months from contract commencement.

KPLC will maintain comprehensive and robust consultation, monitoring and evaluation systems. The PIU will ensure that the members in the Implementation Units are fully integrated into the management information processes of the project. The Monitoring and Evaluation System will track the performance indicators, scheduling and implementation data, and expenditure, as shall be agreed within the framework of the annual work plan and budget.

3 BASELINE INFORMATION

This section describes the overall baseline condition of Kenya in terms of bio-physical environment, as well as the socioeconomic and cultural. The proposed project will be rolled out in the entire country within the 45 out of the 47 counties hence the baseline information presented below will for the entire country.

Kenya is located on the East Coast of Africa bordering the Indian Ocean to the east, Sudan and Ethiopia to the north, Somalia to the northeast; Uganda to the west, and Tanzania to the south. It covers an area of 582,646 sq km and ranks number 47 in the world in terms of size, with a population of more than 47.6 million in the 2019 census.

Kenya has diverse physical features, which are divided into Low Lying Arid and Semi-arid Lands, Coastal Belt, Plateau, Highlands and the Lake Basin around Lake Victoria. Nairobi, the capital city of Kenya is also the seat of government as well as the financial and service hub of East Africa. Nairobi's Jomo Kenyatta International Airport (JKIA) is the largest and busiest airport in East and Central Africa. Other cities are Mombasa, Kisumu and Nakuru. Eldoret and Thika are other major industrial towns.

The Republic of Kenya, located in East Africa, covers a total land area of 582,646 kilometers square (km2), which includes varied formations of plains, escarpments, and hills, as well as low and high mountains. Starting east along the coast, low plateaus run inland (west) to an elevated plateau and mountain ranges, marked by the Kenyan highlands in the southwest corner of the country. Kenya shares borders with Ethiopia to the north, South Sudan and Uganda to the northwest and west, and Tanzania to the south. The country's southeast coastline borders the Indian Ocean. Approximately 85% of Kenya's land area is classified as a fragile arid and semi-arid ecosystem, which is largely pastoral (NEMA 2015). The country's highlands are home to the majority of the population and also host significant farm lands. Kenya's nature-based tourism industry is also a major land user, with wildlife protected areas covering 8.2% of the; and area. Protected land areas are also included as conservancies (KWS 2021). Highlands are relatively cool and agriculturally rich, and are largely dominated by commercial and small-holder farms. Principal cash crops include tea, coffee, flowers, vegetables, pyrethrum. Wheat and maize, as well as livestock production is also practiced across the highlands, which lie at 1,500 to 3,000 meters (m) above sea level. The Great Rift Valley bisects the highlands into an east and west region forming a steep sided trench of 48 to 64 km wide and 600 to 900 m deep (NEMA 2015).

Kenya, while considered a lower middle-income country, has the largest economy in East Africa. It has a population of 52.6 million people (2019) and an annual population growth rate at 2.3% (WB 2020) approximately 27% of Kenya's population currently lives in urban areas. This is projected to increase to 33% and 46% of the population by 2030 and 2050, respectively (WB2020). Gross Domestic Product (GDP) in 2018 was US\$95.5 billion and the economic annual growth rate 5.4% (WB, 2019).7 Kenya had continued to implement significant economic and structural reforms, which have helped to sustain economic growth and political gains over the past decade. Key challenges continue to be seen in the country's inequality and poverty levels, which has increased the country's economic vulnerability to shocks (WB 2019).

3.1 Location and Size

Kenya (*Figure 2* is located in the eastern part of the African continent approximately between latitudes 4°21' N and 4° 28' S and between longitudes 34° and 42° E. Kenya is bordered by Uganda to the west, Ethiopia and South Sudan to the north, Tanzania to the south and Somalia and the Indian Ocean to the east. Kenya covers an area of approx. 587,000 km2, of which 11,000 km² consists of water bodies.

Kenya's landscape is grouped into geographical zones including; the Savannah Lands covering most of the arid and semiarid areas, the Coastal Margin, the Rift Valley, the Highlands and the Lake Victoria Basin.



Figure 2: Map of Kenya

Kenya sits on the Equator in East Africa. It is bordered by the Indian Ocean to the east, Somalia and Ethiopia to the north, South Sudan to the Northwest, Tanzania to the South, and in the West, by Uganda. Kenya is Africa's tenth most populated country and ranks 22nd in terms of its size (Source: Survey of Kenya 2003)

Kenya lies along the equator in East Africa. Most of the country consists of high plateau areas and mountain ranges that rise up to 3,000 m and more. The plateau area is dissected by the Eastern Rift Valley, which is 40-50 km wide and up to 1,000 m lower than the flanking plateau.

The narrow coastal strip along the Indian Ocean is backed by a zone of thorn bush-land. Some areas in central Kenya, at the flanks of the Rift Valley, and in western Kenya, close to Lake Victoria, are very densely populated.

The land stretches from the sea level (Indian Ocean) in the east through a diversity of landforms. From the coast, the altitude changes gradually through the coastal belt and plains (below 152metres above sea level), the dry intermediate low belt to

what is known as the Kenya Highlands (over 900 metres above sea level). The country is split by the Great Rift Valley into the Western part, which slopes into Lake Victoria from the Mau ranges and Mount Elgon (4,300m) and the Eastern part dominated by Mt. Kenya and the Aberdare Ranges which rise to 5,200m and 4,000m respectively.

3.2 Physical Environment

3.2.1 Climate

Kenya's diverse topography results in a wide range of climates. While the coast is typically hot and humid, inland areas are more temperate. The country's northern and north eastern areas are generally very hot and arid, the central highlands are cooler and are formed of a mix of tropical highlands, which become increasingly arid towards the country's interior. Kenya's climate is strongly influenced by the Inter Tropical Convergence Zone (ITCZ), which drives rainfall in the country. The western, central and coastal regions, which occupy less than 20% of the country, houses nearly 90% of the country's population, and includes productive agricultural land which is principally rain fed. Kenya also has a diverse natural resource base, which includes forests, wetlands, dry lands, aquatic and marine resources.

Kenya's natural resource base is under increasing strain due to population pressures, coastal erosion, deforestation, poor land management as well as seasonal variability and climate change. These pressures also threaten the country's unique biodiversity, as well as local livelihoods and long-term food security for a significant segment of the Kenyan population. Given its diverse topography, temperatures across the country vary significantly, with the highlands experiencing much cooler temperatures than coastal and lowland zones (GOK 2015). Little seasonal variation in temperatures has been observed, with average temperatures ranging between 18°C at the higher elevations to 26°C along the coast. Rainfall varies considerably across the country, with less than 250 millimeters (mm) falling in the arid zones of north, to over 2,000 mm per year in the west annually. Highland areas, where the majority of agriculture takes place, receives approximately 1,000 mm of rainfall each year (NEMA 2015) The seasonal migration of the ITCZ define four distinct seasons in Kenya, dominated by two rainfall periods: January to March, which is generally considered the 'warm dry season', April to June known as the 'long wet season', July to September the 'cool dry season', and October to December as the 'short wet season'. Analysis of data from the World Bank Group's Climate Change Knowledge Portal (CCKP, 2020) (Table 3-1) shows Kenya's seasonal cycle for the latest climatology, 1991–2020. Mean annual mean temperatures for Kenya is 24.3°C, with average monthly temperatures ranging between 22°C (July) and 25.6°C (March). Mean annual rainfall is 668.6 mm. While rainfall does occur throughout the year, depending on area, the majority of rainfall is received between March and June and October to December.

Climate Variables	1901–2020
Mean Annual Temperature (°C)	24.3°C
Mean Annual Precipitation (mm)	668.6 mm
Mean Maximum Annual Temperature (°C)	30.3°C
Mean Minimum Annual Temperature (°C)	18.3°C

3.2.1.1 Temperature

While temperatures vary across Kenya, a distinct warming trend is evident, particularly since the 1960s, with inland areas registering larger increases in minimum and maximum temperatures. During this time the annual mean increase has risen by approximately 1.0°C, at an estimated average rate of 0.21°C per decade. The most significant rise in temperature was observed for the start to the primary rainy and humid, spring season (March to May), in the arid and semi-arid regions of the country (USAID 2018).

3.2.1.2 Precipitation

Precipitation trends for Kenya are highly variable, however there is significant geographical diversity in observed rainfall trends. Northern areas have become wetter, and southern areas have become drier since the 1960s, although this has had a high degree of variability. Extreme rainfall events are occurring with greater frequency and intensity. Increased aridity and droughts have also been observed, with moderate drought events recorded on average every three to four years and major droughts every ten years. Since 2000, prolonged droughts have become more common (NEMA 2015).



Figure 3: Koppen-Geiger Climate classification map for Kenya



Figure 4: Climate classification in Kenya

3.2.2 Topography and Drainage

The Republic of Kenya has an area of approximately 582,646 sq. km. comprising of 7.8% land and 2.2% water surface. Only 20% of the land area can be classified as medium to high potential agricultural land and the rest of the land is mainly arid or semiarid. Forests, woodlands and national reserves and game parks account for ten percent (10%) of the land area, i.e. 58,264 sq. km. 18.

Kenya's total land surface comprises of 13,396 km2 of water surface. This water surface comprise of a number of small lakes with fluctuating limits as well as part of Lake Victoria and most of Lake Turkana. Only 3,831 km2 of Lake Victoria is in Kenya while most of Lake Turkana lies in Kenya. Kenya's coastal line extends approximately 402 km along the Indian Ocean.

Topographically, the country may be divided into 4 distinct geographical and ecological regions or zones with different patterns of land use, namely; the coastal plain, the arid low plateau, the highlands, and the Lake Victoria basin. The rainfall patterns are extremely varied but generally follow those regions, with the Lake Victoria basin receiving the heaviest and most consistent rainfall.



Figure 5: Relief Map of Kenya

Kenya's relief can be roughly divided into six major regions: the lowlands of the coastal belt and plains; the Buruma Wajir Low land belt; the Foreland Plateau; the Highlands (East and West); the Nyanza Low Plateau (part of the Lake Victoria Basin); and the Northern Plain lands

A small percentage of the water surface area is covered by surface drainage. This drainage is determined primarily by the Rift Valley, which roughly bisects the highland zone from North to South. Within the Rift Valley, drainage is into a chain of lakes, which have no surface outlet west of the Rift Valley rivers drain into Lake Victoria. To the East, rivers follow a south easterly course into the Indian Ocean.

In some areas, topography and rainfall - runoff regime have created many semi-closed, poorly drained or overflow areas that retain a substantial amounts of runoff which originate on the unslope areas. On groundwater, the country is divided into three broad areas. These are volcanic rocks, precambrian metamorphic basement rocks and Precambrian instrusive rocks and sedimentary rocks.

The volcanic rocks cover 26% of the country, more commonly in the western half of Kenya.

Groundwater sources occur in old land surfaces, which are weathered zones between successive lava flows that signify periods of quiescence. Fractures, faults, fissures and joints are also useful.

Water is mainly of bicarbonate type with low total dissolved solids. Local pockets of high fluoride are believed to be of volcanic and fumarolic origin.

The precambrian rocks cover an area which is approximately 17% of the country and are widely distributed in the central, western and north western parts of Kenya. Water in these areas occurs in deep horizons of faults, and fractures. Aquifers are generally unconfined and yields and water levels vary within rocks. The sedimentary rocks cover 55% of the country, predominantly in the eastern parts. These areas have loose and permeable sediments. The aquifers are shallow and unconfined and most of them are generally saline. The salinity results from accumulation of solute evaporite minerals within the sediments.

3.2.3 Hydrology

Kenya's main rivers originate in the central highlands or in the southern foothills of the Ethiopian highlands. The Rift Valley is a dominant control on surface water flows. West of the Rift Valley, surface water flows towards Lake Victoria and into the Nile Basin; east of the Rift Valley, surface water flows southeast to the Indian Ocean. For the water resource management purposes, five main catchments are identified: Lake Victoria basin, Rift Valley basin, Athi river basin, Tana river basin and Ewaso Ngiro river basin (Pavelic et al. 2012). These large basins are in turn subdivided into 52 main basins and sub-basins.

Kenya's four largest inland water bodies (Lake Victoria, Lake Turkana, Lake Naivasha, and Lake Baringo) account for about 1.9 per cent of the land area. The majority of Kenya's lakes, including both saline and freshwater, and closed and open basin systems, are located within the Great EastAfrican Rift Valley. Kenya's major permanent rivers originate in the highlands. The Nzoia, Yala, sondu Miriu, and Migori rivers drain into Lake Victoria. The Ewaso Ngiro River is found in the northeastern part of the country and the Tana and Athi rivers flow in the southeastern part. The rivers draining into Lake Victoria (covering over 8 per cent of Kenya's land area) provide about 65 per cent of Kenya's internal renewable surface water supply. The Athi River drainage area (11per cent of Kenya's land area) provides 7 per cent, the lowest share among Kenya's major drainage areas.





Figure 6: Hydrological Map of Kenya



Kenya - Aquifer Type and Productivity





3.2.4 Soils and Geology

The geology of Kenya is characterized by Archean granite/greenstone terrain in western Kenya along Lake Victoria, the Neoproterozoic 'Pan-African' Mozambique Belt, which underlies the central part of the country and Mesozoic to Recent sediments underlying the eastern coastal areas.

The Eastern Rift Valley crosses Kenya from north to south and the volcanics associated with rift formation largely obliterate the generally north-south striking Neoproterozoic Mozambique Belt (Schlueter 1997). Rift Valley volcanogenic sediments and lacustrine and alluvial sediments cover large parts of the Eastern Rift.

About 59 per cent of Kenya's soils have moderate to high fertility, meaning they are theoretically suitable for growing crops. Fertility levels, however, depend on the amount of rainfall. Given the distribution and variability of rainfall in Kenya, only about 17 per cent of the land area has medium to high potential for crops, while the remaining 83 per cent is classified as arid and semiarid and so of low crop growing. Drylands, however, provide essential habitat for about half the country's livestock and 70 per cent of Kenya's wildlife.



Figure 8: Soil Map of Kenya



Figure 9: Geological Map of Kenya

3.2.5 Land Use

Land use refers to the activities to which land is subjected to and is often determined by; economic returns, socio-cultural practices, ecological zones and public policies. In the context of this policy, land use is defined as the economic and cultural activities practiced on the land. Land cover on the other hand, denotes the physical state of the land and describes the quantity and type of vegetation. Land use and land cover are interconnected by human actions that directly alter the physical environment such as bio-mass burning, irrigation, deforestation and the application of fertilizer.

Approximately seventy five per cent (75%) of the country's population lives within the medium to high potential (20% of land area) and the rest in the vast Arid and Semi-Arid Lands (ASALs). One consequence of this is that size and distribution of land varies quite widely as does population density which ranges from as low as 2 persons per sq. km. in the ASALs to a high of over 2000 in high potential areas.

Key land uses in Kenya include; agriculture, industrial, commercial, infrastructure, human settlements, recreational areas, rangelands, fishing, mining, wildlife, forests, national reserves and cultural sites among others spread across the high, medium and low rainfall areas.

As of 2019, some 48.6 percent of land in Kenya was used for agricultural activities, mostly for permanent pasture. Other six percent of Kenyan land was covered by forests. Total agricultural land operated by households stood at 10.3 million hectares, equivalent to 17.5 per cent of the total land area in the country from Kenya National Bureau of Statistics (KNBS 2019).

3.2.6 Biological Environment-Ecosystems

Kenya's land is covered by different types of vegetation according to the climate, topography, and other physical factors. The major categories are grassland, forests, semi-deserts, and mountains. Human impacts on the land continue to alter the distribution, amount, and health of these ecosystems.



Figure 10: Major ecosystems in Kenya

3.2.6.1 Grasslands

Grasslands dominate Kenya's land cover and include what is known as 'savanna' vegetation. Permanent meadows and pastures occupy about 21.3 million ha. in Kenya, which represent 2.4per cent of Africa's total meadows and pastures (FAO 2008).



Figure 11: Typical grassland in Kenya

3.2.6.2 Forests

Forests cover in Kenya Surpasses 10% Tree Cover. Kenya's tree cover now stands at 12.13 percent while forest cover is at 8.83 percent up from 5.9 percent of 2018, the National Forest Resources Assessment (NFRA) Report 2021 states. Within these percentages are 7,180,000.66 hectares, where up-to 37 counties out of the 47 (79 percent) have a tree cover percentage greater than 10 percent. Additionally, the statistics indicate that the country has a tree cover per capita index of 1,507.48 m² per person. Under national forest cover are 5,226,191.79 hectares that represent 8.83 percent of the total area. Forest cover is unevenly distributed across the country with the central region, parts of western and the coast region being the most forested parts of the country.

This means that Kenya has attained and exceeded the constitutional threshold of having 10 percent tree cover as obligated in Article 69, Section 1 (a). The achievement has also responded to President Uhuru Kenyatta's directive in early 2019, to meet 10 percent tree cover by 2022. According to the report, counties in the top ten tier of tree coverage were Nyeri (45 percent), Lamu (44 percent) Kirinyaga (30.3 percent), Elgeyo Marakwet (29.9 percent, and Meru (29.6 percent). Others were Embu, Murang'a, Kilifi and Nyandarua with 29 percent, 27.8 percent, 27.75 percent and 27.5 percent, respectively. In the list with least tree cover were Marsabit (2 percent), Mandera (3.6 percent), Wajir (4.4 percent) Siaya (5.2 percent) and Machakos with 6 percent. They were followed by Isiolo, Taita Taveta, Uasin Gishu, Busia and Kisumu (with 6.7 percent, 6.8 percent, 8 percent, 8.39 percent and 8.8 percent) respectively. Within the total national tree coverage, were 88,123,836 tree seedlings which were planted between 2017 and 2021 by the Kenya Forest Service (KFS), to meet its natural forest restoration and rehabilitation and restocking of commercial forest plantation needs.

Top ten forest cover players interestingly, posted some variance where Nyeri had (40.8 percent), Lamu (32 percent) Kilifi (26.25 percent) Nyandarua (26.2 percent), Bomet (24 percent) Kirinyaga (23.6 percent), Samburu (23 percent), Kericho (20.6 percent) Elgeyo Marakwet (20.5 percent), and Mombasa 19.59 percent.

Those with the least forest cover were: Siaya (0.2 percent) Migori (0.3 percent), Busia (0.56 percent), Wajir (0.98 percent) Marsabit (1.11 percent), Mandera (1.46 percent), Kisumu (1.55 percent), Machakos (2.59 percent), Homa Bay (3 percent) and Taita Taveta (3.4 percent).

From the aforesaid, it is indicative that the proportions of total land area under forests and tree cover vary significantly by ecological regions and counties. Of significance is that 21 counties have forest cover above the national forest cover (8.83 percent), while 26 counties' forest cover fell below the target.

The main forest types are moist highland forest, dry forest, tropical rain forest, coastal forest, and riverine and mangrove forests. Although they are not extensive land cover, Kenya's forests provide significant goods and services, including numerous non-timber forest products that provide local people with food, fibres, medicines, and shelter. The closed canopy forests are habitat for a disproportionately large percentage of the country's wildlife and other biodiversity. It is estimated that they harbor 40 per cent of large mammals, 30 per cent of birds and 35 per cent of the nation's butterflies. About half of Kenya's threatened mammals and birds are found in its forests.

3.2.6.3 Arid and semi-arid lands (ASALS)

Over 80 per cent of Kenya is arid or semi-arid lands (ASAL). These lands are home to over 10million people. The ASAL has over 70 per cent of the livestock population and 90 per cent of the wild game, which attract tourism to the area. The ASAL also contains much of Kenya's commercial mineral wealth (WRI et al. 2007 and MSDNKAL 2008).

Kenya is highly susceptible to climate-related shocks and has been listed as one of the most disaster-prone countries in the world, with droughts posing a significant threat (IISD, 2012). The Kenya Arid and Semi-Arid Lands (ASALs) are the most affected by climatic and non-climatic shocks. The frequency and intensity of droughts have increased in recent years. Average temperatures have increased by 1°C since 1960 and there have been observed changes in rainfall patterns, which have become increasingly unreliable during the long rains (March–April) and heavier during the short rains (October–December). It is anticipated that climatic changes will continue to affect Kenya, with temperatures expected to rise alongside a mean decrease in annual rainfall. The ASALs have unlimited economic development potential. They consist of 39 percent of the Kenyan population; constitutes about 89 percent of the country's land mass; are home to 90 percent of wildlife and 75 percent livestock; have the highest potential for blue-economy within Lake Turkana and the coastline of Indian Ocean; and approximately covers 95 percent of cross-country borders.

3.2.6.4 Mountain Vegetation

Kenya's five major mountainous regions (Mount Kenya, Mount Elgon, Aberdare Range, Mau Escarpment, and Cherangani Hills) are surrounded by foothills and high-elevation plateaus. Mountainous regions harbour unique types of vegetation due to the micro-climates that occur on their slopes. Different altitudes, aspects, and moisture availability create a large variety of ecosystems over relatively small areas.

3.2.6.5 Wetlands

Kenya's wetlands occur in both fresh and salt waters. They include coral reefs, marine inshore waters, mangroves, deltas, creeks, lake shores, rivers, marshes, ponds, impoundments, and mountain bogs. They are a source of water, provide numerous ecosystem services, and have a high diversity of characteristic biota or living organisms (Ramsar Convention 2001).

Kenya's wetlands cover about 14 000 km2 (2-3 per cent of the country's surface area) and are found along the major rivers. In addition, many seasonal and temporary wetlands occur all over the country, including rock pools and springs in the southern part of Nairobi, west of Ngong Hills, and at Limuru. Wetlands have also been created by damming water for hydroelectricity and water supplies, and some wetlands have been built to treat wastewater (Macharia 2004).

Wetlands are a source of social-cultural and economic potential providing people with food, medicinal products, firewood, and materials for building and handicrafts. Rapid population growth, agricultural operations, and encroachment of development pose a serious threat to wetlands. Expanding industries and urban centers discharge their waste water into them and the

polluted waters are unhealthy for human and livestock use, destroy aquatic life, and restrict recreation opportunities (Ramsar Convention 2001).

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Figure 12: Kenya's Largest Wetlands

They include the shallow lakes Nakuru, Naivasha, Magadi, Kanyaboli, Jipe, Chala, Elmentaita, Baringo, Ol'Bolossat, Amboseli and Kamnarok; the edges of Lake Victoria and Lorian, Saiwa, Yala, Shompole swamps; Lotigipi swamp (Lotagipi) and Kano plains; Kisii valley bottoms and Tana Delta; and coastal wetlands (Source: WWF 2005)

3.2.6.6 Marine and Coastal Areas

Kenya's marine and coastal environments include the Indian Ocean's territorial waters and the immediate areas that border the ocean. The Kenyan coast stretches 550 kilometers from the Somalian border in the north in a south-westerly direction to the border with Tanzania. The fringing coral reef (comprised of about 140 species of hard and soft corals) runs between 0.5.kmand 2km off-shore with occasional gaps at the mouths of rivers and isolated areas facing creeks.

Beaches, cliffs, or mangrove forests dominate the shoreline in most areas. The coral-reef system, mangrove swamps, and hinterland provide unique natural landscapes and a wide range of biodiversity resources of special conservation concern.

3.2.6.7 Wildlife

Wildlife is a major tourist attraction and contributes greatly to Kenya's economy both directly and indirectly with wildlife-based tourism as the third largest foreign exchange earner. Studies have established that over 70% of gross tourism earnings in Kenya and 5% of GDP can be directly attributed to the spectacular wildlife heritage. Wildlife resources also serve as important components of ecosystems providing services that benefit humanity in the form of pollination, seed dissemination, disease control, pest control, food, water purification and waste decomposition. They also have cultural benefits that include recreation and scientific exploration. Wildlife resources contribute indirectly to a variety of economic value chains that include education, medicine, aviation, manufacture and hospitality. These resources are key to the country's economic growth, job creation and poverty alleviation as they provide multiplier effects on local and national economies (KWS Strategic PLAN 2019-2024)

Wildlife is also protected by bans on game hunting, killing animals even when they attack, and the trade in ivory and skins. Nevertheless, poaching is a significant threat to many species including leopards, cheetahs, lions, elephants, and rhinoceroses. Efforts are being made to restore populations of the endangered African elephant and black rhino, and an aggressive campaign is being been waged against poachers. Moreover, increased pressure on marine resources has led the Kenyan government to establish a system of protected areas managed by the Kenya Wildlife Service (KWS) to conserve and manage the most important ecosystems along the coast. In total, Kenya has five Marine Protected Areas (MPA's).



Figure 13: Protected Areas in Kenya

Examples of endangered species include the Sokokescops owl (Otusireneae); Taita blue-banded papilio (Papiliodesmonditeita); the highly endangered Tana River mangabey (Cercocebusgaleritus) and the Tana River red colobus (Piliocolobusrufomitratus); the green sea turtle (Cheloniamydas) and the critically endangered hawksbill turtle (Eretmochelysimbricata).

In addition to threats to species biodiversity, a number of types of ecosystems are disappearing or are in dangerous decline due to human activities. These include the slopes of Mount Kenya and coastal forests as well as the Horn of Africa Acacia Savannas, a major centre of endemism for dry land plants.



Figure 14: Physical Regions of Kenya

3.2.7 Climate Risk Profile

Kenya is highly exposed to many natural hazards, the most common being floods and droughts. It is estimated that over 70% of natural disasters in Kenya are attributable to extreme climatic events. Typically, major droughts occur approximately every ten years, and moderate droughts or floods every three to four years. Repeating patterns of floods and droughts in the country have had large socio-economic impacts and high economic costs. For example, the 1998 to 2000 drought cost an estimated \$2.8 billion, principally due to crops and livestock loss, as well as forest fires, damage to fisheries, reduced hydropower generation, reduced industrial production and reduced water supplies (NEMA 2015) Droughts have affected more people and had the greatest economic impact (8% of GDP every five years). As many as 28 droughts have been recorded in the past 100 years, and these appear to be increasing in frequency. Droughts are often nation-wide, but normally have the most severe impacts in the country's highly arid zones (GOK 2013). Drought also remains a significant concern to Kenya's agricultural sector (GOK 2013). Arid and semi-arid areas comprise 18 or the 20 poorest counties and are particularly at risk from increased aridity and periods of drought (WB 2018). While droughts affect the most people, floods have caused the greatest losses in terms of human lives. The districts of Baringo, West Pokot, Kisumu and Laikipia are some of the country's most disasterprone areas and have required significant disaster risk investment (Development Initiatives Kenya, 2019). Vulnerability from these hazards poses major challenges for economic stability and fiscal sustainability and have had adverse social and fiscal consequences. Indeed, lower-income populations reside in more hazard prone locations, with high potential for significantly increased exposure of already vulnerable populations) Ministry of Foreign affairs 2018).

Data from the Emergency Event Database: EM-Dat database, presented in Table 3-2, shows the country has endured various natural hazards, including floods, landslides, wildfires, and storms.

Natural Hazard 1900–2020	Subtype Events	Count Total 6	Deaths Total	Affected Total Damage	Total Damage ('000 USD)
Drought	Drought	16	196	52,911,500	1,500
Earthquake	Ground Movement	1	0	0	0
	Tsunami	1	1	0	100,000
Epidemic	Bacterial Disease	20	1,576	59901	0
	Parasitic disease	5	1,595	6,807,533	0
Flood	Flush flood	7	514	3,850	0
	Riverine flood	37	1150	2,232,222	136,038
Land slide	Landslide	4	133	140	0
	Mudslide	1	20	6	0
Storm	Convective storm	1	50	0	0

Table 3-2: Natural Disasters in Kenya, 1900–2020

Climate change is expected to increase the risk and intensity of flood events, as well as increase average annual rainfall amounts, while also furthering drought likelihoods for some areas across Kenya. Intense rainfall and flooding may increase the likelihood of mudslides and landslides, particularly in mountainous areas. As the incidence of extreme rainfall rises, additional soil erosion and water logging of crops is likely to reduce yields and increase food insecurity. Rising temperatures are also likely to increase the periods of aridity in the northwest regions. Furthermore, as temperatures rise and droughts are prolonged, water storage capacities will likely be reduced. This may result in significant economic losses, damage to

agricultural lands and infrastructure as well as human casualties. Additionally, land degradation and soil erosion, exacerbated by recurrent floods, will negatively impact agricultural productivity, disproportionately affecting the livelihoods of the rural poor.

Recurring disasters, particularly droughts and floods, have significantly impacted livelihoods and the country's economic development agenda. Flood and drought events are becoming more frequent, with drought cycles occurring every 2–3 years instead of every 5–10 years. A severe and prolonged drought from 2008–2011 affected 3.7 million people, caused \$12.1 billion in damages and losses, and cost over \$1.7 billion in recovery and reconstruction needs. Additionally, deforestation, watershed degradation, land use changes, urbanization and poor management of settlements have exacerbated the likelihood of and impact from floods and droughts. These conditions contribute to water scarcity and pollution, which limit water for drinking, agriculture, and other uses. Heavy rainfall can also trigger riverine, coastal and flash floods. Flash floods are common in the country's high plateau areas and can also trigger mudflows. Increasing urbanization, particularly into flood plains and/or low-lying areas also has increased flood risk, as water drainage systems fail. Water stress may be further exacerbated as household consumption and agriculture continue to compete for limited supply. Increased heat will further strain water resources and impacts from changing rainfall patterns.

Impact of Climate change on energy sector

In the last 10 years, Kenya has developed adequate generation capacity that includes considerable renewable energy sources mainly geothermal, wind and solar. KPLC has significantly reduced the uptake of thermal (fossil fuels) power in favour of renewable sources of electricity such as Solar, wind, hydro and geothermal. The quest for clean energy has seen us reduce thermal uptake to a low of 7.69 percent, while we have increased uptake of geothermal to 46.69%, wind to 11.2% and Solar at 0.8% while hydroelectricity stood at 32.22% at end of June 2022. As a result of reduced thermal dispatch, clean energy in the previous financial year (2021/22) accounted for 84.31% of our total energy mix. Kenya's successful development of geothermal resource for power generation stands at 820 MW has not only placed the country in the 8th position globally with geothermal development but has also transformed the country's generation mix that was dominated by hydro and thermal sources. Being baseload, geothermal and hydro account for (46.7%) and 32% of generated energy while the other renewable energy source-wind and solar contributed to 11% and 0.8% respectively. Thermal contributes to less than 8% of generated energy. Going forward, continued development of geothermal resources, wind and solar sources provide a unique opportunity for Kenya to meet its electricity needs fully from renewable energy sources.

Extreme weather events such as heavy rains can damage infrastructure, roads, communication networks and disrupt supply lines. An increase in the frequency of heat waves in urban centers like Nairobi or Mombasa could translate into higher demand for air conditioning and cooling systems, putting power plants under severe stress and reducing their efficiency. In coastal areas, sea level rise and storm surge threaten water and electricity infrastructure with inundation and salinity damage.75 Given increasing temperatures and the increased energy demand that will coincide, change in cooling degree days provides insight into the potential for extended seasons of power demand or periods in which cooling demand (power demands) might increase.

Adaptation Options

Electricity generation in Kenya is liberalized with several licensed electric power producers, although KenGen accounts for approximately 70% of all installed capacity. Kenya's National Energy Policy (2014), formulated within the framework of Vision 2030, encourages diversification of electricity sources. Kenya has developed a Least Cost Power Development Plan (LCPDP) that is periodically updated. However, the demand for growth assumed under the recent LCPDPs has proven to be overly ambitious – based on new development projects (mining and processing of iron and steel, irrigation by electricity, electrification of trains, and the development of new economic zones), which have not materialized as expected. However, generation capacity has continued to be contracted, exposing the sector to a high risk of large generation capacity surplus that is not sustainable. The Ministry of Energy is currently reviewing the LCPDP and the generation capacity pipeline to harmonize generation expansion with realistic demand growth. The review presents an opportunity for Kenya to assess and drop the planned development of 1,920 MW coal plant given the successes already being made with development of renewable energy sources (geothermal, wind, and solar) and advancement of these technologies including in battery storage MoEP 2015.

Kenya has also developed a National Energy Efficiency and Conservation Strategy (KNEECS) and Bioenergy Strategy, both launched in 2020 as part of its roadmap towards climate change adaptation. Previously the government launched the Kenya National Electrification Strategy (KNES) in 2018, as a roadmap for electrification through on-grid and off-grid options (MOE 2020).

These strategies collectively target: (i) adoption of energy efficiency technologies that require less energy for the same functionality; (ii) energy conservation by encouraging change in the behavior of electricity consumers behaviors; (iii) adaptive policy, planning and investments for sustainable bioenergy use; and (iv) deployment of solar PV systems in off-grid electrification towards universal electricity access through renewable-energy based distributed systems, which may include productive uses (reducing and/or avoiding diesel-based power supply options).

3.2.8 Disasters and Seismic activity

Seismic risk, as a concept, is understood to be the product of seismic hazard (the probability of harmful seismic phenomena) and seismic vulnerability (the degree of loss from seismic phenomena). In terms of overall seismic risk, the presence of part of the East African Rift (which runs through the west of Kenya) and the Davie fracture (just south of the Mombasa), means that Kenya is vulnerable to seismic activity and related natural disasters: earthquakes, volcanic eruption and tsunamis. Kenya faces a relatively low earthquake hazard in comparison to neighbouring countries, with hazard levels highest in the northwest and south-west regions. The cities with the greatest degree of hazard are Nakuru, Eldoret, Kisumu and Kakamega which have a medium degree of seismic hazard (see WHO 2010 for the hazard scale). Nairobi faces a low degree of hazard and Mombasa very low. Mombasa and the rest of the Kenyan coast have a modest degree of tsunami hazard. Kenya has only experienced one recorded tsunami which arose from the Indian Ocean Earthquake of 2004, the impact of which was relatively minor. According to assessments, the coast is vulnerable to 2 metre high waves and water reaching 500 metres inland. It has not been possible to estimate volcanic hazard in this helpdesk report. In terms of overall vulnerability, an earthquake in Kenva is likely to result in more economic loss than in neighbouring Somalia, but at similar levels to other neighbouring countries. It has not been possible to obtain sub-national data or finite estimates of loss resulting from seismic activity. Most key vulnerability analyses do not cite seismic activity and subsequent natural hazards as a significant concern in Kenya. These vulnerability analyses do not estimate the vulnerability of different populations to seismic-related hazards but do identify populations vulnerable to hazardous factors and humanitarian risk in general. It may be that these vulnerable groups primarily refugees, internally displaced persons (IDPs), and those working in agriculture - are more vulnerable to seismic hazards. Those vulnerable to conflict; flooding; and water, sanitation and hygiene-related diseases may also be more vulnerable to seismic risks.

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vulnerable to seismic hazards. Those vulnerable to conflict; flooding; and water, sanitation and hygiene-related diseases may also be more vulnerable to seismic risks.



Figure 15: Seismic Distribution in Kenya



Modified Mercalli Intensity Scale

I	Instrumental: detected only by instruments	VII	Very strong: noticed by people in autos Damage to poor construction
11	Very feeble: noticed only by people at rest	VIII	Destructive: chimneys fall, much damage in substantial buildings, heavy furniture overturned
ш	Slight: felt by people at rest Like passing of a truck	IX	Ruinous: great damage to substantial structures Ground cracked, pipes broken
IV	Moderate: generally perceptible by people in motion Loose objects disturbed	x	Disastrous: many buildings destroyed
v	Rather strong: dishes broken, bells rung, pendulum clocks stopped People awakened	хі	Very disastrous: few structures left standing
VI	Strong: felt by all, some people frightened Damage slight, some plaster cracked	XII	Catastrophic: total destruction

3.3 Land Tenure Systems

Land in Kenya is public, communal or privately owned. The country has inherited highly unequal patterns of land distribution. The peculiar patterns of land tenure, ownership and property rights that currently prevail in Kenya have to a large extent determined the use and management of land.

Observed trends in agricultural land ownership indicate that family and the community continue to be the dominant form of agricultural land tenure, but with a significant increase in the number of parcels under individual ownership.

The communal ownership presents a number of advantages, allowing a number of heirs to have access to land providing security to all co-owners while retaining flexibility in land use, and providing a buffer as well as a number of non-monetary welfare benefits that would otherwise not be available to the weakest and poorest among the heirs.

However, it creates constraints and problems, particularly in cases of disputes, or when land is needed as collateral for access to credit. In this sense, it is an obstacle to social mobility and economic empowerment in rural areas. Communal ownership may also be an obstacle to land conservation, investment in land as a productive asset and to the use of good agricultural practices.

Whereas it is much easier to control development, conserve and protect the environment and ensure posterity of public land, it continues to experience notable challenges in Kenya. Cases of land grabbing, encroachment, inaccessibility of land to citizens and willing investors negatively influence this form of land ownership.

The incidence of land speculation, among private ownership of land impacts negatively on production while contributing to increase in land prices above what their production capacity justifies. Also, the continued fragmentation of small parcels at the expense of agricultural production and the need to diversify production is another factor. Over the past ten years, there has been notable increase in freehold ownership of dwellings and of the land on which these dwellings are placed. There however remains a significant gap between private ownership of house and private ownership of land, with significant number of houses located on land that is not owned by the owner of the house. The demand for housing exacerbates this situation, and has encouraged some people to build houses on lands that are unsafe and prone to disasters, especially floods and landslides. In addition, occupation of public wayleaves for e.g. businesses is also rampant.

There have been a number of initiatives aimed at promoting land reform and making land accessible to the poor in Kenya over the past four decades, but these experiences have not been entirely successful. In many instances, people have not respected the terms of their lease-purchase agreements, and only a small number of intended beneficiaries have actually become owners.

3.4 Socio-Economic Background

3.4.1 Population and Demography

According to the population census of 2019, the total enumerated population was **47,564,296** of which 23,548,056 were Males, 24,014,716 were Females and 1,524 were Intersex. Females accounted for 50.5% of the total population. The population has grown to 47.6 Million in 2019 from 37.7 Million in 2009. Average household size has declined to 3.9 in 2019 from 4.2 in 2009. Persons in the ages 34 years and below were 35,461067 (KNBS, 2019)

Article 260 of the constitution defines older persons as those aged 60 years and above. The older population in the KPHC 2019 was 2,740,040 persons. There were 209,394 orphans (children below 18) who have lost both parents.

Distribution of older population varied from 2% in Nairobi county to 11 % in Muranga county other counties with high proportion of older population include Nyeri (11%), Vihiga (10%), Tharaka Nithi (10%) and Makueni (9%). Counties with lowest proportion of older population were Mandera (2%), Wajir (3%), Garissa (3%) and Mombasa (3%) (KNBS, 2019).

3.4.2 Disability

The population census, KPHC 2019, describes disability through six domains (visual, hearing, mobility, cognition, selfcare and communication) of the population aged five years and above while that of albinism was administered to everyone. The data show that 918,270 people aged 5 years and above had a disability. More females (523,883) than males (394,330) had disabilities. The common types of disability were mobility (385,417) followed by visual (333,520). A total of 9,729 persons had albinism.

3.4.3 Economic Growth & Setting

The Kenyan economy has demonstrated remarkable resilience and recovery from the COVID-19 shock due to its diversified nature and the proactive Government measures to support businesses. Consequently, the economy grew by 7.5 percent in 2021 following a modest 0.3 percent contraction in 2020, as published in the Economic Survey 2022 report by the Kenya National Bureau of Statistics.



Figure 16: Annual Real GDP Growth Rates (%)

Source of Data: Kenya National Bureau of Statistics

The economy is projected to grow by 5.5 percent in 2022 and above 6.0 percent over the medium term. This growth is reinforced by the government's development agenda that focuses on an economic turnaround and inclusive growth, with a special focus on increasing employment, improving the distribution of income, expanding the tax revenue base, increasing foreign exchange earnings, and improving social security. To achieve these goals, the government has identified five key sectors for investment, including agriculture, micro, small, and medium enterprises, housing and settlement, healthcare, and the digital superhighway and creative industry. The government has also launched the Hustlers Fund to support those at the bottom of the economic pyramid, providing structured financial products including savings, credit, insurance, and investment.

Kenya's Vision 2030 is the country's long-term development blueprint aimed at transforming the country into a newly industrializing, middle-income nation with a high quality of life for all citizens. It's implementation is done in five (5) year plans known as Medium Term Plans (MTPs) with the current one MTP III (2018-2022) coming into the conclusion in June 2022 and MTP IV (2023-2027) to succeed and it outlines the government's key priorities and objectives, including accelerating economic growth and job creation, improving access to quality healthcare, increasing food security, expanding access to

affordable housing, enhancing access to affordable and clean energy, improving access to quality education, and strengthening national security and social cohesion.

The Energy sub-sector is a key enabler in the pursuit of nationally set goals as espoused in the Kenya Vision 2030 and the Kenya Kwanza Manifesto, as well as internationally set obligations that include the Sustainable Development Goals (SDGs) and Africa Agenda 2063. Goal 7 of the Sustainable Development Goals (SDGs) points to access to affordable, reliable, sustainable and modern energy for all as the way to transform lives - while The African Agenda 2063 aim to promote environmentally sustainable and climate resilient economies and communities through the development of renewable energy sources.

In addition, Kenya has committed to achieving the United Nations' Sustainable Development Goals, which include objectives such as no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, and much more. Through these efforts, Kenya aims to address key national socioeconomic challenges and promote the overall development of the country.

3.4.4 Economic engagements and Livelihoods

The results show that the economically active population was 22.3 million, comprising the working (19.7 million) and those seeking work (2.6 million). Females accounted for 50.2 per cent of the total working population. The proportion of males in the urban areas that reported having worked was 50.4 per cent compared to 40.6 per cent of females. A total of 18.9 million individuals were outside the labour force during the reference period. There were 10.1 million youth aged 18-34 years and 4.1 million youth aged 15-24 years in the labour force (PC2019 vol 4).

3.4.4.1 Agriculture

Statistics on agriculture from (KPHC 2019) show that total agricultural land operated by households stood at 10.3 million hectares, equivalent to 17.5 per cent of the total land area in the country. Of the total enumerated households, 6.4 million were practicing agriculture. Households growing crops were 5.6 million while those practicing irrigation were 369,679. In total, 5.1 million households were engaged in maize cultivation followed by 3.6 million cultivating beans. Livestock keeping was practiced by 4.7 million households while aquaculture and fishing activities were practiced by 29,325 and 109,640 households, respectively.

3.4.4.2 Pastoralism

Pastoralism is used to describe a society that derives majority of their food and income from livestock. This form of farming system is largely practised in the arid and semi-arid lands (ASAL). It is estimated that 70% of the landmass in the Horn of Africa is dry land; in Kenya 80% of the landmass is classified as ASAL. These dry lands support wild resource harvesting, tourism but most importantly livestock rearing. It is estimated that over 75% of cattle herds in Kenya are kept by pastoralists who supply the bulk of meat consumed in the countries.

Pastoralism is the most viable production system in the drylands. Pastoralism is one of the main economic activities for people in Africa's arid and semi-arid areas. Practiced by tribesmen for centuries, it is the most viable production system in the drylands. Currently, pastoralism accounts for 90 per cent of youth employment and provides more than 95 per cent of rural family incomes in the drylands of Northern Kenya.

3.4.4.3 Businesses

Micro, small, and medium-sized enterprises (MSMEs) are the economic backbone in Kenya comprising the majority (98%) of all business entities, registered and non-registered, in the country. The MSMEs sector provides enormous opportunity for the socio-economic transformation of Kenya's economy. It also provides opportunities for absorbing low-skill and economically excluded individuals of the labour force including youth, women, persons with disabilities and those with low levels of education.

There are 7.4 million MSEs operating in Kenya and majority of these MSMEs operate in the agribusiness, manufacturing, trade and services. About 98% of the MSEs are micro enterprises that employ less than 10 people in each small enterprise. The medium enterprises account for only 0.2% of MSMEs in the economy.

MSEs in Kenya account for 24% the GDP, with micro enterprises alone accounting for 12% of the GDP and small enterprises accounting for 11% of the GDP. The sector provides immense employment opportunities for youth, women and persons with disabilities.

3.4.5 Poverty

The poverty line is a threshold below which an individual or a household is considered poor. In compiling the poverty statistics, the food poverty lines for rural areas were KSh 1,954, KSh 2,231, KSh2,331 for the years 2019, 2020 and 2021 respectively while for the Urban areas, food poverty lines were, KSh 2,551, KSh 2,796, KSh 2,905 for the years 2019, 2020 and 2021 respectively.

The overall/absolute poverty lines for rural areas were KSh 3,252, KSh 3,783, KSh 3,947for the years 2019, 2020 and 2021 while for Urban areas, the Overall poverty lines were KSh 5,995, KSh 6,915, KSh 7,193 for 2019, 2020 and 2021 respectively The 2021 KCHS data showed a decline in food poverty headcount rate to 30.5 per cent, implying that 15.1 million individuals did not meet the food poverty line threshold. The analysis by residence showed that in the 3 years, the proportion of poor people was higher in rural areas compared to urban areas.

The overall poverty rate declined substantially from 36.1 per cent in 2015/16 to 33.6 per cent in 2019, implying that 15.8 million people lived below the absolute poverty line. The overall poverty rate increased to 42.9 per cent in 2020, which translates to 20.9 million individuals who lived in overall poverty. A decline was observed in 2021 to overall poverty headcount rate of 38.6 per cent, implying that 19.1 million individuals lived in overall poverty. The overall poverty incidence remained higher in rural areas compared to urban areas for the years 2019, 2020 and 2021. The statistics show that 7.1 per cent in 2020 and 5.8 per cent in 2021 of individuals were hardcore (or extreme) poor, implying that 2.9 million people in 2020 and 2.9 million people in 2021 lived in abject poverty and were unable to afford the minimum required food consumption basket even if they allocated all their expenditure on food alone. Extreme poverty incidence remains high in rural areas compared to urban areas for the 3 years.

Overall (absolute), food, and hardcore poverty headcount rates declined between 2015/16 and 2019. Nationally, the overall poverty rate fell by 2.5 percentage points from 36.1 to 33.6 per cent. The food poverty rate, on the other hand, fell at a slower pace, falling by 1.5 percentage points from 32 to 30.5 percent. Poverty remains a rural phenomenon: it remains higher and more concentrated in rural areas. In 2019, 37.0 per cent of the rural population were poor below the overall poverty line, while the urban poverty rate was 26.0 per cent. A look at the poverty gap and poverty severity measures suggests that not only are rural residents more likely to be poor, but they also tend to be further away from the poverty line and inequality among the rural poor tends to be higher. The poverty levels will impact negatively on connectivity rate but once connected it will spur economic development.

3.4.6 Housing and Amenities

The 2019 KPHC data shows that 80.3 per cent of the households occupied dwelling units that had iron sheet as the main roofing material followed by concrete/cement at 8.2 per cent. The dominant material used for wall construction was mud/cow dung at 27.5 per cent followed by stone with lime/cement at 16.5 per cent. Dwelling units with concrete walls accounted for 16.3 per cent of the total.

The predominant floor material was concrete/cement accounting for 43.7 per cent followed by earth/sand floors at 30.0 per cent. More than a third (34.2 per cent) of households in the country relied on piped water as a source of drinking water. More than half (51.2 per cent) of households use covered pit latrine as a sanitation facility. The most common mode of solid waste disposal was burning in the open, used by 27.1 per cent of the households.

Firewood was the most commonly used type of cooking fuel reported by 55.1 per cent of the households followed by Liquefied Petroleum Gas (LPG) at 23.9 per cent. Slightly over half (50.4 per cent) of households reported using electricity mains as a source of lighting fuel followed by solar (19.3 per cent).

3.4.7 Education

Statistics on education from (KPHC 2019) show that a total of 17.8 million individuals reported that they were at school/learning institution; 11.6 million left school/learning institution after completion; 6.9 million left school/learning institution before completion; and 7.1 million had never been to school. The data shows that 10.0 million people were attending primary school; 3.4 million were attending secondary school while 3.3 million were attending pre-primary school. Those attending middle level college/technical training education were about 500 thousand and those attending university education were 471 thousand. Majority of respondents had attained primary education, followed by secondary education. Persons with university education were 1.3 million.

3.4.8 Health

Electricity is a public service important to the functioning of firms of all sizes in many industries. During the COVID-19 pandemic the continued delivery of health services has depended critically on reliable access to electricity for functions such as lighting, data management, refrigeration, sterilisation, and provision of running water. While grid connections in sub-Saharan Africa have grown rapidly in recent years, power reliability has varied and often remains a critical issue. In the healthcare sector, a systematic review finds that in eight countries with data in sub-Saharan Africa, only 34 percent of hospitals had reliable electricity in the week prior to the survey (Adair-Rohani et al 2013). The quality of electricity services in Kenya and the impacts of service interruptions on healthcare providers is of great importance. Most of the rural facilities, which tend to have less reliable power and disproportionately service lower income communities hence the need to enhance the same Wambugu A 2022.

It has been noted among grid-connected rural health facilities in Kenya, some episodes of low quality electricity service affects the health services they provide and their energy costs. Despite the widespread use of backup energy sources, they only partially mitigate the negative effects of outages and constitute a significant expenditure in capital investment. The results suggest that beyond increasing the number electricity connections, increasing the productive use of electricity in rural areas will likely require investments to improve the quality of service that is provided.

According to the Economic Survey 2022, Malaria accounts for the second disease burden in the country with 14,331,877 cases (15.2%) followed by Skin diseases (including ulcers) with 3,664,898 cases (3.9%), diarrhea with 3,259,417 cases (3.5%) and urinary tract infection (UTI) with 2,567,446 (2.7). Data from the Kenya National Bureau of Statistics (KNBS) indicate that 20,613,455 cases of respiratory diseases had been reported as at December 2021, accounting for 21.9 per cent disease burden in the country.

3.4.9 Ownership of Household Assets

A functional television set was the popular household asset owned by 40.7 per cent of households, with households in urban areas accounting for a larger share (62.5 per cent) compared to those in rural areas (26.9 per cent). Approximately 9 per cent of households owned a motorcycle. A larger share of the rural households (10.8 per cent) than urban (6.7 per cent) owned a motor cycle.

3.4.10 Gender Concerns

3.4.10.1 Gender analysis information

The national average for the Gender Inequality Index is 0.55.

A) Role and responsibilities of men and women in the in the project area

Women generally undertake the household chores which includes; cooking, laundry (house and clothes), collecting firewood and fetching water, child care and caring for the elderly and the ill. In addition, women do farm work (picking tea, coffee, miraa (khat), tilling the land, milking cows and harvest of farm produce among others. Women also occasionally sell surplus produce in the local markets. On the other hand men are generally the bread winners and are more engaged in the paid work/labour market. The men are engaged in different activities such as businesses, in construction sites and in formal employment.

In regard to economic participation more men than women are engaged in formal and informal economies. Being in a rural setting, house hold chores and care giving is widely accepted and appropriate to be performed by the women. Consequently, household chores and child care is deemed inappropriate for men. On the other hand, men perform roles in paid up activities including working in construction sites which is generally deemed inappropriate for women and women may take up this role in extreme circumstances such as when one has to put a meal on the table. The KPHC 2019 report indicate that, labour force participation rate for women is lower at 71.1% compared to that of men at 76%. In addition, the Kenya Demographic Health Survey 2022 reports on land ownership among women age 15–49 according to marital status indicates that; thirty-three percent of women own a house, including 5% who do so alone and 28% who own it jointly with their spouse or partner only. In addition twenty-five percent of women own agricultural land, three percent own land alone, while 20% own land jointly with their spouse or partner only and only 7% of women own nonagricultural land.

The responsibility of child/ren care and also care for the elderly is the sole responsibility of the women. Care for children and the elderly is basically home based and time-consuming living the women with little time and unable to move outside the home to engage in paid up economic activities.

At the scheme level, few people from the community will be employed in the project. This is because much of the work will entail semi-skilled and skilled roles. In terms of men and women, more men will be employed than the women. Men will do much of the unskilled work which requires physical strength while the rest of the work requires technical skills like pole erection, stringing and metering which majority of the women do not have. Women are likely to take up simpler roles like cooking for workers and stores in charge for the contractor and so benefits of employment will accrue more to the men.

B) Community Engagement

The main barriers that women and other vulnerable groups face in meeting their needs and interests include lack of skills which in turn locks them out of available employment opportunities in the labour market due. In addition, women rarely own resources such as land and houses and due to their limited engagement in the labour market they also have little buying power (money). Due to their involvement in the house hold chores and care giving, women are time constrained limiting their participation in other economic activities and stakeholder engagement/education forums where they could receive valuable information. Vulnerable groups face various challenges depending on their vulnerability. Women headed households play the role of the bread winners and all the household chores and care giving. This leads to low incomes and exclusion from many opportunities due to low participation in the labour market and social forums. Barriers faced by the elderly people include low incomes, inability to participate in economic activities, limited participation in community forums, lack of social security and in some cases lack of support from family members. Those who are disabled face more barriers as they lack adequate skills to participate in formal employment while challenges in mobility and challenges in disability limits many in participating in work that demands use of physical capabilities. Further, these groups suffer stigma and somehow are also excluded from various forums in the community. According to the Kenya National Population Census 2019 Out of the 2.4 million households who are poor, the proportion of households headed by single mothers is higher at 13.1% compared to those households headed by single fathers with children at 1.9%. in addition the Analytical report on gender dimensions (KPHC, 2019) concerning families households and living conditions and poverty nationally, there are nearly twice as many Households with elderly women (61%) age 60 and above years and over, living alone than males who are 39%.

Decision making in the households is skewed in favor of men. Major decisions in the house are mainly made by the men. Decisions on schooling of children is made by the men and in isolated cases jointly by both spouses. Family decisions especially those involving investments and ownership are made by the men. Family planning decisions are also made by the men as they are the bread winners.

Women involvement as decision makers and leaders in the design and implementation of infrastructure processes is somewhat limited. This is because women representation in the key managerial positions and leadership in various institutions is low.

Women and men are in need of power and the message given to KPLC is that power connection in the different villages is long overdue. The people are ready to offer any support needed to fast track the project and make it a success. The KPHC 2019 indicate that, about 55% of households use firewood for cooking and slightly over 8 in every 10 households in rural areas relay on firewood as the main source of fuel for cooking. Reliance on firewood as a source of cooking fuel exposes more women and girls to the dangers of unclean energy. Further, women and girls who are more likely to be persons in the Household to gather firewood for use spend more time in this activity thereby limiting their participation in other market activities.

3.4.10.2 Gender Based Violence / Sexual Exploitation and Abuse

A) Prevalence of GBV in Kenya

Gender-based violence has been acknowledged worldwide as a violation of basic human rights. Research has highlighted the health burdens, intergenerational effects, and demographic consequences of such violence (United Nations 2006). Gender-based violence is defined as any act of violence that results in physical, sexual, economic, or psychological harm or suffering to women, girls, men, and boys, as well as threats of such acts, coercion, or the arbitrary deprivation of liberty. The AfDB project will be implemented in 45 counties of Kenya abd According to the Kenya Demographic and Health survey 2022 report, thirty-four percent of women in Kenya have experienced physical violence since age 15, including 16% who experienced physical violence; 27% of men have experienced physical violence since age 15, including 10% who experienced such violence in the 12 months before the survey. The percentage of women who experienced physical violence in the 12 months before the survey declined from 20% in 2014 to 16% in 2022. Over the same period, the percentage among men declined slightly from 12% to 10%.

Thirteen percent of women reported that they had experienced sexual violence at some point in their lives, and 7% reported that they had experienced sexual violence in the last 12 months. A slightly lower proportion of men reported experiencing sexual violence; 7% have ever experienced sexual violence, and 4% experienced sexual violence in the 12 months preceding the survey. By county, the percentages of women who have experienced sexual violence are highest in Bungoma (30%), Murang'a (24%), Homa Bay (23%), and Embu (22%).

B) Potential trigger of SEAH due to influx of workers

Potential SEAH risks in the project would be triggered in the following ways

- Higher wages for workers in a community can lead to an increase in transactional sex.
- Projects create changes in the communities in which they operate and can cause shifts in power dynamics between
 community members and within households. Male jealousy, a key driver of GBV, can be triggered by labor influx on
 a project when workers are believed to be interacting with community women. Hence, abusive behavior can occur
 not only between project-related staff and those living in and around the project site, but also within the homes of
 those affected by the project.
- Workers on infrastructure projects are predominantly young and male. Those who are incoming are single or are separated from their family or spouse, and are outside their habitual sphere of social control. Further, in rural settings, where the presence of law enforcement is often low, the risk of sexual harassment for local women is likely

In assessing the AfDB last mile connectivity project potential to exacerbate risk of GBV the following factors are put in consideration. The project involves construction of substations and lines and the maximization component. Most of the works will be done in the rural areas. Unskilled work and semiskilled work will be undertaken by the local community members and few skilled persons will be brought in to undertake the skilled works. Therefore labour influx is expected but on a low scale. Therefore the risk of SEAH is likely to be low.

3.4.10.3 Gender Mainstreaming In the Project

Gender mainstreaming in a project It is a strategy for making women's as well as men's concerns and experiences an integral element of the design, implementation, monitoring and evaluation, so that women and men benefit equally and inequality is not perpetuated. The proposed project is provide an opportunity to promote gender equality through access to clean energy

for lighting, cooking and powering various equipment's for better living standards and income generation. This is in line with the Last mile connectivity project's objective of increasing access to electricity through maximization of new and existing transformers.

AfDB and the GoK recognizes that gender equality and women and girls' empowerment is not only a critical human rights issue for women and girls, it is a prerequisite for the achievement of broader development goals, effective humanitarian response and sustainable peace and security.

The Banks Gender Strategy 2021-2025 to achieve gender equality is anchored on three pillars

- ✓ Empowering women through access to finance and markets
- ✓ Accelerating employability and job creation for women through skills enhancement
- ✓ Increasing women's access to social services through infrastructure

This project derives its strength from pillar three and the aim is to influence gender-responsive project to guarantee women and other vulnerable groups to have adequate access and positively benefit from the projects as stakeholders, workers and end-users.

The targeted areas for gender mainstreaming in the project are presented in the table 3-3 below

Table 3-3: Gender Aspects, status, intervention and their Monitoring Indicators

ASPECT/ISSUES	STATUS		MONITORING INDICATOR
Access Project knowledge	 Inadequate information on the project and especially women and vulnerable groups (poor women headed household, PWD, aged, poor HH, orphaned families are lag behind on this 	 Create awareness on the proposed project to all members of the targeted community (done during feasibility study, ESMF and RPF prepartion) Further awareness to be conducted prior to implementation of the project at the schemes level 	 Minutes of meetings and list of attendance for the community engagement meetings. Data on attendance should be gender disaggregated
Energy use	Electricity for lighting is appreciated however uses of power for enhancing standard of living and income generation lags behind.	Education on the different uses/productive use of power – especially indirect benefits. Some of the opportunities to use electricity in addition to lighting includes; water pumping, cooking, water heating, entertainment, communication, health education, business enterprise/income generating activities	 Improved access to electricity by all segments of the community in a scheme (No. of connections) Number of households using power for other activities except lighting
Affordability	All target beneficiaries/customer are expected to; • do wiring in their houses/premises • Pay for electricity connection and consumption	 Project connection fee is subsidized Payment for connection is done while the beneficiaries are enjoying power through purchase of tokens Offsetting wiring costs to the vulnerable groups- poor women headed household, PWD, aged, poor HH, orphaned families by installation of ready boards 	 Number of customers connected Number of women headed households and other vulnerable households supported/issues with ready boards

Digital purchase of electricity tokens	Buying of electricity tokens is a challenge to many women and senior members of the community -Lack of knowledge of small electrical appliances that can make life easier for women	 -Adequate awareness on purchase of tokens during meetings and metering phase -Create awareness on use of such appliances like water heating kettle, iron boxes, cookers, juice blenders, small fridges/coolers, water pumps 	Distribution of pamphlets with the information on (purchase of token) for further reference
Employment opportunities	Most jobs/contracts are given to the men	 Procurement should adhere to the 30% to women, youth and PWDs to the extent possible Contractors should also give jobs to both genders 	 Number of contracts given to women, youth and PWDs Number of jobs generated for women/number of women working in the project
Work environment	 Inadequate/lack of women facilities e.g rest rooms, changing rooms Potential for gender based violence (SEAH) risks 	 Sanitation facilities and changing rooms be provided by contractor for both men and women Implement code of conduct for staff/workers against GBV by the contractor 	 Evidence of the facilities (sanitation for women) Signed codes of conduct
Decision making	Inadequate representation of women in governance structures and decision making organs	 Representation of all groups (men, women, youth, PWD in meetings) Representation of these groups in grievance redress committees that are selected at scheme level 	Women representatives in committees and also in meetings
Capacity building on gender mainstreaming	Low knowledge on gender mainstreaming among project officers	Training on gender mainstreaming in projects among project officers	Number of project officers trained
Safety Environment and health	 Potential for spread of communicable diseases Potential for gender based violence (SEAH) 	 Awareness creation to the community Awareness to the contractors Implementation of code of conduct on GBV by the contractor 	Signed code of conduct
Stakeholder engagement	Low participation by women in stakeholder meetings	 Invitation for meeting should be sent to all including women Meetings timings should be favorable to women needs e.g. avoiding meetings over lunch hour, in the early mornings, late evenings and market days. 	List of attendance

3.5 The Physical Infrastructure Sector

The Physical Infrastructure Sector consists of Roads; Public Works; Transport; Energy; Local Government; Nairobi Metropolitan Development and Housing Sub-Sectors. In the new long term development blue print for the country "The Kenya Vision 2030", infrastructure development has been recognized as an enabler for sustained development of the economy and particularly for the six key sectors namely; Tourism, Business Process Outsourcing (BPO), Wholesale and Retail, Manufacturing, Financial Services and Agriculture and Livestock identified under the economic pillar.

The Kenya Vision 2030 recognizes the importance of development infrastructure as critical for socio-economic transformation. The Infrastructure Sector aspires for a country with modern metropolitan cities, municipalities and towns with infrastructural facilities that meet international standards to make Kenya a globally competitive and prosperous country. The strategies and

measures to be pursued in the medium term include; supporting the development of infrastructure initiatives around flagship projects, strengthening the institutional framework for infrastructure development, raising the efficiency and quality of infrastructure as well as increasing the pace of infrastructure projects so that they are completed as envisaged, protecting the environment as a national asset and conserving it for the benefit of the future generations and the wider international community. Other measures include encouraging Private Sector participation in the provision of infrastructure services through the Public-Private-Partnerships (PPPs) framework. Below are the ongoing flagship physical infrastructure projects in the different sectors;

3.5.1 Energy sub-sector

3.5.1.1 Power Generation

Kenya's power sector has experienced steady growth over the last two decades in utilizing various renewable energy sources to improve reliability, increase capacity and reduce the cost of electricity. Renewable energy sources as at June 2022 accounted for 78% (2,399MW) of Kenya's installed capacity up from less than 60% a decade ago. While the energy mix in the grid for FY 2021/22 was 84.31% renewable out of a total of 12,653 GWh generated.



Figure 17: Generation Mix (GWh) for FY 2019/20 - FY 2021/22

These significant Investments in renewable energy have been enabled by successful efforts to mobilize both public and private sector investment. The key projects that were completed during the period MTP III include:

- Wind Plants- 300MW Lake Turkana Wind Power and 100MW Kipeto wind,
- Solar Plants: 40.0MW Malindi solar group, 40.0MW Cedate, 40.0MW Selenkei and 50MW Garissa Solar,
- Small hydro's: 0.51MW Kiathumbi, 3.60MW KTDA (Metumi North Mathioya), 2.00MW Gura KTDA, 0.5MW Chania KTDA.
- Geothermal projects-165.4 MW Olkaria V, 83.3MW Olkaria I Unit 6, 25MW Geothermal projects Wellheads.

Additionally, 89 wells were drilled in three geothermal fields namely Olkaria, Menengai and Baringo-Silali which availed 289.9Mwe from the targeted 290 geothermal wells with the steam equivalent of 1200Mwe to the existing energy mix, the energy subsector initiated nuclear power development to boost generation capacity from clean and low-carbon energy sources.

The subsector plans to add 600 MW of nuclear power to the grid by 2036. The development of a nuclear power plant is projected to add dependable power, create jobs, develop skills, and reduce CO2 emissions.

Kenya's Installed Capacity increased from 1,768MW in 2013 to 3,081 MW in June 2022 with a peak demand, of 2,057MW, recorded, on 14th June 2022. This consistent growth in energy demand is attributed to various factors, including population growth, urbanization, widespread electrification initiatives, and expansion in manufacturing, agriculture, and other sectors.
Table 3-4: Generation	Capacity (I	MW): Installed	capacity and	Effective Capacity
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Technology	March	n 2013	June 2022		% Cont	ribution
rechnology	Installed	Effective	Installed	Effective	Installed	Effective
Hydro	816.2	766.9	838.5	809.6	27.2%	27.7%
Geothermal	251.4	244.9	950.0	871.1	30.8%	29.8%
Thermal (MSD)	466.0	447.5	586.3	566.4	19.0%	19.4%
Temporary Thermal Grid	120.0	120.0	-	-	0.0%	0.0%
Thermal (GT)	60.0	27.0	60.0	56.0	1.9%	1.9%
Wind	5.1	5.1	435.5	425.5	14.1%	14.5%
Biomass	26.0	22.0	2.0	2.0	0.1%	0.1%
Solar	0.0	0.0	122.5	122.2	4.0%	4.2%
Interconnected System	1,744.7	1,633.4	2,994.8	2,852.8	97.2%	97.5%
Off-grid thermal	22.1	18.7	35.6	23.0	1.2%	0.8%
Off-grid Wind	0.55	0.2	0.6	0.0	0.0%	0.0%
Off-grid Solar	0.22	0.5	50.0	50.0	1.6%	1.7%
Imports	0	0	0	0	0.0%	0.0%
Total Capacity	1,767.6	1,652.8	3,080.9	2,925.8	100.0%	100.0%

Figure 18: Peak Demand (MW) (July 2020 to June 2022)



Despite the growth in the Peak demand, there is uneven load distribution with a concentration in the Nairobi region, Mombasa and major towns/cities. With the introduction of devolution and county government, the trend is likely to slightly change in the medium and long term.

As per the 2021/2022 KPLC Annual Report, there has been a consistent rise in both Electricity Sales and Energy Purchased over the past seven years, as indicated in Figure 19. The figures illustrate that the amount of Electricity Sales has risen from 7,912 GWh in 2015/2016 to 9,813 GWh in 2021/2022, which represents a cumulative increase of 24.1%. This growth in sales has been facilitated by various initiatives such as the countrywide loss reduction campaign aimed at curbing the pervasive theft of electricity, the expansion of smart metering, and the deployment of more personnel to the field. However, the rate of growth fluctuated from year to year, with the highest growth rate occurring between 2019/20 and 2020/21 at 5.0%, and the lowest between 2016/17 and 2017/18 at 2.2%.

Similarly, Energy Purchased also increased steadily from 9,735 GWh in 2015/16 to 12,653 GWh in 2021/22, representing a cumulative increase of 29.9% over the same period. However, the rate of growth fluctuated from year to year, with the highest

growth rate occurring between 2017/18 and 2018/19 at 7.6%, and the lowest between 2019/20 and 2020/21 at -0.3%. These fluctuations in the rate of growth may be caused by factors such as changes in economic conditions, weather patterns, Covid and technological advancements. Nonetheless, the overall trend indicates an upward trajectory in electricity consumption and energy purchased.



Figure 19: Energy Purchased and Sales (GWh)

3.5.1.2 Increased Electricity Access

During the MTP III, the government-led electrification efforts in Kenya have resulted in a significant increase in the number of households with access to electricity. A total of 2,150,518 households were connected to the grid, facilitated by high levels of resource mobilization to subsidize connection costs and an extensive connectivity campaign across the country. As of June 2022, over 70% of the population (8.92 million people) have gained access to electricity, compared to just 32% in 2013. However, the progress slowed down after 2016/17, mainly due to the completion of the Slum Electrification Programme. Figure 20 and 21 below displays the annual electricity customer connections and customer growth trends in Kenya over the past decade.



Figure 21: Customers Growth



3.5.1.3 Network Expansion and Improvement

Effective distribution of power requires an extensive well-maintained network. This is achieved vide robust network expansion, densification and substation installation. The distribution footprint in the MTP III entails the construction of 116 new primary distribution substations and 1,244 km of associated 66/33kV lines as well as 20 new bulk supply substations. Additionally, 52 distribution substations were completed and 6,280 Km of medium voltage lines were constructed.

As of June 2022, the high-voltage electricity transmission network in Kenya, consisting of 132kV, 220kV, and 400kV circuits, spans a total of 7,676km, which is broken down into 3,444 km of 132kV, 2,116 km of 220kV, and 2,116 km of 400kV circuits. The network also includes high-voltage transformer substations with a transformation capacity of 9,533 MVA.

At the distribution level, the network has a circuit length of 82,211km, including 1,188 km of 66kV, 38,051km of 33kV, and 42,971 km of 11kV circuits. The distribution substations have a distribution capacity of 4,669 MVA.

This network is not sufficient in terms of spatial distribution and capacity. Most of the power generation sites are far from the major demand centres that are located along the Coast, Nairobi, highlands in the East and West of Rift, and along the Lake Basin. The network is concentrated around these regions leaving much of the country unserved by the grid resulting in inadequate access. Due to insufficient capacity, the grid is constrained which results in inadequate reliability and power supply quality in the country. At the same time, the long power transmission distances from the generation sites to demand centres result in transmission losses.

The following transmission line projects have been initiated and are expected for completion by the end of MTP IV timelines: 69km 132kV Sondu – Ongeng (Homa Bay/Ndhiwa); 5Km 132kV Nanyuki – Isiolo underground cable; 132Km 400kV Lessos – Tororo; 150km 220kV Kamburu – Embu – Thika (including Maai Mahiu (Uplands) 132/66kV substation); 240Km 220kV Garsen – Bura – Hola – Garissa; and Kitale -Ortum Substations.

3.5.1.4 Improved Power Supply Reliability

To boost the reliability and stability of power, several initiatives that include Network automation, system reinforcement and the use of modern technologies have been adopted. As a result of these, power supply reliability improved significantly from a customer average interruption duration index (CAIDI) of 5.66 hours in June 2017 to 2.74 hours as of June 2022.

Reliability Indicators	2016/1 7	2017/1 8	2018/1 9	2019/2 0	2020/2 1	2021/2 2
Customer average interruption duration index (CAIDI Actual) (Hours)	5.66	5.51	4.03	4.52	4.03	2.74
System Average Interruption Duration Index (SAIDI) (Hours per year)	256.51	169.08	89.42	115.72	117.93	104.53
System Average Interruption Frequency Index (SAIFI) (Outages per year)	45.32	30.71	22.20	25.60	29.29	38.18

Table 3-5: Annual Reliability Indicators 2016/17 to 2021/22

Figure 22: Monthly CAIDI and SAIFI from Dec. 2020 to Dec. 2022



System Average Interruption Index (SAIFI)



These strides have largely been driven by the implementation of MTP III, Policy initiatives such as Vision 2030, and the Big Four Agenda as well as legislation such as the Energy Act of 2006 and the subsequent Act of 2019. The sector-specific policies have set in place measures to harmonize the energy sector in addressing cost and access. Enhancing the efficiency of energy market systems remains a key priority with a shift towards liberalization, devolution, and public-private partnerships. The government is committed to simultaneously increasing generation by tapping the country's vast renewable energy resources while increasing energy consumption specifically from the highly productive sectors.

3.5.2 Transport sub-sector

With a pristine coastline, extensive savannah grasslands, the great Rift Valley and other natural resources, Kenya has made significant strides in building a sustainable economy. Key legal frameworks to drive development include the country's economic blueprint Vision 2030 and its 2010 constitution. Vision 2030 aims to transform Kenya into an industrializing, middleincome country providing a high quality of life and a clean and secure environment for its citizenry. The 2010 constitution enacted devolution - a political process for transforming and promoting service delivery at the local level. Kenya's movement of goods and people to facilitate economic activities takes place by road, rail, air or water. The road subsector accounts for over 80% of traffic and 76% of freight (Kenya Roads Board1). As part of delivering Kenya's Vision 2030, the country recently constructed a standard gauge railway2 from Mombasa to Naivasha (592 km in total), which will shift at least 40% of freight from road to rail. The last phase of construction to Malaba (369 km), at the Ugandan border, is under construction. This is an important part of the East African Railway Master Plan. Kenya's transport sector accounts for 8.3% of its total GDP.3 Its public transport system is privately operated, with the road transport network served by matatus (minibuses), taxis (traditional and ride hailing services), bodabodas (motorcycles) and tuk tuks (three-wheelers). The aviation sector in 2018 transported 11.8 million passengers, both domestic and international. The maritime sector is a key pillar of the Kenyan economy. The Port of Mombasa serves as the entry and exit point for cargo not only for Kenya but for neighboring countries as well. Kenya has acknowledged the importance of addressing climate change. A signatory of the Paris Agreement, Kenya enacted its Climate Change Act in 2016. The act highlights the importance of mainstreaming climate change across all sectors. Energy distribution is key pillar and enabler as we transition to electric vehicles and Motorcycles. The country has developed legal and policy frameworks to promote the use of electric vehicles. This will greatly contribute to Kenya's Nationally Determined Contribution which commits to lower GHG emissions by 32% by 2030.

3.5.3 ICT sector

The KPHC results show that 20,694,315 of individuals aged 3 years and above owned a mobile phone. More females (10,425,040) than males (10,268,651) owned a mobile phone. The data also shows that 22.6 per cent of individuals aged 3

years and above used internet while 10.4 per cent used a computer. The proportion of population aged 15 years and above who searched and bought goods and services online was 4.3 per cent. Most the ICT users utilize electricity and reliable electricity will be of importance.

3.6 Required Studies

Further studies (as part the ESIAs) will be required in some of the electricity distribution network to ensure proper and adequate mitigation measures are put in place. One of the key area of focus is to carry out measurements of Electromagnetic fields (EMF) for the substation and associated power lines. This will help allay fears raised by stakeholders as far as EMFs are concerned.

Noise levels measurement will be another area of concern especially in substations where transformers produces hamming noise especially during peak hours.

4 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

4.1 Introduction

There is a growing concern in Kenya and at global level that many forms of development activities cause damage to the environment. Consequently, development partners and governments have come up with laws, policies and standards geared towards ensuring developments are not carried out at the expense of the environment with a long-term goal to achieve sustainable development.

A detailed review of relevant institutional and legal as well as policy framework that bears significance or implication to this Last Mile Connectivity project is presented in this chapter. The African Development Bank Safeguard Operational Policies applicable to the project as well as the international laws and conventions that bear relevance to the implementation of this project have also been highlighted in this chapter.

4.2 The National Policy Framework

4.2.1 National Environmental Policy, 2013

The policy promotes the use of environmental assessment tools, such as Environmental and Social Impact Assessment and Environmental Audits that are necessary to ensure long-term environmental quality and resource productivity for projects with the potential to cause negative impacts to the environment. The Policy also requires all sub-projects with the potential for significant environmental and social impacts undergo ESIA.

4.2.2 National Occupational Safety and Health Policy, 2012

The main objective of this policy is to establish national occupational safety and health systems and programmes geared towards the improvement of the work environment. The Policy seeks to reduce the number of work-related accidents and diseases, and to provide compensation and rehabilitation to those who may be injured at work or contract occupational diseases. The specific objectives of this policy among others are:

- To guide the development of laws, regulations and any other instruments on occupational safety and health;
- To recommend establishment and strengthening of responsible and accountable institutions for management of occupational safety and health;
- To recommend an enforcement and compliance mechanisms for occupational safety and health laws and regulations;
- To create mechanisms for cooperation between employers, workers and their representatives at workplaces in the promotion of occupational safety and health;
- To strengthen capacities of state and non-state actors in occupational safety and health; and
- To create a resource mobilization mechanism for the implementation of this Policy. Among other safety issues, the policy
 provides the framework for mandatory use of appropriate personal protective gear, protection of workers against of
 occupational hazards, and workplace provisions for First Aid and emergency medical evacuation.

4.2.3 National Land Use Policy (NLUP) 2012

The National Land Use Policy guides Kenya towards an environmentally and socially responsible use of land and land-based resources for the socio-economic transformation of the people of Kenya. Its mission is to promote the best land use practices for optimal utilization of the land resource in a productive, efficient, equitable and sustainable manner. The principle objective of the NLUP is to provide legal, administrative, institutional and technological framework for optimal utilization and productivity of land and land related resources in a sustainable and desirable manner at National, County and Sub-County and other local levels. Project beneficiaries should utilize farms and land resources in a sustainable manner in accordance with Chapter Five of the Constitution of Kenya. The Constitution, under Article 60, requires that land is used in a manner that is equitable,

efficient, productive and sustainable. In addition, Articles 66, 68 and 69 provide for regulation of land uses, sustainable exploitation, utilization, management and conservation of the environment and natural resources.

4.2.4 National Water Policy 2012

The National Water Policy of Kenya was developed in 1999 as the National Policy on Water Resources Management and Development (NPWRMD, 1999), and was subsequently amended in 2012. The policy aims to achieve sustainable development and management of the water sector by providing a framework in which the desired targets/goals are set. It outlines the necessary measures to guide the entire range of actions and synchronize all water-related activities and sectors. The NPWRMD sets the following specific policy objectives covering the four basic areas of water resources management, water supply and sewerage development, institutional arrangement and financing of the water sector:

- a) Preserve, conserve and protect all available water resources and allocate it in a sustainable, rational and economical way;
- b) Supply of water of good quality and in sufficient quantities to meet the various water needs including poverty alleviation, while ensuring safe disposal of wastewater and environmental protection;
- c) Establish an efficient and effective institutional framework to achieve a systematic development and management of water sector; and
- d) Develop a sound and sustainable financing system for effective water resources management, water supply and sanitation development. The benefiting communities would be required to implement environment conservation measures to limit pollution of the open water source and or underground water resources.

4.2.5 National Wildlife Conservation and Management Policy, 2012

The goal of this Policy is to provide a framework for conserving, in perpetuity, Kenya's rich diversity of species, habitats and ecosystems for the wellbeing of its people and the global community. The objectives and priorities are to:

- Conserve Kenya's wildlife resources as a national heritage;
- Provide legal and institutional framework for wildlife conservation and management throughout the country;
- Conserve and maintain viable and representative wildlife populations in Kenya;
- Develop protocols methodologies and tools for effective assessment and monitoring of wildlife conservation and management throughout the country;
- Promote partnerships, incentives and benefit sharing to enhance wildlife conservation and management; and
- Promote positive attitudes towards wildlife and wildlife conservation and management. Appropriate mitigation measures shall be implemented to ensure there is no encroachment on protected areas or illegal hunting of wildlife.

4.2.6 National Wetland and Conservation Management Policy, 2013

The development of this Policy is in cognizant of the importance of wetlands at the national level, and of Kenya's obligation to the Ramsar Convention. The policy takes into consideration the broader national environmental frameworks, particularly the Environment Management and Coordination Cap 387, the country's premier framework environmental law, the Water Act 2016, and the Forest Policy 2007. In accordance with principles established within this policy, appropriate mitigation measures shall be implemented to ensure there is no encroachment on protected areas or illegal hunting of wildlife.

4.2.7 National Social Protection Policy, 2011

The Kenya National Social Protection Policy is a newly-adopted policy (as Sessional Paper Number 2 of 2014). It has the goal of ensuring that all Kenyans attain social and economic development as provided in Article 43 of the Constitution. The policy provides the framework for social assistance, social security and health insurance. The Policy document acknowledges poverty as a hindrance to social development, and observes that subsistence economies in areas with declining soil productivity and large households are likely to compete for various land uses. Social protection policy issues include safety nets and consumption transfers to sustain livelihoods and build human capital, and protection of assets and their rehabilitation to re-establish livelihoods. DRSLP II is one of the projects that incorporates an element of social protection through

modernization of agriculture and promoting a shift from subsistence farming to commercialized production and creation of livelihood resilience.

4.2.8 The National Land Policy 2009

The overall goal of the national land use policy is to provide legal, administrative, institutional and technological framework for optimal utilization and productivity of land related resources in a sustainable and desirable manner at national, county and community levels.

- The Policy is premised on the philosophy of economic productivity, social responsibility, environmental sustainability and cultural conservation.
- Key principles informing it include efficiency, access to land use information, equity, elimination of discrimination and public benefit sharing.
- Amongst the key principles envisioned by the policy include; Land use planning, resource allocation and resource management for sustainable development to promote public good and general welfare; Environmental management and sustainable production in the utilization of land resources; Coordination and integration of institutional linkages in planning at sectoral and cross-sectoral levels to foster collaboration and decision making among different land users; Equitable utilization of land resources to meet governance, socialeconomic and cultural obligations of the people of Kenya; The proposed project will need to be consistent with the provisions of this Policy in order to avoid conflicts. Among the issues that will have to be addressed, are the modalities for the acquisition of land for PAPs.

4.2.9 The National Gender and Development Policy, 2019

The Policy spells out a policy approach of gender mainstreaming and empowerment of women and clearly states that it is the right of women, men, girls and boys to participate in and benefit equally from the development process.

The NPGD provides a framework for mainstreaming gender in all policies, planning and programming in Kenya and puts in place institutional mechanisms to ensure effective implementation. The proposed project should hence ensure gender concerns are mainstreamed into the development to ensure that the needs and interests of each gender are addressed.

4.2.10 HIV/AIDS Policy of 2009

The policy identifies HIV/AIDS as a global crisis that constitutes one of the most formidable challenges to development and social progress.

The Pandemic heavily affects the Kenyan economy through loss of skilled and experienced manpower due to deaths, loss of man hours due to prolonged illnesses, absenteeism, reduced performance, increased stress, stigma, discrimination and loss of institutional memories, among others. Due to the large of number of workers who will be involved in the proposed project and the associated social issues with projects of such as scale, HIV/AIDS has been considered as one of the proposed impacts, hence adequate mitigation measures will require to be proposed to that effect.

4.2.11 The National policy for prevention and response to gender-based violence, 2014

Gender based Violence is a serious global health, human rights, and development issue. It is a symptom of underlying gender inequalities and power imbalances that goes beyond geography, race, culture, class, and religion, touching virtually every community in every corner of the globe. Gender based violence is often condoned by customs and reinforced by institutions which are thriving on impunity.

The overall Goal of this National Policy is to accelerate efforts towards the elimination of all forms of GBV in Kenya. The Policy Goal is to be realized as laid out in the key objectives which seek to ensure; a coordinated approach in addressing GBV and effective programming; enhanced enforcement of laws and policies towards GBV prevention and response; increase in access to quality and comprehensive support services across sectors; and improved sustainability of GBV prevention and response interventions. The Policy takes cognizance that effective GBV prevention and response requires strong and efficient systems and structures to operationalize laws, policies and plans. It therefore provides an implementation framework which

spells out the roles and responsibilities of stakeholders towards the implementation of the Policy. This Policy further recognizes the functions between the two levels of Government at the National and County levels on accountability, reporting and management lines, and provides a structure that harnesses and synergizes GBV prevention and response interventions through involvement of different stakeholders.

4.2.12 The Kenya National Youth Policy 2016

The Youth policy provides for Youth inclusion in the different sectors to identify specific Youth issues and how to address and include them.

Article 260 of Kenya's Constitution defines a Youth as a person aged between eighteen (18) years and thirty-four (34) years. It is expected the proposed project will identify the needs and concerns of youth and include their views

4.2.13 The National Environmental Sanitation and Hygiene Policy-2016-2030

The Kenya Environmental Sanitation and Hygiene Policy 2016-2030 (KESHP) envisions a clean, healthy and economically prosperous Kenya free from sanitation and hygiene related diseases and seeks to ensure universal access to improved sanitation, clean and healthy environment by 2030. It is the outcome of reviews to address limitations of the National Environmental Sanitation and Hygiene Policy published in 2007. The Policy takes a rights-based approach and redirects efforts of the government at national and county level towards achieving the Kenya Vision 2030 and the global Sustainable Development Goals (SDGs). The strategy developed in the Policy that will not only enable all in Kenya to enjoy their right to highest attainable standards of sanitation but also to a clean and healthy environment as guaranteed by the Constitution of Kenya 2010. It puts emphasis on increasing public and private sector investment through public-private partnerships.

The KESHP proposes a range of complementary activities including the provision of sanitation services and maintenance of sanitary facilities for proper collection, treatment and environmentally sound disposal of liquid and solid wastes, water treatment and safety, promotion of hygiene practices, public education, sanitation marketing, regulation and legislation supported by clearly mandated institutions, sustainable financing and research and development.

4.2.14 National Energy policy 2018

The level and the intensity of energy use in a country is a key indicator of economic growth and development. The Kenya Vision 2030 identified energy as one of the infrastructure enablers of its social economic pillar. Sustainable, affordable and reliable energy for all citizens is a key factor in realization of the Vision.

The overall objective of the energy policy is to ensure affordable, sustainable and reliable supply to meet national and county development needs, while protecting and conserving the environment.

Specifically, the policy aims to; — Utilize energy as a tool to accelerate economic empowerment for the National and County Governments as well as urban and rural development. — Improve access to quality, reliable and affordable energy services. — Ensure that prudent environmental, social, health and safety considerations are factored in energy sector developments. — Promote diversification of energy supply sources to ensure supply security — Provide for the phased transfer of provision of energy services to the Counties in The proposed project is hence in line with the tenets of the energy policy and should ensure prudent environmental, social, health and safety considerations are factored in the development.

4.2.15 Vision 2030

The economic, social and political pillars of Kenya Vision 2030 are anchored on macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor; infrastructure; energy; science, technology and innovation (STI); land reform; human resources development; security as well as public sector reforms. The 2030 Vision aspires for a country firmly interconnected through a network of roads, Electricity railways, ports, airports, water and sanitation facilities, and telecommunications.

Vision 2030 (GOK, 2007) is divided into three fundamental pillars: economic, social and political. The social pillar aims at realising a just and cohesive society enjoying equitable social development in a clean and secure environment.

- These pillars are anchored on the following foundations: macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor; infrastructure; energy; science, technology and innovation; land reform; human resources development; security and public sector reforms.
- The Vision 2030 aims at transforming Kenya into a globally competitive, newly industrialized, middle income and
 prosperous country. The growth objectives underpinning the Vision 2030 require a sustainable annual economic
 growth rate of more than 10% supported by industry, agriculture and services.
- Efficient, accessible and reliable infrastructure has been identified as an enabler for achieving sustained economic growth, development and poverty reduction by lowering cost of doing business and improving the country's global competitiveness. The proposed Project aims to support creation of distribution infrastructure to enhance electricity service provision in Kenya in tandem with Vision 2030 on energy as a key enabler

4.2.16 Third Medium Term Plan (MTP III) (2018-2022)

The Third Medium Term Plan (MTP III) (GOK, 2018) of the Kenya Vision 2030 outlines the main policies, legal and institutional reforms as well as programmes and projects that the Government plans to implement during the period 2018-2022. It builds on the achievements of the first and second MTPs and prioritizes implementation of the Big Four Agenda initiatives.

Under infrastructure, the Plan aims to meet the demands of a growing population through the following programmes and projects: \neg Increased electricity generation capacity from 2,699 MW in FY 2017/18 to 5,221 MW in FY 2021/22 \neg Connect 5 million new households and 15,739 public institutions to electricity through the Last Mile Connectivity Programme The proposed project is hence in line with the MTP III as it will support the enhanced distribution of electricity geared towards power for the last mile connectivity programme

4.2.17 Least Cost Power Development Plan, 2017- 2037

This is a long term 20 year rolling plan covering the period 2017-2037. It integrates Feed-In-Tariff Policy approvals and provides a focus on the Government Big 4 Agenda in which energy is expected to be a central enabler of the programme.

The report covers a comprehensive load forecast, addresses the committed generation projects between 2017-2024 and the expansion programme for the period 2025-2037.

The main objective of the plan and its update (from 2011 -2030) is to take into account new assumptions, reflect on emerging technologies as well as market dynamics that may influence future power expansion plan and accommodate new Government policy guidance on renewable energy expansion in the immediate long term.

A key objective of the plan is to simulate the generation plants; - and prepare a Transmission and distribution System expansion plan in line with the generation expansion. On distribution plan the report covers the target network for the period 2017-2037 ensuring that the target network is adequate, secure and cost effective.

4.3 The National Legal, and Regulatory Framework

4.3.1 The Constitution of Kenya, 2010:

The Constitution is the supreme law of the Republic and binds all persons and all State organs at all levels of government. The Constitution of Kenya, 2010 provides the broad framework regulating all existence and development aspects of interest to the people of Kenya, and along which all national and sectoral legislative documents are drawn.

In relation to the environment, article 42 of chapter four, *The Bill of Rights*, confers to every person the right to a clean and healthy environment, which includes the right to have the environment protected for the benefit of present and future generations through legislative measures, particularly those contemplated in Article 69, and to have obligations relating to the environment fulfilled under Article 70.

Chapter 5 provides the main pillars on which the 77 environmental statutes are hinged.

Part 1 of the chapter dwells on land, outlining the principles informing land policy, land classification as well as land use and property. Of core importance is the definition of private land as land within the project area is largely privately owned, and would be acquired for irrigation purposes.

The second part of this chapter directs focus on the environment and natural resources. It provides a clear outline of the state's obligation with respect to the environment, thus;

"The state shall-

- a) Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;
- b) Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;
- c) Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;
- d) Encourage public participation in the management, protection and conservation of the environment;
- e) Protect genetic resources and biological diversity;
- f) Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;
- g) Eliminate processes and activities that are likely to endanger the environment; and
- h) Utilise the environment and natural resources for the benefit of the people of Kenya."

There are further provisions on enforcement of environmental rights as well as establishment of legislation relating to the environment in accordance to the guidelines provided in this chapter.

In conformity with the Constitution of Kenya, 2010, every activity or project undertaken within the republic must be in tandem with the state's vision for the national environment as well as adherence to the right of every individual to a clean and healthy environment.

According to Section 69 (2), every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources

Section 70 provides for enforcement of environmental rights allowing persons who feel their right to a clean and healthy environment is being or is likely to be, denied, violated, infringed or threatened, to apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

Essentially, the new Constitution has embraced and provided further anchorage to the spirit and letter of EMCA 1999 whose requirements for environmental protection and management have largely informed Sections 69 through to 71 of this document. In Section 72 however, the new constitution allows for enactment of laws towards enforcement of any new provisions of the Supreme Law.

4.3.2 The Environment Management and Co-ordination Act, 1999, Amended 2015 and 2019

This is an Act of Parliament providing for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto.

Part II of the Environment Management & Coordination Act, 1999 states that every person in Kenya is entitled to a clean and healthy environment and has the duty to safeguard and enhance the environment. In order to partly ensure this is achieved, Part VI of the Act directs that any new programme, activity or operation should undergo environmental impact assessment and a report prepared for submission to the National Environmental Management Authority (NEMA), who in turn may issue a license as appropriate.

KPLC is committed to ensuring that all its activities are carried out in an environmentally friendly manner throughout the three major project phases of design, construction and operation of the proposed project.

The Act provides for the setting up of the various ESIA Regulations and Guidelines which are discussed below:

4.3.2.1 The Environmental Impact (Assessment and Auditing) Regulations, 2003 and (Amendment) Regulations, 2016 (L.N 149) & 2019 (L.N 32)

This regulation provides guidelines for conducting Environmental Impact Assessments and Audits. It offers guidance on the fundamental aspects on which emphasis must be laid during field study and outlines the nature and structure of Environmental Impact Assessments and Audit reports. The legislation further explains the legal consequences of partial or non-compliance to the provisions of the Act.

Environmental Impact Assessment under the EMCA Cap 387 Act is guided by the Environmental Impact Assessment (Assessment and Auditing) Regulations of the year 2003, which is given under legal notice no. 101 and (Amendment) Regulations, 2016 (L.N 149) & 2019 (L.N 32)

The regulations stipulate the ways in which environment impact assessment and audits should be conducted. The project falls under the second schedule of EMCA, Cap 387 High Risk Project that requires an Environmental Impact Assessment Study be undertaken to provide baseline information upon which subsequent environmental control audit shall be based.

Under Legal Notice No 32 amending the Second schedule of EMCA, power and infrastructure projects involving Low voltage power lines and sub stations are classified as medium risk projects. and thus require comprehensive project reports Environmental Impact Assessments before commencement. The project cannot start before the license is granted, upon conducting the EIA. For this reason, Kenya Power has to undertake ESIA studies for their sub projects.

The EMCA, Cap 387 requires that during the EIA process a proponent shall in consultation with the Authority seek views of persons who may be affected by the project or activity through posters, newspaper, radio and public meetings with the affected parties and communities. This Report complies with the requirements of the Environmental Regulations in the coverage of environmental issues, project details, impacts, legislation, mitigation measures, management plans and procedures. The Proponent shall be required to commit to implementing the environmental management plan laid out in this report and any other conditions laid out by NEMA.

4.3.2.2 The Environmental Management Coordination (Waste Management) Regulations): Legal Notice 121

The regulation provides that a waste generator shall use cleaner production methods, segregate waste generated and the waste transporter should be licensed. The notice further states no person shall engage in any activity likely to generate any hazardous waste without a valid Environmental Impact Assessment license issued by the National Environment Management Authority.

Hazardous waste will not be generated from this development. The project proponent will ensure that waste is segregated and a licensed waste transporter is contracted to disposed solid waste.

4.3.2.3 The Environmental Management Coordination (Water Quality) Regulations): Legal Notice 120

This Legal Notice on Water Quality provides that anyone who discharges effluent into the environment or public sewer shall be required to apply for Effluent Discharge License. The license for discharge is Kshs 5,000 while annual license fee for discharge into the environment will be Kshs. 20,000 or Kshs 100,000 depending on the facility. Non-compliance with the regulations attracts a fine not exceeding Kshs 500,000 and the polluter pay principle may apply depending on the court ruling.

4.3.2.4 Environmental Management and Coordination (Noise and Excessive Vibration pollution) (Control) Regulations, 2009: Legal Notice 61

This regulation prohibits any person to cause unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. Part 11 section 6(1) provides that no person is shall cause noise from any source which exceeds any sound level as set out in the First Schedule of the regulations.

4.3.2.5 Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006

This legislation aims at enhancing preservation of biodiversity and safeguarding of endangered and rare plant and animal species within any human activity area.

Section 4 of the legislation expressly prohibits any activity which may have adverse effects on any ecosystem, lead to introduction of alien species in a given area or result in unsustainable utilization of available ecosystem resources.

4.3.2.6 Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations 2006

These regulations are described Legal Notice No. 131 of the Kenya Gazette Supplement no. 74, October 2006 and will apply to all internal combustion engine emission standards, emission inspections, the power of emission inspectors, fuel catalysts, licensing to treat fuel, cost of clearing pollution and partnerships to control fossil fuel emissions. The fossil fuels considered are petrol, diesel, fuel oils and kerosene.

4.3.2.7 Environmental Management and Coordination (Air Quality) Regulations, 2014

The objective this regulation is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air.

- It provides for the establishment of emission standards for various sources, including as mobile sources (e.g. motor vehicles).
- Emission limits for various areas and facilities have been set.
- The regulations provide the procedure for designating controlled areas, and the objectives of air quality management
 plans for these areas. Although impacts on air pollution is listed minor, the Proponent shall observe policy and regulatory
 requirements and implement the mitigation measures proposed in this document to comply with the provisions of these
 Regulations on abatement of air pollution.

4.3.3 County Government Acts, 2012

This Act makes provisions for county governments' powers, functions and responsibilities to deliver services and for connected purposes. Part VIII of the act on Citizen Participation (87) (b) emphasizes on the right of citizens to participate to any development projects prior to their implementation.

This is the primary law governing the development of counties and thereby will be key during implementation of the Kenya Power projects. All organs established under this law should be consulted and approvals sought from the relevant authorities in relation to the relevant County Government where the project will be located.

4.3.4 Physical and Land Use Planning Act, 2019;

The Physical and Land Use Planning Act, 2019 provides for the preparation and implementation of physical development plans.

Section 55 of the Act provides for development control to protect and conserve the environment and to ensure orderly physical and land use development amongst others. These includes process and procedures for processing of easements and way-leaves; siting of base distribution station, power generation Plants etc.

The third schedule section 4 of the act specifically highlights that planning authorities shall require applications for major developments to be subjected to environmental and social impact assessment. The proponent and contractors of the proposed distribution line and substations should ensure compliance with the provisions of the act and land use planning. Public participation has been conducted to ensure the involvement of stakeholders in the planning process.

4.3.5 Urban Areas and Cities Act No. 13 of 2011

This is an act of Parliament to give effect to Article 184 of the Constitution; to provide for the, classification, governance and management of urban areas and cities; to provide for the criteria of establishing urban areas, to provide for the principle of governance and participation of residents and for connected purposes. This act will apply where Kenya Power projects will be located within urban areas and cities.

4.3.6 Land Act, 2012

This Act gives effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land based resources, and for connected purposes.

Section 110(1) of the Act provides that land may be acquired compulsorily if the National Land Commission certifies, in writing, that the land is required for public purposes or in the public interest as related to and necessary for fulfilment of the stated public purpose.

In such an acquisition, this Act, in section 111(1) provides that just compensation shall be paid promptly in full to all persons whose interests in the land have been determined.

4.3.7 The Land and Environment Court Act 2011

This is an Act of Parliament to give effect to Article 162(2)(b) of the Constitution; to establish a superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to, land, and to make provision for its jurisdiction functions and powers, and for connected purposes. The principal objective of this Act is to enable the Court to facilitate the just, expeditious, proportionate and accessible resolution of disputes governed by this Act.

Section 13 (2) (b) of the Act outlines that in exercise of its jurisdiction under Article 162 (2) (b) of the Constitution, the Court shall have power to hear and determine disputes relating to environment and land, including disputes:

- Relating to environmental planning and protection, trade, climate issues, land use planning, title, tenure, boundaries, rates, rents, valuations, mining, minerals and other natural resources;
- Relating to compulsory acquisition of land;
- Relating to land administration and management;
- Relating to public, private and community land and contracts, chooses in action or other instruments granting any enforceable interests in land; and
- Any other dispute relating to environment and land.

4.3.8 Way Leaves Act Cap 292

Section 143 (2) states that a public right of way may be—a right of way created for the benefit of the national or county government, a local authority, a public authority or any corporate body to enable all such institutions, organizations, authorities, and bodies to carry out their functions, referred to in this Act as a wayleave; or (b) a right of way created for the benefit of the public, referred to in section 145 of this Act as a communal right of way.

4.3.9 Water Act, 2016

The Water Act No. 43 of 2016 was assented to on 20th September 2016. The new Act repealed the water Act 2002. The Act provides for the establishment of the Water Resources Authority (WRA) who have the responsibility to regulate the management and use of water resources. The Act provides for the regulation, management and development of water resources and water and sewerage services in line with the Constitution. The enactment of this law aimed at aligning national water management and water services provision with the requirements of the Constitution of Kenya 2010 particularly on the devolving of water and sanitation services to the county governments.

The Act stipulates that a permit shall be required in all cases of proposed diversion, abstraction, obstruction, storage or use of water, with minor exceptions relating to use for domestic purposes (Section.36). A person shall not throw, convey, cause or permit to be thrown or conveyed, any rubbish, dirt, refuse, effluent, trade waste or other offensive matter or thing into or near to any water resource in such manner as to cause, or be likely to cause, pollution of the water resource

4.3.10 Energy Act of 2019

AN ACT of Parliament to consolidate the laws relating to energy, to provide for National and County Government functions in relation to energy, to provide for the establishment, powers and functions of the energy sector entities; promotion of renewable

energy; exploration, recovery and commercial utilization of geothermal energy; regulation of midstream and downstream petroleum and coal activities; regulation, production, supply and use of electricity and other energy forms; and for connected purposes.

Part VI Section 117 states that A person who wishes to carry out the generation, exportation, importation, transmission, distribution and retail supply of electricity must apply for a licence as the case may be to the Authority in accordance with the provisions of this Act: section 121 (1) states that the Authority shall, in granting or rejecting an application for a licence, take into consideration (a) the impact of the undertaking on the social, cultural or recreational life of the community;

(b) the need to protect the environment and to conserve the natural resources in accordance with the Environmental Management and Coordination Act; while (h) considers the ability of the applicant to operate in a manner designed to protect the health and safety of its employees and users of the service for which the licence is required and other members of the public who would be affected by the undertaking.

4.3.11 Penal Code Act (Cap.63)

Section 191 of the penal code states that if any person or institution that voluntarily corrupts or foils water for public springs or reservoirs, rendering it less fit for its ordinary use is guilty of an offence. Section 192 of the same Act says a person who makes or vitiates the atmosphere in any place to make it noxious to health of persons /institution, dwelling or business premises in the neighborhood or those passing along public way, commit an offence.

KPLC shall observe the guidelines as set out in the environmental management and monitoring plan laid out in this report as well as the recommendation provided for mitigation/minimization/avoidance of adverse impacts arising from the project activities.

4.3.12 Wildlife Conservation and Management Act, 2013

This Act provides for the protection, conservation, sustainable use and management of wildlife in Kenya. The law has as one of its guiding principles the devolution of conservation and management of wildlife to landowners and managers in areas where wildlife occurs, through in particular the recognition of wildlife conservation as a form of land-use, better access to benefits from wildlife conservation, and adherence to the principles of sustainable utilization.

4.3.13 The Forest Conservation and Management Act 2016

The Act led to the establishment of Kenya Forest Service which is charged with management of forests in consultation with the forest owners. The body enforces the conditions and regulations pertaining to logging, charcoal making and other forest utilization activities.

To ensure community participation in forest management, the service collaborates with other organizations and communities in the management and conservation of forests and for the utilization of the biodiversity.

Section 43 subsection 1 provides that if mining, quarrying or any other activity carried out in the forest, shall, where activity concerned is likely to result in forest cover depletion, the person responsible shall undertake compulsory re-vegetation immediately upon the completion of the activity.

4.3.14 The National Museums and Heritage Act 2006.

The Act seeks to consolidate the law relating to national museums and heritage; to provide for the establishment, control, management and development of national museums and the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya; to repeal the Antiquities and Monuments Act and the National Museums Act.

The Act requires that where a person discovers a monument or object of archaeological or palaeontological interest, the person shall, within seven days, give notice thereof, indicating the precise site and circumstances of the discovery, to the National Museums, and in the case of an object, shall deliver the object to the National Museums or to the District Commissioner to keep it for any particular purpose or for any particular period. Subject to section 27, no person shall move a monument 'Or object of archaeological or paleontological interest from the place where it has been discovered otherwise than in such manner and to such place as may be allowed by an, exploration license, or by written permit from the Minister after consultation with the National Museums."

The project routes will be designed deliberately to as no to interfere the cultural heritage and includes objects of archaeological or paleontological interest, objects of historical interest and protected objects.

The Act will be triggered as a precaution and due process will be followed in case of chance find of cultural heritage along the proposed route.

4.3.15 Occupational Safety and Health Act, 2007

The Act provides for the safety, health and welfare of workers and all persons lawfully present at work place, as well as the establishment of the National Council for Occupational Safety and Health and for connected purposes.

Section 3(1) and (2) of the Act explains that it applies in all workplaces where any person is at work, either temporarily or permanently. It expounds on the purpose, which is to secure the safety, health and welfare of persons at work as well as protecting persons other than persons at work against risks resulting from, or connected to, activities at workplace.

Further, sections 43 and 44 of part V give regulations on registration of work places. This shall be considered at the construction, implementation and decommissioning phases of the project.

The act requires:

- Provision of suitable protective clothing and appliances including where necessary, suitable gloves, footwear, goggles, gas masks, and head covering, and maintained for the use of workers in any process involving exposure to wet or to any injurious or offensive substances.
- Training and supervision of inexperienced workers, protection of eyes with goggles or effective screens must be
 provided in certain specified processes, adequate and suitable means for extinguishing fire must be provided in
 addition to adequate means of escape in case of fire must be provided.
- An adequate supply of both quantity and quality of wholesome drinking water must be provided. Maintenance of suitable washing facilities, accommodation for clothing not worn during working hours must be provided.
- Every premise shall be provided with maintenance, readily accessible means for extinguishing fire and person trained in the correct use of such means shall be present during all working periods.
- Regular individual examination or surveys of health conditions of industrial medicine and hygiene must be performed and the cost will be met by the employer. This will ensure that the examination can take place without any loss of earning for the employees and if possible within normal working hours.
- The (OSH) Act provides for development and maintenance of an effective programme of collection, compilation and analysis of occupational safety. This will ensure that health statistics, which shall cover injuries and illness including disabling during working hours, are adhered.

The environmental management plan (EMP) advices the Proponent on safety and health aspects, potential impacts, personnel responsible for implementation and monitoring, frequency of monitoring, and estimated cost.

4.3.16 Work Injury and Benefits Act, (WIBA) 2007

This Act provides for compensation to employees for work related injuries and disease contracted in the course of their employment and for connected purposes. Key sections of the Act include the obligations of employers; right to compensation; reporting of accidents; compensation; occupational diseases; medical aid etc. In case of any accidents or incidents during the project cycle, this Act will guide the course of action to be taken.

4.3.17 The Traffic Act Cap 403 0f 2009

This Act consolidates the law relating to traffic on all public roads. Key sections include registration and licensing of vehicles; driving licenses; driving and other offences relating to the use of vehicles on roads; regulation of traffic; accidents; offences by drivers other than motor vehicles and other road users. Many types of equipment and fuel shall be transported through the roads to the proposed site. Their registration and licensing will be required to follow the stipulated road regulations. The Act also prohibits encroachment on and damage to roads including land reserved for roads. KPLC will observe the provisions of the Act.

4.3.18 Kenya Roads Act, 2007;

This is an Act of Parliament that provided for the establishment of Kenya Road Agencies i.e. Kenya National Roads Authority (KeNHA), the Kenya Urban Roads Authority (KURA) and the Kenya Rural Roads Authority (KeRRA) and provided powers and functions of the authorities.

The Rural Roads Authority has the responsibility for the management, development, rehabilitation and maintenance of rural roads. Article 49 of the act requires written permission to be obtained from for construction or erection of any structures or other thing on, over, and below roads the surface of a road reserve.

KeRRA functions and duties include (a) constructing, upgrading, rehabilitating and maintaining roads under its control; and (b) controlling reserves for rural roads and access to roadside developments. The various Roads Authorities will be key stakeholders in the development of the project and most important during construction phases for development and maintenance of road access within the project areas.

4.3.19 The Civil Aviation Act No. 21 of 2013

The provisions of this Act or any regulations made thereunder shall, except where expressly or by implication excluded, apply to—

- a) All aircraft whilst in or over any part of Kenya;
- b) All Kenya aircraft and the crew and other persons on board wherever they may be; and
- c) All aerodromes and service providers within aerodromes.

The provisions of this Act shall not, except where expressly included or if the Cabinet Secretary so directs by order published in the Gazette, apply to state aircraft or to any class or classes of state aircraft. All aircraft shall be subject to the requirements of this Act in respect of rules of the air. The proposed Substation upgrade is not going to penetrate the atmosphere beyond 15 meters and isnot proximal to any airstrip and this act will not be triggered.

4.3.20 The Employment Act, 2007

The Employment Act, 2007 defines the fundamental rights of employees including the basic conditions of employment of workers. It also regulates employment of children. The contractor shall vet the ages of those engaged in the project through scrutinizing their national identity cards.

The contractor on site shall employ labourers with priority given to the local community for the jobs they qualify and remunerate according to the market conditions. The basic conditions of employees shall be observed to avoid unnecessary conflicts during the construction works. The Contractor shall pay the entire amount of the wages earned by or payable to the workers. Payment of such wages shall be done as per the agreement contract.

The Contractor shall also ensure that all statutory deductions are submitted without delay to appropriate government agencies e.g. Kenya Revenue Authority, NSSF, NHIF, among others, ensure safety to workers and public and adhere to all the provisions of this act.

4.3.21 The Public Health Act (Chapter 242) of Revised Edition 2012

The Public Health Act (Chapter 242) is an Act of Parliament that provides for securing and maintaining good health of citizens. The Act contains directives that are focused on ensuring protection of human health. There are provisions within the Act that deal with water, air and noise quality as they pertain to human health. An environmental nuisance includes the emission from premises of wastewaters, gases and smoke, which could be regarded as injurious to health. The owner and/or occupier of premises responsible for such nuisances are liable to prosecution under the Act. The upgrading works of the substation has potential pollution risks related to water and air. The contractor will need to ensure that air and water pollution is controlled and does not affect the immediate neighbours.

Part IX, section 115, of the Act states that no person/institution shall cause nuisance or condition liable to be injurious or dangerous to human health. Section 116 requires that Local Authorities take all lawful, necessary and reasonably practicable measures to maintain their jurisdiction clean and sanitary to prevent occurrence of nuisance or condition liable to be injurious or dangerous to human health. Such nuisance or conditions are defined under section 118 and include nuisances caused by accumulation of materials or refuse which in the opinion of the medical officer of health is likely to harbour rats or other vermin. The environmental management plan (EMP) advices the Proponent on safety and health aspects, potential impacts, personnel responsible for implementation and monitoring, frequency of monitoring, and estimated cost.

KPLC shall observe policy and regulatory requirements and implement measures to safeguard public health and safety.

4.3.22 Security Laws (Amendment) Act, 2014

This act entails a legal framework and jurisdiction on security matters. It is a constitutional entitlement to live and feel secure from agents that may compromise ones' life and safety. Security measures are vital in this project both for the contractor and the community.

It is recommended that the government takes keen interest in providing adequate support to enhance the security of persons involved in this project and the community at large. This also calls for cooperation between proponent, contractor and the local administration and security agencies.

4.3.23 The Children Act, 2022

This Act protects the welfare of children within the Country. The Act identifies Children as a person below the age of 18 years old and safeguards for the rights and best interests of the child. Of particular importance to this project are sections: 18 - Protection from child labour, Sexual exploitation, and Economic exploitation, any work that interferes with his / her education, or is harmful to the child's health or physical, mental, spiritual, moral or social development. 20 - Rights of Children with

disabilities factoring access to institutions and homes 22 - Protection from abuse etc. 24 - Protection from drugs and substance abuse.

4.3.24 Persons with Disability Act, Chapter 133

This act protects the rights of people with disabilities ensuring they are not marginalized and that they enjoy all the necessities of life without discrimination. The act guarantees that (1) No person shall deny a person with a disability access to opportunities for suitable employment. (2) A qualified employee with a disability shall be subject to the same terms and conditions of employment and the same compensation, privileges, benefits, fringe benefits, incentives or allowances as qualified ablebodied employees. (3) An employee with a disability shall be entitled to exemption from tax on all income accruing from his employment.

4.3.25 Climate Change Act, 2016.

The Climate change Act, 2016 is an Act of Parliament to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development towards the sustainable development of Kenya.

The Act shall be applied in all sectors of the economy by the national and county governments to, among others mainstream climate change responses into development planning, decision making and implementation; build resilience and enhance adaptive capacity to the impacts of climate change; mainstream and reinforce climate change disaster risk reduction into strategies and actions of public and private entities; provide incentives and obligations for private sector contribution in achieving low carbon climate resilient development; promote low carbon technologies, improve efficiency and reduce emissions intensity by facilitating approaches and uptake of technologies that support low carbon, and climate resilient development.

The guiding values and principles of low carbon climate change resilient and development include:

- ensure promotion of sustainable development under changing climatic conditions;
- ensure equity and social inclusion in allocation of effort, costs and benefits to cater for special needs, vulnerabilities, capabilities, disparities and responsibilities; ensure integrity and transparency;
- Ensure participation and consultation with stakeholders.

4.3.26 HIV / AIDS Prevention and Control Act, 2006

The Act provides for measures of prevention, management and control of HIV and AIDS. It Promotes public health, counselling, support and care for those affected or living with HIV. This Act provides for Voluntary Counselling and Testing (VCT) for the workers and for non-discrimination with regard to one's status. It also provides for management of HIV and AIDS and bringing down stigmatization.

4.3.27 The National Gender and Equality Act, 2011

National Gender Equality Commission is a constitutional Commission established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to Article 59 of the Constitution. NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination. Gender mainstreaming ensures that the concerns of women and men form an integral dimension of the project design, implementation, operation and the monitoring and evaluation and ensures that women and men benefit equally, and that inequality is not perpetuated..

4.3.28 The Sexual Offences Act, 2006 and its amendment 2012

This Act protects people and employees from any unwarranted sexual attention or advances by staff members. This act ensures the safety of women, children and men from any sexual offences which include: rape, defilement, indecent acts. This law will govern the code of conduct of the Contractor's staff and provide repercussions of any wrong doing by an offender. The contractor in addition to observing this Act shall develop a Gender Based Plan to manage any Gender Based Violence (GBV) that may manifest in form of Sexual Exploitation and Abuse, Sexual Harassment and Gender Violence.

4.3.29 Public Participation Act, 2018

The Public Participation Act: provides a general framework for effective public participation; and gives effect to the constitutional principles of democracy and participation of the people under Articles 1(2), 10(2), 35, 69(1)(d), 118, 174(c) and (d), 184(1)(c), 196,201(a) and 232(1)(d) of the Constitution. According the Act, the conduct of public participation shall be guided by the following principles - a. Principles. that the public, communities and organizations to be affected by a decision shall have a right to be consulted and involved in the decision-making process; b. provision of effective mechanisms for the involvement of the public, communities and organizations that would be affected by or be interested in a decision; participants' equitable access to the information they need to participate in a meaningful manner; c. that public views shall be taken into consideration in decision making; development of appropriate feedback mechanisms; and d. Promotion of sustainable decisions recognizing the needs and interests of all participants, including decision makers. The beneficiaries and local leaders shall be involved through a continuous consultation process throughout the project implementation.

4.4 Institutional /Administrative framework

4.4.1 Relevant Institutions for Environmental Issues

4.4.1.1 National Environment Management Authority

The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and coordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

In addition to NEMA, the Act provides for the establishment and enforcement of environmental quality standards to be set by a technical committee of NEMA known as the Standards and Enforcement Review Committee (SERC) which governs the discharge limits to the environment by the proposed project.

County Environmental Committees

The County Environmental Committees contribute to decentralized environmental management and enable the participation of local communities. These environmental committees consist of the following:

i) Representatives from all the ministries;

Representatives from local authorities within the province/district;

- iii) Two farmers / pastoral representatives;
- iv) Two representatives from NGOs involved in environmental management in the province/district;
- v) A representative of each regional development authority.

4.4.1.2 National Environmental Complaints Committee (NECC)

The National Environmental Complaints Committee (NECC) was established under Section 31 of the Environmental Management and Co-ordination Act, 1999. It was formerly known as the Public

Complaints Committee (PCC) but its name changed in the EMCA (Amendment) No. 5 of 2015). It is an important institution in the assessment of the condition of the environment in Kenya. It plays an important role in the facilitation of alternative dispute resolution mechanisms relating to environmental matters. The NECC makes recommendations to the Cabinet Secretary and thus contributes significantly to the formulation and development of environmental policy.

The membership of NECC is drawn from key stakeholders in environmental management. The

Committee consists of seven members headed by a Chairperson, who is appointed by the Cabinet Secretary and qualifies to be a judge of the Environment and Land Court of Kenya. Other members are; a representative of the Attorney General, a representative of the Law Society of Kenya, one person who has demonstrated competence in environmental matters to be nominated by the Council of Governors and who is the Secretary to the Committee, a representative of the business community and two members, appointed by the Cabinet Secretary for their active role in environmental management.

4.4.1.3 National Environmental Tribunal (NET)

The NET is established under Section 125 of EMCA for the purpose of hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA license or by a local community upon the grant of an EIA license to a project proponent. NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. The proceedings of NET are not as stringent as those in a court of law and NET shall not be bound by the rules of evidence as set out in the Evidence Act. Upon the making of an award, NET's mandate ends there as it does not have the power to enforce its awards. EMCA provides that any person aggrieved by a decision or award of NET may within 30 days appeal to the High Court.

4.4.1.4 Environment and Land Court

The Kenya Constitution establishes Environment and Land Court1. Article 162 of the constitution provides for the creation of specialized courts to handle all matters on land and the environment.

The court has the status and powers of a High Court in every respect. Article 159 on the principles of judicial authority, indicates that courts endeavors to encourage application of alternative dispute resolution mechanisms, including traditional ones, so long as they are consistent with the constitution. Section 20, of the Environment and Land Court Act, 2011 empowers the Environment and Land Court, on its own motion, or on application of the parties to a dispute, to direct the application of including traditional dispute resolution mechanisms.

4.4.1.5 County Government

The County Governments have powers to control or prohibit all businesses, factories and other activities including new projects which maybe or become a source of danger, discomfort or annoyance to the neighborhood and to prescribe conditions subject to which such activities shall be carried.

4.4.2 Institutions relevant to Social issues management

The constitution provides for several institutions to address issues of vulnerable and marginalized groups including grievance and conflict handling mechanisms as provided for in this project ESMF as well as in the project Implementation plans. Key constitutional mechanisms for redress of issues related to marginalization include the (a) Commission on Administrative Justice-Office of the Ombudsman; (b) National Land Commission; and (c) Committee on Revenue Allocation

4.4.2.1 Commission on Administrative Justice (CAJ) – Office of the Ombudsman

Kenya has a formal Feedback and Complaints Handling Mechanism.

The Commission is the national/constitutional stakeholder instrument for grievance redress. Its mandate is to receive and address complaints against public officers and public institutions to improve service delivery. Three types of complaints can be made to the office of the Ombudsman including:

- (i) Citizen against State/public officers and institutions;
- (ii) (ii) Public officers against fellow public officers; and,
- (iii) (iii) Public institutions against other public institutions.

Table 9 below provides the steps and process for feedback and complaints redress by the Ombudsman. The Ombudsman has a three step and time bound mechanism for feedback and grievance redress, as shown below.

Table 4-1: Feedback and Complaints Redress by the CAJ (the Ombudsman)

STEP 1	Complainant fills in a Complaint Form
	Complaint is assessed for compliance with CAJ Mandate;
	• If within mandate, CAJ commences inquiries and complainant is issued with copy of communication -
	CAJ 2 [Sec. 43];
	• If NOT within CAJ mandate, Complainant is advised accordingly and/or referred to appropriate
	government agencies;
	 If a response is not received from the respondent after 14 working days, CAJ sends a first reminder giving the respondent 7 days to comply;
	• If no response is received after this, a final reminder of 7 days is sent; • If there is still no response after
	28 days, summonses are issued to the respondent in line with [Sec. 27(a)].
STEP2	If after the summonses the respondent still fails to comply, the Ombudsman proceeds to:
	Determines the complaint in the absence of the respondent;
	 Institutes legal proceedings against the respondent [according to Sec. 52];
	Cites the respondent as an unresponsive State or Public Office or Officer, and/or declares such State or
	Public Officer to be unfit to serve in the Public Service;
07502	Lleve the Orehodeness undertaken aris on a nedeces estimate a second in a second intertaken Orehodeness result
STEP3	How the Ombudsman undertakes grievance redress action: In resolving a complaint, the Ombudsman may:
	• Conduct investigations according to articles [A 59 (2)(i)] [Sec 8 b)] [A 252(1)(a)] [Sec 53 (1)]:
	 Demand and obtain information or documents [S 26 (d)];
	 Conduct an inquiry [A 252(1)(a)]
	 Undertake mediation negotiation and conciliation [A 252 (1) (b)];
	Constitute a hearing panel:
	 Invite or summon any person or persons to attend to the Commission [S.26 (f)]:
	Obtain orders from the Court authorizing Searches or Seizures [Sec.26 (e)].
	Obtain warrants of arrest for breach of any summons or orders of the Commission

4.4.2.2 National Gender Equality Commission

National Gender Equality Commission is a constitutional Commission established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to Article 59 of the Constitution. NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination. The over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all; women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities. The Agency has specific mandates including ensuring that those considered marginalized benefit from the project interventions.

4.4.2.3 Kenya National Commission on Human Rights

The Kenya National Commission on Human Rights (KNCHR) is an autonomous national human rights institution established under Article 59 of the Constitution of Kenya 2010. The commission has a core mandate to further the promotion and protection of human rights in Kenya. This is categorized further into two key broad mandates, namely:

- To act as a watch-dog over the Government in the area of human rights; and
- To provide key leadership in moving the country towards a human rights state.

The main goals of KNCHR are to investigate and provide redress for human rights violations; research and monitor the compliance of human rights norms and standards; conduct human rights education, to facilitate training, campaigns and advocacy on human rights; and collaborate with other stakeholders in Kenya.

4.4.2.4 State Department for Social Protection

The department is responsible for sectoral oversight and management of all matters concerning children, older persons and PWDs, including related policies, social development and management of statutory institutions. The State Department has officers in all counties and most of sub-counties across the country. Since they focus on children, older persons and PWDs, the officers are key resource in the selection of beneficiaries and monitoring the project's social impacts.

4.4.2.5 National Council for Persons with Disabilities (NCPWD)

The NCPWD oversees all matters relating to PWDs, including:

- Statutory responsibility for facilitation of disability mainstreaming programmes;
- Formulating and developing measures and policies designed to achieve equal opportunities for PWDs;
- Cooperating with the government;
- Recommending measures to prevent discrimination against PWDs; and
- Registering persons with disabilities and institutions and organizations giving services to PWDs.

The NCPWD has officers in all counties and a documented list of persons with disabilities that could inform implementation of the project. The officers could also support the process of translating documents and communicating with PWDs (e.g. sign language and braille).

4.4.2.6 Directorate of Occupational Safety and Health Services (DOSHS)

- Inspecting workplaces to ensure compliance with safety and health laws, including:
- Examination and testing of regulated equipment;
- Measurements of workplace pollutants for purposes of their control;
- Investigation of occupational accidents and diseases with a view to preventing recurrence;

- Medical examinations of workers;
- Training on OSH, first aid and fire safety; and
- Disseminating information on occupational safety and health to customers

4.4.2.7 The Energy and Petroleum Regulatory Authority (EPRA)

EPRA was established by the Energy Act of 2019. The EPRA's mandate extends beyond electricity and includes natural gas (including petroleum), renewables and all other forms of energy. The generation, transmission, transmission, supply, import and export of electricity can only be carried out by parties in possession of a license or a permit issued by the EPRA. In the event that the capacity involved is for own use and less than 1 MW, authorization is not required. Although the generated electricity is expected to be less than 1 MW (0.3 - 1 MW), the fact that the generated electricity is intended for use in a factory and there is a possibility for connection to the national grid and sale of excess power to the government, the project requires a license from the EPRC to generate electricity as stipulated in the Energy Act, 2019.

The Energy and Petroleum Regulatory Authority (Authority) together with industry stakeholders have developed the Draft Energy (Mini-Grid) Regulations, 2021 (the 'Regulations'). The Regulations have been developed within provisions 10, 11 and 208 of the Energy Act, 2019 (the 'Act') and shall constitute Regulations to the Act.

4.4.2.8 Ministry of Energy and Petroleum:

MoE&P aims to facilitate provision of clean, sustainable, affordable, reliable, and secure energy services for national development while protecting the environment. The ministry will be responsible for not only implementing the community projects like energy conservation and cooking solutions but will also the overall coordination of project implementation and oversight.

4.5 Multilateral Environmental Agreements and Guidelines

Kenya has ratified various international conventions that related to the protection of the environment that may be directly or indirectly applicable to the proposed sub-projects' operations and processes in the selected countries. These are discussed as follows: -

4.5.1 United Nations Framework Convention on Climate Change (UNFCCC or FCCC)

This is an international environmental treaty produced at the United Nations Conference on

Environment and Development (UNCED) in Rio de Janeiro in 1992, informally known as the Earth

Summit. The objective of the treaty is to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The treaty itself sets no mandatory limits on greenhouse gas emissions for individual countries and contains no enforcement mechanisms. In that sense, the treaty is considered legally non-binding.

Instead, the treaty provides for updates (called "protocols") that would set mandatory emission limits. The principal update is the Kyoto Protocol, Kyoto protocol was a protocol under the UNFCCC and has now ceased, the latest convention under UNFCCC being the Paris agreement concluded during COP 21 in Paris, France where Countries made a commitment through there Nationally Determined Conditions (NDC) to reduce their emissions.

The project shall implement climate smart agriculture to limit emission from agricultural practices that are a significant contributor to GHG emissions.

Kyoto was drawn up in 1997, pursuant to the objectives of the United Nations Framework Convention on Climate Change, in which the developed nations agreed to limit their greenhouse gas emissions, relative to the levels emitted in 1990;

4.5.2 International Convention on Biological Diversity (CBD) of 1992

This Convention entered into force on 29 December 1993, and its objectives are to: conserve biological diversity; use biological diversity in a sustainable fashion and share the benefits of biological diversity fairly and equitably. This Convention governs Kenya's international obligations regarding biological diversity;

This treaty promotes the protection of ecosystems and natural habitats, respects the traditional lifestyles of indigenous communities, and promotes the sustainable use of resources. The project, however, does not envisage any interference with protected ecosystems.

Project specific ESMPs shall be prepared and implemented for all subprojects to ensure that mitigation measures adequately address potential impacts.

4.5.3 World Heritage Convention, 1972

This Convention aims to encourage the identification, protection, and preservation of Earth's cultural and natural heritage. It recognizes that nature and culture are complementary and that cultural identity is strongly related to the natural environment in which it develops.

Kenya is a party to this convention which is concerned with cultural and natural heritage. The convention deals with monuments and areas that are deemed to be of 'outstanding universal value' in terms of beauty, science and/or conservation. Kenya has several sites that have been declared

World Heritage Sites, such as Mt. Kenya's natural forests. Any deterioration or disappearance of such heritage is considered a loss to all the nations of the world.

A chance finds procedures has been developed to guide civil works in case of an occurrence of chance finds or any physical cultural resources.

4.5.4 Ramsar Convention, 1971

The Convention was signed in Iran in 1971 and came into force in 1975. It represents the first attempt to establish a legal instrument providing comprehensive protection for a particular type of ecosystem. The Ramsar parties agree to implement their planning so as to promote conservation of the wetlands included in the list.

The importance of wetlands and water birds is covered under the Ramsar Convention of 1971, which governs wetlands of international importance. The convention entered into force in Kenya in 1990 and Kenya is therefore committed to preventing the degradation of wetlands under its jurisdiction.

4.5.5 Agreement of the Conservation of Eurasian Migratory Water Birds (2001)

The goal of the agreement is to protect migratory waterfowl by ensuring that they are protected for the entire length of their migratory routes. The list of birds protected under the AEWA Convention covers 235 species of birds.

Kenya ratified this convention, which seeks to protect migratory water birds and facilitate the conservation of nature and natural resources. This establishes a legal imperative for GoK to ensure that the Project and its value chain development recognize and safeguard natural resources. The project activities may not pose any specific threat to Migratory Water Birds as the activities are within already disturbed environment. However, the project shall establish measures to ensure that beneficiary communities avoid practices that may endanger migratory birds or their habitat.

4.5.6 Convention on International Trade in Endangered Species of Wildlife Fauna and Flora (CITES) 1973

This convention seeks to control the trade in species of wild animals and plants that are, or may be, threatened with extinction as a result of International trade. CITES is an important line of defence against the threat posed to diversity by invasive species.

This international treaty prohibits trade in endangered and their trophies. Such species include elephant ivory, rhino horns and Dugongs among others. The project activities do not pose a specific threat to wildlife resources. However, the project shall implement measures to ensure that beneficiary communities avoid practices that may harm wildlife (e.g. hunting and trade in wildlife and wildlife products.

4.5.7 FAO: International Code of Conduct on the Distribution and Use of Pesticides

It is the duty of all users of pesticides to act responsibly when acquiring, storing and applying pesticides. They have a duty to prevent waste, avoid contamination and deal responsibly with the waste pesticides, pesticide residues and empty pesticide containers. Pesticides should only be acquired in quantities that are likely to be needed, to avoid the potential for creating obsolete stocks. The pesticides must be stored safely and securely, away from food and water supplies. The storage conditions must comply with the instructions on the label, particularly with regard to ventilation, temperature and light. Pesticide formulations stored in inappropriate conditions may deteriorate such that their shelf-life is shortened. Generally, pesticide containers should be stored in dry, well ventilated, maintained at a constant temperature, and protected from extremes of temperature.

4.5.8 Vienna Convention for the Protection of the Ozone Layer.

Inter-governmental negotiations for an International agreement to phase out ozone depleting substances concluded in March 1985 with The adoption of this convention to encourage Inter-governmental co-operation on research, systematic observation of the ozone layer, monitoring of CFC production and the exchange of information;

4.5.9 Montreal Protocol on Substances that Deplete the Ozone layer:

Adopted in September 1987 and intended to allow the revision of phase out schedules on the basis of periodic scientific and technological assessment, the Protocol was adjusted to accelerate the phase out schedules and has since been amended to introduce other kinds of control measures and to add new controlled substances to the list;

4.5.10 African Convention on Conservation of Nature and Natural Resources (1968):

This Convention of the African Union is ratified by 40 African countries, including Kenya. The fundamental principle requires contracting states to adopt the measures necessary to ensure conservation, utilization and development of soil, water, flora and fauna resources in accordance with scientific principles and with due regard to the best interests of the people.

4.6 African Development Bank Policies

4.6.1 Integrated Safeguards System and the Operational Safeguard Policies

The AfDB is concerned about the environmental and social impacts of its activities and requires environmental assessments for all projects it is to finance. Its safeguards policies, aimed at preventing and mitigating undue harm to people and their environment in the development process, also provide a platform for the participation of stakeholders in project design and implementation. The operational safeguard policies are:

Operational Safeguard 1: Environmental and social assessment. This overarching safeguard governs the process of determining a project's environmental and social category and the resulting environmental and social assessment requirements: This policy requires Environmental Assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making. The EA is a process whose breadth, depth, and type of analysis will depend on the nature, scale, and potential environmental impact of the proposed investments under the LMCP.

The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and transboundary and global environmental aspects.

The environmental and social impacts under LMCP will come from the proposed investment activities. However, since the exact location of these investments will not be identified before bank appraisal of the project, the EA process calls for the Kenya Power to prepare an Environmental and Social Management Framework (ESMF).

OS 1 is triggered in case of LMCP, as the AFDB will finance project works including the rehabilitation and refurbishment of existing infrastructure, as well as the construction of new infrastructure. The exact locations and impacts of the sub-projects have not yet been identified, though the potential impacts for such project are known from experience with the past and ongoing projects.

This report which will establish a mechanism to determine and assess future potential environmental and social impacts during implementation of LMCP activities, and then to set out mitigation, monitoring and institutional measures to be taken during operations of these activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

Operational Safeguard 1 further requires that the ESMF report must be disclosed as a separate and stand-alone document by the Government of Kenya and the AfDB as a condition for bank appraisal. The disclosure should be both in Kenya where it can be accessed by the general public and local communities and at the Banks website and the date for disclosure must precede the date for appraisal of the program/project. The policy further calls for the LMCP as a whole to be environmentally screened to determine the extent and type of the EA process. The Africa Development Bank system assigns a project to one of the four project categories, as defined below:

Category 1 Projects: An ESIA or SESA is always required for projects that are in this category. Impacts are expected to be 'adverse, sensitive, irreversible and diverse ortosignificantlyaffectenvironmental or social components that the Bank or the borrowing country considers sensitive. Any project requiring a Full Resettlement Action Plan (FRAP) under the provisions of the Bank's policy on involuntary resettlement is also deemed to be Category 1.

Category 2 Projects: Category 2 projects have impacts that are 'less significant, not as sensitive, numerous, major or diverse compared to Category 1. Few, if any, impacts are irreversible, and remedial measures can be more easily designed.' Category 2 projects are likely to have detrimental site-specific environmental and / or social impacts that are less adverse than those of Category 1 projects and can be minimized by applying appropriate management and mitigation measures or incorporating internationally recognized design criteria and standards. An operation that involves resettlement activity for which an Abbreviated Resettlement Action Plan (ARAP) is required under the ESAPs is classified as Category 2. Category 2 projects require an appropriate level of environmental and social assessment(SESA), or ESIA for investment projects

tailored to the expected environmental and social risk so that the borrower can prepare and implement an adequate ESMP (for an investment project) or ESMF (for a programme operation), to manage the environmental and social risks.

Category 3 Projects: Category 3 projects do not directly impact the environment adversely and are unlikely to induce adverse social impacts. They do not require an environmental and social assessment. Beyond Categorization, no action is required. Nonetheless, to design a Category 3 project properly, it may be necessary to carry out gender analyses, institutional analyses, or other studies on specific, critical social issues in order to anticipate and manage unintended impacts on the affected communities.

Category 4 Projects: Category 4 projects involve Bank lending to Financial Intermediaries (FIs) who on lend or invest in subprojects that may produce adverse environmental and social impacts. FIs include banks, insurance, re-insurance and leasing companies, microfinance providers and investment funds that use the Bank's funds to on-lend or provide equity finance to their clients. FIs shall also be understood to include private or public sector companies that receive corporate loans or loans for investment plans from the Bank used to finance a set of sub-projects.

Overall, LMCP III is assigned Category 2 under OS 1.

- Operational Safeguard 2: Involuntary resettlement: Land acquisition, population displacement and compensation. This safeguard consolidates the policy commitments and requirements set out in the Bank's policy on involuntary resettlement and incorporates a number of refinements designed to improve the operational effectiveness of those requirements. In particular, it embraces comprehensive and forward-looking notions of livelihood and assets, accounting for their social, cultural, and economic dimensions. It also adopts a definition of community and common property that emphasizes the need to maintain social cohesion, community structures, and the social interlinkages that common property provides. The safeguard retains the requirement to provide compensation at full replacement cost; reiterates the importance of a resettlement that improves standards of living, income-earning capacity, and overall means of livelihood; and emphasizes the need to ensure that social considerations, such as gender, age, and stakes in the project outcome, do not disenfranchise particular project-affected people.
- Operational Safeguard 3: Biodiversity and ecosystem services. This safeguard aims to conserve biological diversity
 and promote the sustainable use of natural resources. It also translates the commitments in the Bank's policy on
 integrated water resources management into operational requirements. The safeguard reflects the importance of
 biodiversity on the African continent and the value of key ecosystems to the population, emphasizing the need to "respect,
 conserve and maintain [the] knowledge, innovations and practices of indigenous and local communities... [and] to protect
 and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible
 with conservation or sustainable use requirements.
- Operational Safeguard 4: Pollution prevention and control, hazardous materials and resource efficiency. This
 safeguard covers the range of key impacts of pollution, waste, and hazardous materials for which there are agreed
 international conventions, as well as comprehensive industry-specific and regional standards, including greenhouse gas
 accounting, that other multilateral development banks follow. It also introduces vulnerability analysis and monitoring of
 greenhouse gas emissions levels and provides a detailed analysis of the possible reduction or compensatory measures
 framework.
- Operational Safeguard 5: Labour Conditions, Health and Safety. This safeguard establishes the Bank's requirements for its borrowers or clients concerning workers' conditions, rights and protection from abuse or exploitation. It covers working conditions, workers' organizations, occupational health and safety, and avoidance of child or forced labour.

OPERATIONAL SAFEGUARD	OBJECTIVE	TRIGGER FOR THE POLICY
OS1 -Environmental	To identify and assess the environmental and	This OS is triggered through the mandatory
Assessment	social impacts (including gender) and climate	Environmental and Social Screening Process
	change vulnerability issues of Bank lending	through which the project is assigned a Category

Figure 23: Summary of AfDB Operational Safeguards objectives including when they are triggered

	 and grant financed operations in their area of influence To avoid or if not possible minimize, mitigate and compensate for adverse impacts on the environment and on affected communities; To ensure that affected communities have timely access to information in suitable forms about Bank operations and are consulted meaningfully about issues that may affect them 	based upon its potential environmental and social risks and impacts in its area of influence. These potential risks and impacts include physical, biological, socio-economic, health, safety, cultural property, transboundary impacts and global impacts including Greenhouse Gas (GHG) emissions and vulnerability to climate change effects. Most sub projects e.g. sub stations will trigger this OS.
OS2 Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation	 To avoid involuntary resettlement where feasible, or minimize resettlement impacts where involuntary resettlement is unavoidable, exploring all viable project designs; To ensure that displaced people receive significant resettlement assistance, preferably under the project, so that their standards of living, income earning capacity, production levels and overall means of livelihood are improved beyond pre-project levels; To set up a mechanism for monitoring the performance of involuntary resettlement programs in Bank operations and remedying problems as they arise so as to safeguard against ill-prepared and poorly implemented resettlement plans 	 This OS is triggered if projects require the involuntary acquisition of land, involuntary acquisition of other assets or restrictions on land use and on access to local natural resources which result in: Relocation or loss of shelter by the people residing in the project area of influence; Loss of assets or restriction of access to assets including national parks, protected areas or natural resources; or Loss of income sources or means of livelihood as a result of the project, whether or not the PAPs are required to move. Some of the sub projects e.g. sub stations will trigger this OS.
OS3: Biodiversity and Ecosystem Services	 To preserve biological diversity by avoiding, or if not possible, reducing and minimizing impacts on biodiversity; In cases where some impacts are unavoidable, to endeavor to reinstate or restore biodiversity including, where required, the implementation of biodiversity offsets to achieve "not net loss but net gain" of biodiversity; To protect natural, modified and critical habitats; and To sustain the availability and productivity of priority ecosystem services to maintain benefits to the affected communities and to sustain project performance. To manage and reduce pollutants likely to be 	This OS is triggered if a project is to be located in a habitat where there may be potential biodiversity impacts or in areas providing ecosystem services upon which potentially affected stakeholders are dependent for survival, sustenance, livelihood or primary income, or which are used for sustaining the project. It is also triggered if the project is designed to extract natural resources as a main purpose (e.g. plantation forestry, commercial harvesting, agriculture, livestock, fisheries and aquaculture). Applicability to be determined after sub projects site selection This OS is triggered if the project is likely to
Prevention and	caused by a project so that they shall not	cause significant adverse environmental or

Control, Greenhouse Gases, Hazardous Materials	 pose harmful risks to human health and the environment, including hazardous, non-hazardous waste and GHG emissions. To set a framework for efficiently utilizing all a project's raw materials and natural resources especially focusing on energy and water. 	social impacts owing to the emission of pollutants, waste or hazardous materials covered by national legislation, international conventions or internationally recognized standards or by unsustainable resource use. It is also triggered by potentially significant levels of GHG emissions.
OS 5 Labor Conditions, Health and Safety	 To protect the workers' rights and to establish, maintain, and improve the employee – employer relationship; To promote compliance with national legal requirements and provide due diligence in case national laws are silent or inconsistent with the OS; To provide broad consistency with the relevant International Labor Organization (ILO) Conventions, ILO Core Labor Standards and the UNICEF Convention on the Rights of the Child in cases where national laws do not provide equivalent protection; To protect the workforce from inequality, social exclusion, child labor and forced labor; and To establish requirements to provide safe and healthy working conditions 	All sub projects will trigger this OS This OS is triggered if the project involves the establishment of a temporary or permanent workforce. All sub projects will trigger this OS

The likely locations for subprojects under LMCP are not yet known, but will most definitely include rural and peri-urban areas of Kenya. Further preparatory work needs to be concluded as to the specific geographic reach of the proposed project (e.g. selection and location of infrastructure investment). Further details on the state/county and social/physical environment of the project activities will be provided in the later stages.

The activities in the LMCP are for the moment expected to trigger all OS (apart from OS 3) but with differences between the various sub projects e.g. if sub stations chosen are existing on land already owned by KPLC, no land acquisition will apply. The safeguards instruments prepared for any subprojects will address the requirements of any applicable policies.

OPERATIONAL SAFEGUARDS TRIGGERED BY THE PROJECT (FOR THE MOMENT)	YES	NO/MAYBE
OS1 -Environmental Assessment	Х	
OS2 Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation	Х	
OS3 Biodiversity and Ecosystem Services	Х	
OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials	Х	
OS 5 Labor Conditions, Health and Safety	X	

4.6.2 Alignment of Government of Kenya Legal Framework versus AfDB policy

The comprehensive framework for environmental assessment provided by EMCA, is largely consistent with AfDB safeguard policies, and are generally aligned in principle and objective: -

- Both require Environmental Assessment before project implementation (which includes an assessment of social impacts). The main difference is the categorisation of various projects where EMCA uses High, medium and Low risk as opposed to AfDB's Category 1,2,3 and 4.
- Stakeholder consultation is critical in the planning, implementation and operation of the project, with evidence of stakeholder engagement in the ESAs preparations required.

Public disclosure of the ESA documents is also required.

- While AfDB stipulates different scales of EIA for different category of projects, EMCA requires EIA for all sizes of projects, which require to be scoped as applicable.
- Where EMCA requires Strategic Environmental Assessments, AfDB requires that an Environmental Assessment be conducted depending on the project category while an SESA/ESMF should be prepared for Programmes.

In Kenya, it is a mandatory requirement under EMCA 1999 for all development projects (Schedule Two) to be preceded by an EIA study. Thus, under the Laws of Kenya, environmental assessment is fully mainstreamed in all development process consistent with AfDB policies. It is anticipated that sub projects to be supported under LMCP III will be medium to small in scale. However, since EMCA provides no minimum size threshold, all sub projects will be screened at identification stage so as to determine level of environmental assessment required under EMCA. Further, in order to fully insure against triggers to AfDB Policies, individual investments will be screened against each policy as part of the EIA Study.

4.6.3 The African Development Bank Group Gender Strategy 2021 - 2025

The African Development Bank has actively led on gender issues since the 1980s, developing and implementing strategies and tools to systematically integrate gender considerations into the Bank's operations as well as targeted initiatives. The Bank's 2021-2025 vision for gender equality and women and girls' empowerment is to transform the continent's key sectors into grounds of accessible opportunities where women, girls, men and boys, regardless of their background, enjoy equal access and control over productive resources and benefit from supportive infrastructure and services to thrive.

The Board of Directors of the African Development Bank has approved a new Gender Strategy for 2021-2025: "Investing in Africa's women to accelerate inclusive growth." The strategy, was approved on 11 December 2020, seeks to strengthen the Bank's commitment as a leader on the continent, to reach gender equality and women and girls' empowerment in Africa. To bridge the existing gaps hindering women's contribution to development, the Bank is addressing obstacles to inclusive economic and social transformation for women across Africa.

The Gender Strategy 2021-2025 is anchored on three pillars that support the Bank's priorities to promote transformative gender equality and women and girl's empowerment and accelerate economic and social development in regional member countries (RMCs). These pillars are:

• Pillar 1: Empowering women through access to finance and markets:

This first pillar focuses on enhancing access to finance and technical assistance to women entrepreneurs in business model development, financial and business planning, to transform them into productive and competitive enterprises. The Affirmative Finance Action for Women in Africa (<u>AFAWA</u>) flagship initiative, led by the African Development Bank, is key to achieving this pillar as it seeks to unlock \$5 billion over five years to support women's small and medium enterprises. The Bank will also dedicate efforts to creating opportunities for women in the non-financial sectors.

• Pillar 2: Accelerating employability and job creation for women through skills enhancement:

This second pillar aims to increase access to relevant skills and jobs for women by considering the need to introduce more women to science, technology, engineering, and mathematics fields while leveraging technology to enhance access to skills and information.

• Pillar 3: Increasing women's access to social services through infrastructure:

Under the third pillar, the Bank will seek to influence gender-responsive quality infrastructure development to guarantee women have adequate access and positively benefit from infrastructure projects as stakeholders, workers and end-users.

Through this new Gender Strategy, the Bank will capitalize on its longstanding experience, leadership and convening power as well as building on its comparative advantage to achieve maximum impact on the ground.

4.6.4 AfDB Group's Policy on Disclosure and Access to Information

The Bank believes that the sharing of information on its operations nurtures openness and transparency that are crucial to its mandate which, as set out in the Agreement establishing the African Development Bank, is contributing to sustainable economic development and social progress of its regional member countries individually and jointly. The formulation of a revised Information Disclosure Policy has therefore been given high priority by Management, with the goal of meeting transparency requirements, the needs of the Bank Group's shareholders and other stakeholders, and the standards set by partner institutions in developing similar policies of their own. The new Policy has a number of new elements including introduction of an appeals mechanism; increased project level information; provision for simultaneous disclosure; and enhanced access to a broad range of stakeholders through strengthened implementation modalities.

The revised Policy constitutes a major shift in the information that the Bank Group may disclose - from a policy that listed which information would be made available, to one that allows disclosure of any information in the Bank Group's possession as long as it is not on a list of exceptions. It is anchored on the principles of: (i) Maximum disclosure; (ii) Enhanced Access; (iii) Limited list of exceptions; (iv) A Consultative Approach; (v) Pro-active disclosure; (vi) Right to appeal; (vii) Safe-guarding the deliberative process; and (viii) Provision for review.

5 PUBLIC CONSULTATION AND PARTICIPATION

5.1 Introduction

Public consultation and Participation is one of the task that is predominantly discussed with the various relevant institutions and beneficiaries who are directly or indirectly engaged with the project and those who are impacted and have an interest. It is important and critical in the planning process and preparation of an applicable and effective design for the LCMP -3's safeguards approach. The most important step is to hold stakeholder consultations with relevant institutions, local communities and all other interested/affected parties during planning and screening process and in the course of any further social assessment work that helps to identify key environmental and social risks and issues and determine how the concerns of all parties will be addressed.

As a principle, the guidelines for public consultation include, among others, a requirement of major elements of the consultation program should be timed to coincide with significant planning and decision-making activities in the project cycle. The objectives of public consultation are to:

- Inform the public about the proposed program and its likely anticipated impacts on the nearby social and biophysical environment.
- Collect, collate and analyse stakeholders' views on the program.
- Accommodate the stakeholders' concerns during the project implementation.
- Establish the social implications of the project on the different stakeholders.

As per the National and AfDB requirements, the borrower or client is responsible for conducting and providing evidence of meaningful consultation (i.e., consultation that is free, prior and informed) with communities likely to be affected by environmental and social impacts, and with local stakeholders, and also for ensuring broad community support.

Kenya Power will undertake its consultation with reference to the updated AfDB IESIA Guidance Notes on consultation, participation and broad community support, which also provide guidance on affected communities' involvement in the process of project planning, implementation and monitoring. Consultation is based on stakeholder analysis and is preceded by disclosure of adequate project information and environmental and social information to ensure that participants are fully informed. This process will begin at an early stage during project preparation and continues as needed. It will be conducted in a timely manner in the context of key project preparation steps, in an appropriate language, and in an accessible place. The results of the consultation will be adequately being reflected in the project design and in the project documentation.

For Category 2 projects, like LCMP –III the affected communities and stakeholders are consulted about the Environmental and Social Management Framework, and the draft RPF. Consultation should be conducted with the objective of ensuring that the project has community support, and that affected people endorse the proposed mitigation and management measures. When the borrower or client has identified vulnerable communities that would potentially be affected by the project, the borrower/client engages in meaningful informed consultation and participation with the vulnerable communities, beginning as early as possible in the project cycle before the project is submitted for Board consideration and continuing throughout the project cycle. The borrower or client demonstrates that consulted individuals or groups can effectively represent the affected groups. In particular, this process of engagement:

- Involves representative bodies and civil society organizations, as well as members from the vulnerable communities themselves;
- Ensures inclusivity in a socially and culturally appropriate manner;
- Provides sufficient time for the vulnerable groups' decision-making processes;
- Facilitates the vulnerable groups' expression of their views, concerns and proposals in the language and manner of their choice, without external manipulation, interference, coercion, or intimidation; and
- Respects the culture, knowledge and practices of vulnerable communities.

5.2 Requirements and Rationale for Stakeholder/Public Participation

As per the AfDB requirements, the borrower or client is responsible for conducting and providing evidence of meaningful consultation (i.e., consultation that is free, prior and informed) with communities likely to be affected by environmental and social impacts, and with local stakeholders, and for ensuring broad community support. In addition, stakeholder consultations is required by the Constitution of Kenya 2010, which recognises public participation as among the national values and principles of governance.

In the course of the preparation for this RPF, Consultative Public Participation (CPPs) sessions were conducted to provide project information and facts to likely project-affected persons and other stakeholders thus giving them a platform to enable them to express their appreciation, concerns and fears as well as contribute ideas and opinions towards project design and implementation for sustainability.

5.3 Stakeholder Participation in the Preparation of the ESMF

A detailed CPP/community engagement for LMCP Phase III was carried out in 9 Counties in 8 different Kenya Power service regions and was held between 20th June, 2023 - 8th July 2023. In total, during consultation process a total of 42 stakeholder forums were held in 9 counties The Engagement was undertaken at two levels:

1. Public meetings which included a variety of stakeholders:

The consultations with key stakeholders ranging from relevant Ministries, Government Agencies, County Government officials, NGOs, AfDB and the general public including project affected persons was carried from 20th June 2023, 26th June 2023 and 2nd – 8th July 2023. 40 public stakeholder forums were held in Nakuru, Kisii, Kakamega, Transnzoia, Embu, Garissa, Machakos, Makueni and Taita Taveta Counties. These counties were considered based on their geographical locations and representing the eight regions as per KPLC administrative boundaries. Further some of the counties (Trans Nzoia and Garissa) visited are inhabitant of the indigenous people which are key in the implementation of this project.

The following were the measures that were put in place that ensured open participation, inclusivity and accessible of the public consultation meetings

- The meeting notice of two weeks was given to the locals through the area chief
- All members (Men, women, youth and persons living with disability) of the community were invited without discrimination
- The meeting was open to all members of the community
- Community members were given adequate time to contribute towards successful implementation of the proposed project

These were chaired by the area chiefs, Assistant Chief and Village elders. A total of 2242 stakeholders were engaged comprising of 1341 male and 901 female.

Table 5-1: number of stakeholders engaged per potential schemes in different Counties and sub counties

No	County	Sub county	Potential Schemes	Stakeholder Attendance	Engagement i	n
				Male	Female	Total
1.	Nakuru	Njoro	Piave-Kahuho	15	18	33
2.	Nakuru	Njoro	Lower Piave –Kwa Chief Jimmy Corner	22	9	31
3.	Nakuru	Gilgil	Gema Village	17	12	29
4.	Nakuru	Gilgil	Mwitumberia	41	33	74

No	County	Sub county	Potential Schemes	Stakeholder Attendance	Engagement i	n
				Male	Female	Total
5.	Nakuru	Rongai	Waldai-Matuiku	24	8	32
6.	Nakuru	Kuresoi South	Tachasis	40	18	58
7.	Nakuru	Kuresoi South	Kapkores	29	4	33
8.	Kisii	Nyaribari Masaba	Riabigutu	56	18	74
9.	Kisii	Bobasi	Ekerema	35	5	40
10.	Kisii	Bomachoge Chache	Eburi	75	30	105
11.	Kisii	South Mogirango	Karungu	74	33	107
12.	Kisii	Bomachoge Borabu	Zambia-Kenyenya	18	15	33
13.	Makueni	Makueni	Ngai Ndethya	12	3	15
14.	Makueni	Mbooni	Kithuia – Kivani	23	32	55
15.	Makueni	Kibwezi West	Ndithini	16	12	28
16.	Makueni	Kibwezi East	Usalama	10	7	17
17.	Makueni	Kibwezi East	Kiuwani	12	24	36
18.	Taita Taveta	Voi	Dambi	16	21	37
19.	Taita Taveta	Mwatate	Manoah	28	14	42
20.	Taita Taveta	Taveta	Lessisia B&C	64	48	112
21.	Taita Taveta	Wundanyi	Kishushe	16	26	42
22.	Embu	Mbeere North	Ciambugu	65	54	119
23.	Embu	Mbeere South	Gataka	47	33	80
24.	Embu	Manyatta	Karmwage	74	60	134
25.	Embu	Runyenjes	Kanginga	55	41	96
26.	Garissa	Balambala	Lagdera	48	67	115
27.	Garissa	Garissa Township	Towfiq	30	10	40
28.	Garissa	Garissa Township	Kunaso	16	35	51
29.	Garissa	Garissa Township	Bour Argi	19	6	25
30.	Machakos	Machakos town	Mutindini	16	29	45
31.	Machakos	Machakos town	Kakinduni	39	23	62
32.	TransNzoia	Cherangani	Kaptega	23	26	49
33.	TransNzoia	Kwanza	Lurare	25	19	44
34.	TransNzoia	Saboti	Gitwambaa	27	5	32
35.	TransNzoia	Kiminini	Sirare Dip	58	57	115
36.	Kakamega	Lurambi	Emere	21	9	30
37.	Kakamega	Ikolomani	Milinani	30	19	49
38.	Kakamega	Malava	Ifwetere	58	13	71
No	County	Sub county	Potential Schemes	Stakeholder Engagement in Attendance		n
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				Male	Female	Total
39.	Kakamega	Malava	Cheptuli Polytechnic	25	3	28
40.	Kakamega	Malava	Mandara	37	20	57
	Total No Of Stakeholders Consulted			1341	901	2242

2. Civil Society Organizations, NGOs, Key Government Agencies and state departments meeting

Two Forums for CSOs, NGOs and Key Government state departments/ Institutions and Agencies in Nairobi and Machakos Counties and A total of 70 stakeholders were engaged comprising of 39 male and 31 female.

Table 5-2: Stakeholder meeting attendance and venues

No	County	Sub county	Potential Schemes	Stakeholder Attendance	r Engageme	ent in
				Male	Female	Total
1.	Machakos Town	Gelani Hotel	Meeting with CSOs	18	11	29
2.	Nairobi City	Stima Club	Government Agencies, state Departments, Institutions and NGOs	21	20	41
	Total No Of Stakeh	olders Consulted		39	31	70

The issues discussed during both forums included why ESMF and RPF, Project description, Project Impacts (Positive and Negative), Mitigation Measures, Gender mainstreaming, Electrical safety, Electricity application process, the Dos and Don'ts regarding the safe use of electricity, GRM, incident reporting using *977# just to mention a few. The potential schemes visited, assessed and engagements done during the ESMF preparation included:

5.4 Key areas covered during stakeholder engagement

The stakeholder engagement mainly dwell in the areas enumerated below

- 1. Project brief
- 2. ESMF Overview and its applicability to the project
- 3. RPF overview and its applicability to the proposed project
- 4. Technical project requirements
- 5. Potential Positive and negative impacts of project
- 6. Responsibilities of the Customer
- 7. Responsibilities of the Contractor
- 8. Social inclusion
- 9. Safe Use of Electricity

5.5 Results of stakeholder Consultations

All stakeholders were supportive of the project since it will provide communities with a number of advantages with minimum or no impacts. The stakeholders also appreciated that the importance of the proposed project in the enhancement of

household incomes and strengthening of self-reliance due to advantage from access to electricity. The stakeholders also pointed out the contribution the project on improving communities' access to energy services and improvement of the social well-being. During the consultation with stakeholders' participants raised specific project benefits, impacts, mitigation measures and concerns and these are discussed in the below table 5-3. With responses provided.

Table 5-3: Project benefits	, impacts and	I mitigation meas	ures raised by participants
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Benefit	Impact	PROPOSED MITIGATION MEASURES
Health benefits due to use of clean energy Opportunity to connect more customers Enhanced Security Creation of employment	Way leave acquisition Solid waste	Since this is an electrical distribution project and it aims at reaching the households , the lines will mainly use the road reserve. Way leave officer from KPLC will steer the process of way leave consent where necessary Contractor will be required to come up with waste management plans
Opportunities for establishing new businesses even at the local level	Occupational Health and Safety of the workers	Use of Personal Protective Equipment and adherence to work instructions KPLC will ensure all contractors implement all the safety management plans as per KPLC standards
Prolonged hours of operation due to power supply for business people	Noise	Work would be carried out during the day between 08:00 a.m and 05:00 p.m from Monday to Friday and 8Am to 12 noon on saturdays NEMA Noise regulations would be observed by all contractors.
Promotion of education services as children can	Mild dust emission	Where rough roads are used vehicles to maintain a slower speed
do studies in the evening Better access to information through use	Social impacts like HIV AIDs, youth pregnancy, drug abuse	Public education against the said social evils
of radios and televisions More opportunities for ICT centres/services	Electric shocks and electrocution of people.	Proper public education to the people on safe use of electricity. Proper wiring in the customers' premises by qualified/licenced technicians. Use of danger/hatari signs on the poles.
	Oil Leaks from transformer	Frequent inspection and maintenance of the transformers. All new transformers will be subjected to Factory Inspection tests before installation.
	Vegetation clearance	Use of road reserve. Proper designs to avoid clearance of vegetation.
	Cultural property	Avoidance.

	s willi	the	designers	and	contractors	during
construction.						

5.5.1 Issues/Concerns Raised in the Forums

5.5.1.1 Public stakeholders/ Project Affected Persons feedbacks

NO.	ISSUE/CONCERN	RESPONSE FROM KPLC	
1	What is the cost of connection and how are we supposed to pay?	15 thousand shillings for domestic customers (residential use) and 45 thousand shillings for customers who require three phase connection, payment shall be spread over three years, as one purchases token, 50% will be allocated to connection fee and the other 50% to tokens	
2	What will happen to those who applied for connection and have already paid 35 thousand shillings to be connected?	Those who have applied will be connected at the cost they were quoted, if they have done payment.	
3	Some of us have done wiring for solar installation; is it good enough for electricity?	Consult with qualified and registered wiring technicians who will advise and ensure you are issued with a wiring certificate.	
4	Some of us may not fall within the 600 meters radius you have mentioned; what will happen?	Those who will not be connected in this phase shall be connected in subsequent and following phases of the last mile. We have several schemes funded by different development partners. One is also free to walk to nearest KPLC office and apply for connection after which survey will be done and shall be issued with a quotation, if one pays he/she shall be connected,	
5	If I am within the same compound with my sons families, can I apply for one meter and extend connections to them?	We advocate for safe and reliable supply. Electricity cable extensions from one household to the next may pose electrical risks and also affect the quality of supply. We advise each household to get connected through individual drops/meters so that safety is guaranteed and one can also pay according to individual's consumption.	
6	We have a church which requires a drop, who will apply?	The leader of the church appointed by the church committee shall apply for connection using the church registration certificate, Pin, and the next of kin shall be decided by the committee i.e. either the leader, or one of the church elders.	
7	We have noticed power outages and think the transformer you have told us shall be maximized may already be overloaded, will you bring another transformer?	We will study the load of the transformer with a view of making an informed decision whether the transformer requires uprating to one with higher capacity or introduce a new transformer so as serve household that could be beyond transformer protection distance.	
8	Most of the attendees in all the meetings expressed their concerns that they have waited for too long to be connected to electricity, welcomed the project and requested connection to be done soonest without delays. They also requested to be given first priority (schemes where public consultations were done) once project implementation starts. They also requested that the contractor should call for an entry meeting before any construction starts and that the locals be given priority for all the jobs they qualify for in the project. They also requested KPLC to be considerate and factor how the disadvantaged in the society like orphans and the aged/very poor who could not even afford wiring cost could get connected to electricity.		

KPLC representatives assured the members present that their concerns would be captured in minutes for the meetings and the company in liaison with the contractor would assess the vulnerable members in the society and ensure no one is left out or disadvantaged by the proposed last mile project.

5.5.1.1.1 Some of the sentiments from the community meetings

- a) When will the project begin for planning purposes, power supply benefits are many and cannot be emphasized our need for power supply is long overdue. Do something to fast-track the process
- b) Business opportunities will improve and we shall start others once power is available because running businesses on diesel is quite expensive. Some of the businesses we look forward to improving our; refrigeration of food, milk coolers, Barbershops, saloons, welding business, pumping water for domestic use as well as for irrigation of crops, and use of chaff cutter for dairy farming among others.
- c) Security will improve due to the availability of lighting
- d) Learning will improve due to the availability of lighting
- e) Employment opportunities will increase for the youth due to an increase in business opportunities
- f) Medical services will improve due to the availability of refrigeration services
- g) Charging of phones will be made easier and more convenient
- h) Paying for power is not a problem we shall pay the connection fee and consumption
- i) During connection provide us with the list of trained technicians who can do for us quality work to avoid electrocutions

The feeder-back sessions revealed that the potential beneficiaries are really in need of power

5.5.1.2 CSOs forum feedbacks

Questions/Comments	Responses
With regard to climate change mitigation, Why use tree poles for the construction of power lines when you can instead use concrete poles?	KPLC utilizes both concrete and wooden poles for their power lines. In cases where trees are cut down to accommodate wooden poles, KPLC ensure compensatory measures by planting a specified number of trees. Additionally, the choice between wooden and concrete poles is based on cost and design considerations, particularly in areas prone to termite infestation where concrete poles will be used.
Why make the decision to upgrade only the 3-phase system connectivity for SME. He additionally inquired about the selection of Kakinduni area as an area of	The decision to prioritize 3-phase connectivity was based on the planning perspective, with a focus on supporting vocational institutions and community business enterprise projects. These specific initiatives required 3-phase connectivity to effectively meet their needs.
consideration for the project?	The selection of Kakinduni area was based on the project's focus on rural areas and the area's potential for commercial enterprises, which made it a suitable candidate for consideration
Why do you source labor from external regions instead of prioritizing local labor?	The previous project phases had encountered some challenges with sourcing local labor. Some of the employed individuals failed to meet the contractor's deadlines and some were unable to carry out their assigned tasks effectively, causing significant delays. However, be assured KPLC will still consider local labor. The MCA is requested to partner with the CSOs to oversee the selection process for casual work, ensuring careful consideration of suitable local candidates

5.5.1.3 Key Government agencies, state departments and NGOs feedbacks

Comment/Question	Response/Remarks from Kenya Power
Is it possible to incorporate county governments in these projects as their participation is very crucial for the project implementation?	Key stakeholders, including county authorities, have been identified and actively engaged to gain a comprehensive understanding of government plans. The involvement of counties has facilitated the identification of their specific electricity needs and supply requirements to meet customer demands. Moreover, counties serve as valuable references for identifying other areas within their jurisdiction that require power infrastructure development. The county governments will be involved especially in resettlement and GRMs
How will the National Land Commision be engaged in the LMCP?	The project will have clear channels of engagement with all stakeholders involved in the implementation of this project.
Will land surveyors and valuers be involved in the project? And if so they should be included in the ESMF.	The surveyors and valuers will be full involved in the implementation of this project
Consider creating a comprehensive Grievance Redress Mechanism draft.	A comprehensive GRM will be prepared once this project is approved by the board of AfDB
Ensure the stakeholder engagement plan is comprehensive and outlines the hierarchical structure effectively	A detailled stakeholder engagement plan will be prepared that will guide the consultations in this project.
Engage the National council of people with disabilities to establish effective communication mechanisms that ensure meaningful participation of individuals with disabilities.	The project proponent will engage the national council of people with disabilities for more insight on how to engage people living with disabilities.
Clearly highlight the potential risks associated with Labour influx in the ESMF.	The following are risks associated with labour influx; population increase, social vices, Sexual Harrassment, low wage income, spread of HIV/AIDs and sexually related diseases, gender based violence, pressure on the existing infrastructures among others
Ensure confidentiality for grievances reports by vulnerable groups e.g sexual assault cases	The PIU will establish a robust logging in of the various grievances with a lot of confidence. The report timing should be open and anmomity is highly encouraged. The reporting desk should be manned by a lady.
What skills will be transferred to the communities?	Construction, plumbing, electrical, store keeping, accounting skills will be transfered to the casuals and students in the colleges studying construction related courses who will be undertaking interships programs with the contractor
Incorporate local translators to disseminate information to the locals	The project proponent has noted and it will implement it in any community consultation meeting in ensuring effective communication.
	Noted and it should be adhered to.

The gender mainstreaming aspects should be inclusive of	
women,boys and girls	Noted and it's a requirement by the project proponent that all
Contractors to sign a code of conduct to protect women	contactor workers should sign and adhere to the code of conduct at all times they will be working for the proposed project.
Liase with road agencies under the national and county government to safeguard infrastructure	Collaboration with relevant stakeholders at both the county and national government levels, including KURA, KeNHA, MoL, NLC, and KeRRA, will be established to devise effective strategies for addressing road reserve and wayleave challenges. The aim is to find sustainable solutions and establish efficient mechanisms to overcome these issues.
Appreciated impact of the project.	The project proponent through its PIU will strive to conserve the
How do you intend to conserve the environment?	environment through minimisation of tree cutting, the proposed project to be implemented in areas that are not ecologically sensitive, the low voltage line will be constructed along the roads. The contractor will strive to plant tree to replace those which will be cut during the implementation of the proposed project. further the proponent will ensure any waste generated to be disposed off by NEMA lisenced firms. Further KPLC will comply with various environmental and social related legislations during the implementation of this project.
How do you intend to plant trees in line with the presidential directive?	KPLC has an elaborate plan on how to plant trees across the country as per the presidential directives. KPLC has allocated a budget towards the same. KPLC also encourages its project contractors to implement corporate social responsibility project in tree planting.
KWS is ready to partner with Kenva Power to come up with a	
framework guiding environmental conservation and strategies to deal with human-wildlife conflict	The network distribution management team of the project will conduct mapping of wildlife migratory routes in order to develop design mechanisms that effectively mitigate potential environmental and wildlife impacts.
The resettlement issues should be taken seriously. The RPF	KPLC will endeavour to undertake the purchase of land with strict
should clearly indicate the speculated willing land buyer and willing seller with the market quotation price.	compliance with the Kenyan law. Any land that could be acquired through willing buyer and willing seller should be subjected to valuation so as to get the correct price for that piece of land. NLC will be involved in this exercise and AFDB Policies will apply in this process.
Measures should be put in place to ensure adherence of effective environmental and social governance throughout the project implementation.	KPLC will strieve to adhere to all country and AFDB policies in regard to the implementation of the proposed project. There will be regular inspection and monitoring that will be undertake to enhance compliance.

ESIA to include issues on teenage pregnancies and HIV/AIDS	ESIA will cover all issues including HIV
How does the project address the needs of individuals with disabilities, such as providing provisions for sign language interpreters and hearing aid devices?	People living with disabilities will actively participate in stakeholder engagements as part of the project's inclusive approach. Local translators and sign language interpreters will be utilized to ensure that people with disabilities are well-informed about the project's requirements and benefits
Could you elaborate on the communication methods employed to effectively engage and include people with disabilities? What measures are in place to ensure there is no stereotyping or discrimination against individuals with disabilities within the project? Can you explain the specific considerations and provisions outlined in the safeguard documents regarding people with disabilities?	To ensure effective communication, the project will engage the services of communication experts who will facilitate information dissemination. Local translators and sign language interpreters will be utilized to ensure that people with disabilities are well-informed about the project's requirements and benefits. In the safeguard documents people with disabilities will fall under the category of vulnerable groups and will be considered case by case
Lastly, how is information made accessible to individuals with disabilities to ensure their active participation and engagement throughout the project?	Public awareness will be enhanced through the engagement of communication experts who specialize in inclusive communication methods, ensuring effective communication to the general public as well as individuals with disabilities. No one will be left out
Nature Kenya Commends KPLC on recognition of power infrastructure impact on wildlife We invite KPLC and the project engineers for a meeting with Nature Kenya experts regarding power line designs to mitigate impact on avifauna, provide guidance on mitigation hierarchy and inclusion of counterproductive statements in the ESMF that will use existing science to guide project implementation.	KPLC acknowledged the invitation extended by Nature Kenya and expressed its commitment to collaborate with them in formulating a focused approach for the conservation and preservation of natural resources, particularly in forested and wetland areas.
How will KPLC manage huge expectations and over- exaggerated quoted prices of from land sellers? What actions will KPLC take when the wayleave and road reserves corridor are less than 10 m? And what are the compensation measures in the event they get into people's land?	Collaboration with key stakeholders, including the Ministry of Lands and the National Lands Commission, will provide guidance on the applicable legislation and procurement procedures to ensure a smooth evaluation process. The involvement of the Ministry of Lands will help in land Valuation and lock out exaggerated quotes KPLC in Collaboration with relevant stakeholders at both the county and national government levels, including KURA, KENHA, MoL, NLC, and KRRA, will work in collaboration to establish the
	official road reserve corridor In response to the issues raised regarding wayleaves, we will incorporate a change in design approach, moving towards vertical formation designs instead of horizontal formation for the conductors

The gender aspect lacks clarity on the procedure of handling the vulnerable marginalized groups and social impacts such as livelihood restoration.	The gaps in the gender aspect have been noted and will be incorporated in the report. Gender inclusivity and ensuring equal benefits of the project is covered in the ESMF. Vulnerable groups are also covered to ensure they are not left out in the project. Any involuntary resettlement necessitated by the project shall be handled case by case ensuring livelihood restoration. For structures within the 10m wayleave corridor KPLC will incorporate a change in design approach maying towards verticed
What plans have you put in place to deal with squatter settlements and structures you find in the 10m wayleave corridor?	designs instead of horizontal ones, and avoidance of displacement will be the key principle.
We are looking forward to the social risk management bill.	
We appreciate the project and hope the 45 counties including marginalised counties are covered. As a commission, we are grateful for the initiatives.	KPLC has a provision for providing ready boards for the vulnerable members of society who may not afford to install in their houses and schemes will be spread across the 45 counties.
Issues on safety and inclusivity have been well articulated.	
Vulnerable people who may not afford to be connected should be considered.	On the issue of connecting health facilities and dispensaries the project has a component of ensuring community projects are connected with electricity and this includes health facilities and
Can the project consider health facilities and dispensaries in marginalized areas?	dispensaries
On the issue of falling and hanging poles, how sustainable is this project especially in areas prone to termite infestation?	The project design ensures sustainability by utilizing a combination of concrete and wooden poles. Concrete poles are specifically deployed in areas susceptible to termite infestation and where terrain proves to be a challenge.
Be cautious on the willing-buyer willing-seller policy as element of corruption may come in. You should be guided by the procurement act.	All purchase of land will be guided by the procurement act. However if involuntary land acquisition is undertaken, then the relvant land laws will be applicable.
All evaluation should be done by ministry of lands to avoid project derail due to of highly exaggerated quotation prices by willing land sellers.	Key stakeholders, including county authorities, have been identified and actively engaged to gain a comprehensive understanding of government plans. The involvement of counties
There is no mention in the ESMF of any partnership or collaboration with the county government. Make efforts to partner with county government as they have already formulated the Intergrated County Development Plan which has already identified areas in need for development.	and supply requirements to meet customer demands. Moreover, counties serve as valuable references for identifying other areas within their jurisdiction that require power infrastructure development. This will be captured in the SMF
There was no mention on community land ownership especially for communal unregistered lands. The acquisition process is not easy in such areas and there is a community land act in place	The issue of land acquisition in the community owned lands and communal unregistered land is covered in the ESMF Public engagement forums will be carried out in all schemes before
The responsibility of the citizens should be made very clear in a way they can undertake wiring and to avoid exploitation of	connection cost will be explained to the members of the public to protect them from exploitation from conmen. On the issue of contractor identification of contractors KPLC has a system that helps the public to identify genuine contractors and the public will

customers by conmen. Clearly indicate the wiring cost and	be educated on the process. KPLC encourages members to use
process.	*977# which has an option of verifying under option 5 whether the
Design a unique identification to identify contractors and citizens	person in question is a genuine Kenya Power or Contractor staff.
in order to stop vandalism of power infrastructure	Kenya power branded overalls, company vehicles are mostly used
	by staff working on the network. Contractors shall provide branded
	reflective vests and identification cards.
I don't think project engineers are competent to carry out	KPLC will factor in environment and social experts in the project
supervision during project implementation. The project should	monitoring
include environmental and social safety experts to handle supervision	Principles and Strategies that will guide the resettlement process are clearly stated in the RPF
The resettlement policy framework is not clear on the principles	
and strategies that will guide the resettlement process.	Once the safeguard documents are finalized KPLC will share the
	documents with interested stakeholders
Involve us when the safeguard documents are ready to review so	
we can give our final input	
The document should be enhanced to include key areas that	Issues on community engagement, indigenous vulnerable groups
ensure comprehensive community engagement, address the	and biodiversity conservation are adequately covered in the
needs of indigenous vulnerable groups, and consider biodiversity	safeguard documents
conservation. Additionally, it is important to assess the broader	
impacts beyond the implementation of the connectivity project.	
	KPLC will continue monitoring the project post implementation and any necessary corrections or replacement of damaged electrical infrastructure done. Customer education will also continue post implementation and also to check the impact of the project on the
	livelihoods of the beneficiaries.

5.5.1.4 Stakeholder engagement Photographic illustration





Project beneficiaries and PAPs engagament

CSOs consultative forum

5.6 **Results of stakeholder Consultations**

All stakeholders were supportive of the project since it will provide communities with a number of advantages with minimum or no impacts. The stakeholders also appreciated that the importance of the proposed project in the enhancement of household incomes and strengthening of self-reliance due to advantage from access to electricity. The stakeholders also pointed out the contribution the project will make on improving communities' access to energy services and improvement of the social well-being. During the consultation with stakeholders' participants noted specific project benefits, impacts, mitigation measures and raised various concerns and these are discussed in the this report.

5.7 Stakeholder Consultation during the Sub project's planning and Implementation

In the preparation of the various ESAs for the sub projects, Kenya Power will undertake its consultation with reference to the AfDB ISS Guidance Materials on consultation, participation and achieving broad community support, which also provide guidance on affected communities' involvement in the process of project planning, implementation and monitoring. Consultation will be based on stakeholder analysis and will be preceded by disclosure of adequate project information and environmental and social information to ensure that participants are fully informed. This process will begin at an early stage during each sub project preparation and continue as needed. It will be conducted in a timely manner in the context of key project preparation steps, in an appropriate language, and in an accessible place. The results of the consultation will be adequately being reflected in the project design and in the project documentation.

Kenya Power will be responsible for conducting and providing evidence of meaningful consultation (i.e., consultation that is free, prior and informed) with communities likely to be affected by environmental and social impacts, and with local stakeholders, and also for ensuring broad community support for each sub project.

5.8 Stakeholder Engagement and Public participations process

The objective of the engagements will be to enhance project acceptance and make a significant contribution to successful project design and implementation. The stakeholder engagements will be done timely, with relevant, understandable, and accessible information, in a culturally appropriate way free of manipulation, interference, coercion, discrimination, and intimidation.

The process of stakeholder engagement will involve:

- i) Stakeholder identification and analysis: As discussed below but also when identifying participants in consultations involving multiple stakeholders, choose a wide range of interests and opinions, paying particular attention to women, the poor and to more vulnerable groups (young people, vulnerable ethnic minorities, elderly people, etc.).
- ii) Planning how the engagement with stakeholders will take place, including identification of appropriate venues, consideration on how to ensure inclusivity, Identification of socio-cultural factors that could influence the consultation process, Definition of the parameters, goals and expected results of the consultation process, Consideration of the various alternative approaches based on the particularity of the sub-project and adapting the participation process to the preferences of the stakeholders or context (individual meetings, focus groups, advisory committee, workshop, etc.); undertaking logistics for the consultation etc.
- iii) Consultation with stakeholders including disclosure of information in an open and transparent manner to ensure meaningful consultations, providing a response to the concerns expressed (if applicable);
- iv) Addressing and responding to grievances; and
- v) Reporting to stakeholders
- vi) Recording the key issues raised and addressing these in the design of the project or ensuring that the results of the consultation are reflected in the SEA studies and in the documents prepared throughout the cycle of the sub-project

5.9 Stakeholder Identification

For the purposes of this ESMF, a stakeholder will be defined as "a person, group, or organization that has a direct or indirect stake in a project/organization because it can affect or be affected by the Project/organization's actions, objectives, and policies"

Stakeholders thus will vary in terms of the degree of interest, influence and control they have over the project. Stakeholders will be classified into the following two categories.

- Project-affected parties Stakeholders who are affected or are likely to be affected by the project.
- Other interested parties Stakeholders who have an interest in the project.

5.10 Stakeholder Analysis

Stakeholder analysis is a process of examining the relative influence that different individuals and groups have over a project as well as the influence of the project over them. The purpose of stakeholder analysis will be to: study their profile and the

nature of the stakes, understand each group's specific issues, concerns as well as expectations from the project and gauge their influence on the Project.

The significance of a stakeholder group will be categorized considering the magnitude of impact (type, extent, duration, scale, and frequency) or degree of influence (power and proximity) of a stakeholder group and urgency/likelihood of the impact/influence associated with the stakeholder group in the project context. The magnitude of stakeholder impact/influence will be assessed by taking the power/responsibility and proximity of the stakeholder group and the group is consequently categorized as negligible, small, medium, or large. The urgency or likelihood of the impact on/influence by the stakeholder will be assessed on a scale of low, medium, and high. The overall significance of the stakeholder group is assessed as per the matrix provided in the table below.

Table 5-4: Stakeholder Significance and Engagement Requirement

		Likelihood of Influence on/ by Stakeholder		
		Low	Medium	High
Magnitude of	Negligible	Negligible	Negligible	Negligible
impact				
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

The table above will be used to classify the identified stakeholders (directly or indirectly impacting the project) in accordance with their levels of influence on the project. The influence and priority have both been primarily rated as:

- **High Influence**: This implies a high degree of influence of the stakeholder on the project in terms of participation and decision-making or high priority to engage with the stakeholder.
- **Medium Influence**: This implies a moderate level of influence and participation of the stakeholder in the project as well as a priority level to engage the stakeholder which is neither highly critical nor insignificant in terms of influence; and
- Low Influence: This implies a low degree of influence of the stakeholder on the project in terms of participation and decision-making or low priority to engage that stakeholder.

The intermediary categories of low to medium or medium to high primarily imply that their influence and importance could vary in that range subject to context-specific conditions or also based on the responses of the project towards the project.

In line with the nature of the project and its locations, the possible stakeholders have been identified and listed in the table given below.

No.	Stakeholder	Potential Role in Project	Interest	Influence
1.	Project Affected person beneficiaries and communi	Apply for power, do wiring in their premises, grant way leaves, pay connection fees and consume power and pay for power	High	Low - Medium

No.	Stakeholder	Potential Role in Project	Interest	Influence
	members neighbouring the projects	Affected by the project impacts or may own the land on which some of the sub projects will be located		
Other in	nterested parties			
2.	County Governments including various technical departments	Grant approvals for the project	High	medium
3	NEMA	Ensure environmental and social compliance	High	High
4	EPRA	Project approval and ensure compliance	High	High
5	DOSH	Oversight on occupational Health & safety compliance.	High	High
6	Kenya Power	Project implementation and coordination including stakeholder engagement	High	High
7	Contractors and sub-contractors and their workers	Construction of the project	High	High
8	GOK - Ministry of Energy & Petroleum	Project financing & oversight of project implementation	High	High
9	National Treasury			
10	AfDB	Financing partner Monitoring of Compliance	High	High
11	Roads agencies-Kenya Highways Authority, Kenya Urban roads Authority and Kenya Rural Roads Authority	Grant approvals to use road reserve for the distribution lines	High	High
12	Other Government Agencies (KWS,KFS, WRA etc)	Provide approval for clearances for project locations in sensitive environments	Medium	High
13	County/National Administration (County Commissioners, Deputy/Assistant County Commissioners/ chiefs and Sub Chiefs)	Provide security Organize for the stakeholder engagement	High	High
14	Civil Society/NGOs	Compliance monitoring Sensitize the public	Medium	Medium

No.	Stakeholder	Potential Role in Project	Interest	Influence
		Advocacy for fairness		

5.11 Stakeholder Engagement Schedule and Methods

Stakeholder engagement is a continuous process that will be carried out till project implementation. The table below shows other stakeholder engagements that will be carried out throughout the project cycle.

Table 5-6: Stakeholder Engagement schedule

Project Stage	Topic/ Messages	Stakeholders Involved	Responsibility	Methods Used	Remarks
	5				
Feasibility phase	Awareness creation on the project-project information.	Target communities and beneficiaries	Infrastructure development, Safety Health & Environment (SHE) and Customer service	Public Barazas	31 public barazas done in 15 counties
ESMF/RPF Phase	Awareness creation on the project-project information.	Target communities and beneficiaries	Infrastructure development, Safety Health & Environment (SHE) and Customer service	Public Barazas	41 stakeholders forum done in 10 Counties - 39 public barazas and 2 Key stakeholder workshops
Pre- Construction phase-design phase, ESIA phase	Awareness creation on the project Assessment of project impacts	Target communities and beneficiaries	Infrastructure development, Safety Health & Environment (SHE) and Customer service	Public Barazas, face-to-face engagements, questionnaires, and Baseline surveys focus group discussions	To be done for the three project components
	Various approvals required Assessment of project impacts	Relevant government agencies and administration/ Third Sector (Civil Society/NGOs)	Infrastructure development, Safety Health & Environment (SHE)	Letters, memos, Key Informant Interviews, some e.g., local administration (chiefs etc.) will	To be done

Project Stage	Topic/ Messages	Stakeholders Involved	Responsibility	Methods Used	Remarks
				be invited to the public barazas)	
	Project and ESIA/ESMF disclosure	All stakeholders	Safety Health & Environment Department (SHE)	KPLC website	To be done
	ESMP/RAP awareness	Contractors	Infrastructure development, Safety Health & Environment (SHE)	Meetings	To be done
Construction phase	ESMP monitoring	Communities and beneficiaries and Contractors and Sub-contractors.	Infrastructure development, Safety Health & Environment (SHE)	Random interviews and site visits for observations	To be done quarterly
Operations Phase	Annual environmental audits	Communities	Safety Health & Environment (SHE)	Questionnaires and face-to-face interviews	Once per year

Gender and cultural norms will be considered in the choice of engagement methods and other logistical elements such as venue.

5.12 Disclosure

This ESMF will be disclosed on the AfDB website as well as KPLC's website for easy access to persons with internet. Similarly, all RAPs and ESIAs prepared for the sub projects will also be disclosed on KPLC website as well as availed on site.

5.13 Future Consultations

The community around each sub projects and other relevant stakeholders will be consulted and involved during the screening process of sub projects, preparation of the ESIAs, implementation of the ESMPs as well as monitoring and evaluation of the ESMF and ESMPs.

6 THE ENVIRONMENTAL AND SOCIAL SCREENING AND ASSESSMENT PROCESS FOR LMCP III SUB PROJECTS

Environmental and Social Screening in the Framework

The Environmental Management Coordination Act of 1999 (Amended 2015) and the Environmental (Impact Assessment and Audit) Regulations (June 2003, Amendment 2019) prescribe the conduct for Environmental Impact Assessment for development projects. Under Legal Notice 31 which amends the Second Schedule of NEMA, it is implied that projects must be screened to determine whether they fall under Low, Medium or High risk. However, these instruments do not contain explicit guidelines regarding (or how to do) the screening of projects where the project details and specific project sites are not known at the time of appraisal of the parent project.

The Environmental and Social Screening Process outlined in the ESMF therefore provides a mechanism for ensuring that all potential sub projects are screened and potential adverse environmental and social impacts of future sub projects under LMCP III are identified, assessed and mitigated and monitored as appropriate, through an environmental and social screening process. This will be undertaken by qualified NEMA registered KPLC E&S staff at the national and regional levels.

The Screening results will determine the requisite environmental and social assessments and mitigation plans (ESIAs, RAPs, and VMGPs) for individual projects to be developed.

6.1 Objectives of the Screening processes

The objectives of the screening process are to:

- i) Determine which sub projects are eligible for financing under LMCP III.
- ii) Determine the scale and scope of potential environmental and social impacts of the proposed sub project;
- iii) Determine the appropriate environmental category as per EMCA 1999 Amendment 2019 legal notice 31 & 32 to determine the level of reports required whether it is an SPR, CPR or Full ESIA Study;
- iv) Determine the appropriate level and depth of environmental and social assessment (ESA) required to mitigate against likely impacts.
- v) To recommend an appropriate choice of ESA instrument suitable for a particular sub project. This ensures that the proposed projects undergo the right level of assessment.
- vi) To determine the applicability of the AfDB safeguard policies and Government of Kenya policies and laws to ensure compliance

The following criteria should be followed for project selection so as to comply with the environmental legislations:

- Proposed project construction/expansion with major adverse impacts on physical cultural resources, "physical cultural resources" are the movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance;
- Activities to be located within critical habitats and conservation areas, protected areas, sanctuary, and forest areas as designated by Wildlife Conservation and Forest Departments;
- Activities to be located within a wetland or on a reservation of surface water bodies.
- Activities that may involve large scale involuntary resettlement or land acquisition or impacts on cultural heritage

6.2 Screening Process and Procedures

The following procedure will be followed for sub projects:

6.2.1 Step 1: Screening of project activities and sites

Prior to going to the field, a desk appraisal of the construction and rehabilitation plans, including sub stations (transformers), distribution and transmission lines designs, will be carried out by KPLC PIT and Environment/social unit staff or selected NEMA registered consultant. KPLC PIT will carry out the initial screening in the field, by completing the Environmental and Social Screening Form (Annex 4).

The screening form, when correctly completed, will facilitate the identification of potential environmental and social impacts (including the need for way-leave acquisition), the determination of their significance, the assignment of the appropriate level of environmental assessments needed as per Kenya laws and the determination of appropriate environmental and social assessments (ESAs) based on Legal Notice 31&32 of 2019.

To ensure that the screening form is completed correctly for the various project locations and activities, training should be provided to KPLC PIT staff, KPLC Environment unit staff and KPLC regional Staff as part of strengthening internal capacity.

6.2.2 Step 2: Assigning the Appropriate Environmental Categories/Classification

The environmental and social screening form, when completed, will provide information on the likely impacts and thus enable the assignment of the appropriate environmental category to a particular project.

Categorization follows the principle of using the appropriate type and level of environmental and social assessment for the type of operation. KPLC will propose a category, providing sufficient supporting documentation and baseline data to allow the Bank's E&S staff to review the proposed category.

The categorisation follows AfDB policies but also national legislation. Legal Notice 31 on the Amendment of EMCA provides for 3 categories of High, Medium and Low risk projects. Wherever there is divergence, the higher safeguard applies.

6.2.3 Step 3: Determining Level of ESA to be undertaken

After reviewing the information provided in the environmental and social screening form, and having determined the appropriate environmental category, KPLC Environment/Social Unit staff will propose the required ESAs in line with the legal requirements and AfDB policies.

- i) If screening establishes the sub-project has environmental impacts that needs to be mitigated, then an Environmental and Social Impact assessment will be conducted.
 - The level of assessment will depend on:
 - National regulation

Pursuant to Section 147 of the Environmental Management and Coordination Act, 1999, the Cabinet Secretary, Ministry of Environment and Forestry amended the Environmental (Impact Assessment and Audit) regulations, 2003 by deleting regulation 7 and replacing it with a new regulation 7, vide legal notice of 2019. The new regulation 7 provides for preparation and submission of a Summary Project Report (SPR) of the likely environmental impacts of the project for approval for low or medium risk projects.

Where it is established that the proposed project (mostly medium risk projects) may have significant adverse environmental impacts, the proponent will prepare and submit a Comprehensive Project Report (CPR) as provided for in Regulation 7 (4) of The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019.

AfDB Policies

This will assess the impacts in line with the various Categories already discussed earlier.

ii) In situations where the screening process identifies the need for land acquisition, impacts on assets, causes a loss of livelihood, and/or restricts access to natural resources, a RAP shall be prepared consistent with the standards

and guidelines set forth in which one clarify local legislations and donors safeguard policies. If it is identified through screening that a sub-project causes physical and/or livelihood displacement, and affects physical cultural resources, this ESMF refers to the Resettlement Policy Framework, which guides preparation of a Resettlement Action Plan, which should be implemented prior to commencement of works on the site. In unique and outlier situations where the screening process identifies peoples' presence in, or attachment to, project lands, an Indigenous Peoples Plan (IPP) will be prepared.

The results and recommendations presented in the environmental and social screening forms and the proposed categorisation can be discussed with NEMA at the County level.

Given that LMCP III is already categorised by AfDB as Category 2, it is envisaged that sub projects also fall in this category and thus require an ESIA. Note that ESMPs are not stand-alone instruments but are prepared in the context of ESIAs. `

6.2.4 Step 4: Carrying Out Environmental and Social Impact Assessment

The EIA process will identify and assess the potential environmental and social impacts of the proposed construction activities, evaluate alternatives, as well as design and implement appropriate mitigation, management and monitoring measures.

Preparation of the EIA and the RAP will be carried out in consultation with the relevant stakeholders including potentially affected persons. The PIT and the KPLC EIA/EA experts will (i) prepare EIA terms of reference for projects (a draft ToR is provided as Annex 5); (ii) recruitment of a service provider to carry out the EIA where necessary; (iii) public consultations; and (IV) review and approval of the EIA through the national EIA approval process.

6.2.4.1 Guidance on the Preparation of ESIA

i) AfDB

In terms of coverage of the EIA process, AfDB's Integrated Safeguards System Guidance Materials Volume 1 on General Guidance on Implementation of OS 1 produced under the Safeguards and Sustainability Series Volume 2, Issue 1, December 2015 provides the Key steps in undertaking an ESIA as wells as the ESIA methodologies to be employed.

ii) National Legislation

EMCA requirements under Legal Notice 101 of June 2003, as well as Amended under Legal Notice 32 provide for the Content and thus process for both SPR and CPR which will be adhered to. In addition, NEMA in issued Guidance Notes for Summary Project Report.

As per the 12th March 2020 NEMA Public Notice On Processing Of Environmental Impact Assessment Reports, an Environmental Impact Assessment Study Report (SR) shall be conducted in accordance with the general environmental impact assessment guidelines and sector environmental impact assessment guidelines as provided for in Part III of the Environmental (Impact Assessment and Audit) Regulations, 2003.

Further, EMCA regulations require an environmental impact assessment shall be carried out by a lead expert qualified by NEMA and shall among other things seek the views of persons who may be affected by the project – which will be adhered to.

In terms of the ESIA report, AfDB ESIA report content as outlined in the Integrated Safeguards System Guidance Materials Volume 1 on General Guidance on Implementation of OS 1 do not vary considerably from NEMA requirements for a CPR and an Environmental Impact Assessment Study Report (SR). However, AfDB requires more emphasis on impacts and assessment of their significance, as well as comprehensive coverage of residual effects which will need to be adhered to in the preparation of ESIAs. The content of an SPR is however found lacking when AfDB policies are applied. The higher safeguard will apply when divergence is found.

6.2.5 Step 5: Review and Approval of the ESA

The ESA Report will be discussed extensively with the affected/neighbouring community as part of the stakeholder consultations and the County. The improved draft is then presented to AfDB for review and clearance. Upon clearance, the PIT will finalize the report and submit to NEMA for EIA licensing

Type of Report	Where Submitted	Remarks
Summary Project	NEMA county office	• The County Director of Environment (CDE) shall acknowledge receipt
Reports (SPR)	where the proposed	of the SPR by issuing an SPR application reference number and an
	project site is located	acknowledgement letter
		• The SPR shall, Within Five Days, screened and assessed for
		completeness
Comprehensive	Authority's County	All CPRs shall be processed at the Authority's County offices in
Project Report (CPR)	offices	consultation with relevant lead agencies and a Record of
		Decision made within 21 days.

Table 6-1: NEMA ESIA Reports categorization, and approval processes

Often, based on the SPR Report submitted which is the lowest level of report often submitted to NEMA and internal review process, NEMA will make decision on the requirement or otherwise for further EIA Studies. As per NEMA Public Notice On Processing Of Environmental Impact Assessment Reports:

- The SPR shall, Within Five Days, be screened and assessed for completeness and the following Records of Decision (RoD) of the Authority made and communicated online to the Proponent and copied to the expert.
 - Where it is established that the proposed project may have significant adverse environmental impacts, a RoD of the Authority shall be made for the proponent prepare and submit a Comprehensive Project Report (CPR) as provided for in Regulation 7 (4) of The Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019.
 - Where it shall be established that the proposed project is not likely to have any significant adverse environmental impacts, a RoD of the Authority shall be made exempting the proponent from submitting a comprehensive project report and an approval with conditions to proceed with the project issued

It is also possible that:

- Where it is established that there is more information needed to help in making an informed decision, issues to be addressed will be raised for the proponent and the expert to respond to.
- Project Report discloses potential for major irreversible adverse impacts. In this case, NEMA may not approve the project. Such a proponent has the right to appeal to the National Environment Tribunal.

All Subprojects will only proceed to implementation after clearance by AfDB and approval by NEMA

6.2.6 Disclosure

After Approval by NEMA, ESIA study reports for the subproject shall be disclosed in-country by the client in formats that are accessible to all project stakeholders and on the African Development Bank external website

6.2.7 Practicality in Undertaking ESIAs

Depending on how the works/sub projects are organized e.g., in Lots, there might be need for an element of practicality in the preparation of the ESIAs. In some cases, e.g., for sub projects in the same locality and whose base conditions do not vary much, these could be combined in 1 ESIA. For instance, a short transmission line that culminates into a new substation or upgrading of an existing substation and which is implemented by the same contractor or tendered as 1 project.

These decisions will be made in consultation with NEMA County Offices, and in consultation with the Bank.

6.3 Usefulness of the Screening Process

The EIA process provides an adequate mechanism for arriving at informed decisions on the net social and environmental worth of projects as proposed. For this to be achieved, the EIA process needs to be timed in a manner that allows it to be useful into the final designs to be implemented.

7 ENVIRONMENTAL AND SOCIAL IMPACTS, AND PROCEDURES FOR ASSESSING THE IMPACT

LMCP III is classified largely as Category 2 under AfDB's Environmental and Social Assessment Procedures (ESAP). Category 2 projects are likely to have site-specific environmental and / or social impacts that are less adverse than those of Category 1 projects and can be minimized by applying appropriate management and mitigation measures or incorporating internationally recognized design criteria and standards. It is expected that LMCP's Environmental and social risks are likely to be localized and limited to the selection of the location for the sub projects.

Because most distribution line construction will take place in existing utility corridors adjacent to public roads, only minimal impacts to soils, water quality, vegetation, wildlife habitats, critical habitat, protected species, and legally protected and internationally recognized areas are expected.

Screening for these resources should be included as part of the further environmental screening of the substation sites and distribution line ROWs as part of the finalization of the Sub-Activities. The most important impacts associated with the various Sub-Activities are the potential need for resettlement and the disconnection and loss of electrical service by customers.

All of these potential impacts can be effectively mitigated and should be addressed in the Sub-Activity-specific ESMP documents.

This chapter therefore explains the general approach to assessment of the project impacts. In the absence of detailed project designs, layouts and specific infrastructure locations, the assessment of the potential environmental and social impacts and the preparation of the respective management plans are based on conceptual provisions.

7.1 Impact Assessment Approach

An impact is essentially any change to a resource or receptor brought about by the presence of the Project component or by the execution of a Project related activity. In general, the assessment of impacts will proceed through an iterative process considering four key elements;

- Prediction of potential impacts and their magnitude (i.e., the consequences of the development on the natural and social environment);
- Evaluation of the importance (or significance) of potential impacts taking the sensitivity of the environmental resources or human receptors into account;
- Development of mitigation measures to avoid, reduce or manage the potential impacts or enhancement measures to increase positive impacts; and
- > Assessment of residual significant impacts after the application of mitigation and enhancement measures.

Where significant residual impacts remain, further options for mitigation may be considered and impacts re-assessed until they are as low as reasonably practicable for the Project and would be deemed to be within acceptable levels:

7.1.1 Assessment of Significance

Criteria for assessing the significance of impacts will stem from the following key elements:

- Status of compliance with relevant Kenyan legislation, policies and plans and any relevant Kenyan or industry policies, standards or guidelines, as well as international best practice standards and guidelines;
- The magnitude (including nature, scale and duration) of the change to the natural or socioeconomic environment (e.g. an increase in coastal erosion, or an increase in employment opportunities), expressed, wherever practicable,

in quantitative terms. The magnitude of all impacts is viewed from the perspective of those affected by considering the likely perceived importance as understood through stakeholder engagement;

- The nature and sensitivity of the impact receptor (physical, biological, or human). Where the receptor is physical, the
 assessment considers the quality, sensitivity to change and importance of the receptor. For a human receptor, the
 sensitivity of the household, community or wider societal group is considered along with their ability to adapt to and
 manage the effects of the impact; and
- The likelihood (probability) that the identified impact will occur. This is estimated based upon experience or evidence that such an outcome has previously occurred.

It is generally accepted that significance is a function of the magnitude of the impact and the likelihood of the impact occurring.

For this assessment, significance has been defined in Table 7-1 below based on five levels;

Category	Significance
Positive impacts	Positive impacts provide resources or receptors, most often people, with positive benefits. It is noted that concepts of equity need to be considered in assessing the overall positive nature of some impacts such as economic benefits, or opportunities for employment
Negligible impacts (or Insignificant impacts)	Negligible impacts (or Insignificant impacts) are where a resource or receptor (including people) will not be affected in any way by a particular activity or the predicted effect is deemed to be 'negligible' or 'imperceptible' or is indistinguishable from natural background variations.
Minor	An impact of minor significance ('Minor impact') is one where an effect will be experienced, but the impact magnitude is sufficiently small (with or without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value.
Moderate	An impact of moderate significance ('Moderate impact') is one within accepted limits and standards. Moderate impacts may cover a broad range, from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. Clearly to design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for moderate impacts is therefore on demonstrating that the impact has been reduced to a level that is ALARP (as-low-as-reasonably-possible). This does not necessarily mean that 'Moderate' impacts have to be reduced to 'Minor' impacts, but that moderate impacts are being managed effectively and efficiently.
major	An impact of major significance ('Major impact') is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. An aim of EIA is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long-term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted (i.e., ALARP has been applied). It is then the function of regulators and stakeholders to weigh such negative factors against the positive ones in coming to a decision on the Project.

Table 7-1: Categories of Significance

For environmental impacts the significance criteria used in this ESMF is shown in Table 7-2:

Table 7-2: Overall Significance Criteria for Environmental Impacts

Receptor sensitivity (or	Impact Magnitude		
resource value)	Low	Medium	High
Low	Minor	Minor	Medium
Medium	Minor	Medium	Major
High	Medium	Major	Major

For the social impact assessment, the perceptions of stakeholders, expressed as opinions around certain issues, can be as important as actual impacts. Consequently, the concept of perception is explicitly brought into the evaluation of significance after an impact is evaluated. When an impact is of significant stakeholder concern, this may be causing to raise the significance rating. This prompts the formulation of more rigorous and appropriate mitigation measures which focus on the

source of the impact and also address stakeholder perceptions. The risk of not addressing stakeholder perceptions is that reputational damage could arise, resulting in the loss of a social licence to operate.

7.1.2 Magnitude of Impact

The impact assessment describes what will happen by predicting the magnitude of impacts and quantifying these to the extent practical. The term 'magnitude' covers all the dimensions of the predicted impact to the natural and social environment including: (e.g., type, scale, duration, frequency, extent). The terminology used to describe impact characteristics is as shown in Table 7-3.

For social impacts, the magnitude considers the perspective of those affected by taking into account the likely perceived importance of the impact, the ability of people to manage and adapt to change and the extent to which a human receptor gains or loses access to, or control over, socio-economic resources resulting in a positive or negative effect on their well-being (a concept combining an individual's health, prosperity, their quality of life, and their satisfaction

Characteristic	Definition	Designation
Туре	A descriptor indicating the relationship of the impact of the project (in terms of cause and effect)	DirectIndirectInduced
Extent	The' 'reach" of the impact (e.g., confined to a small area around the Project Footprint, projected for several kilometers, etc.)	LocalNationalGlobal
Duration	The period over which a resource/receptor is affected	 Temporary Short term Long term Permanent
Scale	The size of the impact (e.g., the size of the area damaged or impacted, the	(No fixed designations; intended to be numerical value or a qualitative description)
Frequency	A measure of the constancy or periodicity of the impact	(No fixed designations; intended to be numerical value or a qualitative description)

Table 7-3: Impact characteristic terminology

The above characteristics and definitions apply to planned and unplanned events. An additional characteristic that pertains only to unplanned events is likelihood.

Likelihood

The likelihood of an unplanned event occurring was designated using a qualitative scale, as described in the table 7-4 below.

Likelihood	Definition
Unlikely	The event is unlikely but may occur at some time during normal operating conditions (probability less than 20%)
Possible	The event is likely to occur at some time during normal operating conditions (probability less than 20%)
Likely	The event will occur during normal operating conditions (probability greater than 50%)

Table 7-4: Impact qualitative scale

7.1.3 Sensitivity of Resources and Receptors

Sensitivities are defined as aspects of the natural or social environment which support and sustain people and nature. Once affected, their disruption could lead to a disturbance of the stability or the integrity of that environment. For ecological impacts,

sensitivity can be assigned as low, medium or high based on the conservation importance of habitats and species. For habitats, these are based on naturalness, extent, rarity, fragility, diversity and importance as a community resource. For socio-economic impacts, the degree of sensitivity of a receptor is defined as 'a stakeholder's (or groups of stakeholders') resilience or capacity to cope with sudden changes or economic shocks. The sensitivity of a resource is based on its quality and value/importance, for example, by its local, regional, national or international designation, its importance to the local or wider community, or its economic value.

In addition to characterizing the magnitude of impact, the other principal impact evaluation step was definition of the sensitivity/ vulnerability/ importance of the impacted resource/receptor. There are a range of factors that was considered when defining the sensitivity/ vulnerability/ importance of the resource/receptor, which may be physical, biological, cultural, or human. Other factors were also considered when characterizing sensitivity/ vulnerability/importance, such as legal protection, government policy, stakeholder views and economic value. The sensitivity/ vulnerability/importance designations used herein for all resources/receptors are:

- Low
- Medium
- High

Once magnitude of impact and sensitivity/ vulnerability/ importance of resource/ receptor have been characterized, the significance was assigned for each impact. Impact significance is designated using the matrix shown in table 7-5 Impact Significance.

Table 7-5: Impact Significance

		Sensitivity/vulnerability/importance of resource/receptor		
		Low	Medium	High
Magnitude of impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

The matrix applies universally to all resources/receptors, and all impacts to these resources/receptors, as the resource/receptor-specific considerations are factored into the assignment of magnitude and sensitivity/ vulnerability/ importance designations that enter the matrix.

7.1.4 Context of impact significance

An impact of **negligible significance** is one where a resource/ receptor (including people) will essentially not be affected in any way by a particular activity, or the predicted effect is deemed to be 'imperceptible' or is indistinguishable from natural background variations.

An impact of **minor significance** is one where a resource/ receptor will experience a noticeable effect, but the impact magnitude is sufficiently small and/or the resource/receptor is of low sensitivity/ vulnerability/ importance.

In either case, the magnitude should be well within applicable standards/ guidelines.

An impact of moderate significance has an impact magnitude that is within applicable standards/guidelines but falls somewhere in the range from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. Clearly, to design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice.

This does not necessarily mean that impacts of moderate significance must be reduced to minor, but that moderate impacts are being managed effectively and efficiently.

An impact of major significance is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. An aim of IA is to get to a position where the Project does not have any major residual impacts, certainly not ones that would endure into the long-term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted. An example might be the visual impact of a facility. It is then the function of regulators and stakeholders to weigh such negative factors against the positive ones, such as employment, in coming to a decision on the Project.

7.2 Typology of Positive Environmental and Social Impacts

Overall, LMCP is designed as a positive impact project whose aim is "to increase on-grid electricity access for households, social-based infrastructure amenities, and MSMEs." The PDO will be assessed through the number of new grid-connected households, directly attributed to the Project, from which the share of the population (i.e., gender disaggregated) with access to electricity will be projected based on the average household size in Kenya.

7.2.1 During Construction

7.2.1.1 Employment Opportunities and wealth creation

The Last Mile Connectivity project will have a positive impact on both direct and indirect employment levels in the country although the bulk of them will be on temporary basis since the project has a timeframe. Based on an estimate of connecting a customer who is 600m away and requiring about 12 poles, it will take about 192-person hours. According to the preliminary estimate by the engineers each household will require an average of 1.8 poles which is basically 2 poles to be connected. Therefore, connecting each household will require 32 person-hours on average. Consequently connecting 128,961 households will require 4,126,752 person hours. These job opportunities will be will be made available to the locals thereby easing unemployment in the country. In addition, this will translate into income at the household levels which will trigger other spending and demand in the local economy.

According to In terms of empowerment, at-least temporary 1,150 job opportunities will be created during the construction phase followed 105,210 permanent jobs in relation to the 10,521 MSMEs that will be connected to the electricity grid thereby inevitably contributing to poverty alleviation,

Enhancement measures

- Contractor should ensure that they prioritise the local community in allocating job opportunities.
- Contractor should ensure that job opportunities are not discriminatory
- Equal opportunities should be given to both men and women

7.2.1.2 Local Material Supplies

An estimated 237, 359 wooden poles will be required for the project according to the preliminary engineer's estimates. Most of the poles about 80% are sourced locally while the rest come through importation. Transportation costs makes sourcing of poles locally more cost effective than importing. This project is not likely to be an exceptional in pole sourcing. Therefore, going by the estimate of 80% local sourcing, the local farmers will benefit by selling about 189, 887 poles. This translates into Kshs 664,605,200 using a farm-gate price of Kshs 3,500 per wooden pole for this kind of a project. The stated amount does not include labour and transport costs for the poles which will also be a benefit to the local people. Therefore, the project will generate new income revenues for the local population across the country.

7.2.1.3 Improving local economy

During this phase, the project will require supply of building materials most of which will be sourced locally at the nearest trading Centre and its environs to the extent possible. Therefore, the project will provide ready market for local enterprises with such materials and boosts the local economy.

The businesses that will benefit during this phase are such as hotel, shops, artisan industries and food vending who will be benefit directly from the construction, as people working there will need commodities from them. This will promote the informal sector in securing some temporary revenues and hence improved livelihoods.

One of the responsibilities of the beneficiaries of the proposed Solar Mini-grid is to undertake wiring of their premises before there are connected and payment of a connection fee of Ksh 1000. The KPLC as an implementing agency KPLC should consider supporting at some households that are very poor through installation of ready boards to offset the cost of wiring so that they can also access electricity.

Enhancement

- KPLC should ensure that their contractors/suppliers remit taxes and have a tax compliance certificate
- Prioritize local purchases over imports.
- Remit taxes on behalf of employees
- Contractor should prioritize local purchases over imports;
- Contractor should give preference to local labor which increases the local's ability to spend

7.2.2 Operation Phase

7.2.2.1 Social Inclusion

The national grid mainly serves the large urban areas and the relatively high population density rural areas. Large parts of the country, particularly in the northern part of the country, remain off-grid due to having only 7% of the country's total population. There are currently eight off grid counties in the country, namely Garissa, Lamu, Wajir, Mandera, Marsabit, Tana River, Turkana and Isiolo according to KPLC. The 14 existing Off-Grid power stations are owned by the Government of Kenya under the Rural Electrification Programme and are managed by Kenya Power.

The Last Mile Connectivity Project aims at scaling up access of electricity to all socio-economic groups of the country. This is in line with the tenets of social inclusion which the AfDB defines as the process of improving the terms for individuals and groups to take part in society. Further, Social inclusion aims to empower poor and marginalized people to take advantage of burgeoning global opportunities. It ensures that people have a voice in decisions which affect their lives and that they enjoy equal access to markets, services and political, social and physical spaces.

According to the preliminary project design, the Last Mile Connectivity Project demonstrates this by making a 100% apportionment i.e. connection to households in off grid station counties which is not the case in other counties. There is a deliberate effort to apply equity by ensuring counties with low penetration benefit the most. Consequently, the counties which hold low penetration and which also exhibit higher poverty levels will get 100% coverage. These are Garissa, Lamu, Mandera, Marsabit, Tana River, Isiolo, Turkana with only Wajir getting 75% coverage. The fact that the Last Mile Connectivity project will cover the off grid areas at a 100% despite their low sales in electricity is a demonstration that the project is keen on social inclusion.

7.2.2.2 Employment Creation

Employment opportunities will also be created during the operation phase of the project. Opportunities that will be created include unskilled, semi-skilled to skilled jobs. These will involve security personnel, and staff to operate and maintain the Minigrid. Employment will increase skill transfers.

Enhancement measures

• KPLC should ensure that they prioritize the local community in allocating job opportunities.

- KPLC should ensure that job opportunities are not discriminatory
- Equal opportunities should be given to both men and women

7.2.2.3 Reduction of Pollution Associated with Kerosene and Wood Fuel Usage:

Residents in the area use different sources of energy. Electricity supply will imply that as many as are willing can apply for connection and get connected. This will result in reduced individuals and organizations using diesel generators, less reliance on kerosene, wood fuel and charcoal. This would mean less carbon dioxide is released to the environment and destruction of forests will be reduced hence decreasing greenhouse gases.

Enhancement Measures

- KPLC should ensure that the power provided cost is competitive to discourage the locals from using unclean source of power.
- KPLC should ensure that they communicate power outages early to consumers

7.2.2.4 Improvement of Local and National Economy

The mini-grid project will ensure supply of a stable power that will reduce damage to the electronics and this will result in promotion of businesses both in the formal and informal sectors. Availability of power will enable businessmen to scale up their businesses while making it is possible to set up businesses such as salons, barber shops, photocopying machines, cyber cafes, welding, and refrigeration of drinks among others. This will result in income improvements at the individual level and for the national economy. More customers will be connected and retail of reliable electricity by the power utility firm will attract increased tax revenues to the government.

Enhancement Measures

- KPLC should ensure that their contractors/suppliers remit taxes and have a tax compliance certificate
- Priorities local purchases over imports.
- Remit taxes on behalf of employees

7.2.2.5 Improved Health benefits and outcomes

Kenya has also aggressively tried to increase access to the power grid, having more than doubled electricity access from 32% in 2013 to 75% of households in 2022. This indicates that 25% of the population was using other sources for lighting. Although access to electricity has improved a majority of Kenyans are still using kerosene for lighting. It has been noted that kerosene lamps emit particles that cause air pollution; these are measured by the concentration of the smallest particles per cubic meter (PM10). Burning a litre of kerosene emits PM51 micrograms per hour, which is just above the World Health Organization 24-hour mean standard of PM10 of 50 micrograms per cubic meter. But these particles do not disperse, so burning a lamp for four hours can result in concentrations several times the World Health Organization standard. The health risks posed by this indoor air pollution mainly include acute lower respiratory infections, but also low birth weight, infant mortality, and pulmonary tuberculosis. Additionally, available data suggest that insufficient illumination (low light) conditions can cause some degree of eye strain, and reading in these conditions over long periods of time may have the potential to increase the development of near sightedness (myopia) in children and adults. The Last Mile project will result in many families replacing kerosene lamps for lighting with electricity there-by reducing disease burden at the family level and on the government.

Solar energy for lighting is better than kerosene lamps that are in use currently. This is because kerosene lamps emit particles that cause air pollution. The health risks posed by this indoor air pollution mainly include acute lower respiratory infections. Additionally, insufficient illumination (low light) conditions can cause some degree of eye strain and reading in these conditions over long periods of time may have the potential to increase the development of nearsightedness in children and adults. The

project will result in many families replacing kerosene lamps for lighting with electricity there-by reducing chances of the aforementioned disease incidences.

Enhancement

- Ensure quality and reliable electricity supply
- Ensure affordable supply of electricity

7.2.2.6 Benefits to education

Access to electricity at the household level and schools will create opportunities for children to study. For example, children from households with electricity have an advantage because they have more time for study and doing homework in the evening as opposed to children from households without electricity. This benefit will in the end translate to better results. Additionally, children in households with electricity can also access T.V. which gives them an advantage of benefiting from education programs being aired through such communication channels.

These are findings supported by a 2022 AfDB evaluation which found that the impact of the LMCP on some educational outcomes for children was found to be positive and significant. The LMCP increased the probability of studying at night in treated households (46%) and increased the time spent studying during the night by 9.4 hours in the last 3 weekdays finding is consistent with the evidence base that electrification allows students to study longer at night. Indeed, the results suggest that the impact of electrification on study hours is positive for lighting.

An explanation for this may be that while solar lighting also increases the hours of studying at night, it does not provide the same quality or length of lighting in the evening and night relative to grid electricity. Notably, the evaluation found that the project increased the test scores of students that took Kenya's Certificate of Secondary Education (KCSE) exam by almost 1 standard deviation.

Access to electricity at the household level and schools will create opportunities for children be able to study even for longer hours. Additionally, children in households can also access education programs being aired through different radio and T.V. channels. Schools will be able to take advantage of information technology and communication that are becoming a way of life in education sector and learning in general.'

The impact significance is high as it will provide power to schools over a long period for additional study time in the night and morning

Enhancement measures

- KPLC should consider having the transmission lines are closer to schools for them to benefit from the power supply;
- KPLC should consider partnering with the county government in providing street lighting to improve security for children and teachers leaving for school early or leaving late for home

7.2.2.7 Improved standard of living

The implementation of this project will result in connecting about 851,149 beneficiaries to the national grid. Access to electricity will change the standard of living of the people as they can use domestic appliances like iron boxes, television sets and washing machines. Furthermore Availability of power will result in lifestyle changes through improved night lighting, pumping of water instead of manual pumping and refrigeration to maintain food safety and quality.

Enhancement

- Ensure quality and reliable electricity supply
- Ensure affordable supply of electricity

7.2.2.8 Increase in Revenues

The implementation of the project will boost income streams accrued from increased sales of electricity to KPLC in the long run. Though not in the short term, these revenues will go to system reinforcement to ensure reliable quality supply while some of it goes to the government as taxes which results in improvement in service provision by the government to its citizens.

7.2.2.9 Improved Security

There will be enhanced security in the country arising from well-lit social, commercial and individual premises. With the implementation of the project, the level of security will increase across the country. This is as a result of more security lights which helps keep off opportunistic crimes and gender-based violence.

7.2.2.10 Information, Awareness and improved Communication

Access to electricity will lead to improved communication for the beneficiaries. This will be enabled by the fact that charging of mobile phones will be easier and cheaper. Access also to mass media like radio and T.V will provide opportunity for the households to access a wide range of information which is useful for decision making. Some of information beneficiaries receive include: information on markets, farm inputs, crop management and local affairs, nutrition, diseases, investments and entertainment among others. These are findings supported by a recent AfDB evaluation of the last mile program which found that the intervention has a positive and statistically significant impact on the level of awareness and knowledge about current events among LMCP beneficiaries. This was driven by the increased ownership of household electrical appliances such as televisions and radios by LMCP households.

7.2.2.11 Gender Considerations: Impact on women and girls

Electricity is a basic service especially for lighting but is still a luxury for many rural women and men. Access to modern electricity will go a long way towards alleviating the daily household burdens of women, giving them more time, improving their health and enhancing their livelihoods. The Last Mile Project will increase access to electricity across the whole country. Available literature on gender and energy suggests that providing electricity to communities and homes and motive power for tasks considered women's work can promote gender equality, women's empowerment, and women's and girls 'access to education, health care, and employment.

This project will not be an exceptional. Indeed, most gender benefits of the project will occur because women tend to spend more time at home, are responsible for household chores that can be carried out more productively with electricity, and because certain tasks are culturally defined as women's work. Majority of the beneficiaries will use the electricity mainly for lighting and powering low energy gadget such as TV, radio, phone charging, refrigeration and to some extent ironing and cooking. In general, lighting and TV are the first common uses of electricity, accounting for at least 80% of rural electricity consumption according to a working paper on Energy Gender and Development of the World Bank 2012. The first and strongest impacts of the project shall occur via lighting and TV. Electricity will definitely displace more expensive candles and kerosene lamps, thereby reducing indoor air pollution, fire, burn risk and providing higher quality light. Women and girls will benefit more from air pollution of kerosene lamps because they spend more time in the kitchen.

Lighting and television will improve access to information, the ability to study, and extend the effective working day. This is more so because children can have extended time of study. The women will also benefit more due to access of information especially on health and nutrition since they also spend more time at home. The project will also enhance security in the rural areas as most homes will be lit up, a benefit that is more appreciated by women.

7.2.2.12 Increased productive use of electricity and improved business

The study Impact Evaluation of the AfDB-Supported Kenya Last Mile Connectivity Project, Phase 1- found Last Mile Phase 1 increased the productive use of electricity by intended beneficiaries.

The evaluation found evidence that the project increased the productive use of electricity by eligible and connected businesses and households. Evidence from the evaluation shows that the intervention increased the connection of household-owned businesses to the national grid by 7%. The project also increased the use of electricity for agricultural activities such as irrigation by 17%. This result is notable and may indicate future productivity gains in agriculture given that 90% of the communities surveyed are predominately engaged in agriculture, specifically, crop farming. The use of electrical appliances

such as hairdryers, sewing machines, and security lights also increased by one type of electrical appliance. Overall, the qualitative evidence showed that the most important benefits for small businesses are increased security due to lighting and longer opening hours. Others include the use of electrical appliances for their business.

7.2.3 Decommissioning Phase

7.2.3.1 Employment Opportunities

Once the project has served its purpose it will then be decommissioned. This will involve demolition and removal of the facility. During demolition, unskilled, semi-skilled and skilled employment opportunities will be available to the public.

7.2.3.2 Site Rehabilitation

After demolition of the proposed project, rehabilitation of the project site will be carried out to restore it to its original status or to a better state than it was. This will include replacement of topsoil and re-vegetation which will lead to restoration of the visual, vegetative and aesthetic state of the site.

7.3 Typology of Negative Environmental and Social Impacts

Despite the various socio economic and environmental benefits outlined, the project will also have some negative impacts. As regards the proposed KPLC Projects, potential adverse environmental and social impacts on the natural and human environment are likely to arise from inputs as well as project processes at the construction and operation and maintenance phases.

7.3.1 Planning Phase Impacts

7.3.1.1 Land Acquisition and Displacement

Land for substations

The proposed project will entail the acquisition of land parcel for setting up the substations. The land acquired may also be used to develop contractor facilities, worker's camps and other ancillary facilities e.g., storage and sanitary facilities. Loss of land will be based on either:

- Involuntary acquisition or compulsory acquisition in line with the land act
- on a willing seller willing buyer basis

In both cases full replacement value will be ensured.

New settlements may arise due to migration of people to the centres near the electricity distribution areas disrupting the existing community settlement patterns.

Wayleaves

The project proponent will use existing access roads to set up the power distribution lines and will seek access from beneficiaries and clients in whose property they will undertake electricity connection to the power grid. Supply of electricity will involve passing of low voltage (LV) lines to connect the customers to power.

Mitigation measures

- Land for substation will be procured by KPLC and will compensated at replacement value
- The contractor will sign and adhere to the agreement for use of land for contractor facilities and worker's camps, and restoration of the site after use.
- The construction activities will be restricted to within the allocated land and the immediate surroundings only.

- After construction work, any land taken for a temporary basis for storage of material will be restored to their original form.
- Consultations with the community during construction of the low voltage lines

7.3.1.2 Way-Leave

The way-leave is recognized as the safety corridor outside of which negative impacts from transmission lines are assumed to be negligible. The width of the corridor depends on the line voltage. The Kenyan standard is a 10m wide corridor for a 11 and 33kV distribution line.

Titles for the way-leave land will not be transferred from the present land owners; this land will remain their property. This land is, however, subject to the following restrictions:

No construction is allowed in the Corridor; and

All vegetation is to be kept below 6ft height (1.8m).

In the way-leave outside of the 5m Right of Way, cultivation or other uses of land may continue provided the above –mentioned restrictions are complied with by the owner and the occupants of the land. KPLC is also required to provide the land owners with 3-day notice prior to maintenance works

7.3.2 Construction Phase Impacts

7.3.2.1 Impact on Natural Vegetation and Biodiversity

The project will involve short service lines within the 600m radius mainly along the road reserve. No tall growing trees will be allowed below the lines or along the way leave trace. Therefore, Grass and short vegetation will be cleared to pave way for erection of poles. This will also be the case where new sub stations will be established. Clearance of vegetation has spill over effects through loosening of soil and resultant soil and wind erosion. Outside of such works, the construction works are not anticipated to significantly impact on soils of the project site other than disturbances to soil during excavation on site for the construction of e.g., the structures.

It is unlikely that the sub project will affect any sensitive natural habitats such as wetlands. Similarly, there will be negligible impact on Fauna, as such sensitive environments will be avoided/minimised during site selection.

Mitigation Measures

- 1. Clear only the necessary areas
- 2. Ensure proper demarcation and delineation of the project area to be affected by construction works.
- 3. Specify locations for vehicles and equipment, and areas of the site which should be kept free of traffic, equipment, and storage.
- 4. Designate access routes and parking areas
- 5. Re-vegetation including planting of trees around the plant/facility

7.3.2.2 Soil Erosion Impact

During clearing of the area to pave way for groundbreaking soil erosion may take place. This will be due to surface run off or blowing away by the wind if not properly managed. This is bound to happen because the soil will be loose. The area is gently slopy on the lower side and surface run off can also result to soil erosion. The impact significance will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- The contractor shall avoid ground-breaking during the seasons of high rainfall to avoid erosion.
- Monitoring of areas of exposed soil during rainy seasons to ensure that any incidents of erosion are quickly controlled.
- The contractor should ensure that construction related impacts like erosion and cut slope destabilizing should be addressed through landscaping and grassing, carting away and proper disposal of construction materials
- Use silt traps where necessary
- Cover soil stockpiles.
- Landscaping with grass on areas without electrical installation (lower areas)
- The contractor should ensure recovery of exposed soils with grass and other ground cover as soon as possible.
- The contractor should put up proper drainage to avoid unnecessary erosion and do compaction of spoil areas to avoid land instability in form of soil subsidence, slip and mass movement.
- Areas compacted by vehicles during site preparation and construction should be scarified (ripped) by the contractor in order to allow penetration of plant roots and the re growth of the natural vegetation

7.3.2.3 Contamination of Soil from Fossil Fuels

The potential sources of soil contamination during construction phase are oil /fuel leaks or spills from machinery used in site preparation and trucks used in transporting construction materials. Depending on the size and source of the spill, liquid and gaseous state, petroleum hydrocarbons may remain mobile for long periods of time, threatening to contaminate the soil. The significance of the impact to the soil will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- Construction vehicles must be maintained in good state and proper servicing to ensure no oils are likely to leak
- Care must be exercised not to spill any fossil fuels
- Any contaminated soil shall be scooped and disposed-off appropriately.

7.3.2.4 Dust Emissions

Initial activities such as site clearing, excavation if done in dry weather conditions will result in dust pollution. Dust emission from construction machinery is regarded as a nuisance when it reduces visibility and is aesthetically displeasing. This is expected during construction works. Dust will be generated from construction earthworks, transportation activities and aggregate mixing.

The receptors were noted to be mainly residential and a health facility. The distances from a source that dust impacts can occur is highly site specific and will depend on the extent and nature of incorporated mitigation measures, prevailing wind conditions, rainfall and the presence of natural screening. Due to the variability of the weather, it is impossible to predict what the weather conditions will be when specific construction activities are being undertaken. Therefore, the assessment of construction dust impacts is typically qualitative.

Mitigation Measures

- The construction area for substations should be fenced off to reduce dust to the public
- Sprinkle loose surface earth areas with water to keep dust levels down.
- Construction trucks moving materials to site, delivering sand and cement to the site should be covered to prevent material dust emissions into the surrounding areas;
- Masks should be provided to all personnel in areas prone to dust emissions during construction
- Stockpiles of excavated soil should be enclosed/covered/watered during dry or windy conditions to reduce dust emissions.
- Drivers of construction vehicles must be sensitized so that they limit their speeds so that dust levels are lowered.
- Trees can be planted around the plant provided they do not cast shadows to the solar panels to act as wind breakers and hence decrease dust pollution

7.3.2.5 Impacts on air quality from Vehicle Exhaust Emissions

Exhaust emissions are likely to be generated by the construction vehicles and equipment. Motor vehicles that will be used to ferry construction materials would cause air quality impact by emitting pollutants through exhaust emissions.

Construction activities e.g., at sites for location of new sub stations will also create some dust, whose amount will be determined by weather conditions as at time of construction.

Mitigation Measures

- Drivers of construction vehicles must be sensitized so that they do not leave vehicles idling so that exhaust emissions are lowered.
- Maintain all machinery and equipment in good working order to ensure minimum emissions of carbon monoxide, NO_X, SO_X and suspended particulate matter;

7.3.2.6 Solid Waste Generation

Little if any solid waste will be generated which includes conductor cuttings, tree cuttings, Cement storage bags and other packets from materials used during construction. Similarly, excavated spoil material will be minimal with the backfilling using the same spoil material undertaken whenever possible. It is expected that solid waste will be generated during construction phase of the project. Solid waste is anticipated to be produced during site preparation, civil works, spoil from excavations and will include; mortar, wood, paper, waste paper wrappings, conductor off cuts, masonry chips and left-over food stuffs. Effects of mismanaged waste include:

- Public nuisance due to littering or smell in case of rotting
- Contamination of soils and water courses
- Creation of breeding grounds for vermin like rodents and cockroaches

Mitigation Measures

- Ensure spoil from excavations is arranged according to the various soil layers. This soil can then be returned during landscaping and then rehabilitation, in the correct order which they were removed that is top soil last;
- Segregate waste and dispose of appropriately using a licensed waste handler
- Provide litter collection facilities such as bins and create awareness campaigns to segregate as early as possible, using the appropriate bins
- Contractor to put in place and comply with a site waste management plan
- The contractor should comply with the requirement of OSHA ACT 2007 and Building rules on storage of construction materials
- Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of waste generated over time
- Recovery of materials remains and return to stores
- Re-use of materials where possible
- Proper budgeting to avoid waste generation

1.1.1.1 Storm water and Waste water

Compaction of surface on the proposed subproject site, access roads and campsite construction will create impervious surfaces (slab environment). There is a likelihood of increased storm water runoff from these sites, which result in gully erosion with time. In addition to creating unattractive terrain, this may cause flood incidences along streams downhill during high rainfall times. The construction and production waste water in the project that will come from concrete mixing and curing processes. The domestic waste water from construction staff further forms waste water if discharged directly to the environment.

Mitigation

- Provision of sanitary faculties
- Proper drainage be constructed including silt traps
- Sensitize the staff on efficient water use
- · Factor storm water harvesting to reduce strain on water resources
- Recycle water where necessary

7.3.2.7 Impacts on Water Resources and Water Quality

During construction, excavation activities will involve soil exposure which results in soil erosion due to wind and surface runoff due to rains. Seepage from spilled fuels and oils and leaking machinery can also negatively impact groundwater water which could lead to potential contamination. Generally, due to the localized area of impact, the overall significance of the related impacts on water quality is considered to be minor, provided the necessary mitigation/ management measures are implemented. The people in some areas use an earth dam as the main source of water and care must be exercised to avoid any pollution to the water source.

Mitigation Measures

Measures shall be put in place to minimize erosion and sediment mobility, especially during construction. These measures include:

- Clear the necessary areas only.
- Appropriate remedial measures shall be implemented by the contractor in the event of erosion.
- Infrastructure shall be designed to ensure that contaminated run-off does not reach watercourses.
- In the event of an oil spill the procedures contained in the emergency response plan of the contractor will come into effect.
- No vehicle maintenance and service shall be done at project site but in approved garages or service stations to avoid any possible oil and fuel spills that could contaminate soils and possibly ground water quality.
- Ensure that potential sources of petro-chemical pollution are handled in such a way to reduce chances of spills and leaks.
- · Construction activities to avoid any unchanneled flow of water at the site
- Storage areas that contain hazardous substances should be bundled with an approved impermeable liner and provision for a pit to be made in case of oil spill.
- The excavation and use of rubbish pits during construction should be strictly prohibited.
- A waste disposal area should be designated within the active construction area and this should be equipped with suitable containers i.e., skips or bins of sufficient capacity and designed to contain and prevent refuse from being blown by wind,
- Areas contaminated by spilled concrete and/or fuels and oils leaking from vehicles and machinery should be cleaned immediately.
- The contractor to source for alternative source of water for construction purposes to avoid potential conflict with the community

7.3.2.8 Impacts from Hazardous Materials

Some hazardous materials will be used during construction phase of the project. They include insulating oil, paints, solvents and oils. Spilled chemicals can contaminate soil as well as pollute water resources. Additionally, hazardous and flammable substances if improperly stored and handled on site become potential health hazard for construction workers and the public. The amount of hazardous waste generated will be minimal.

Mitigation Measures

- Maintenance of construction vehicles will not be done on site
- All hazardous products and waste should be labelled and handled properly to avoid contact with the ground
- Material handling to be done by trained and qualified staff
- The contractor site should have designated area (concrete bunded) for storing hazards materials

7.3.2.9 Accidental Oil Spills or Leaks

There is possibility of oil leaks from construction vehicles. The construction machines on the proposed site have moving parts which will require continuous oiling to minimize the usual corrosion or wear and tear. These processes may lead to oil spill to the ground. The impact significance will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- In the event of accidental leaks, contaminated top soil should be scooped and disposed of appropriately.
- It is proposed that the refueling and maintenance of vehicles will not take place at the construction site.
- Contractor to create awareness for the employees on site on procedures of dealing with spills and leaks from oil for the construction machinery
- Vehicles and equipment must be serviced regularly and kept in good state to avoid leaks.
- In case of spillage the contractor should isolate the source of oil spill and contain the spillage using sandbags, sawdust, absorbent materials and/or other materials approved by materials.
- Proper training for the handling and use of fuels and hazardous material for construction workers.
- All chemicals should be stored within the bunded areas and clearly labeled detailing the nature and quantity of chemicals within individual containers.

7.3.2.10 Occupation safety and health hazards

During construction many people will be engaged in activities such as pole and conductor wiring and working at heights. Workers can be exposed to significant occupational risks like falling from heights, being pressed by poles etc.

However, work practices and consideration for health and safety may fall short of international standards and best practice, such as the use of personal protective equipment (PPE), which will increase the severity of hazards to which the workforce are exposed.

Equipment and worker transport to work sites may also result in road accidents in the absence of a proper traffic management plan or if traffic safety rules are not enforced.

Occupational health and safety impacts during construction are considered to be of high in significance due to the expected use of mechanized equipment and machinery. The often-poor conditions of the existing roads e.g., in rural areas may also increase the risk of accidents.

Given the construction works will be undertaken by different contractors, risk of non-compliance with labour rights could arise.

Working at Height poses the risk of fall from heights and normally occurs when workers do any work above 2.5 meters especially during Pole erection, climbing poles and during stringing. It may happen due to negligence and failure to follow safe work procedures. Proper testing of power lines to minimize risk or shocks and sounding of poles to determine whether they are safe coupled with use of the right Personal protective clothing and equipment will help minimize and or eliminate the risk.

Mitigation Measures

- The contractor should use skilled personnel for activities that demand that.
- Awareness creation/Tool box talks on safety to workers while at construction site and documentation kept
- Workers coming to the site should be knowledgeable on safety precautions to take
- Appropriate PPE (helmet, safety harness, gloves, safety shoes, masks, climbing irons among others)
- Proper housekeeping and maintain good hygiene
- Close supervision of workers
- Engagement of trained first aider on site

- Provide safe drinking water for workers
- Availability of equipped first aid box on site
- Risk assessment by contractor of the construction activities and implement mitigation measures appropriately
- Adherence to occupational Safety and Health Act 2007
- Establish Safety committees
- The contractor must acquire insurance for the workers-WIBA cover

7.3.2.11 Community Safety -Access to Site by General Public

If access to the substation or power line construction site is not controlled then it can lead to people entering the site including animals. This can result to accidents. Impact significate is rated as moderate considering the high impact magnitude and low receptor sensitivity. The health and safety of construction personnel may be placed at risk as a result of the use of heavy machinery to construct the required powerline infrastructure. There may be injury to people / animals accessing the site i.e. falling into foundation excavations. In addition, there is the potential for loitering and / or attempted theft of construction machinery and equipment present onsite during the construction period.

The primary impacts on health and safety during construction are therefore:

- · Injury to people resulting from the use of machinery and equipment;
- · Injury to people and animals accessing the site; and
- Increase in crime.

Mitigation measures

- Stakeholders engagement
- Staff signs code of conducts
- Disciplinary action for in bad behaviours
- Hazard communication
- Cultivate good relationship with the community
- Proper barricading
- Awareness creation to community
- Hazard communication.
- Controlled access to the site by designated personnel
- Maintain records of any person who comes to site

7.3.2.12 Public health and Safety risk (Spread of HIV/AIDS and STIs)

At project implementation many new workers will be involved and new interactions between people are likely to take place. These interactions are likely to pose risks to the social fabric of the society. Such risks include public health related issues such as (HIV/AIDS, communicable and sexually transmitted diseases (STDs).

Project construction works will also entail some temporary, localized, ground works as well as those involving hoisting of e.g., poles that pose safety risks to passer-by pedestrian as well as motor vehicles. This will particular be of concern in urban and peri-urban areas, and along roads with constricted wayleaves. Excavations undertaken will also pose additional risks to pedestrians.

Ongoing works in constricted wayleaves can result in traffic snarl ups and be a public nuisance. Snarl ups due to blockage of the road could lead to traffic as well as potential risk for accidents especially where construction is on-going with little room for pedestrian access.
Mitigation measures include:

- Develop and implement at HIV/AIDS Policy to promote awareness of HIV/AIDS and access to treatment.
- Employees contractors and subcontractors will be required to follow, and will be trained in, the Worker Code of Conduct which includes context specific guidelines on worker-community interactions, worker-worker interactions and alcohol and drug use.
- Employees, contractors, and subcontractors will be trained and educated to improve awareness of transmission routes and methods of prevention of sexually transmitted infections, communicable diseases and vector borne diseases, notably malaria, prior to working on the Project site. Other diseases will be covered as appropriate.
- Work with NGOs or the Ministry of Health to develop and implement a community sensitisation programme on HIV/AIDs and communicable diseases.
- Continue to implement a programme of stakeholder engagement including a grievance mechanism in communities in the Project Area.
- Monitor health trends during Project construction (and operations) in order to be aware of and respond appropriately to any negative health trends that may be linked to the Project and its workers.
- Sensitize workers and the community on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff training, awareness campaigns and community *Barazas*.
- Awareness creation and consultations with local communities prior and during construction on the dangers of these diseases
- Informing workers on local cultural values and health matters.
- Provision of condoms to workers
- Allowing migrant workers time to be with their families
- The contractor will provide public education/information about HIV/AIDS transmission and prevention measures.
- Ensure equal treatment of workers

7.3.2.13 Increase in competition for scarce resources and strain on public utilities

The influx of workers in the project areas is expected to lead to increase in demand for public amenities such as hospitals, transport, schools water resources etc. This could lead to a loss of access to these services by locals especially those who could be among the vulnerable categories. Due an increase in demand, cost of housing near the sites will disadvantage the locals.

The nature of the project will require technical skills that might not be available in the community. This might require movement of construction workers into the community. It is expected that technically skilled personnel might be sourced from outside the community while the unskilled labour is expected to be sourced locally. It is therefore a possibility that the neigbouring communities might go out looking for opportunities in project area thus creating competition. The significance of this impact is considered to be minor because the receptor sensitivity will be medium, and the impact magnitude is low.

Mitigation Measures

- Reduction of labor influx by tapping into the local workforce to the extent possible
- Recruitment of local workforce to the extent possible especially unskilled and semi-skilled jobs
- Consultations with and involvement of local community in project planning and other phases of the project
- Awareness-raising among local community and workers on the need to have a good /cordial working relation
- Sensitization/awareness to workers regarding engagement with local community.
- Contactor shall make provision to provide resources needed by the workers if the need for such resources may result to competition e.g., water
- Establishment and operationalization of an effective Grievance Redress Mechanism accessible to community members
- The contractor and the project/community grievance redress committee to work closely address complains raised on time.
- Gender considerations in employment opportunities
- Appropriate compensation for work done

- Respect for community values/culture
- Prompt payments as per the contractual agreements/terms

7.3.2.14 Fire Hazards

During construction of the project, fire hazards are likely to occur especially when precaution measures are not taken to account. Smoking is one of causes of fires and this can happen if cigarette butts are left carelessly. Additionally, keeping of fuels onsite during construction can be a potential cause of fire. This impact is evaluated to be of moderate significance. All the construction activities will be confined at the project site hence high sensitivity and low magnitude.

Mitigation Measures

The following measures should be put in place to prevent fire hazards:

- · Create awareness to the construction workers on potential fire hazards
- Provision of firefighting equipment (extinguishers) on site during construction.
- No smoking shall be done on construction site
- 'No smoking' signs shall be posted at the construction site
- A fire evacuation plan must be posted in various points of the construction site including procedures to take when a fire is reported.
- No vegetation burning takes place especially after clearing sites for substations or Wayleave traces.
- Have a fire marshal on site all times.
- Where smoking is necessary Cigarette smoking areas should be demarcated and safe disposal of cigarette butts encouraged throughout the project cycle.

7.3.2.15 Electric shocks and electrocution.

These may likely happen during testing and commissioning at construction phase where staff will be working on live power lines and substation. The contractor is expected to adhere to safe working procedures in liaison with KPLC's project Engineer and to ensure proper communication and operational procedures with National and Local control centres. This will ensure safe isolation and restoration of power.

7.3.2.16 Construction material sourcing (wooden poles) and Quarrying Impacts

Majority of these service lines are constructed using wooden poles. Despite properly treated, wooden poles providing an economical utility period of up to 40 years, the initial set up will impact on the environment because many poles will be used during construction. This as well as early replacement (due to e.g., accidents) of these wooden poles increases deforestation, and therefore, increases greenhouse gas emissions.

The construction of the project will utilize materials such as; stone, ballast, sand and hard-core for substation Construction. It is anticipated that they will be obtained from quarry and mining operations. Conscious or unwitting purchase of these materials from unlicensed operations indirectly supports, encourages and promotes environmental degradation at the illegal quarry sites and causes medium to long term negative impacts at source, including landslides.

Mitigation Measures

- The contractor should source all building materials such as stone, sand, ballast and hard core from NEMA approved sites.
- Ensure accurate budgeting and estimation of actual construction materials to avoid wastage.
- Reuse of construction materials where possible.

7.3.2.17 Increased Water Demand

During the construction of the project there will be increased demand for water by the construction workers and the construction works. Water will be mostly used in the construction works and for wetting surfaces or cleaning completed structures. It will also be used by the construction workers to wash themselves and even drink. Although the sensitivity of the receptor (surface water) in the project area is high owing to unavailability of feasible alternative source of water for the local community, the overall significance of impacts is assessed to be negligible due to negligible magnitude of the impact.

Mitigation Measures

- Prudent use of available water
- Consultations with the project local committee on use of water in the community to avoid conflicts with the community
- Contractor to make own arrangements to provide water for construction works different from the community sources avoid any conflicts with community.

7.3.2.18 Noise and Vibration during construction

Noise pollution from the proposed development during construction noise will be generated from the construction machines, vehicles and construction workers. During construction activities noise pollution will occur and is bound to be a nuisance and a disturbance to neighbouring communities. This noise is from construction equipment, excavation works, concrete mixing and vehicles coming to site but will be temporary.

Mitigation Measures for Noise and Vibration

These proposed mitigation measures aim to ensure that noise generated during construction is kept to minimum and adheres to relevant noise standards. They include:

- Fencing off the construction site with iron sheet during construction
- Install portable barriers to shield compactors thereby reducing noise levels.
- Use of noise-suppression techniques to minimize the impact of construction noise at the project site.
- Use equipment designed with noise control elements.
- Co-ordinate with relevant agencies regarding all construction activities.
- Limit vehicles to minimum idling time and observe a common-sense approach to vehicle use, and encourage drivers to switch off vehicle engines whenever possible.
- Set and observe speed limits and avoid raving of engines
- The Contractor shall ensure that construction activities are limited to working hours (i.e., between 8am and 5pm daily) from Monday to Saturday, or as required in terms of legislation.
- Compliance with Noise and Vibration Regulations of 2009 is expected

7.3.2.19 Temporary Land-take for construction purposes

During construction, some areas may have to be temporarily occupied by the contractors in charge of the transmission lines construction, for storage of materials. As previously mentioned, no contractors camp will not be set up for this particular project. Instead, unskilled labour will be sourced from areas in which the distribution power line will traverse. Skilled labour, which is anticipated to be small in size, will be absorbed by the nearest urban/settlement areas. Owners and occupants will be compensated against the loss of crops if any and will receive rent from the contractors for temporary occupation. There will be no transfer of rights in this case.

7.3.2.20 Gender Based Violence, Sexual Harassment and Sexual Exploitation and Abuse

In the processes of interacting with the community members some workers may be involved in gender-based violence. SEA may also occur where the workers may use their influence in terms of money to lure young girls and exploit them sexually.

Gender-based violence (GBV) is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (i.e., gender) differences between males and females. It includes acts that inflict physical, sexual or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. GBV in project may manifest in terms of sexual exploitation and abuse (SEA) and workplace sexual harassment (SH).

Sexual Exploitation and Abuse (SEA) is any actual or attempted abuse of a position of vulnerability, differential power, or trust, for sexual purposes, including but not limited to, profiting monetarily and socially from the sexual exploitation of another. Sexual abuse is further defined as "the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions." Women, girls, boys and men can experience SEA.

Workplace sexual harassment (SH) includes unwanted sexual advances, request for sexual favors and sexual physical contact.

Sexual exploitation and abuse (SEA) of community members by project workers and sexual harassment (SH) among project workers are forms of GBV that are a potential risk and impacts to this proposed project. GBV has serious and far-reaching negative effects including physical injuries resulting in death or disfigurement, psychological trauma, infection with HIV/AIDS, unwanted pregnancies, social stigmatization and exclusion and economic deprivation among others. Consequently, it is incumbent that preventive measures be mooted to prevent occurrence of such cases.

Mitigation Measures

To manage GBV risks, the contractor will prepare a SEA/SH Prevention and Response Action Plan that will include a GRM that ensures confidentiality. The plan should have an Accountability and Response Framework. The plan will include the necessary measures for prevention and response. The contractor can make reference to AFDB requirements and guidelines on gender aspect management.

It should be noted that the decision to report a GBV case lies with the survivor or the guardians if the survivor (in case of a minor) and such a decision must be respected. Therefore, the contractor or project will only refer the survivor of guardian to the established referral pathway, including the nearest police station with a gender desk for handling GBV cases. Also, should a survivor choose legal redress, the project will similarly facilitate him/her by referring him/her to the nearest established legal support facility that offers legal support to GBV survivors.

Key tasks will include:

- Community engagement to create awareness on SEA/SH risk/ issues
- Creating awareness to workers on the need to refrain from SEA/SH incidences
- Mandatory awareness creation for workers on required lawful conduct in the community and legal consequences for failure to comply with laws
- Mandatory signing and implementation of code of conduct for the workers
- Creation of partnership or liaison with specialized actors in GBV who can respond appropriately in case of any incidence (provide contacts to community)
- Ensure a survivor centred approach in responding to SEA/SH incidences i.e., decision to report lies with the survivor or the guardian in case of a minor.
- Contractor to provide established referral pathway including police station with a gender desk for handling SEA/SH cases and also free toll numbers/hot lines for reporting GBV
- The contractor will also facilitate any survivor who decides to take legal action by referring them to the nearest established legal support facility that offers legal support to GBV survivors.
- Ensure Confidential reporting and responding to SEA/SH cases if reported;

- Encourage reporting of all SEA/SH incidences to the chief or the grievance redress committee members or community elders; and
- Ensure all complaints on SEA/SH or harassment are reported directly through Safety Health and Environment officer based in KPLC regional offices

7.3.2.21 Child Labour and Exploitation

Implementation of the project could lead to increased opportunities for the host communities to sell goods and services to the incoming workers. This can lead to child labor to produce and deliver these goods and services, which in turn can lead to increased cases of school truancy and dropout. The impact significance is rated minor, based on low sensitivity of the receptor and medium magnitude of the impact.

Mitigation Measures

- Awareness creation to the community that child labour is illegal and that children have a right to education.
- Communication to the contractor that child labour is illegal and adherence to employment act is required.

7.3.2.22 Labour Influx and Recruitment

The nature of the project will require technical skills that may not be all available in the project areas. This will require movement of construction workers into the project community. With an increase in population of the project area, the social set up may be affected resulting to Different negative social impacts such as competition for resources, illicit behavior, and crime (including prostitution, theft, and substance abuse).

7.3.2.23 Forced Labor

During construction of the substation and Power lines the risk of forced labor is likely to occur and precaution is need to safe guard the community from being subjected to forced labor. The impact significance is rated minor, based on low sensitivity of the receptor and medium magnitude of the impact.

Mitigation Measures

- Contractor must adhere to the employment Act which outlaws any form of forced labor
- Community to report any form of forced labor at the site
- Contractor to ensure that all workers have a national ID card or documentation to show they are adults (above 18 years).

7.3.2.24 Negative Cultural exchange and Social ills:

Contractors and his workforce may find some cultural differences within the project foot print. Respect and tolerance even for different religious backgrounds is encouraged throughout the project cycle. Some workers may be tempted to participate in crime or unwanted behaviours within the community.

Mitigation measures

- Respect and tolerate other people's cultures and religious alienations
- · dissemination warning information through billboard on site
- Contractor to apply ethics as required throughout the construction period.
- Awareness to workers
- Security on site
- Awareness creation
- Provision of protective device (condom) in liaison with sub county National Aids Control Council -NACC officers

7.3.2.25 Interruption of existing installations, services and utilities

During constriction of both the substations and power lines, various services are likely to be affected. Puncturing of water pipes is likely to occur during digging of holes for poles. It is important to carry due diligence and consult to service providers to provide you the network map for their systems. Transport is likely to be disrupted as well especially during power line string a cross public road.

Mitigation Measures

- Liaise with various agencies to identify where installation are
- Avoid existing installation, services and utilities
- Engage the concern stakeholders
- Use traffic marshal
- Identify all service provider and inform them of the construction
- Immediate repair in case of any damage

7.3.2.26 Archaeological and other cultural properties Impact

This may likely happen during vegetation clearance or compaction activities along the wayleave trace for power lines where an endangered species may be disrupted or destroyed. Cultural places like Shrines, traditional medicinal herbs or graves may be interfered with. It is highly recommended that Physical Cultural resources including archaeological resources, monuments should be preserved and any chance findings must be reported to the local community leadership and the National Museums of Kenya.

7.3.2.27 Risks related to Inadequate Stakeholder Engagement

Lack of timely and adequate stakeholder engagement during construction is a recipe for dissatisfaction among stakeholders affected and can result to grievances which may turn to conflicts and delays in project construction. With the implementation of the mitigation measures the impact significance is minor.

Mitigation measures;

- The contractor will design and implement a stakeholder engagement schedule to ensure various stakeholders are engaged at and informed about the project on a timely basis and respond to issues that the stakeholders may require.
- The contractor will also prepare and implement a grievance redress mechanism to deal with grievances. The grievance redress mechanism committee of this GRM should also include representatives from the community.

7.3.3 Operation Phase Impacts

7.3.3.1 Occupational Health and Safety

a) Live power lines

Hazards directly related to distribution power lines occur as a result of electrocution from direct contact with high voltage electricity or from contact with tools, vehicles, ladders, or other devices that are in contact with high voltage electricity. Recommended techniques to prevent these hazards include:

- Use of signs, barriers (e.g.) use of steel posts surrounding power lines, particularly in urban areas) and education/public outreach to prevent public contact with potentially dangerous equipment
- Grounding conducting objects (e.g. fences or other metallic structure) installed near power lines to prevent shock Only allowing trained and certified workers to install, maintain, or repair electrical equipment;

- Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards
- Prevent encroachment and enforce restrictions on activities in RoW
- Post warning signs and properly install electrical poles with anti-climbs to prevent access to conductors by unauthorized personnel
- Provide safety belts and include log-out/tag-out procedures
- Create public and staff awareness on the electrical safety rules as set out in Kenya power safety book
- Deactivating and properly grounding live power distribution lines before work is performed on, or in close proximity, to the lines by Apply SITE -Switch, Isolate, Test and Earthing of power lines

b) Working at height

This poses the risk of fall from heights and normally occurs when workers do any work above 2.5 meters especially during Pole erection, climbing poles and during stringing. It may happen due to negligence and failure to follow safe work procedures. Proper testing of power lines to minimize risk or shocks and sounding of poles to determine whether they are safe coupled with use of the right Personal protective clothing and equipment will help minimize and or eliminate the risk.

Mitigation Measures

- Follow safe work procedures including sounding of poles before climbing and associated electricity lines precautions
- Procure and enforce proper use of necessary protective equipment
- Testing structures for integrity prior to undertaking work;
- Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures;
- Inspection, maintenance, and replacement of fall protection equipment;
- Installation of fixtures on tower components to facilitate fall protection systems;
- An approved tool bag should be used for raising or lowering tools or materials to workers on structures
- Use of helmets and other protective devices will mitigate against scratches, bruises, punctures, lacerations and head injuries due to dropping objects.
- Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures;
- Inspection, maintenance, and replacement of fall protection equipment;

c) Exposure to Electric and magnetic fields

Electric magnetic fields are only anticipated during operation period, but these are negligible. The exposure to would be little EMFs is highly negligible because the EMFs produced by the electrical installation are low. Consequently, the ESMF does not anticipate impacts of EMFs.

Mitigation measures

- Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Average and peak exposure levels should remain below the ICNIRP recommendation for General Public Exposure;
- Considering siting new facilities so as to avoid or minimize exposure to the public. Installation of transmission lines or other high voltage equipment above or adjacent to residential properties or other locations intended for highly frequent human occupancy, (e.g. schools or offices), should be avoided;
- If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines, substations, or transformers. Examples of these techniques include:
 - Shielding with specific metal alloys
 - o Burying transmission lines

- o Increasing height of transmission towers o
- Modifications to size, spacing, and configuration of conductors

d) Exposure to chemicals

Some hazardous materials will be used during construction phase of the project. They include insulating oil, paints, solvents and oils. Spilled chemicals can contaminate soil as well as pollute water resources. Additionally, hazardous and flammable substances if improperly stored and handled on site become potential health hazard for construction workers and the public.

Mitigation measures

- Provide appropriate PPEs
- Secure chemical storage area
- Train personell to handle chemicals
- Provide Material Safety Datat Sheets for handling chemicals

7.3.3.2 Public Safety

Public safety risks during operation phase emanate from:

a) Risk of sparks/fire from live conductors

Potential adverse impacts related to fire hazards can result from the project. The live conductors can cause short circuiting in case conductors touch one another due to strong winds, falling tree branches or trees. In case of big sparks falling on dry grass there can be a likelihood of fire.

Mitigation Measures

- No burning of vegetation along the distribution lines rights-of-way
- Timely maintenance of the right of way
- Timely maintenance of transformers

b) Electric shocks and electrocution of people

Electricity, though a good master and a bad servant, is a hazard and safety precautions must be adhered to and properly used. Within the households electric shocks are likely in case of poor handling of electricity such as using wet hands, poor wiring and overloading of sockets.

Fallen poles and transmission lines can also cause safety risks of electrocution for the members of the public.

Mitigation

- Inspect the wiring of the houses before connecting power
- Safety awareness campaigns to the community before connection of power on safety precautions such as:
- Require community to engage a certified technician to do wiring in the premises
- Use of quality materials while wiring
- Refraining from individual illegal extensions of power lines to other houses
- Observing safety measures while using electricity such as not touching sockets and switches with wet hands or wiping with wet cloths
- Keeping off all electricity infrastructure e.g., not tying livestock on electric poles, no cutting earth wires that run along some electric poles, not interfering with sockets or switches
- Reporting any electric wire/conductors if found fallen on the ground

• Report any incident regarding electricity at the local office -staff in charge of operating the Mini-grid

c) Electromagnetic interference

Electric and magnetic fields (EMF) are invisible lines of force emitted by and surrounding any electrical device (e.g. power lines and electrical equipment). Electric fields are produced by voltage and increase in strength as the voltage increases. Electric field strength is measured in volts per meter (V/m). Magnetic fields result from the flow of electric current and increase in strength as the current increases. Magnetic fields are measured in units of gauss (G) or tesla (T), where 1T equals 10,000G. Electric fields are shielded by materials that conduct electricity, and other materials, such as trees and building materials. Magnetic fields pass through most materials and are difficult to shield. Both electric and magnetic fields decrease rapidly with distance. Power frequency EMF typically has a frequency in the range of 50 - 60 Hertz (Hz), and is considered Extremely Low Frequency (ELF). Although there is public and scientific concern over the potential health effects associated with exposure to EMF (not only high voltage power lines and substations, but also from everyday household uses of electricity), there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. However, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.

Mitigation

- Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Average and peak exposure levels should remain below the ICNIRP recommendation for General Public Exposure;
- Considering siting new facilities so as to avoid or minimize exposure to the public. Installation of transmission lines or other high voltage equipment above or adjacent to residential properties or other locations intended for highly frequent human occupancy, (e.g. schools or offices), should be avoided;
- If EMF levels are confirmed or expected to be above the recommended exposure limits, application of engineering techniques should be considered to reduce the EMF produced by power lines, substations, or transformers. Examples of these techniques include:
 - Shielding with specific metal alloys
 - Burying transmission lines
 - o Increasing height of transmission towers o
 - o Modifications to size, spacing, and configuration of conductors

d) Noise and Ozone

Noise in the form of buzzing or humming can often be heard around transformers or high voltage power lines producing corona. Ozone, a colorless gas with a pungent odor, may also be produced. Neither the noise nor ozone produced by power

Mitigation Measures

- Proper servicing of vehicles used during maintenance works to ensure minimal noise generation
- Maintain Transformers in good working conditions and ensure they are not overloaded to minimize humming of Transformers
- Monitor noise levels at sensitive receptors (residential areas, schools, hospitals)
- The KPLC should adhere to Noise and Excessive vibrations regulations of 2009.
- Measures to mitigate this impact may be addressed during project planning stages to locate rights-of-way away from human receptors, to the extent possible.
- Use of noise barriers or noise canceling acoustic devices should be considered as necessary.

7.3.3.3 Increase in Hazardous Waste

The main cases here include:

a) Oil Leaks from transformers

Transformers can experience a leak arising from a fault, poor handling and vandalism. These leaks may result in potential contamination of surface and groundwater as well as soil.

Mitigation measures

- Need to design appropriate protection devices against accidental discharge of transformer oil substances.
- Frequent inspection and maintenance of the transformers should be done to minimize spilling.
- All waste oils from maintenance of transformers and other associated equipment should be segregated and disposed properly by a reputable/registered waste handler in accordance with the waste disposal plan.

b) Contamination from Copper Chromate Arsenate (CCA)-treated poles

Soil and water pollution due to unsafe disposal of CCA-treated poles my occur if proper care and management procedures are not put in place

Mitigation Measures

- Development of a comprehensive CCA management plan and safety systems
- Used pole disposal system and management
- CCA-treated Poles should not be used to build children's play equipment or toys, new garden furniture, exterior seating or picnic tables.
- As a precaution, you should limit possible exposure to CCA-treated wood chemicals
- Never burn CCA-treated wood in fireplaces, wood stoves or any wood fire.
- After a bushfire, keep people and children away from the CCA-treated wooded ash until it is removed, and follow safety precautions for clean-up.
- Do not prepare food on treated wood or store in treated wood containers
- Do not make food utensils from treated wood
- Do not use to make containers for storing drinking water
- Do not use in beehives where it may come in contact with honey
- Do not use for firewood.

7.3.3.4 Visual Impacts and Aesthetics Landscape Impacts

Visual impacts will occur when changes in the landscape are noticeable to viewers observing the landscape from their homes or from tourism / conservation areas, travel routes, and important cultural features. This may result from construction of substation and new distribution lines. Once complete the substation and power lines will present visual impacts, both by its physical presence and by visual impacts of its associated structures. Visual intrusion caused by the substation and power lines may cause alteration to the natural scenery of the project area. Some people however, do not notice structures or do not find them objectionable from an aesthetic perspective. To some, the substation and its utilities may be viewed as part of the infrastructure necessary to enhance everyday lives and activities while to other it represents economic development. The project and its surrounding area are new for such developmental project and will have visual impacts during initial period of Project and the same will disappear over a period of time. Based on the above, significance of visual impact on landscape during operation phase of the project has been assessed as minor due to low receptor sensitivity and impact magnitude being medium.

Mitigation Measures

- The visual negative impacts can be mitigated through putting up a fence round to keep off/screen the substation.
- Planting of short trees along the fence
- Extensive public consultation during the planning of power line and power line right-of-way locations; ·
- Accurate assessment of changes in property values due to power line proximity;
- Siting power lines, and designing substations, with due consideration to landscape views and important environmental and community features;

- Location of high-voltage distribution lines in less populated areas, where possible;
- Burying distribution lines when power must be transported through dense residential or commercial areas.

7.3.3.5 Avian and Bat Collisions and Electrocutions

The distribution lines and poles can potentially constitute an electrocution and collision hazard to birds and Bats. Some birds building nests in the cross arms and perch on the power lines and poles. The combination of the height of distribution poles and the electricity carried by distribution lines can pose potentially fatal risk to birds and bats through collisions and electrocutions. Avian collisions with power lines can occur in large numbers if located within daily flyways or migration corridors, or if groups are traveling at night or during low light conditions (e.g. dense fog). In addition, bird and bat collisions with power lines may result in power outages and fires.

Mitigation measures

- Regular Monitoring and record any Avi Fauna deaths
- Use flappers in areas where wetlands /bird habitats are crossed by the line
- Used of insulated conductors across endangered birds' habitat areas
- Design of distribution towers and transformers should be such so as to minimize the risks of electrocution of birds;
- The distribution poles should be raised with suspended insulators in order to reduce the electrocution of bird species; and
- Marking overhead cables using bird-flight deterrents and avoiding use in areas of high bird concentrations of species vulnerable to collision.
- Aligning transmission corridors to avoid critical habitats (e.g. nesting grounds, heronries, rookeries, bat foraging corridors, and migration corridors);
- Maintaining 1.5 meter (60-inch) 11 spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware;
- Retrofitting existing transmission or distribution systems by installing elevated perches, insulating jumper loops, placing obstructive perch deterrents (e.g. insulated "V's"), changing the location of conductors, and / or using raptor hoods;
- Considering the installation of underground transmission and distribution lines in sensitive areas (e.g. critical natural habitats);
- Installing visibility enhancement objects such as marker balls, bird deterrents, or diverters

7.3.3.6 Aircraft Navigation Safety

If power lines are located near an airport or known flight paths can impact aircraft safety directly thorough collision or indirectly through radar interference.

Mitigation Measures

Aircraft collision impacts may be mitigated by

- Avoiding the siting of power lines close to airports and outside of known flight path envelopes
- Consultation with regulatory air traffic authorities or national safety regulations and
- Use of buried lines when installation is required in flight sensitive areas.

7.3.3.7 Flooding

Flooding may occur and cause damage to the Substations and other associated infrastructure but the risk of occurrence will vary from one place to the other depending on how regular such places are known for regular flooding. The impact is assessed to be negligible due to very low magnitude of the impact.

Mitigation measures

- Ensure drainage channels are free of any obstruction at all times i.e., not blocked
- Construct more channels and or expand existing ones
- Raise foundations of the solar panels and ensure a proper and firm concrete base
- Create flooding diversions and or spill ways to divert water from getting into the solar power facility

7.3.3.8 Forest Fires

If underlying growth is left unchecked, or slash from routine maintenance is left to accumulate within right-of-way boundaries, sufficient fuel can accumulate that may promote forest fires. Recommended measures to prevent and control risk of forest fire include: ·

- Monitoring right-of-way vegetation according to fire risk;
- Removing blowdown and other high-hazard fuel accumulations;
- Time thinning, slashing, and other maintenance activities to avoid forest fire seasons;
- Disposal of maintenance slash by truck or controlled burning
- Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically must be monitored by a fire watcher;
- Planting and managing fire resistant species (e.g. hardwoods) within, and adjacent to, rights-of-way;
- Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access.

7.3.4 Negative impacts during decommissioning phase

Preparation for decommissioning

The Substations or Powerlines may be decommissioned due to various reasons and there are impacts that will need to be mitigated. Once the KPLC makes the decision for decommissioning the following will be required;

- Prepare a Decommissioning Plan and submit to NEMA and the County Governments of project area to obtain approval for implementation.
- Implement the decommissioning plan including backfilling, revegetation, disposal of waste material, recycling of recyclable material among others

Some of the negative impacts associated with the proposed project during its decommissioning phase include;

7.3.4.1 Noise and Vibration

The demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas. This will be as a result of the noise from demolition works. The impact significance has been assessed minor due to the fact that the impact magnitude is low and the receptor sensitivity is medium.

Mitigation Measures

Significant impacts on the acoustic environment will be mitigated by the KPLC who will put in place several measures that will mitigate noise pollution. The following noise-suppression techniques will be employed to minimize the impact of temporary noise at the project site.

- Install portable barriers to shield compressors and other small stationary equipment where necessary.
- Use quiet equipment (i.e., equipment designed with noise control elements).
- Co-ordinate with relevant agencies in case the noise produced will require a license.
- Limit pickup trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use and encourage workers to shut off vehicle engines whenever possible.
- Demolish mainly during the day when most of the neighbors are out working.

7.3.4.2 Solid Waste Generation

Demolition of the Mini-grid and related infrastructure will result in generation of solid waste. The waste will contain the materials used in construction including concrete, metal, wood, glass, paints, adhesives, sealants and fasteners, conductors, poles solar panels and batteries. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment.

Mitigation Measures

- Demolition contractor to adhere to the various manufacturer's guidelines and requirements regarding demolition and disposal
- Segregation of waste in order to separate hazardous waste from nonhazardous waste and other streams of waste
- Provision of facilities for proper handling and storage of demolition materials to reduce the amount of waste caused by damage or exposure to the elements
- Adequate collection and storage of waste on site
- Safe transportation to the disposal sites / designated area
- Hazardous waste must be disposed by NEMA approved waste handler

7.3.4.3 Dust Emissions

Some dust will be generated during demolition works. This will affect demolition staff as well as the neighbors. The impact will be of minor significance.

Mitigation Measures

High levels of dust concentration resulting from demolition or dismantling works will be minimized as follows:

- Watering all active demolition areas to kill dust.
- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard.

7.3.4.4 Soil environment/ compaction

Soil compaction may occur during demolition and transportation of debris from the demolition site

Mitigation

- Vehicles will utilize the existing roads to access the site;
- No unauthorized dumping of used oil and other hazardous waste should be undertaken at site;
- All waste should be stored in a shed that is protected from the elements (wind, rain, storms, etc.) and away from natural drainage channels;
- Solid waste should be segregated in colour coded waste receptacles.
- In case of accidental/unintended spillage on small area, the contaminated soil should be immediately collected and stored as hazardous waste;
- Compacting of loose soil in excavated areas.
- Enclose the demolition site and protect the soil to prevent the waste soils and other debris from being washed away by surface runoff and wind.
- Any soil potentially contaminated by chemicals, oils, fuels to be collected and disposed of by a NEMA authorized waste handler

7.3.4.5 Occupational safety and health

Workers and the public are likely to be exposed to several occupational health and Public safety risks including dust inhalation, fall from height, hit by falling objects or machinery hence the to manage and mitigate the risks and hazards

Mitigation

- All workers (regular and contracted) should be provided with training on Health and Safety management system of the contractor during decommissioning stage and EHS policies and procedures during the operation stage;
- Obtain and check safety method statements from contractors;
- Monitor health and safety performance and have an operating audit system; and
- Permitting system should be implemented to ensure that lifting equipment are operated by trained and authorized persons only;
- Appropriate safety harnesses and lowering/raising tools should be used for working at heights;
- All equipment should be turned off and checked when not in use; and
- A safety or emergency management plan should be in place to account for natural disasters, accidents and any emergency situations.

7.3.4.6 Gender Based Violence, SEA & SH

Gender base violence is likely to happen because different gender will be seeking employment during demolition of the project.

Mitigation

- Prepare an Awareness Raising Strategy, which describes how workers and local communities will be sensitized to GBV risks, and the worker's responsibilities;
- Identify GBV Services Providers to which GBV survivors will be referred, and the services which will be available;
- Elaborate GBV Allegation Procedures i.e. how the project will provide information to employees and the community on how to report cases of GBV breaches to the GM.
- An Accountability and Response Framework, to be finalized with input from the contractor, should include at minimum:
- GBV Allegation Procedures to report GBV issues to service providers, and internally for case accountability procedures which should clearly lay out confidentiality requirements for dealing with cases; and,
- A Response Framework which has:
 - Mechanisms to hold accountable alleged perpetrators associated to the project;
 - The GM process for capturing disclosure of GBV;
 - A referral pathway to refer survivors to appropriate support services.

7.3.4.7 HIV/AIDs awareness and prevention

Interactions during the decommissioning phase will be for a very limited time. The project will sensitize workers and the surrounding communities on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff training and awareness campaigns/ to the community. This impact is assessed to be Minor due to the low magnitude and medium receptor sensitivity.

7.4 Typology of Cumulative Impacts from Sub project

Cumulative impacts are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past present or reasonably foreseeable future activities.

This section provides a description and analysis of the potential cumulative effects of the proposed transmission and distribution power line and substations project and considers the effects of any such changes on:

- The biophysical environment; and
- Socio-economic conditions.

7.4.1.1 Cumulative Impact Analysis

For the most part, cumulative impacts or aspects thereof are too uncertain to be quantifiable, due to mainly lack of data availability and accuracy. This is particularly true of cumulative impacts arising from potential or future projects, the design or details of which may not be finalized or available and the direct and indirect impacts of which have not yet been assessed. Given the limited detail available regarding such future developments, the analysis that follows is necessarily of a generic nature and focuses on key issues and sensitivities for the project and how these might be influenced by cumulative impacts with other activities. In most cases, only qualitative assessments of cumulative impacts are possible, i.e. they are not formally rated.

7.4.1.2 Cumulative Biophysical Impact

The potential cumulative impact associated with the LMCP III is the potential loss of biodiversity through a decrease in vegetation and faunal habitat. A decrease in avifauna as a result of the operation of the facility may also occur. The clearing of natural vegetation is occurring at an increasing rate within some Flats area as a result of human population growth and development. The clearing of indigenous vegetation is resulting in a decrease in biodiversity and suitable habitat for fauna. The proposed development is likely to exacerbate the loss of biodiversity through the direct loss of natural vegetation within the powerline wayleave, as well as indirectly through enabling the further construction of the ring feed powerlines and providing an additional supply of electricity to the area which may facilitate further development initiatives. However, with the implementation of the proposed mitigation recommendations the cumulative impact on avifauna is anticipated to below.

7.4.1.3 Cumulative Socio-Economic Impact

The proposed power lines development has the potential for positive cumulative socioeconomic impacts. The construction of power lines and substations will provide an additional supply of electricity to the several proposed areas all over the country. This dedicated, additional supply of electricity will enable many previously un-serviced households to receive electricity, thereby improving the standard of living for the people within the surrounding rural area. The power outages, which are currently occurring in the area on a relatively frequent basis, will also decrease accordingly due to provision of additional substations.

7.5 Climate Change Risk and Adaptation Measures

The Project has been assessed as Category 2 based on AfDB's Climate Safeguards System meaning that it is moderately vulnerable to climate risks such as extreme weather conditions namely storms and flooding which will be mitigated through appropriate technical designs of the network.

Taking into consideration the default emission factor for kerosene and the average kerosene consumption (for lighting) per month in a typical household in Kenya, it is estimated that the Project will abate 2.881 tonnes of carbon dioxide equivalent (tCO2e/year) thus contributing to Kenya's emission reduction targets outlined in its Updated Nationally Determined Contribution under the Paris Agreement (2015) on Climate Change.

Kenya Power as a corporate entity is committed to sustainable development policies and measures. Kenya Power has contributed tremendously to the global effort to combat climate change while ensuring the sustainability of its business and society

In the last five years, KPLC has significantly reduced the uptake of thermal (fossil fuels) power in favour of renewable sources of electricity such as Solar, wind, hydro and geothermal. The quest for clean energy has seen us reduce thermal uptake to a low of 7.69 percent, while we have increased uptake of geothermal to 46.69%, wind to 11.2% and Solar at 0.8% while hydroelectricity stood at 32.22% at end of June 2022. As a result of reduced thermal dispatch, clean energy in the previous financial year (2021/22) accounted for 84.31% of our total energy mix.

Increased reliance on clean energy will reduce the use of diesel generators, kerosene lamps and over-reliance on wood hence saving the planet from tonnes of greenhouse gas emissions and save our forests, which are key carbon, sinks resulting in mitigation of Climate change.

LCMP AfDB III will be tremendously helpful in tackling climate change by ensuring access to clean energy for the majority of the population hence relieving pressure on forests since over-reliance on firewood and charcoal as a source of energy will be minimized

In addition, the site that would host the main impact activities, are on existing rights-of-way, thus the project will reduce any significant impacts on the physical and biophysical environments (flora, fauna, natural resources, biological diversity). However, the project will advocate for a landscaping/green space component in its design, which will contribute to the improvement of the living environment and the fight against climate change. The use of alternative energy will also be ensured in the implementation of the project activities through including related interventions such as supply of electric cookers. The activities will also have no significant impact on the quality and quantity of available water resources.

7.6 Potential Gender-related Impacts relating to LCMP-AFDB Phase III Sub-Activities

Access to sustainable energy by all is a key global development target under the Sustainable Development Goals (SDGs) where Goal 7 is specific on access to affordable, reliable, sustainable and modern energy for all. Sustainable energy resources enhance the quality of life and well-being of the population by enabling the production of goods, and access and provision of related services and is also underscored under vision 2030 that access to energy resources is an enabler of economic development.

Mainstreaming gender perspectives and ensuring social inclusion of all groups in society throughout the project cycle is critical in ensuring the effectiveness and sustainability of any energy project. This is because energy affects men and women differently and bringing all groups of society on board to participate in projects results in enhanced success and leads to shared benefits and enhances all-inclusive development in any society. Access to modern energy is a key enabler for women's empowerment as it plays a key role in meeting practical gender needs of women such as cooking, food processing and water hauling as well as strategic gender needs like street lighting for safety and power for enterprise development. While access to energy services would not necessarily guarantee gender equality, it helps in relieving women and girls of the drudgery associated with their daily tasks and provides them with time for income-generating opportunities and education (UNDP; 2015).

7.6.1 Lessons Learnt From Previous Last Mile Connectivity Project Phases

The last mile connectivity project has been in implementation for close to 8 years. Three phases of the project have been implemented funded by AFDB and the World Bank and the Government of Kenya. The following are the lessons learnt from the project in regard to gender issues during the planning, implementation and operation phases of the project.

- Gender mainstreaming and social inclusion were not mainstreamed during the planning phases of the project.
- Public Participation at the planning stages of the project gives a better understanding of the gender issues at hand and informs the planning team to front strategies and support to ensure all members of society participate in the project, equally access the benefits of the project and also ensures negative impacts are not disproportionately shared by vulnerable groups of the society. In the case of the last mile, this matter of participation was inadequately done. In the schemes where it was done, the benefits were evident especially fewer complaints from the women and vulnerable groups and more of these groups benefited.
- The project implementation team, the contractors and the supervising consultant did not have a gender expert in their teams
- The project –access to modern and clean electricity has made a significant contribution to all members of the society and especially to women and the vulnerable groups of our society as described below through capturing the voices of the beneficiaries;
 - i) Access to electricity has enhanced security and so businesses can open for long hours, especially for the women
 - ii) Women spend more time in the kitchen and access to clean energy for lighting has resulted in health benefits because they no longer use kerosene lamps for lighting and so they are no longer exposed to air pollution that is linked to fumes and particles from kerosene lamps which predisposes users to respiratory diseases.
 - iii) Better lighting was appreciated also by the elderly who noted it helped them deal with eye strain
 - iv) On security at the home, one woman said "The area is well lit and now I never fear at night, I can check on my livestock from the window because of security lights

- Access to electricity has resulted in the convenience of carrying out women's roles; e.g. In the kitchen we have power and it's easy to cook, attending to small babies at night is easier such as changing the baby and giving medication, heating water and also ironing
- vi) Access to power has enhanced the participation of women in economic activities that were difficult before and one had to wait for the husband or employ young men to do it. This was in line with the difficulties of women in operating diesel chaff cutters for dairy farming and she said "Women will now operate chaff cutter because with the power it is just a switch the diesel chaff cutter is difficult for women because it needs a lot of energy".
- vii) Charging phones in the comfort and privacy of our homes has enabled us to maintain the confidentiality of our phones and information therefore. This statement was made by one elderly woman who noted that before the power came they had to charge phones at the local market centres which were far and they used to send their grandchildren with their phones who would access their information, especially mobile money or even have their batteries changed
- viii) Women can now access information through radios and TVs which are easily powered by electricity without necessarily having to travel to the market centre or wait to ask their husbands. This is because there are very many health programs in the media, especially on nutrition, child care and reproductive health among others
- ix) Most women were not given jobs because the contractors think they cannot work, if they had asked us we could dig the holes, one woman said.

LMCP AFDB Phase III will result in a substantial increase in the availability and reliability of electricity supply throughout cities, villages, and towns in Kenya, thereby providing a major impetus to its national economic and social development. Access to reliable, clean, and low-cost energy enables individuals, households, employers, employees, and communities to maintain and enhance their quality of life. Expanded and improved electrification is crucial for household, productive, and social activities as well as effective education and health care services.

To a large extent, these benefits will apply equally to men and women, especially so in relation to work activities. Nevertheless, there will be situations where gender impacts will vary. However, differential impacts are most likely to occur. Women use energy differently than men and are key end-users of energy for household purposes. Women also participate strongly in the informal small-scale commercial sector.

A number of studies highlight the link between energy and gender within an African context, and specific to Kenya. Although these studies provide essential information, there is a dearth of secondary research providing sex-disaggregated energy data in Kenya and information related to energy purchase and use at the household level. As such, some of the referenced studies conclude that it is difficult to ascertain women's access to and the impact of energy services in Kenya. Findings from these studies include:

- Although improved energy may extend the working hours (and therefore working days) of women working outside
 of the home, at home the lack of electricity has a more significant impact on women because they must expend
 physical labor to complete household tasks.
- Key uses of reliable energy are for income-generating activities, to complete household responsibilities, generate informal sector products, and for use in the community and commercial sectors.
- Constraints that women may face include the availability and access to energy, credit needed to launch or sustain/maintain enterprises, prepayment/Token cards, and decision-making involving household issues.
- The provision of improved and reliable energy presents various opportunities for women to increase their involvement in home-based income-generating enterprises.

7.6.2 Gender specific impacts that could arise from LMCP Phase III

Summary information regarding summary gender-specific impacts that could arise from LMCP Phase III Sub-Activities is provided in the table below, which emphasizes impacts that relate to women's roles in the household and enterprise-related activities.

Potential Impact	Possible /Likely Positive	Possible / Likely Negative
Kenya has greatly increased electricity access over the last few years, from 2.3 million connections in 2013 to 8.6 million by the end of June 2021 thereby achieving an electricity access rate of over 75%. Impressive as this may be, the goal is to achieve universal access by 2030. The substantial extension of electricity supplies will reduce this percentage and thereby engender a substantial positive impact on women. However, issues of reliability and frequent outages reduce the benefit of this increase in access to electricity.	XX	
Fuel wood and charcoal remain as primary energy sources in rural and urban areas in Kenya. A reduction in the use of fuel wood would reduce indoor air pollution and labour expended (related to the arduous task of fuel wood collection and burning). Fuel wood is used for domestic purposes and women are responsible for gathering and using it. As such, increased availability and reliability of electricity supplies could lead to a reduction in pollution levels, improve health and reduce poverty given the increased time available for income generations. However, current data indicate that few Kenyans use electricity as a fuel source (liquid natural gas is much more prevalent) so there will be at most a slight positive impact.	X	
Women operating small businesses away from the home that uses electricity will benefit from reduced outages and will have the potential to have longer opening hours.	XX	
A reliable energy supply will provide additional time that could be used for income- producing enterprises, which could improve socio-economic conditions. Although studies specific to Kenya in this area do not exist, similar studies conducted in other countries show that the impact of reliable energy supply may have a positive impact on the allocation of time for women. The impacts relate to female heads of households having additional time available for income-generating activities in the evening and spending less time cooking.	X	
Increased and improved street lighting will provide safer environments at night for women.	XX	
Increased reliability of indoor lighting will help children do their homework and therefore contribute to one of the primary aspirations of any mother.	Х	
 Related to prepaid meters: a) There may be difficulty purchasing token cards due to the number of vendors and hours of operation or lack of knowledge on mobile payments; b) There may be suspicion related to prepayment meters and the adoption of new technology; and c) Women may have unequal/lesser access to money, which would be needed to purchase tokens. 		X (but could be allayed by publicity campaigns)

The increased availability and reliability of electricity supplies resulting from LMCP III will bring benefits to a significant proportion of Kenya's population, be they male, female, young, or old. Mostly, these benefits will affect men and women in much the same way – by increasing their income-generating potential and reducing the negative impact of outages. They will also increase the quality of domestic living. The differential gender impacts relate mainly to home activities, which are largely carried out by women who would thus benefit from improved lighting in the home for both domestic and small income-generating activities. Improved street lighting will also increase their sense of security during the hours of darkness. Potential negative impacts are hard to identify based on available information and revolve around the use of prepayment cards and the

introduction of new meters. These potential negative impacts can be mitigated through publicity campaigns. The overall conclusion of this gender assessment is that increased availability and reliability of electricity supplies will bring significant benefits to women, as they will to most of the population, and that there will be little in the way of negative impacts.

Under the AfDB's Gender Marker System, this Project is tentatively categorized as GEN II because it has the potential to close the gender gaps since at-least 30% of the envisaged job opportunities during the construction phase will target women in consideration of the labour laws in Kenya. Other Project activities that will address the gender disparities include the provision of electricity 139,480 low-consumption last-mile connections where 32.4% of the households will be female-headed. Also, 31.4% of the registered MSMEs (of which 90% are micro-sized establishments employing 1 – 9 persons) will be female-owned. Furthermore, the improved service delivery arising from the newly electrification of social-infrastructure amenities (in relation to education, healthcare, and water supply and sanitation) under LMCP III will contribute to closing gender disparities. Besides, the promotion of electric cooking will contribute to improving the welfare of females since cooking and fetching cooking fuels in many households are chores undertaken by women and girls.

7.7 Mitigation Measures

Mitigation measures involve avoiding of impact altogether, minimizing the impact, rectifying the impact and gradual elimination of impact over time. Mitigation measures are twofold: physical and socio-economic. Physical measures relate to issues of project siting, re-vegetation and preventive measures like bush clearing, erosion, sedimentation and pollution control and good construction / farming practices, waste management, and application of Environmental Guidelines for Contractors. Socio-economic measures will include education and awareness, hygiene and sanitation training, rules and regulations, institutional support (including skills training), and recruitment of qualified personnel.

The mitigation measures for the public health issues; explore options to accommodate workers off site and avoid camps and in absence of that, educate the workers about preserving vegetation, provide decent temporary sanitation facilities like toilets. Use local and regional labour as much as possible and provide HIV/AIDS awareness training to the workers and the community, provide guidelines on local culture, behaviour and social life to the workers and create walk ways and plant grass where necessary.

The mitigation measures for use of hazardous waste include; use off site treatment methods and only deliver poles ready for fixing, proper burning or disposal of any hazardous materials found on site, use protective gear during work, remove or bury all abandoned construction materials and rubbles and fill in and close all latrines and septic systems. The mitigation measures for use of heavy plant and equipment i.e. tippers for material delivery include; Minimize the use of heavy trucks, Provision of drainage channels to guide surface run offs and introduction of mulching to minimize effects on soil erosion and set protocols for vehicle maintenance on site and not dump any oil around the site. In addition to specific measures, the project will require to prepare subproject specific management plans, such as waste management plan, labour influx management plan, traffic management plan, etc., as required

A summary of typical environmental and social impacts and the corresponding typical mitigation measures for the types of activities likely to be undertaken by KPLC are as shown in Chapter 10 below. The mitigations are not intended to be exhaustive in content but rather to indicate in general the scope of ESIAs and ESMPs. It is entirely possible that additional impacts will be identified during impact assessment studies or audit preparation and will require additional mitigation measures. In the ESIAs and ESMPs, impacts shall be categorized according to project phase (planning, construction, operation, and decommissioning) and for all project types.

8 MEASURES TO DEVELOP ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS (ESMPS)

This chapter outlines the general approach towards developing the Environmental and Social Management Plan (ESMP) proposed for LMCP III. The ESMP comprises of the proposed mitigation measures and monitoring plans.

The chapter will outline the generic impacts mitigations. However, each sub project found to require an ESIA after screening will include a specific ESMP as a key output.

Identification of Mitigation and Enhancement Measures

The mitigation hierarchy (MH) is a tool that will be applied to limit the negative impacts of the development project. Mitigation measures involve avoiding of impact altogether, minimizing the impact, rectifying the impact and gradual elimination of impact over time. In some cases, this involves four steps followed in order – Avoid, then Minimise, then Restore impacted areas and finally offset any impacts that remain. Preventing impacts (steps 1 and 2) is most effective.

Figure 24: Impacts Mitigation Hierarchy

The mitigation hierarchy consists of four steps:



In some variants, this can be summarised in 3 steps: Impacts will be avoided, if not possible, then mitigated and to deal with a residual significant impact, then offset applied.

An additional step is to enhance any positive impacts the project has.

Broadly, mitigation measures can be threefold: technical, physical and socio-economic. Technical involves changes or alterations in some of the design elements for example. Physical measures relate to issues of project siting, re-vegetation and preventive measures like bush clearing, erosion, sedimentation and pollution control and good construction / farming practices, waste management, and application of Environmental Guidelines for Contractors. Socio-economic measures will include education and awareness, hygiene and sanitation training, rules and regulations, institutional support (including skills training), and recruitment of qualified personnel.

A typology of enhancement measures from the positive impacts is provided in table below. Similarly, a summary of typical environmental and social impacts and the corresponding typical mitigation measures for the types of activities likely to be undertaken by KPLC are as shown in Table 8-1 below. The table are not intended to be exhaustive in content but rather to indicate in general the scope of ESIAs and ESMPs. It is entirely possible that additional impacts will be identified during impact assessment studies or audit preparation and will require additional mitigation measures. In the ESIAs and ESMPs, impacts shall be categorized according to project phase (planning, construction, operation, and decommissioning) and for all project types.

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Employment of locals during construction	•	Prioritize employment of locals by contractors through relevant contractual clauses
	•	Ensure all un skilled jobs are sourced from local populations where the sub projects are implemented

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Social Inclusion	 Use of Stima Loan. Stima Loan is a Kenya Power initiative in partnership with the French Development Agency (AFD) through the Government of Kenya. It aims at connecting low-income families that cannot afford the connection fees upfront by giving them loans.
Increased productive use of electricity and improved business	 Stimulate and manage households' and businesses' demand for the productive use of electricity. Priority areas of action to consider include integrating complementary interventions into electricity access programs to link electricity with income-generating activities such as the promotion of small businesses (MSMEs).
Improvement of National and Local Economy	 KPLC should ensure that their contractors/suppliers remit taxes and have a tax compliance certificate Priorities local purchases over imports. Remit taxes on behalf of employees

Table 8-2: Typical impacts and mitigation measures for new LV distribution lines and Wayleave acquisition

Project Activities/	Potential and Associated Impacts	Mitigation Measures
Environmental		
Aspects		
Construction Phase	Impacts	
Acquisition of Right	Anxiety among potentially affected	• Work through government officers like chiefs to keep
of Way (ROW)	landowners and users	public fully informed
	Loss of natural habitat	Give preference in site selection to land already converted
		Select alternative alignments to avoid protected areas and other sensitive natural features
	Loss of or damage to cultural resources	Select alternative alignments to avoid physical cultural resources
		• Where avoidance is impossible, comply with AfDBOS2 and consult with national authorities and/or local leaders on best way to preserve or relocate
		cultural property.
	Loop of Lond	Formulate and implement chance finds procedure
Clearance of DaW	Loss of Land	Prepare RAPs and compensate land owners
Clearance of Row	Loss or fragmentation of or increased	Give preference in site selection to land already senverted
	reduction in biodiversity possible impacts	Minimize width of elegred area
	on rare or endancered species	 Infinitize with or cleared area Use labor intensive mechanical clearing methods to
		maximize employment opportunities and avoid impacts of herbicides
	Accumulation of brush and debris	• Use appropriate disposal techniques; prohibit burning
Pole installation and Cable Stringing; Equipment Delivery	Soil / groundwater contamination from accidental fuel/engine oil spill refuelling	• Store fuel and chemicals on an impermeable surface with a bund that will hold 110% of the capacity of fuel and chemicals stored.
and Installation		 Train personnel in safe fuel handling
		Use drip pans to contain any spills during refuelling activities
	Onsite noise and vibration and other hazards.	Maintain all work equipment at optimal operating condition
		Enforce use of PPE
		Daily tool box talks
	Disturbance by noise and vibration in surrounding communities	Maintain all work equipment at optimal operating condition
		 Monitor noise levels at sensitive receptors (residential areas, schools, hospitals)

Project Activities/	Potential and Associated Impacts	Mitigation Measures
Environmental		
Aspects		
		 Work through community liaison officers to agree on working hours and to respond promptly to complaints. Sensitize workers to reduce noise during working hours in sensitive areas
	Risk of accidents to life and property	 Set and enforce speed limits Mandatory driver training Use warning signs and, where necessary, personnel to direct traffic
	Damage to roads and other infrastructure caused by transit of heavy trucks	Routine inspection, and prompt repair of any damage
	Working at heights and in confined spaces.	 Adequate ladder should be provided Provision of climbing shoes Provide safety harness
Operation Phase Im	pacts	
Distribution line operation	Risk of electrocution, injury or property damage Pollution from Improper disposal of solid and liquid wastes Damage to natural habitat	 Prevent encroachment and enforce restrictions on activities in RoW Post warning signs and properly install electrical poles with anti-climbs to prevent access to conductors by unauthorized personnel Provide safety belts and include log-out/tag-out procedures Create public and staff awareness on the electrical safety rules as set out in Kenya power safety book Operators to practice 3 Rs of waste management: reduce, reuse, recycle Dispose of wastes and scrapped equipment properly Manage storage, transfer, and disposal of transformer oils according to industry standards Set and enforce restrictions on hunting by workers
maintenance		 Minimize width of cleared area Use labour-intensive mechanical clearing methods to maximize employment opportunities and avoid impacts of herbicides
	Accumulation of brush and debris	Use appropriate disposal techniques; prohibit burning
	Soll / groundwater contamination from accidental fuel/engine oil spill refuelling	 Train personnel in safe fuel handling Use drip pans to contain any spills during refuelling activities
	Risk of accidents to life and property	 Set and enforce speed limits Mandatory driver training Use warning signs and, where necessary, personnel to direct traffic

The previous chapter on Environmental and Social Impacts, And Procedures for Assessing the Impact demonstrates more typologies of impacts and mitigation measures likely to be undertaken by KPLC and the contractors. The mitigations are not intended to be exhaustive in content but rather to indicate in general to the scope of ESIAs and ESMPs. It is entirely possible that additional impacts will be identified during impact assessment studies or audit preparation and will require additional mitigation measures. In the ESIAs and ESMPs, impacts shall be categorized according to project phase (planning, construction, operation, and decommissioning) and for all project types.

Mitigation measures involve avoiding of impact altogether, minimizing the impact, rectifying the impact and gradual elimination of impact over time. Mitigation measures are three: physical, socio-cultural and socio-economic. Physical measures relate to

issues of project sitting, re-vegetation and preventive measures like bush clearing, erosion, sedimentation and pollution control and good construction / farming practices, waste management, and application of Environmental clauses for Contractors. Socio-economic measures will include education and awareness, hygiene and sanitation training, rules and regulations, institutional support (including skills training), and recruitment of qualified personnel while socio-cultural measures could include allowing limited and monitored access to restricted areas for cultural reasons where applicable. Some of the mitigation measures are briefly described below.

8.1 Environmental and Social Management Plan (ESMP)

Based on the identified impacts, an Environmental and Social Management Plan (ESMP) will be prepared as the key output of an ESIA process. The purpose of the ESMP is to provide guidance during the implementation of the Proposed KPLC sub Projects regarding mitigation measures, the institutional responsibilities for implementation (and monitoring), and cost estimates for effective environmental and social management. According to AfDB policies, the key areas to be covered to develop appropriate Environmental and Social Management Plans (ESMPs) of subprojects, include identification of mitigation measures for the impacts of subprojects (physical works or management activities); the objective of each measure, its specific implementation requirements and responsibilities, its technical and operational requirements, its timing, the targets to be achieved, performance indicators for monitoring and supervising the adequacy of safeguard implementation and the associated costs and sources of funds for the proposed mitigation measures. It's important to ensure that these costs are sufficient to ensure that adequate mitigation is undertaken.

Towards this end, the ESMP will:

- Ensure that proper appraisals on the effects of projects takes place and that proper measures are put in place to mitigate the effects;
- Set out the basis for compliance and enforcement of terms and conditions for approval;
- Design compliance strategies; and
- Monitor compliance and managing of the environment.

8.1.1 ENVIRONMENTAL SOCIAL MANAGEMENT PLAN

Table 8-3: Pre-construction Phase ESMMP

S/NO	POTENTIAL NEGATIVE IMPACTS	PROPOSED MITIGATION MEASURES	RESPONSIBILITY	PERFOMANCE INDICATOR	VERIFIERS	MONITORING FREQUENCY	COST
1	Acquisition of Way leaves impacts – Land use restriction, tree cutting, crop damages	 Consultations with the community during construction of the low voltage lines Proper wayleaves consents Consider alternative designs 	KPLC,	 No of Consultation meetings No of complains on wayleaves No of wayleaves consents signed 	 Records of public consultations Wayleave consent forms Grievance Logs 	Quarterly	2,500,000
2	Land acquisition for Substations and restricted Land use	 Prepare RPF to guide the preparation of RAP documents and compensate at full replacement value. Providing skills-based training interventions, especially for self-employment to the young and unemployed. This will enhance their employability and create potential for income generation through self-employment; Procuring resources from the local sources so as to induce more employment in the supply chain. Where land is compulsarily acquired do full compensation The proponent shall: Establish an efficient grievance management mechanism (GRM) Ensure early stakeholders' engagement sessions are held, and all agreed issues 	KPLC	 No of ARAPs prepared No of PAPs compensated and Types of assets/livelihoods compensated and/or replaced No of PAPs/persons received skills-based training No of stakeholder forums held No of jobs created for locals 	 Prepared ARAPs GRM records, Record of stakeholders' engagement sessions Established GRM A-RAP 	Quarterly	40,000,000

		properly documented, signed, and					
		implemented in timely manner.					
		Engage in due consultation with relevant					
		groups within host community at all					
		phases of the project					
		 Provide opportunities for all groups 					
		(women, men, youth/associations, elders,					
		leaders etc.) to participate in					
		consultations and ensure that all					
		concerns are duly addressed					
		Should ensure that all land acquisition					
		procedures are documented and land					
		procurement procedures are followed					
		keenly, including holding regular					
		stakeholder engagement forum giving					
		prior information regarding the land take					
		procedures. In the case of unavoidable					
		iand take, that land in question shall be					
		acquired in accordance with the					
		applicable law and the previously done					
		resettlement policy framework					
		Align distribution power lines to already					
		existing access roads within the area					
		The contractor will implement and adhere					
		to agreements for temporal use of land					
		and restoration of land after use.					
		The construction activities will be					
		restricted to within the allocated land and					
		the immediate surroundings only					
		After construction work any land taken					
		for a temporary basis for storage of					
		material will be restored to their original					
		form					
		Consultations with the community on the					
		low voltage lines					
3		Stakeholder Identification and consultation			1	1	L
а	In exhaustive	• Prior to construction works, identify and	KPLC	 No and category of 	 Stakeholder 	Continuous	2,000,000
	stakeholder	map all primary and secondary		stakeholders identified	mapping Results		
	identification,	stakeholders (the various segments of					
	stakeholder	the subproject area community – men					
		and dubproject area community - men,			1		

mapping and stakeholder information needs basis	 women, PWDs, elders, religious leaders, etc., community level CSOs, sub-county level CSOs with interest in the subproject, county level CSOs with interest in the subproject etc.). Assess the interest of each stakeholder category in the subproject Assess each stakeholder category's subproject information needs at the various subproject phases 	and mapped, their interest etc	 Records of stakeholder identification and consultations 		
b Risks related to disclosure of appropriate information in line with the subproject phase	 In consultation with the identified stakeholders, prepare a stakeholder engagement plan (SEP) that is based on their locations (maps) and their information needs at the various subproject phases Undertake timely and prior disclosure of relevant project information to the various stakeholder categories in line with their information needs and the project phase Carry out robust consultations with all identified community level (primary) stakeholders in a gender, intergenerational and culturally sensitive manner, using appropriate participatory consultative techniques Consult with other relevant (secondary) stakeholders (as appropriate) based on their information needs, project phase and the SEP Document the information disclosure and stakeholder consultation processes (including venues, dates, minutes of discussions detailing consultation agenda, issues/concerns raised for 	KPLC • No of SEP prepared • No and types of disclosure of various information • No of stakeholder consultations	 Prepared SEP Records of stakeholder identification and consultations 	Continuous	2,000,000

		each agenda item, and responses by the implementing agency)					
c	Risks related to inadequate consultations with all segments of the community and exclusion of VMGs and vulnerable individuals and households in subproject activities and implementation structures	 Ensure adequate consultations prior to construction, and throughout the project cycle with all segments of the community and other relevant stakeholders. This should be based on the SEP, using appropriate consultation techniques Establish project GRM Ensure all concerns or grievances raised are responded to in a timely manner. 	KPLC	 No of stakeholder consultations undertaken No and type of grievances resolved and the timing for resolution 	 Records of stakeholder identification and consultations Grievance Logs 	Continuous	3,000,000
d	Risks related to exclusion of some stakeholder categories (VMGs, minority clans, disadvantaged individuals, women, youth, PWDs) from the consultation processes and the established subproject implementation structures	 Facilitate the various stakeholder groups to establish representative and proportionate subproject implementation structures (implementation committee, GRM Committee etc.) composed of people of integrity who have the interest of their stakeholder category at heart, while ensuring that there is no conflict of interest, e.g., one person should not represent the stakeholder category in more than one structure) Train the members of the implementation structures in their respective roles and responsibilities Sensitise the various stakeholder categories on the existence, roles and responsibilities of the various implementation structures 	KPLC	 No of sensitisation meetings on the GRM and implementation structures No of trainings of GRM members and numbers trained 	 Records of stakeholder identification and consultations Training records 	Continuous	3,000,000

е	Risks related to	Consult with all segments of the	KPLC	 Records of stakeholder 		Continuous	500,000
	establishment of	community and agree on the criteria to		identification and			
	subproject	be used to elect leaders into the		consultations, training			
	governance	subproject governance structures		etc.			
	structures, e.g.,	• Facilitate each segment of the		 Elected members of 			
	selecting	community to elect their representatives		governance structures			
	individuals into	to the various governance structures		5			
	management or	based on the agreed criteria					
	GRM committees	• Train members of the various					
	who have not been	governance structures on their roles and					
	elected by all	responsibilities					
	segments of the	'					
	community, or						
	imposing people						
	who are not						
	trustworthy into						
	community level						
	leadership						
	positions						
4	Elite Capture	Implement mitigation measures on GRM to	KPLC	Establish a GRM and		Continuous	1.000.000
		empower stakeholders to take responsibility	-	other implementation	disclosure		,,
		and ownership of the subproject and its		measures	reports		
		activities as a way of stemming elite capture					
		, , , , , , , , , , , , , , , , , , , ,			 Implementation 		
					and risk		
					management		
					plans		
					 Composition of 		
					implementation		
					structures		
					 Functional and 		
					accessible GRM		
1	1	1					

Table 8-4: Construction Phase ESMMP

No.	Potential	Recommended Mitigation Measures	Responsibility	Performance	Verifiers	Frequency	Estimated
	Impacts			Indicator			Cost (Ksh)
							(rsn)
1.	Impact on	KPLC to plant trees as a way of	Contractor	 No of trees cut 	 Records of 	daily	2,000,000
	Natural	compensation for the cleared ones		versus planted	seedlings		
	Vegetation and	Clear limited areas only where the		 No of alternative 	purchase		
	Biodiversity	pole will be erected		routes selected	 Alternative routes 		
		 Select alternative alignments to avoid 					
		sensitive natural reatures					
2.	Soil Erosion	• The contractor shall avoid ground-	Contractor	 Timing of ground 	 No erosion 	daily	300,000
		breaking during the seasons of high		breaking	Photos of silt		
		rainfall to avoid erosion.		No of silt traps	traps and areas		
		 Monitoring of areas of exposed soil during rainy accesso to ensure that 			landscaped		
		any incidents of erosion are quickly		 Acreage of areas 			
		controlled.		lanuscapeu			
		 The contractor should ensure that 					
		construction related impacts like					
		erosion and cut slope destabilizing					
		should be addressed through					
		landscaping and grassing, carting					
		away and proper disposal of					
		construction materials					
		Use silt traps where necessary					
		Cover soil stockpiles.					
		Landscaping with grass on areas					
		without electrical installation (lower					
		areas)					
		 The contractor should ensure recovery of exposed soils with gross and other 					
		around cover as soon as possible					
		ground cover as soon as possible.			1		

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
3	Contamination	Construction vehicles must be	Contractor	No of times and	• Maintenance	Daily	150 000 00
0.	of Soils by oils	maintained in good state and proper		period of vehicle	records	Daily	100,000.00
	,	servicing to ensure no oils are likely to		maintenance	Tracking		
		leak		 No of vehicles 	document for		
		• Care must be exercised not to spill any		regularly	disposal of		
		fossil fuels		maintained	contaminated soils		
		Any contaminated soil shall be		 Acreage of area 	 Contract for 		
		scooped and disposed-off		contaminated	licensed waste		
		appropriately by licensed waste		Location of	handler		
		handler		disposal for			
				contaminated soil			
				Licensed waster			
1	Dust Emission	Trees can be planted around the	Contractor		- Coodling	Monthly	500 000 00
4.	Dust Emission	 Trees can be planted around the plant/facility provided they do not cast 	Contractor	 No of seedlings nurchased and 	Seeuling purchase records	wonuny	500,000.00
		shadows to the solar panels to act as		trees planted	Watering records		
		wind breakers and hence decrease		 No of times in a 			
		dust pollution		day watering of			
		 Ensure planting of grass around and 		site is undertaken			
		within the facility compound					
		Watering of site during construction					
5.	Impacts on air	Drivers shall not leave vehicles idling	Contractor	 Maintenance 	Vehicle	Monthly	300,000
	quality from	so that exhaust emissions are		status of vehicles	maintenance		
	vehicle	lowered.		and machinery	Records		
	exhaust	Maintain all machinery and equipment		No of times			
	emissions and	in good working order to ensure		vehicles/machinery			
	uusi uunny	minimum emissions are produced.		serviced			
6	Solid waste	Ensure spoil from executions is	Contractor		Presence of well	daily	
0.	generation	arranged according to the various soil		nlan prepared	maintained		400 000 00
	301101000	lavers. This soil can then be returned			receptacles and		100,000.00

No.	Potential	Recommended Mitigation Measures	Responsibility	Performance	Verifiers	Frequency	Estimated
	Impacts			Indicator			Cost
							(Ksh)
		during landscaping and then		 Volumes of waste 	centralized		
		rehabilitation, in the correct order		segregated	collection points		
		which they were removed that is top		 No of liter bins 	NEMA license for		
		soil last;		provided	waste handler		
		Segregate waste		 Volumes of 			
		Provide litter collection facilities such		materials reused			
		as bins		 Presence of a 			
		• Contractor to put in place and comply		nema licensed			
		with a site waste management plan		waste handler			
		• The contractor should comply with the					
		requirement of OSHA ACT 2007 and					
		Building rules on storage of					
		construction materials					
		• Use of durable, long-lasting materials					
		that will not need to be replaced as					
		often, thereby reducing the amount of					
		waste generated over time					
		Recovery of materials remains and					
		return to stores					
		Re-use of materials where possible					
		• Proper budgeting to avoid waste					
		generation					
		Proper disposal of waste in line with addition					
		solid waste regulation					
		Construction wastes to be managed in appared with construction					
		in accordance with construction					
		Standards III Kenya					
7	Impacts on	Clear the percessing areas only	Contractor		011	Wookhy	150.000
1.	Water	2 Appropriate remedial measures shall		• Presence of an	• -Oil spill	VVCCNIY	130,000
	זימנכו	be implemented by the contractor in		OII-SPIII	containment plan.		
		be implemented by the contractor in		containment plan			

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost (Ksh)
	Resources and Water Quality	 Infrastructure shall be designed to ensure that contaminated run-off does not reach water source i.e., earth dam. Contractor to develop an oil-spill containment plan as part of the emergency response plan. In the event of an oil spill the procedures contained in the emergency response plan of the contractor will come into effect. No vehicle maintenance and service shall be done at project site Ensure that potential sources of petro-chemical pollution are handled in such a way to reduce chances of spills and leaks. 		 Location of vehicle maintenance yard No of fuel/oil drip and spill trays 			
8.	Impacts from Hazardous materials -	 Maintenance of construction vehicles will not be done on site All hazardous products and waste should be labeled and handled properly to avoid contact with the ground Dispose hazardous waste through a NEMA approved waste handler 	Contractor	 Location of vehicle maintenance yards No of NEMA approved waste handler 	 Presence of well- maintained receptacles and centralized collection points License for the NEMA approved waste handler 	weekly	100,000.00
9.	Accidental Oil Spills or Leaks	 In the event of accidental leaks, contaminated top soil should be scooped and disposed of appropriately. Refueling and maintenance of vehicles will not take place at the construction site. 	Contractor	 Location of vehicle depot/maintenance yards No of sensitisation for 	 Records of all accidental spills and number of litres Photo of nuded area 	Daily	150,000.00

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
							(Ksh)
		 Create awareness for the employees on site on procedures of dealing with spills and leaks Vehicles and equipment must be serviced regularly and kept in good state to avoid leaks. In case of spillage the contractor should isolate the source of oil spill and contain the spillage using sandbags, sawdust, absorbent materials and/or other materials approved by materials. All chemicals should be stored within the bunded areas and clearly labeled detailing the nature and quantity of 		workers on spills and leak handling • No of bunded areas constructed • Frequency of vehicle/machinery maintenance	 Sensitisation records Records of vehicle/machinery maintenance 		
10.	Occupation safety and health hazards. During construction many people will be engaged in working. Such people are exposed to occupational risks like falling from heights, Accidents etc.	 Chemicals within individual containers. The contractor must observe all the safety precautions to ensure workers work safely Safety awareness creation to the workers Use of personal protective equipment like gloves, helmet, climbing shoes, harnesses etc. Staff Training and regular equipment service and testing Only trained & certified workers to install, maintain or repair electrical equipment; Use of signs, barriers and education/ public outreach to prevent public contact with potentially dangerous equipment: 	Contractor	 No and type of PPE issued No of trained and certified workers hired for handling machinery No of signs/barriers set up No of first aid kits No of sensitization tool boxes held 	 PPE purchase and issuance records Photos of Workers in PPE Records of safety awareness sessions held with workers Fully stacked First Aid Kit Competency records Tool box talk records 	Daily	400,000

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
		 Community policing to be encouraged to reduce vandalism of transformers and distribution cables Follow safe work procedures Maintain a fully stocked and accessible first aid kit Observe OSHA 2007 regulations 					
11.	Community safety -Access to site by general public -Falls into trenches and deep excavations or pole holes	 Proper barricading Hazard communication. controlled access to the site maintain records of any person who comes to site 	Contractor	 No of hazard sign posts No of records books for visitor on site No of security guards manning sites No of barricading tape used 	 Access and exit records Presence of barricading tape Presence of security 	Daily	500,000
12.	Public health and Safety risk	 Public awareness of the public health issues identified. Provision of condoms Distribution of HIV & AIDS awareness materials in collaboration NACC 	Contractor	 Public awareness of the public health issues identified and sensitization meetings held. No of boxes of condoms purchased and issued out Distribution of HIV & AIDS awareness materials 	 public health awareness sessions with workers records Availability of Condoms Well manned gates 	Daily	150,000
13.	Increase in competition	Reduction of labor influx by tapping into the local workforce to the extent	Contractor	 Stakeholder meetings held 	 Records of stakeholder 	weekly	300,000

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
							(Ksh)
	for scarce resources and strain on public utilities	 possible Recruitment of local workforce to the extent possible especially unskilled and semi-skilled jobs Consultations with and involvement of local community in project planning and other phases of the project Awareness-raising among local community and workers on the need to have a good /cordial working relation Sensitization/awareness to workers regarding engagement with local community. Contactor shall make provision to provide resources needed by the workers if the need for such resources may result to competition e.g., water Establishment and operationalization of an effective Grievance Redress Mechanism accessible to community members The contractor and the project/community grievance redress committee to work closely address 		 No of locals recruited by gender Set up of a GRM No of sensitization meetings 	engagement • Employment records • Complaints received • Sensitisation records		(Ksh)
		 complains raised on time. Gender considerations in employment opportunities Appropriate compensation for work done Respect for community values/culture 					
14.	Risk of fire	Create awareness to the construction workers on potential fire hazards	Contractor	 Sensitization meetings held 	 Records of any Fire incidences 	Weekly	300,000

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost (Ksh)
		 Provision of firefighting equipment (extinguishers) on site during construction. No smoking shall be done on construction site 'No smoking' signs shall be posted at the construction site A fire evacuation plan must be posted in various points of the construction site including procedures to take when a fire is reported. 		 No of firefighting equipment provided No of signs put up Fire evacuation plan prepared 	 Records of Fire equipment Evacuation plan Photos of signs and signage 		
15.	Electric shocks and Electrocution	 Proper public education to the people on safe use of electricity Proper wiring in the customers' premises by qualified technicians Use of danger/hatari signs on the poles Follow safe work procedures during lines and substations maintenance Hold tool box talks and identify possible hazards and corrective/preventive measures before any maintenance work Verify Wiring in premises before connecting and energizing customers. Ensure no sagging lines, proper earthing and no stays at risk of been energized 	Supervising Engineer Contractor	 Sensitization meetings held No of tool box talks held No of safe working procedures held No of Public safety awareness sessions held No of accidents recorded No of deaths Presence of Hazard communication signs 	 Medical Records Availability of wiring certificate Sensitization records Photos of hazard signs etc. 	daily	2,350,000
16.	Working at heights	Follow safe work procedures including sounding of poles before climbing and associated electricity	Contractor	 PPE issued and used 	 No of incidents reported PPE Records 	Daily	1,000,000
No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost (Ksb)
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		 lines precautions Procure and enforce proper use of necessary protective equipment Use of safety harness and climbing irons 		Safety devices issued	Safety devices issuance records		
17.	Construction Material Sourcing	 Plant more trees to compensate for the poles used Ensure accurate budgeting to ensure only necessary material is ordered Proper storage to ensure minimal loss Supply seedlings to farmers to increase forest cover 	Contractor / project Engineer	 No concrete poles used No of trees planted 	 seedlings purchase records Photos of planted seedlings 	Daily	1,500,000
18.	Increase Water Demand	 Prudent use of available water Consultations with the project local committee on use of water in the community to avoid conflicts with the community Contractor to make own arrangements to provide water for construction works different from the community sources avoid any conflicts with community. 	Contractor	 Sensitization meetings held Amount of water used and its source Contractor's source of water 	 Water usage records Stakeholder engagement Water delivery records 	Daily	200,000
19.	Noise	 Proper servicing of vehicles Contractor should ensure minimal noise generation during construction and decommissioning phases Maintain all work equipment at optimal operating condition Monitor noise levels at sensitive receptors (residential areas, schools, hospitals) 	Contractor	 Working times Frequency of maintenance of machinery/vehicles 	 Vehicle and Machinery maintenance Records 	Weekly	200,000

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost (Ksh)
		 Adhere to permitted working hours as per regulations 					
20.	Temporary Land take	 Construction activities should be restricted to designated project area. The land use in and around permanent project facilities should not be disturbed. On completion of construction activities, land used for temporary facilities such as store yard should be restored to the extent possible. The existing earth road networks will be used for access to the project site. 	Contractor	 Amount of land take and modality of acquisition Acreage of area disturbed Status of restored area 	 Land use agreements Compensation records for land use 	Monthly	2,000,000
21.	Wayleave Acquisition Resulting in Anxiety among potentially affected landowners and users Dissatisfaction with compensation; disruption of livelihoods Loss of natural habitat Loss of or damage to cultural resources Restricted Land use	 Work through community liaison officers to keep public fully informed Give preference in site selection to land already under electrical use or obtain change of user as necessary Select alternative alignments to avoid protected areas and other sensitive natural features Select alternative alignments to avoid physical cultural resources Where avoidance is impossible, comply with AFDB Standard and Kenya laws by consulting with national authorities and/or local leaders on best way to preserve or relocate cultural property. Formulate and implement chance finds procedure In kind compensation for community land or Implementation of nonmonetary compensation is also a good idea especially in the event community assets are affected in 	Contractor KPLC	 No of alternative routes selected Prepared chance find procedures Sensitisation meetings Compensation of affected persons 	 Wayleave Consent forms Route alignment drawings Compensation records 	Daily	3,500,000

No.	Potential	Recommended Mitigation Measures	Responsibility	Performance	Verifiers	Frequency	Estimated
	Impacts			Indicator			Cost (Kch)
							(KSII)
		order maximize project benefit to the					
00	Ounderhead	entire community	O antina ata n			Deile	700.000
22.	Gender based	Prepare an Awareness Raising	Contractor	Awareness	• GBV	Dally	700,000
	violence,	Strategy, which describes now		Raising Strategy	management plan		
	Sexual	workers and local communities will be		prepared	Code of conduct		
	Harassment	sensitized to GBV risks, and the		• No of GBV	signed by workers		
	and Sexual	worker's responsibilities;		Services Providers	Records of GBV		
		Identify GBV Services Providers to		identified	related cases		
	Abuse	which GBV survivors will be referred,		• Elaborated GBV	GBV service		
		and the services which will be		Allegation	providers engaged		
		available;		Procedures	 Referral methods 		
		Elaborate GBV Allegation Procedures		• Set up of An			
		i.e. How the project will provide		Accountability and			
		information to employees and the		Response			
		CDV bracehos to the CM		Framework,			
		GBV breaches to the GM.		Including GBV			
		 An Accountability and Response 		Allegation			
		Framework, to be finalized with input		Procedures and			
				Response			
		minimum:		Framework			
		GBV Allegation Procedures to report		NO Of referral			
		GBV issues to service providers, and		pathways identified			
		presedures which should clearly lay		• NO OF WORKERS			
		procedures which should clearly lay		signing code of			
		dealing with eases; and		conduct			
		A Dosponso Framowork which has:					
		A Response Framework which has: Mechanisme to hold accountable					
		Inviechanisms to note accountable					
		aneyed perpetiators associated to the					
		The CM process for conturing					
		 The Givi process for capturing disclosure of CDV/r 					
		disclosure of GBV;					

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
							(Ksh)
		 A referral pathway to refer 					
		survivors to appropriate					
00	Objid Labour	support services.	Operation			Deile	500.0000
23.	Child Labour	 The contractor should develop a code of conduct to choose abildron are 	Contractor	Age of all workers	• Employment	Dally	500,0000
		or conduct to ensure children are		on site	records		
		from the construction works		No of workers	 Signed code of 		
		The contractor should strictly hire		signed code of	conduct		
		people who are above 18vrs and		Conduct			
		ensure they provide their Identity					
		Cards.					
		The contractor shall ensure every					
		worker under their jurisdiction signs a					
		document committing themselves to					
		the protection of the area children.					
0.1		Every worker to sign code of conduct				D 1	000.000
24.	Labour Influx	In contract documents for the	Contractor	No of locals hired	 Employment 	Dally	200,000
	and recruitment	Contractor, KPC should make explicit		Presence of a			
		Kenvan law international best practice		GRIVI	• GRIVI LOGS		
		and the ratified II O conventions and					
		KPLC's policies in relation to health					
		and safety, labour and welfare					
		standards.					
		• In selection of a Contractor, KPC					
		should refer to past performance in					
		similar assignments as an indicator of					
		future performance with respect to					
		worker management, worker rights,					
		Kenvan law and international					
		standards.					

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
							(Ksh)
		 Regular checks by KPC should be undertaken to ensure the relevant labour laws and occupational health and safety plans are adhered to at all times. The contractor should put in place mechanism to ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, ethnicity, age, religion or sexual orientation. The Contractor will put in place a worker grievance redress mechanism accessible to all workers, whether permanent or casual, directly or indirectly employed. The Proponent worker grievance mechanism shall be open to the Contractor workforce in the event that their grievance is not adequately resolved by their direct employer. The Proponent will then have the authority to act to resolve this grievance. 					
25.	Forced Labour	 Contractor must adhere to the employment Act which outlaws any form of forced labor Community to report any form of forced labor at the site Contractor to ensure that all workers have a national ID card or documentation to show they are adults (above 18 years). 	Contractor	 No forced labour 	 Employment records GRM records 	daily	400,000

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
							(Ksh)
26.	Negative cultural exchange and social ills- Crime, HIV/AIDS, Underage relationship and pregnancies	 Respect and tolerate other people's cultures and religious alienations dissemination warning information through billboard on site Contractor to apply ethics as required throughout the construction period. Awareness to workers Security on site Awareness creation Provision of protective device (condom) in liaison with sub county National Aids Control Council -NACC 	Contractor	 No of dissemination boards set up Sensitization sessions for workers Provision of condoms Security hired on site 	 Availability of condom dispenser Tool box talk records Staff and public awareness records Enhance security 	Daily	500,000
07		officers	Outotte				400.000
27.	Health hazards to Workers and Communities	 Stakeholders engagement Staff signs code of conducts Disciplinary action for in bad behaviors Hazard communication Cultivate good relationship with the community 	Contractor	 Hazard communication No of stakeholders engagement 	 Stakeholder engagement records Signed workers code of conduct 	Daily	100,000
28.	Interruption of existing installations, services and utilities	 Liaise with various agencies to identify where installation are Avoid existing installation, services and utilities Engage the concern stakeholders Use traffic marshal Identify all service provider and inform them of the construction Immediate repair in case of any damage 	Contractor	 Mapped service locations No of service interruptions No of reinstatement and repairs No of grievances 	 Records of incidences or disruption Records of complain Records of communication to service providers 	Daily	1,000,000
29.	Archaeological and other cultural	In order to minimize the potential for impact to sub-surface cultural archaeological material, the proponent should establish a	Contractor	No of graves etc. found	Chance find program	daily	400,000

No.	Potential Impacts	Recommended Mitigation Measures	Responsibility	Performance Indicator	Verifiers	Frequency	Estimated Cost
							(Ksn)
	property	Chance Find Programme which includes		 Prepared chance 	 Records of any 		
	impacts	the following provisions:		find procedures	change find		
		A chance find can be reported by any			Chance find		
		member of the Project Accordingly if a			procedure		
		chance find is encountered, the first course					
		of action is to stop work in the vicinity of the					
		find. Then the following steps will be					
		undertaken:					
		Inform site supervisor/foreman.					
		Install temporary site protection					
		measures (warning tape and keep off					
		signs).					
		Inform all personnel of the Chance					
		Find if access to any part of the work					
		area is restricted.					
		Establish a localized no-go area no-dod to protoct the Change Find					
		The National Museum of Kenva will be					
		contacted to perform a preliminary					
		evaluation to determine whether the					
		Chance Find is cultural heritage and if					
		so, whether it is an isolate or part of a					
		larger site or feature.					
		• Artefacts will be left in place when					
		possible; if materials are collected,					
		they will be placed in bags and labelled					
		by an archaeologist and handed over					
		to the National Museum of Kenya; no					
		Project personnel are permitted to take					
		or keep artefacts as personal					
		possessions.					

No.	Potential	Recommended Mitigation Measures	Responsibility	Performance	Verifiers	Frequency	Estimated
	Impacts			Indicator			Cost
							(Ksh)
		• Document find through photography,					
		notes, GPS coordinates, and maps					
		(collect spatial data) as appropriate.					
		• If the Chance Find proves to be an					
		isolated find or not cultural heritage,					
		the specialists brought in from the					
		National Museum of Kenya will					
		authorize the removal of site protection					
		measures and activity in the vicinity of					
		the site can resume.					
		• If the archaeological specialists from					
		National Museum of Kenya confirm the					
		Chance Find is a cultural heritage site,					
		they will inform the project team and					
		initiate discussions with the latter					
		about treatment.					
		Prepare and retain archaeological					
		monitoring records including all initial					
		confirmed or not					
		Develop and implement treatment					
		 Develop and implement treatment plans for confirmed finds using the 					
		services of qualified cultural beritage					
		experts.					
		• If a Chance Find is a verified cultural					
		heritage site, prepare a final Chance					
		Finds report once treatment has been					
		completed.					
		• While investigation is on-going, co-					
		ordinate with on-site personnel					
		keeping them informed as to status					
		and schedule of investigations, and					

No.	Potential	Recommended Mitigation Measures	Responsibility	Performance	Verifiers	Frequency	Estimated
	Impacts			Indicator			(Ksh)
30.	Impacts Risks related to Inadequate Stakeholder Engagement	 informing them when the construction may resume. If mitigation is required, then expedient rescue excavations will be undertaken by the National Museum of Kenya specialist, except in the case that the chance find is of international importance (i.e., Critical Cultural Heritage). If an archaeological site of international importance is encountered special care will be taken and archaeologists with the appropriate expertise in addressing the find will be appointed. The contractor will design and implement a stakeholder engagement schedule to ensure various stakeholders are engaged at and informed about the project on a timely basis and respond to issues that the stakeholders may require. The contractor will also prepare and implement a grievance redress mechanism to deal with grievances. The grievance redress mechanism committee of this GRM should also 	Contractor	Indicator • stakeholder engagement schedule set up • No of stakeholder engagements held • GRM Set up	 Availability of stakeholder engagement schedule Records of stakeholder engagement GRM in place 	Daily	Cost (Ksh) 750,000
		community.					

Table 8-5 Operation Phase ESMMP

S/NO	POTENTIAL IMPACTS	MITIGATION MEASURES	RESPONSIBILITY	MONITORING	FREQUENCY	COST
1	Occupational Health And Sat	fety		·		
a	Live power lines	 Only allowing trained and certified workers to install, maintain, or repair electrical equipment; Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards Prevent encroachment and enforce restrictions on activities in RoW Post warning signs and properly install electrical poles with anti-climbs to prevent access to conductors by unauthorized personnel Provide safety belts and include log-out/tag-out procedures Create public and staff awareness on the electrical safety rules as set out in Kenya power safety book Deactivating and properly grounding live power distribution lines before work is performed on, or in close proximity, to the lines by Apply SITE -Switch, Isolate, Tast and Easthan and Easthan	KPLC	 No of accidents related powerlines No of trained and certified workers on site No of warning signs No of safety devices provided no of accidents registered on site 	Monthly	O&M Cost
b	Working at Height	 Follow safe work procedures including sounding of poles before climbing and associated electricity lines precautions Procure and enforce proper use of necessary protective equipment 	KPLC	 No of accidents No of trained and certified workers on site No of safety devices/PPE provided 	Quarterly	1,000,000

	Exposure to EMES	 Testing structures for integrity prior to undertaking work; Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; Inspection, maintenance, and replacement of fall protection equipment; Installation of fixtures on tower components to facilitate fall protection systems; An approved tool bag should be used for raising or lowering tools or materials to workers on structures Use of helmets and other protective devices will mitigate against scratches, bruises, punctures, lacerations and head injuries due to dropping objects. Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; Inspection, maintenance, and replacement of fall protection 	 no of accidents registered on site No of Installation of fixtures on tower components to facilitate fall protection systems a fall protection program that includes training in climbing techniques and use of fall protection measures 	Annually	3 000 000
0		 Evaluating potential exposure to the public against the reference levels developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). 	 ENF measurement records Training records 		5,000,000

	a hould remain helew the ICNIDD
	should remain below the ICNIRP
	recommendation for General Public
	Exposure;
	Considering siting new facilities so
	as to avoid or minimize exposure to
	the public. Installation of transmission
	lines or other high voltage equipment
	above or adjacent to residential
	properties or other locations intended
	for highly frequent human occupancy.
	(e.g. schools or offices), should be
	avoided:
	 If EME levels are confirmed or
	expected to be above the
	recommended exposure limits
	application of anginopring techniques
	application of engineering techniques
	EMF produced by power lines,
	substations, or transformers.
	Examples of these techniques
	include:
	 Shielding with specific
	metal alloys
	 Burying transmission
	lines
	 Increasing height of
	transmission towers o
	 Modifications to size,
	spacing, and
	configuration of
	conductors

d	Exposure to Chemicals	 Provide appropriate PPEs Secure chemical storage area Train personell to handle chemicals Provide Material Safety Datat Sheets for handling chemicals 	KPLC	 PPE provided Secured / locked chemical store MSDS available 	Quarterly	1,000,000
2 a	Public Safety Risk of Fire from live conductors and Transformers- Potential adverse impacts related to fire hazards remain a main feature of this project. The Transformers will have combustible products like the transformer oil and the risks associated with fire hazards form a significant adverse impact on the human health and environment	 No burning of vegetation along the distribution lines rights-of-way Timely maintenance of the right of way Timely maintenance of transformers 	KPLC	• • Way leave and Transformer maintenance Records	Quarterly	O&M cost
b	Electric shocks and electrocution of people	 Follow safe work procedures during lines and substations maintenance Hold tool box talks and identify possible hazards and corrective/preventive measures before any maintenance work Use of danger/warning signs and condone areas of work Verify Wiring in premises before connecting and energizing customers. Ensure no sagging lines, proper earthing and no stays at risk of been energized Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding transmission towers, particularly in urban areas), and 	KPLC	 No of contractor safety awareness sessions held No of contractor/public accidents recorded No of deaths Medical Records Presence of Hazard communication signs Availability of wiring certificates 	Quarterly	1,000,000

		•	education / public outreach to prevent public contact with potentially dangerous equipment; Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock.				
c	Noise and Ozone	•	Proper servicing of vehicles used during maintenance works to ensure minimal noise generation Maintain Transformers in good working conditions and ensure they are not overloaded to minimize humming of Transformers Monitor noise levels at sensitive receptors (residential areas, schools, hospitals) The KPLC should adhere to Noise and Excessive vibrations regulations of 2009. Measures to mitigate this impact may be addressed during project planning stages to locate rights-of- way away from human receptors, to the extent possible. Use of noise barriers or noise canceling acoustic devices should be considered as necessary.	KPLC	 Minimal noise and Vibrations at work sites No of well-maintained transformers Vehicle maintenance frequency 	Annually	500,000
3	Increase in Hazardous Waste	;					
a	Oil leaks from Transformers The refilling and empting of the transformer oil can lead to accidental oil spills. There is a possibility of oil leaking from the transformers can lead to oil spills. This may lead to potential contamination of	•	Need to design appropriate protection devices against accidental discharge of transformer oil substances. Frequent inspection and maintenance of the transformers should be done to minimize spilling.	KPLC	 Designed protection devices against accidental discharge of transformer oil 	Quarterly	O&M Costs

surface and groundwater as well as soil.	All waste oils from maintenance of transformers and other associated equipment should be segregated and disposed properly by a reputable/registered waste handler in accordance with the waste disposal plan.		 No of NEMA licensed providers hired 		
b Contamination from copper chromate Arsenate (CCA)	 Development of a comprehensive CCA management plan and safety systems Used pole disposal system and management CCA-treated Poles should not be used to build children's play equipment or toys, new garden furniture, exterior seating or picnic tables. As a precaution, you should limit possible exposure to CCA-treated wood chemicals Never burn CCA-treated wood in fireplaces, wood stoves or any wood fire. After a bushfire, keep people and children away from the CCA-treated wooded ash until it is removed, and follow safety precautions for clean- up. Do not prepare food on treated wood or store in treated wood containers Do not make food utensils from treated wood 	KPLC	 No burning of wooden poles Tracking documents on wooden poles disposal CCA treated wooden poles safety and disposal procedure comprehensive CCA management plan and safety systems in place sensitisation of community not to use treated wood for various purposes 	Quarterly	2,000,000

5	Avian and Bird collisions and Electrocution	 Siting power lines, and designing substations, with due consideration to landscape views and important environmental and community features; Location of high-voltage transmission and distribution lines in less populated areas, where possible; Burying transmission or distribution lines when power must be transported through dense residential or commercial areas. Regular Monitoring and record any Avi – Fauna deaths Use flappers in areas where wetlands /bird habitats are crossed by the line 	KPLC	 Number of avifauna deaths recorded Insulated cables where possible 	Quarterly	3,500,000
4	Visual and aesthetics Landscape impacts	 Do not use for firewood. Proper positioning of structures Relignment of powerlines to pass along fences Stakeholder engagement and infromation dissemination Extensive public consultation during the planning of power line and power line right-of-way locations; Accurate assessment of changes in property values due to power line 	KPLC	 Number of complaints from the public No of stakeholder engagements 	Quarterly	1,000,000
		 Do not use to make containers for storing drinking water Do not use in beehives where it may come in contact with honey 				

		minimize the risks of electropution of	avoided		
		hinder	avulueu		
		UIIUS, The distribution relation through the state of	visibility enhancement objects such as marker halls		
		Ine distribution poles should be raised	objects such as marker balls,		
		with suspended insulators in order to	bird deterrents, or diverters		
		reduce the electrocution of bird species;	Installed		
		and			
		Marking overhead cables using bird-flight			
		deterrents and avoiding use in areas of			
		high bird concentrations of species			
		vulnerable to collision.			
		• Aligning transmission corridors to avoid			
		critical habitats (e.g. nesting grounds,			
		heronries, rookeries, bat foraging			
		corridors, and migration corridors);			
		• Maintaining 1.5 meter (60-inch) 11			
		spacing between energized components			
		and grounded hardware or, where			
		spacing is not feasible, covering			
		energized parts and hardware;			
		Retrofitting existing transmission or			
		distribution systems by installing elevated			
		perches, insulating jumper loops, placing			
		obstructive perch deterrents (e.g.			
		insulated "V's"), changing the location of			
		conductors and / or using raptor hoods:			
		Considering the installation of			
		underground transmission and			
		distribution lines in sensitive areas (e.g.			
		critical natural habitate):			
		Installing visibility enhancement objects			
		Installing visibility enhancement objects			
		divertore			
		uiveners			
6	Aircraft Navigation Safety	Avaiding the siting of newer lines slass	Number of incider	Quarterly	O&M Cost
U	Andrait Navigation Salety	Avoiding the stung of power lines close to aimorte and outside of known flight		Qualterry	
		to airports and outside of known flight	or near misses recorded		
		path envelopes			

		 Consultation with regulatory air traffic authorities or national safety regulations and Use of buried lines when installation is required in flight sensitive areas 		 Location of powerlines proximity to flight path 		
7	Flooding	 Ensure drainage channels are free of any obstruction at all times i.e., not blocked. Construct more channels and or expand existing ones. Raise foundations of the solar panels and ensure a proper and from concrete base. Create flooding diversions and or spill ways to divert water from getting into the substation or power facility/ infrastructure. 	KPLC	 Obstruction free drainages Records of flooding Inspection reports 	Quarterly	2,000,000
8	Wayleave maintenance	 Implementation of an integrated vegetation management approach (IVM). The selective removal of tall-growing tree species and the encouragement of low-growing grasses and shrubs is the common approach to vegetation management in transmission line rights-of-way. Alternative vegetation management techniques should be selected based on environmental and site considerations including potential impacts to non-target, endangered and threatened species; Removal of invasive plant species, whenever possible, cultivating native plant species; - Scheduling activities to avoid breeding and nesting seasons for any critically endangered or 	KPLC Wayleave officer	 Wayleave monitoring schedule No overgrown trees 	Bi annually	3,000,000

		 endangered wildlife species; Observing manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response; Avoiding clearing in riparian areas; Avoiding use of machinery in the vicinity of watercourses. 				
9	Forest Fires	 Monitoring right-of-way vegetation according to fire risk; Removing blowdown and other high-hazard fuel accumulations; Time thinning, slashing, and other maintenance activities to avoid forest fire seasons; Disposal of maintenance slash by truck or controlled burning Controlled burning should adhere to applicable burning regulations, fire suppression equipment requirements, and typically must be monitored by a fire watcher; Planting and managing fire resistant species (e.g. hardwoods) within, and adjacent to, rights-of-way; Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access 	KPLC – O&M Engineer and SHE-Engineer KPLC E&S Specialist	 Monitoring schedule Network of fire breakers established 	Quarterly	1,500,000

Table 8-6 Decommissioning Phase ESMMP

S/NO	Potential Negative Impact	Mitigation Measures	Responsibility	Performance indicator	Frequency	Cost
1	Air quality impact from dust and fugitive emissions from demolition machinery	 Periodic access road wetting to reduce nuisance dust levels. Visual inspection of dust pollution from roads and the demolition site and appropriate intervention if dust levels are high. Speed restriction of the vehicles to a speed of 10-15km/h or less on the site and on the access roads to the site. Maintenance and servicing of machines and engines off-site. Grievance procedure for dust complaints. The use of appropriate Personal Protective Equipment (PPE) such as dust masks, in particular, for the site workers. All demolition wastes will be transported in designated trucks which will be covered. 	Contractor	 No of times roads wetting is done Speed signs installed Location of vehicle servicing yards site inspections records issuance of PPE 	Daily	3,150,000
2	Solid Waste generation and soil contamination	 Contractor should ensure that no unauthorized dumping of used oil and other hazardous waste is undertaken at the site; Demolition Waste should be stored separately and be periodically collected by an authorized treatment and storage facility; All waste should be stored in a shed that is protected from the elements (wind, rain, storms, etc.) and away from natural drainage channels; A log book should be maintained for quantity and type of hazardous waste generated; and In case of accidental/unintended spillage, the contaminated soil should be immediately collected and stored as hazardous waste. 	KPLC Contractor	 Weekly Records of Audits and Visual Inspection Licensed waste Collector Hired Waste receptacles on site Well-disposed hazardous materials 	Weekly	2,500,000
3	Noise Pollution	 Only well-maintained equipment should be operated on-site; If it is noticed that any particular equipment is generating too much noise then lubricating moving parts, tightening loose parts. 	Contractor / KPLC	 Daily inspections of the vehicles and machinery Adherence to working hours 	Daily	2,000,000

		 and replacing worn out components should be carried out to bring down the noise and placing such machinery far away from the households as possible; Machinery and equipment that may be in intermittent use should be shut down or throttled down during non-work periods; and Minimal use of vehicle horns and heavy engine breaking in the area needs to be encouraged. The machineries should be maintained regularly to reduce noise resulting from friction; Normal working hours of the contractor to be defined (preferable 8 am to 5pm). If work needs to be undertaken outside these hours, it should be limited to activities which do not generate noise; Sensitize the truck drivers to switch off vehicle engines while loading materials. 		No of sensitisation sessions for drivers		
4	Soil environment/ compaction	 Vehicles will utilize the existing roads to access the site; No unauthorized dumping of used oil and other hazardous waste should be undertaken at site; All waste should be stored in a shed that is protected from the elements (wind, rain, storms, etc.) and away from natural drainage channels; Solid waste should be segregated in color coded waste receptacles. In case of accidental/unintended spillage on small area, the contaminated soil should be immediately collected and stored as hazardous waste; Compacting of loose soil in excavated areas. Enclose the demolition site and protect the soil to prevent the waste soils and other debris from being washed away by surface runoff and wind. Any soil potentially contaminated by chemicals, oils, fuels to be collected and disposed of by a NEMA authorized waste handler 	Contractor, KPLC	Waste storage shed set up Weekly site inspections NEMA authorized waste handler hired	Weekly	1,500,000

5	Occupational safety and health	All workers (reg training on Hea contractor during procedures durin Obtain and chec Monitor health a audit system; and Permitting system equipment are of Appropriate safe used for working All equipment sh and A safety or eme account for nat situations.	ular and contracted) should be provided with alth and Safety management system of the decommissioning stage and EHS policies and g the operation stage; k safety method statements from contractors; and safety performance and have an operating d m should be implemented to ensure that lifting berated by trained and authorized persons only; ty harnesses and lowering/raising tools should be at heights; ould be turned off and checked when not in use; rgency management plan should be in place to ural disasters, accidents and any emergency	Contractor, KPLC	Daily inspection of incident reporting forms. Health and Safety management system set up Safety devices issued method statements done by contractor	Daily	2,500,000
6	Gender Based Violence, SEA & SH	Prepare an Awa workers and loca the worker's resp Identify GBV Se referred, and the Elaborate GBV provide informati report cases of G An Accountability input from the co GBV servi acco confi and, A Re	reness Raising Strategy, which describes how I communities will be sensitized to GBV risks, and bonsibilities; rvices Providers to which GBV survivors will be services which will be available; Allegation Procedures i.e. How the project will on to employees and the community on how to BV breaches to the GM. y and Response Framework, to be finalized with ntractor, should include at minimum: Allegation Procedures to report GBV issues to ce providers, and internally for case untability procedures which should clearly lay out dentiality requirements for dealing with cases; sponse Framework which has:	KPLC contractor,	 Inspection of GRM records Awareness Raising Strategy prepared No of GBV Services Providers identified Elaborated GBV Allegation Procedures Set up of An Accountability and Response Framework, including GBV Allegation Procedures and Response Framework No of referral pathways identified No of workers signing code of conduct 	Daily	3,000,000

		•	 Mechanisms to hold accountable alleged perpetrators associated to the project; The GM process for capturing disclosure of GBV; A referral pathway to refer survivors to appropriate support services. 				
7	Risk of Communicable Diseases	•	The Contractor should develop and implement pre-employment screening measures for workers, which should include communicable diseases. Individuals found to be suffering from these diseases will need to be sensitized on prevention of transmission to others and management of the disease prior to mobilisation to site. The Contractor should develop and implement a Communicable Diseases Policy and an information document for all workers directly related to the Project. The document should address factual health issues as well as behaviour change issues around the transmission and infection of diseases. The Contractor will make condoms available to employees and communities neighbouring the site during decommissioning. All project personnel should be inducted on a Code of Conduct that gives guidelines on worker-worker interactions, worker-community interactions and development of personal relationships with members of the local communities. If workers are found to be in contravention of the Code of Conduct, which they will face disciplinary action including dismissal from duty. Restrict site access to only Authorised persons	Contractor	Inspection of health and screening records implement a Communicable Diseases Policy developed condoms availed on site	Daily	3,500,000

8.2 Update of the ESMP

The ESMP is a living document and will be updated from time to time to capture any emerging environmental and social issues as well as addressing any lessons learn from project implementation.

8.3 Monitoring of the ESMP

Environmental and social monitoring will be carried out by the KPLC PIT (with support from the supervising Consultant) in conjunction with the relevant government departments that have been given that responsibility by the Kenyan laws. Monitoring of environmental and social safeguards needs to be carried out during the planning, construction and rehabilitation of the existing and new distribution and transmission lines and substations, as well as during their operation and maintenance. To guide this, specific and objectively verifiable monitoring indicators based on various planned mitigation measures and impacts are often defined, and which help ascertain whether the ESMP is being implemented, and its effect on the environmental or social baseline.

The table below provides some examples of the key environmental and social monitoring indicators, to be adapted to the projects as necessary. Note that the list is not exhaustive but only gives an indication of the types of indicators that need to be developed.

Thematic Area	Indicators/Parameters		
Overall	Number of environmental mitigation measures implemented and financed by projects		
Land acquisition,	RPF/RAP(s) developed		
Displacement and	Hectares of land acquired		
Resettlement	Number of people affected/compensated		
	Livelihood status prior to project		
	Livelihood status after project		
Employment/Local content	Local contractors, suppliers used on project		
	Number of people employed from project surrounding areas in the various categories		
	Number of women employed by civil works		
Impact on vegetation	Surface area cleared of vegetation		
	Increase in re-afforestation e.g., Number and types of trees replanted		
	Has standard of living increased, decreased, or remained the same		
Occupational Health and	Number of pit latrines for workers at camp site		
Safety/Labour rights	Number of water points for workers at camp site		
	Number of workers issued contracts		
	Number and type of sensitisation/capacity building		
	Number of employees receiving various awareness sensitisations/capacity building/ training at work site		
	Number/Type of Accidents/incidences		
	Number/Types of PPE issued/replaced		
	Code of conduct included in contracts		
	Human Resources policy in place		
	Workers GRM in place		
Grievance Redress	Grievance Mechanism established		
Mechanisms	GRCs formation and Capacity building		
	Number of Grievances received, resolved, pending etc.		

Table 8-7: Sample environmental and social monitoring indicators

Thematic Area	Indicators/Parameters		
Overall	Number of environmental mitigation measures implemented and financed by projects		
	Types of grievances recorded		
Community Health and	Number of community members participated in HIV/AIDS awareness training		
Safety	Development/implementation of traffic management plan		
GBV/SEA/SR	GBV (SEA and SH) Management Plan Developed		
	Policies against GBV (SEA/SH) in place		
	No of workers who have signed code of conduct		
	Number/attendance records of Sensitization meetings held on GBV, SEA, HIV/AIDS and other STIs etc.		
Waste Management	Waste Management Plan developed		
	Hiring of licensed waste disposal consultants/company		
	Frequency of collection of waste		
	Amount and categories of waste collected and safely disposed		
	Amount of waste recycled/reused		
	Implementation status of safe disposal of creosote-treated poles and PCB		
	Number of disposal sites for wastes from the construction sites and camp sites		
	Number of Disposal sites restored to original or better state in terms of environmental degradation.		

To monitor the ESMP, a monitoring plan will be developed for each ESMP. The aim is to ensure that that the mitigation and optimization measures proposed in the ESMP are been effectively applied during implementation of the project activities.

Monitoring of the implementation of the ESMP will be the primary responsibility of KPLC Environment and social unit with assistance from regional safety officers/engineers. They will be responsible:

- To drawing up project objectives for monitoring purposes
- Develop the key indicators for monitoring purposes with the bank and ensure the monitoring capabilities. Here they will
 work with the hired ESIA consultants.
- To produce annual and periodical reports to the management and to the bank indicating the actions that has been undertaken towards the implementation of projects on the environmental status.
- Carrying out Environmental awareness campaigns and collaborates with other stakeholders where these projects will be implemented.

9 ESMF IMPLEMENTATION ARRANGEMENT AND INSTITUTIONAL CAPACITY FOR ENVIRONMENTAL MANAGEMENT

Overall, the Government of Kenya (GoK) Ministry of Energy and Petroleum (MoEP) is responsible for policy formulation and implementation to create a conducive environment for efficient operation and growth of the country's energy sector. In terms of the project however, Kenya Power and Lighting Company (Kenya Power) KPLC, under the jurisdiction of MoEP, will be responsible for carrying out the Project activities and ensuring that the outputs are fit-for-purpose and completed within the available resource envelop in the stipulated timeframe, and in full compliance with national and African Development Bank (AfDB) operational safeguards (Oss).

KPLC will also play a coordinating role among the various stakeholders involved in the project to ensure the success of the project.

10 Institutional Arrangements

10.1.1 KPLC Project Implementation Team (PIT)

KPLC will take the direct responsibility of putting in place a dedicated Project Implementation Team (PIT) headed by a fulltime Project Coordinator, and with the relevant staffing. The roles of the PIT include:

- Design of appropriate sub projects, and ensuring that the design and planning is in compliance with national requirements and aligned with international best practise.
- Overall in-charge of the ESMF/ESMP implementation
- Screening of subproject activities and Determination of appropriate environmental assessment level/ category
- Develop terms of reference for the ESIAs and hiring of E&S consultants to prepare ESIA
- Review of ESIAs/ESMPs
- Disclosure of the ESMF/ESIAs cleared by the African Development Bank prior to its implementation.
- Responsible for subsequent implementation of ESIA, and monitoring and safeguarding E&S issues during operation, including ensuring compliance with all relevant national legislation, as well as with the environmental controls and mitigation measures contained in the ESMP.
- Hire construction contractors and ensure contracts for works bear clauses binding respective contractors to undertake impact mitigation
- Monitoring the performance of staff as well as contractors and sub-contractors used for providing supplies and services.

10.1.1.1 National Level

At this level, the composition of the PIT will include a Project Coordinator, Environmentalist, Socio-economist/Sociologist, Procurement Specialist, and Accountant

10.1.1.2 Regional/Lot Level

The Regional level will comprise mainly of the Regional Safety, Health and Environment Engineer who coordinate E&S issues including sensitization of contractors, accident investigation, monitoring and follow up on ESMP implementations. Project engineer who will over quality of construction by the contractor to ensure safety.

10.1.1.3 Site Level

The site level will have Customer experience officer, Business Development officers and SHE assistant who educate the public on Safety issues, social aspects of the project, electricity application process and general sensitizations on electrical requirements and standards.

10.1.2 Supervising Consultant

- Review And approve the C-ESMP
- The consultant must appoint an ESHS officer who will be assisting on supervising on ESMMP implementation and reporting on the ESMMP implementation supervision.
- The consultant ESHS officer be required to generate various reports including production of minutes of monthly site visits and quarterly supervision reports detailing environmental, health, social and safety compliance on quarterly basis amongst other technical aspects.
- Reporting on the ESMMP implementation progress and recommendations.

10.1.3 Contractors

- Prepares the C-ESMP
- > Implementation of the contractor related aspects of the ESMMP and regularly (monthly) reporting
- The contractor on his part will have to appoint an EHS officer and a Social Specialist to coordinate and report on the ESMMP implementation respectively.
- The contractor to engage a Community Liaison Officer to act as a link between the community and the contractor and support the Social Specialist.
- > The contractor will also have the obligation of managing the E&S risks related to his/her operations.
- Maintaining the required level of stakeholder engagement and communication, including providing project schedule information to the public, accepting, and resolving public grievances, advertising, and hiring local workers.
- > Maintain a working grievance redress mechanism.
- > The contractor is to comply with all regulations and by-laws at the county level and other relevant regulations and laws.
- The contractor shall refer to ESIA recommendations and the ESMMP when preparing the contractors- ESMMP and the specific plans.
- The contractor shall provide water required for use in connection with the works including the work of subcontractors and shall provide temporary storage tanks, if required
- The contractor shall make his own arrangements for sanitary conveniences for his workers. Any arrangements so made shall be in conformity with the public health requirements for such facilities and the contractor shall be solely liable for any infringement of the requirements.
- > The contractor shall be responsible for all the actions of any subcontractors whom he subcontracts.
- > The contractor shall take all possible precautions to prevent nuisance, inconvenience, or injury to the neighbouring properties and to the public generally and shall use proper precaution to ensure the safety of the community.
- All work operations which may generate noise, dust, vibrations, or any other discomfort to the workers and/or visitors of the client and the local community must be undertaken with care, with all necessary safety precautions taken.
- > The contractor shall take all effort to muffle the noises from his tools, equipment, and workmen to not more than 70dBA.
- The contractor shall upon completion of working, remove and clear away all plant, rubbish and unused materials and shall leave the whole site in a clean and tidy state to the satisfaction of the Proponent. He shall also remove from the site all waste.
- > No shrubs, trees, bushes, or underground thicket shall be removed except with the express approval of the proponent.
- > No blasting shall be permitted without the prior approval of the KPLC and the local authorities.
- > Borrow pits will only be allowed to be opened up on receipt of permission from the approving authorities.
- The standard of workmanship shall not be inferior to the Kenya Bureau of Standards where existing. No materials for use in the permanent incorporation into the works shall be used for any temporary works or purpose other than that for which it is provided. Similarly, no material for temporary support may be used for permanent incorporation into the works.
- > Disposing of the waste generated during construction activities in accordance with the ESMMP.
- The contractor EHS officer will report on ESMMP implementation during construction period. The aspect to be reported by the contractor will include safety issues i.e. hours worked, recordable incidents and corresponding Root Cause Analysis (lost time incidents, medical treatment cases), first aid cases, incidents and accidents, potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment,

skills training etc.); Environmental incidents and near misses; noncompliance incidents with permits and national law; Training on E&S issues (dates, number of trainees, and topics); Details of any security risks; Worker & External stakeholder grievances and E&S inspections by contractor, including any authorities.

Environmental and Social concerns need to be part of the planning and development process and not an afterthought, it is therefore advisable that all the risks and impacts of the project be prevented and mitigated at the earliest opportunity possible to ensure smooth implementation of the project. Finally, a comprehensive Environmental and Social Management and Monitoring Plan (ESMMP) has been prepared and will guide in implementation of mitigation measures.

10.1.3.1 Contractors and Conditions in Contractors Contracts

A key management and supervision tool is to input Environmental and Social Clauses in Contractor Agreements. Environmental and Social Clauses should be included in the Technical Specifications and be accounted for as part of the Project investment's overall implementation budget.. The contractor will be responsible for ensuring compliance with all relevant legislation as well as managing the potential environmental, social, health and safety impacts of all contract activities specified in all the approved environmental documents or reports for the project such as ESMF and ESMP or as may be recommended by key stakeholders and sector ministries. The Contractor will be expected to demonstrate commitment to the environment at all levels in the Contractor's management structure. The Contractor will be required to identify individuals responsible for overall environment, social (including community relations); and health and safety management. Contractor implementation of the requirements of the ESMF/EIA will form part of contractual agreement and Contractor project reporting requirements to the implementing Ministries.

It should also be stated that the contractor should engage the services of a Health, Safety and Environment officer as well as a Community Liaison Officer to ensure proper application and compliance with principles and prerogatives in these Clauses. Terms of Reference for hiring a safety and environment officer should be provided and made clear to all parties and should include the responsibilities of the contractors in sub-projects implementation. This should further specify the environmental and social requirements in the contractual agreements and should include the development of a contractor's environmental and social management plan (CESMP) by the contractor before construction works, monitoring, supervision and reporting requirements.

Therefore, the list of measures to mitigate potential adverse impacts as per screening results and/or separate EA reports, including terms and conditions and the sector specific ESMP, supplemented by any additional site-specific measures will be attached as a part of the contract specifications. A clause in the Particular Conditions of Contract will refer to the Environmental and Social Management Plan for a proposed project. The Particular Conditions of Contract prepared by KPLC based on the environmental and social management plan will also stipulate that any non-compliance with the mitigation measures set out in the contract will attract the same remedies under the contract as any non-compliance with the contract provisions; such remedies would be instructions, notices, suspension of works, etc. The Instruction to Bidders will highlight the inclusion of the ESMP in the contract specifications and the contractor's obligation of compliance. The performance agreement will carry a clause to the effect that the recipient shall ensure the design; construction; operation and implementation of the proposed projects are carried out in accordance with the ESMF. In addition, Environmental Guidelines for Contractors (Annex 9) will be implemented and monitored by the KPLC SHE staff.

To ensure this is mainstreamed throughout, Environment requirements including the ESMP will be incorporated into the standard bidding and procurement documents.

10.1.3.2 Requirement for the Preparation of a Construction specific Environment and Social Management Plan (C-ESMP)

The contractors contracted will be required to comply with the requirements of the ESMMP prepared at EIA stage. To ensure compliance environmental specifications and social risk mitigation measures that address project related SEA and GBV at the community level and SH of this ESMMP will form part of the contract documents.

The contractor will be required under the contract to engage a competent Environment Safety Health and Safety Advisor/officer to advise them on the ESMP compliance; Undertake risk assessments and prepare project specific Construction ESMPs for review and approval. Implementation. Environment and Social Management Plan (C-EMSP), annexes to the C-EMSP will include but not limited to:

- Health, Hygiene and Safety Plan;
- Labour Influx Management Plan;
- Child Protection Strategy;
- Waste Management Plan;
- Contractors Code of Conduct;
- Gender Inclusivity Strategy;
- HIV/Aid Prevention Strategy; and
- Gender-based Violence Action Plan
- Construction management plan
- Rehabilitation and site closure plan
- Local recruitment plan
- Workplace health and safety plan
- Community safety plan
- > Emergency management and response plan
- SEA/SH Prevention and Response plan
- Stakeholder Engagement management plan
- > Grievance Redress mechanism

Construction Environment and Social Management Plan (C-ESMP) is an upgraded ESMP illustrating realities of the project works to be prepared by the Contractor. The Contractor is expected to finalize the Work Plan and upon approval, list the works items and for each item present practical actions that will be undertaken to realize achievement of the ESMP. The actions on works items should address environmental and social aspects associated with the works and in line with guidelines from the ESMP.

10.1.4 Other Institutions with a role in ESMP Implementation

Institution	Roles and Responsibilities		
NEMA	 The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of government in the implementation of all policies relating to the environment. The National Environment Management Authority (NEMA) is responsible for ensuring compliance with ESIA procedures in Kenya in accordance with the EMCA Act 2017 (Cap 387) Review of EIA project reports and provide decision on licensing and/or need for further studies Issuance of environmental permit for project implementation Oversight over ESMPs implementation 		
Environmental Tribunal	 The NET purpose is hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA license or by a local community upon the grant of an EIA license to a project proponent. NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. This tribunal guides the handling of causes related to environmental offences in the Republic of Kenya. 		
Kenya Forestry Service (KFS)	 Forest conservation and advise on the right species to be planted in different areas Provide permits for cutting of trees 		

KPLC collaborate closely with other partners in the activities implementation but at varying degrees

Water Resources	er Resources • Advise on the buffer zone for project close to the reviver		
Authority	Give permits for water drilling in areas where water is lacking		
	Protection of riparian zones		
County	 The County Governments have powers to control or prohibit all businesses, factories and 		
Governments	other activities including new projects which maybe or become a source of danger,		
	discomfort or annovance to the neighbourhood and to prescribe conditions subject to which		
	such activities shall be carried.		
DOSH	Inspecting workplaces to ensure compliance with safety and health laws, including:		
 Examination and testing of regulated equipment; 			
	Measurements of workplace pollutants for purposes of their control;		
	Investigation of occupational accidents and diseases with a view to preventing recurre		
	Medical examinations of workers;		
	Training on OSH, first aid and fire safety; and		
	Disseminating information on occupational safety and health to customers		
	Workplace registration		
Land and	Handle all matters on land and the environment.		
environment Court	• Courts endeavours to encourage application of alternative dispute resolution mechanisms,		
	including traditional ones, so long as they are consistent with the constitution		
	• Environment and Land Court, on its own motion, or on application of the parties to a dispute,		
	to direct the application of including traditional dispute resolution mechanisms.		
	• In the event any disputes on land and environment are not resolved through the project		
	GRM, this court will provide a forum for timely resolution of such grievances.		

10.1.5 African Development Bank

The African development bank as the financier will be involved in:

- Reviewing and validating the screening results of sub projects
- Reviewing and clearance of ESIAs
- Providing technical support including safeguards compliance, and supervision of the project through periodic implementation support missions and supervision missions to monitor progress of implementation.
- Monitors compliance with E&S standards

10.2 Summarized Roles and Responsibilities

Table 9-1: Activities and Responsible parties

No.	Steps/Activities	Responsible	Collaboration/Service Provider
1.	Capacity Building of stakeholders	PIT EnvironmentalSpecialist and PIT Social specialist	
2.	Identification and/or siting of the various Sub projects	Project engineers in consultation with PIT Environment and Social Experts/officers	 County government wherethe sub-project hasbeen proposed to be located, National/county Land Office/NLC to check on land tenure issue Others as relevant

3.		PIT	Relevant County NEMA Office
	Screening, categorization andidentification of the required	and PIT Social specialist	
	instrument (national EIA procedure)		
4.	Approval/Clearance of the classification and the	PIT	 The Bank
	selected instrument	Coordinator	 Relevant County NEMA Office
5.	Preparation of the safeguard document/instrumer Kenyan environmental clearance procedure and i	nt (ESIA, Env. Audit, simple E n compliance with requiremen	SMP, etc.)in accordance with the ts of AfDB policies.
a)	If ESIA is envisaged,	PIT	
	Preparation of terms of reference	EnvironmentalSpecialist and PIT Social specialist	
b)	Validation of ESIA/ESMP ToR	 Relevant Headquarters Office (for Environmental Impact Assessment Study Report For High-Risk Projects) 	 African Development Bank (may offer input if requested)
c)	Selection of independent Consultant or Contractor does it as part of their tasks or whichever other case	KPLC Procurement specialist/Committee	Environment and social PIT Staff
d)	Reparation and publication of scoping reports	Consultant/Contractor/Other	Environment and social PIT
e)	Preparation of ESIA report	party	
f)	Review and Approval of ESIA	• PIT • AfDB	NEMA Office (depending on risk level of project)
g)	If further work or studies needed by NEMA, preparation of those	Consultant/Contractor/Other party	E&S consultant atPIE
h)	Issuance of environmental permit for project implementation	NEMA Office (depending on risk level of project)	
i)	Disclosure of the document	Project CoordinatorAfDB	
6.	Integrating the construction phase mitigation measures and E&S clauses in the bidding document prior they're advertised; (ii) ensuring that the constructor prepares his ESMP (C- ESMP), gets it approved and integrates the relevant measures in the works breakdown structure (WBS) or execution plan.	 Technical staffin charge of the sub- project including Environment and social PIT Staff Procurement PIT 	 Supervision Consultant(if any) AfDB
7.	Implementation t h e E S M P a n d other safeguards measures	ContractorPIT	Supervision Consultant(if any)
8.	Implementation of the othersafeguards measures including environmental monitoring (when relevant) and sensitization activities,	Environment and social PIT Staff	 PIT Financial Staff Local authorities e.g., NEMA
9.	Oversight and Reporting		
a)	Oversight of safeguards implementation (internal)	Environment and social PIT Staff	 PIT Monitoring and Evaluation specialist Relevant Local Authorities

b)	Reporting on project safeguards performance and disclosure	PIT Coordinator	Environment and social PIT Staff
			 PIT Monitoring and Evaluation specialist
c)	External oversight of the project safeguards compliance/performance	Local AuthoritiesAfDB	
d)	Building stakeholders' capacity in safeguards management	PIT environment and social staff	
e)	Independent evaluation of the safeguards performance (Audit)	Consultant	 PIT environment and social staff AfDB

10.3 Gender Requirements for gender mainstreaming in the project phase III.

- i. Sensitization/capacity building for project officers and contractors on the need to mainstream gender across all phases of the project
- ii. Access to opportunities; Available employment opportunities to be shared among men and women -both at the contractor level and the community level
- iii. Decision-making and leadership; both men and women to be included in the decision-making and leadership structures:
 - ✓ KPLC project implementing unit should be gender sensitive
- iv. At the community level, the committee selected which is also responsible to deal with grievances must be gender sensitive-both women and men must be included in the leadership
- v. Equality; both men and women should be encouraged to participate in the project by removing any barriers that make it difficult for them to participate:
 - Efforts must be made by the KPLC business development officer of the schemes concerned to support the beneficiaries on how to acquire pin certificates and wiring certificates which have been barriers to accessing electricity, especially for the women
 - Ready boards which is the government's support to ensure all access power by offsetting wiring costs must be
 allocated to the deserving households only. These households include; poor female-headed households, poor
 elderly persons, orphaned children, persons with special needs (terminally ill and disabled) who can't afford
 wiring and very poor households.
- vi. Equal treatment to all.
 - Women especially must be encouraged to attend community entry meetings so they can access project information on time. Meeting schedules should be favorable to the women putting in mind their roles. Therefore, meetings should not be scheduled late in the evening, on market days or during lunch hours because few if any women will attend.
 - Contractors must put in place structures to deal with gender-based violence on the part of their workers such as creating awareness among workers and having the workers sign a code of conduct against gender-based violence.
- vii. All data regarding the project must be gender disaggregated
- viii. Contractors should be careful not to leave any conductor offcuts within the community. This is because women pick them and use them for cloth lines and this has resulted to the electrocution mainly of women and children.

KPLC is committed to gender equality which is grounded in its mission to promote economic growth and poverty reduction by powering people to better lives. AFDB recognizes that many countries with high levels of gender inequality also experience high levels of poverty and that gender inequality can be a significant constraint to economic growth and poverty reduction. Therefore, in order to maximize the impact of LMCP AFDB Phase III on economic growth and poverty reduction, AFDB requires that eligible countries analyze gender differences and inequalities to inform the development, design, implementation, monitoring, and evaluation of programs funded by AFDB

10.4 Grievance Redress Mechanism and Process

Grievance Redress Mechanism will be implemented to ensure that all complaints from local communities are dealt with appropriately, with corrective actions being implemented, and the complainant being informed of the outcome.

Grievance mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented. They may take the form of specific complaints for damages/injury, concerns about routine project activities, or perceived incidents or impacts. Identifying and responding to grievances supports the development of positive relationships between projects and affected groups/communities, and other stakeholders.

Grievances can be an indication of growing stakeholder concerns (real and perceived) and can escalate if not identified and resolved. The management of grievances is therefore a vital component of stakeholder management and an important aspect of risk management for a project. Projects may have a range of potential adverse impacts to people and the environment in general, identifying grievances and ensuring timely resolution is therefore very necessary.

The AfDB standards outline requirements for grievance mechanisms for projects. Grievance mechanisms should receive and facilitate resolution of the affected institutional or communities' concerns and grievances. Concerns should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities, at no cost and without retribution. Mechanisms should be appropriate to the scale of impacts and risks presented by a project.

As such the ESMF has provided guidance on the grievance management process to serve as a guide during project implementation and which will be considered in the various ESAs to be developed.

The principles of grievance mechanism management that need to be observed include.

- > All complaints and grievances are resolved as quickly as possible.
- > That the resolution of complaints and grievances should be at the lowest possible level for resolution.
- All complaints that can be resolved, should be resolved immediately on the site. The focus of the GRM is to resolve issues in a customarily appropriate fashion at community level and record details of the complaint, the complainant, and the resolution.

10.4.1 The LMCP Community GRM

It is highly recommendable that the client (KPLC) establishes a grievance mechanism as early as possible in the project development phase. In this section, the Grievance Redress Committee (GRC) is elaborated in and recommends its composition at the project level.

One of the key roles of the Grievance Redress Committees, will be to address disputes led by the administrative chiefs. All PAPs will be informed how to register grievances or complaints, including specific concerns about land and environment. The PAPs will be informed about the dispute resolution process, specifically about how the disputes will be resolved in an impartial and timely manner

The three tiers if the GRM are as described below:

10.4.1.1 Site/Local GRC

A grievance redress mechanism and a committee will be established in a culturally appropriate manner in consultation with the community during the consultations for ESMF, Screening and ESIA and will be utilized during project implementation. The GRM committee will have the following roles: log the grievances, maintain records of the GRC meetings and grievances, resolve the grievances to the extent possible.

It is important to note that every sub project will have its own grievance redress committee which will include different users that can submit their claims and will allow even anonymous claims. This will serve as the first level committee.

Since counties are large, further decentralized Grievance Redress Committee will be formed at the location of the sub-project. Subsequently, Locational Grievance Redress Committees (LGRC's), based at each location of a sub-projects, will be established. The LGRC's will be constituted by implementing agencies and representatives of CGRCs through consultation with the PAPs and will act as the voice of the PAPs.

The LGRCs will work under guidance and coordination of CGRC and the implementing agencies. Their membership will comprise of the following:

- 1. The locational Chief, who is the Government administrative representative at the locational unit and who deals with community disputes will represent the Government in LGRC
- 2. Assistant Chiefs, who supports the locational Chief and Government in managing local community disputes in village units will form membership of the team.
- 3. Female PAP, elected by women PAPs, will represent women and children related issues regarding the project.
- 4. Youth representative, elected by youths, will represent youth related concerns in the LGRCs.
- 5. Male representatives elected by the members of the PAPs.
- 6. Vulnerable person's representative will deal and represent vulnerable person's issues in the LGRCs.
- 7. CBO representatives
- 8. Contractor Representative
- 9. Supervising Consultant Representative

The membership of the GRCs at the sub project will vary and will be contextualised to each area given the sub projects will be implemented in various and different parts of the country with different cultural orientations. Gender considerations will be key in the constitution of the GRCs. At minimum a GRC will comprise of the Chief or Assistant chief, village elder, one Male PAP, one female PAP, One Youth and PLWD.

Membership of LGRCs will be elected by each category of PAPs except the locational Chief and assistant chiefs who will be automatic members of the team by virtue of their positions. Each of LGRCs will elect their own chairperson and a secretary among themselves.

The roles of LRCCs will include among others the following:

- a) Conducting extensive public awareness and consultations with the affected people.
- b) Help ensure that local concerns raised by PAPs as regards to the project are promptly addressed by relevant authorities.
- c) Resolve manageable disputes that may arise relating to the project. If it is unable to resolve/help refer such grievances to the CGRCs instituted.
- d) Ensure that the concerns of vulnerable persons such as the disabled, widowed women, orphaned children affected by the sub project are addressed.
- e) Assist the community in recording grievances, including helping those who cannot write or read.
- f) Help the vulnerable groups' access project benefits.
- g) Ensure that all the PAPs in their locality are informed about the project.

10.4.1.2 County Grievance Redress Committees (CGRC)

CGRC will be established at the county level to ensure participatory and transparent implementation of the project. The CGRC will help the project carry out its mandate efficiently- particularly ensuring effective communication with the communities.

Members to CGRC will include representation from the following agencies and entities.

- 1. Representative of NLC, to grant legitimacy to the acquisition process and ensure that legal procedures as outlined in Land Act 2012
- 2. Representative of the implementing agency (project Engineer and Regional Safety Health and Environment Engineer
- 3. Representative of NEMA to handle environmental issues.
- 4. The County Administration representative, which will provide the much-needed community mobilization, and support to the sub-project.
- 5. Wayleaves Officer will survey all affected land and produce maps.
- 6. The County Gender and Social Development Officer who will be responsible for ensuring gender programs are adhered to.
- 7. Two PAP representatives from Location Grievance Resettlement Committee act as voice for the PAPs
- 8. NGOs and CBOs locally active in relevant fields
- 9. Contractor Representative
- 10. Supervising Consultant Representative

The CGRC will have the following specific responsibilities:

- a) Ensuring effective flow of information between PAPs and the implementing agency
- b) Coordinate Locational Grievance Redress Committees (LGRC)
- c) Coordinate activities between the various organizations involved; facilitate grievance and conflict resolution; and provide support and assistance to vulnerable groups.
- d) Conducting extensive public awareness and consultations with the affected people so that they can air their concerns, interests, and grievances.
- e) Resolving disputes that may arise within the project. If it is unable to resolve any such problems, channel it to the National Grievance Redress committee before utilizing the appropriate formal grievance procedures.

10.4.1.3 National Grievances Redress Committee (NGRC)

NGRC will be established at the National level to ensure participatory and transparent implementation of the project. The NGRC will help the project carry out its mandate efficiently- particularly ensuring effective and amicable settling of disputes among the communities/PAP.

Members to NGRC include representation from the following agencies and entities.

- 1. Representative from the Ministry Of Energy, chair of the Committee
- 2. Representative from NLC to handle matters that involve land take.

- 3. Representatives of the Implementing Agencies Kenya Power (Project manager, project engineer, procurement, accountant, environmentalist, socio economist, way leaves, and surveyor).
- 4. Representative from the County Grievance Redress Committee-depending on the matter at hand; Land or Environment
- 5. Representative from Gender and Social Development Office who will be responsible for ensuring gender issues are well addressed.
- 6. County Administration representative
- 7. Project Affected Person's-to represent the matter before the committee.
- 8. Contractor Representative
- 9. Supervising Consultant Representative

10.4.1.3.1 Functions of the National Grievances Redress Committee

- a) Ensuring effective flow of information between PAPs, the implementing agency and the County Grievance Redress committee on matters brought before the committee.
- b) Co-ordinate County Grievance Redress Committees (CGRC)
- c) Co-ordinate activities between the various organizations involved; facilitate grievance and conflict resolution at the highest level.

Resolving disputes that may arise within the project. If it is unable to resolve any such problems, the PAP's can seek legal redress or Approach AfDB redress system.

10.4.1.4 Others

The Land Acquisition Tribunal has the jurisdiction to hear and determine appeals from the decision of the NLC on the process of compulsory land acquisition of land. However, if a party is dissatisfied by the decision of the tribunal, they may appeal to the Environment and Land Court. The court will deal with land related disputes. However, the Land Act 2012 and Environment and Land Court Act 2011 advocates for Alternative Dispute Resolution (ADR) methods in tackling land related disputes. ADR approaches will be given preference and based on customary rules, arbitration, or third-party mediation. ADR will be promoted or defended as a resolution to disputes related to land. The affected persons and other stakeholders also have a right to access the AfDB redress mechanism at no cost.

10.4.2 Workers GRM

The contractor will also be required to set up a workers GRM more so committee to handle workers grievances. Workers also need to be provide with means to register their grievances anonymously such as suggestion boxes.

In both cases, feedback mechanisms will need to be established

10.4.3 Grievance Procedures

- a) Registration Community members can inform the contractor about concerns directly and if necessary, through third parties. Once a complaint has been received, it will be recorded in a complaints log or data system. The log will be kept in hardcopy or electronic form. All reported grievances will be categorized, assigned priority, and routed as appropriate.
- Development and Publicizing the grievance management procedures

The grievance mechanism will be disclosed to the project stakeholders as a part of the project stakeholder engagement program stating the purpose and functioning of the projects grievance mechanism. The uptake channels will be publicized
and advertised via public meetings, through provincial administration office and at the implementing agency local office and where relevant contractors/supervising engineers.

• Receiving and registering the grievance

Any member of the grievance redress committee can receive the complaints from the public either through direct face-face meetings or in writing which will be forwarded to the GRC secretary for proper documentation and filling.

The GRC Secretary will receive complaints verbally and put them in writing for consideration. The GRC secretary will provide written acknowledgement. Recognizing that many complaints may be resolved 'on the spot' and informally by committee, there are opportunities to encourage these informal resolutions to be registered to (i) Encourage responsiveness; and (ii) Ensure that repeated or low-level grievances are being noted in the system. The GRM should have the ability to handle anonymous complaints.

• Documenting the grievance

All grievances will be received by GRC secretary or RGC liaison officer who will document and records kept for further action. The records should indicate the grievances received, grievances resolved, and grievances not resolved. Complainants should be handed a receipt and a flyer that describes the GRM procedures and timeline (staff should be trained to read this orally for illiterate complainants). Where possible, the grievance log should capture complaints being made via informal or traditional systems, such as village elders.

• Reviewing and investigating grievances

The grievances shall be screened to determine whether they are eligible for the grievance mechanism. Ineligible complaints include those that are not project related or those that the community procedures are more appropriate to address. Eligibility should be a procedural step to ensure that the issue being raised is relevant to the project. It is often better to ensure a relatively low barrier to entry with quick turnaround rather than to prevent users having their issues considered. Complaints that cannot be resolved on the spot should be directed to the grievance focal point who will have a set number of days to assess the issue and provide a written response to the complainant, acknowledging receipt and detailing the next steps it will take (one week or less is recommended).

The grievances are categorized in three categories (A, B or C)

Category A: Immediate action-these issues require immediate actions are typically issues which threaten the short-term safety or the community member's e.g., chemical spills or accidents near community water supply or sensitive environments.

Category B: Urgent action-these are issues which cause a nuisance or a long-term safety to the community members, employees and the environment. They should be communicated to the Manager (Safety Health and Environment) within 12 hours after receiving and be responded to within 72 hours.

Category C: action – these are issues requiring action which is not of urgent nature and are typically procedural or dispute type issues.

• Action and Feedback

This is the development of resolution options taking into consideration the community preferences, project policy, past experience, current issues and potential outcomes

Closure

All grievance records and supporting documents will be filled and recorded in the database. Upon completion of the agreed upon corrective actions, collect proof that these actions have taken place this includes photos, documentary evidence record of resolution which is signed and dated by the responsible staff member and if the resolution have been to the satisfaction of the complainant confirmation of this for the record. These are all included and recorded in the case documentation. If complainants remain unsatisfied with the grievance process, they have the right of recourse to the courts.

• Monitoring, Reporting and Evaluating

Monitoring and reporting are the tools for measuring the effectiveness of the grievance mechanism, efficient use of project resources and for determining trends and recurring problems to facilitate proactive resolution.

The Grievance Redress Process is summarizing in the table below

Process	Description	Time Frame	Other Information
Grievance submission	Face to face; phone; letter, e-mail; recorded during public/community Interaction. Anonymous claims	1 Day	KPLC hotline no. 95551 or 0703070707 or 0732170170
Grievance assessment and log	Grievance significance assessed and recorded or logged (i.e. in a log book)	Within 5 Days of receipt	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law or policy or this ESMF/RPF provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	Within 5 Days of receipt	Email, letter, call.
Development of response	Grievance assigned to appropriate party for investigation and resolution Response development with input from management/ relevant stakeholders	Within 15 Days of receipt	Response would take the form of meeting with aggrieved person/s, investigations and resolution agreed.
Response communication	Redress action approved as appropriate and communicated to complainant	Within 21 Days of receipts and maximum 1 month of receipt	Resolution delivered
Implementation of response	Redress action implemented and update of progress on resolution communicated to complainant	Within 15 Days Of reaching a resolution	Progress of implementation
Grievance closure	Grievance Closure		Grievance Closure report

Table 9-2: Summary of Grievance Redress Process

It should be noted that if complainants are not satisfied with the grievance process, they have the right to present their complaint through the court system. Where all options have been explored and they fail AfDB internal mechanism (AfDB Nairobi Office) will apply. Thereafter, if no amicable solution is found, complainants can be free to complain to the Independent Response Mechanism (IRM) Administered by Compliance Review and Mediation Unit (BCRM) of AfDB.

The SHE department ensures compliance with national and international environmental regulations and with the AfDB operational Safeguards. The staff includes environmental and social specialists and Socio-economist. The SHE department has prepared a number of ESIAs, RAPs, and/or Environmental Audits as well monitoring of other projects for Kenya Power.

Figure 25: The Grievance Redress Mechanism Process Flow Diagram



10.4.4 Grievance Log

The grievance logbook will ensure that each complaint has an individual reference number and is appropriately tracked and recorded actions are completed. The information to be recorded will include:

- Name, age, gender of complainant.
- Date the complaint was reported.
- > Date the grievance logged.

- Action taken.
- > Date information on proposed corrective action sent to complainant (if appropriate).
- > The date the complaint was closed; and
- > Date response was sent to complainant.
- b) Sorting and Processing This step determines whether a complaint is eligible for the grievance mechanism and its seriousness and complexity. The complaint will be screened however this will not involve judging the substantive merit of the complaint.

The following guide will be used to determine whether a complaint is eligible or not:

Eligible complaints may include those where:

- The complaint pertains to the mini-grid project.
- The issues raised in the complaint fall within the scope of issues the grievance mechanism is authorized to address.

Ineligible complaints may include those where:

- > The complaint is clearly not mini-grid project –related.
- > The nature of the issue is outside the mandate of the grievance mechanism.
- > The complainant has no standing to file.
- > Other project or organizational procedures are more appropriate to address the issue.
- Closing Out and Escalation: Project-related grievances will be addressed and closed out as appropriate. The GRM will provide a channel for escalation e.g., through legal redress.

The proponent KPLC will monitor the activities of the stakeholder engagement and grievance management activities.

10.4.5 Grievance Redress Committee Capacity Building

The GRCs will be trained on their mandates and how to deal with various grievances. These committees will be trained by the KPLC social specialists. The committee members will offer these services voluntarily to the community but a small facilitation will be provide for water, lunches and/or transport refund.

10.5 Requirements for consultation

According to the AfDB's OS 1 on environmental and social assessment, the borrower or client is responsible for conducting and providing evidence of meaningful consultation (i.e., consultation that is free, prior and informed) with communities likely to be affected by environmental and social impacts, and with local stakeholders, and also for ensuring broad community support. Consultation is undertaken with reference to the updated IESIA Guidance Notes on consultation, participation and broad community support, which also provide guidance on affected communities' involvement in the process of project planning, implementation and monitoring. This will follow also the guidelines in Section 6.3 of this report, and applies both during screening, scoping, subproject preparation, ESIA and ESMP development and during subproject implementation, among others.

10.6 Capacity Building and Environmental Trainings

Experiences of LMCP I and II, shows the following gaps:

- i) Training on the AFDB operating procedures to enable the PIT carryout activities in compliance with all the triggered operating standards.
- ii) Timely and regular monitoring and follow up by AFDB to ensure that any noncompliance is address at the early stage of the project. There was a lot of time lapse in AFDB I &II monitoring
- iii) Training on AFDB reporting systems to ensure compliance with the Bank requirement. There was standardized reporting in Phases I & II, although it happens towards the tail end of Phase II.
- iv) Inadequate number of E&S personnel to cover the so many scattered sites on time
- v) There was lack of E&S budget for monitoring in Phase I and was intermittent in Phase II hence need to have a dedicated budget for E&S aspects including training for PIT and E&S staff.

Effective implementation of Environment and Social Management Framework (ESMF) requires technical capacity in the human resource base of implementing institutions as well as logistical facilitation. Capacity building can help improve the effectiveness of stakeholders at various levels in the management of environmental and social impacts during planning, implementation and operation of proposed projects. These can provide adequate training to strengthen the management and technical capacity of the agencies, which will be responsible for ensuring that safeguards requirements are enforced even after the project, has closed.

Different groups involved in project implementation have different training needs in terms of raised awareness, sensitization to the issues, and detailed technical training. While some would require training on general awareness building and more specific training would be needed for others:

- Awareness raising for participants who need to appreciate the significance or relevance of environmental issues;
- Sensitization to the issues for participants who need to be familiar enough with the issues that they can make informal
 and specific requests for technical support;
- Detailed technical training for participants who need to analyse potentially adverse environmental impacts, to prescribe
 mitigation approaches and measures, and to prepare and supervise the implementation of environmental and social
 management plans. Such training can address such matters as community participation methods; environmental
 assessment; using the ESMF; and project supervision and monitoring;
- The community members will be trained on better methods of environmental conservation and management, reporting of incidences or accidents, protection and security of construction materials, use of qualified electrician to do wiring ensuring safety at home, creating awareness on safe use of electricity as well as promoting peaceful coexistence with contractor workers. The community will also provide information on the happenings and objective evidence during monitoring of the project.

Capacity building should be undertaken for the:

i) PIT: The implementation of ESMF and related ESMPs requires dedicated staff with sufficient knowledge on environmental and social management principles, project screening, impact mitigation, monitoring and follow-up action. Therefore, for effective implementation of the ESMF, there will be need for technical Environmental and Social safeguards capacity in the human resource base of the PIT of KPLC at national and regional levels i.e. SHE department and Regional Safety Officers/Engineers to ensure that the ESMF is effectively operationalized. Given the nature of the environmental and social management requirements and provisions outlined in this ESMF, competencies and capacity building to enhance the respective roles and collaboration of the relevant stakeholders will be required in the following areas:

- Environmental Assessment Process Screening, scoping, impact analysis, mitigation measures and monitoring, public participation techniques and stakeholders' engagement, including public awareness creation / educational techniques (on environmental, social and health issues), reviewing ESIA Reports;
- Environmental Due Diligence Types of due diligence, screening projects for liabilities, scoping due diligence investigations and reviewing due diligence reports. This includes Environment: site selection to minimize environmental impacts and social disruption, public consultation to assess feasibility and acceptability options as well as management of impacts during construction
- Monitoring and Evaluation E&S management planning and monitoring systems. Impact assessment tools, monitoring tools and activities, understanding the importance of M&E in project implementation, transparency and supervision responsibilities, M&E requirements for environmental and social sustainability of projects.
- Environmental and social safeguards policies and practices of the AfDB and international community

The KPLC PIT and regional staff involved in environmental matters need to be exposed to formal training in the management of environmental issues.

As regards the institutional capacity building, the KPLC PIT and regional staff as well as some staff of the SHE department in Nairobi are to be trained in different aspects of the implementation of the ESMF and the proposed Project, including interpretation and implementation of environmental impact management guidelines and the AfDB safeguard policies.

The PIT will be attending various courses towards enhancing capacity building when they are identified. These courses include;

Environmental conservation and management;	Waste management;
SEA Trainings	Project management;
ESMF implementation and Monitoring Trainings	Occupational Safety & Health
Monitoring and evaluation	Climate change among others

The following course shall be offered to the SHE staff who will oversee the environmental aspects of the proposed projects. They include;

- Environmental Management Systems and Impact Assessment& Implementation of the ESMF, Hazardous Waste Management and Pollution Control and
- Strategic Environmental and Social Assessment (SESA)
- Project Management and Monitoring and evaluation
- NEBOSH International Certificate in Occupational Safety & Health
 - ii) Contractors and Supervising Engineer

The PIT designated project team will have to work closely with likely procured contractors/force account construction workers to ensure they abide to environmental and social management best practices, AfDB polices and National legislations and regulatory requirements.

Overall, the training program for various role players will include an orientation program on the ESMF and Training on E&S requirements for the successful implementation of the project. The training and awareness workshops will be done by SHE department which will include environmental and social assessment processes and community participatory methodologies.

iii) Other parties with a role in ESMF monitoring

GRCs can also be trained on ESMF and various requirements which will help them in handling various complains within the project area.

11 ESMF MONITORING & REPORTING

11.1 KPLC ESMF Monitoring

This section will detail the processes for monitoring of the ESMF implementation which is needed to verify impacts, ensure adherence to approved plans, environmental standards and general compliance of the project. Although, it might include some level of monitoring of the ESMPs (Number V below, Monitoring of the ESMF is not to be confused with monitoring ESMPs, which are sub-project specific and therefore site specific only. Monitoring of the ESMF covers the entire LMCP III project at the national level, and reported as such i.e. results will be aggregated at the national level, and is undertaken by the PIT in KPLC.

The sections also describes monitoring schedules and accountability, the types of reports, who reports, who gets the reports, when and how frequently reports are prepared, the management of corrective actions etc.

KPLC will monitor the overall implementation of the ESMF, most particularly the:

Timely preparation of TORs for the ESIAs, ESMPs, RAPs and ARAPs for review and clearance by the Bank

Timely preparation of environmental and social screening forms for all subprojects (list of subprojects by risk category by date);

Timely preparation and clearance of subproject ESIAs and ESMPs, as needed (list of instruments with dates);

Management of prior review requirements of the Bank (non-objection requests with dates);

Monitoring of ESMP implementation, including monitoring of mitigation measures and monitoring of contractors environmental and social performance (indicators);

Training of project staff, implementing partners, and contractors (list of persons, dates and places);

The objective of ESMF monitoring is to:

- provide timely information the project implementers and other relevant counterparts about the success or otherwise of the Environmental Management process outlined in the ESMF in such a manner that changes can be made as required to ensure continuous improvement to the process; and
- to evaluate the performance of the ESMF by determining whether the mitigation measures designed into LMCP III
 activities have been successful in such a way that the pre- program environmental condition has been restored, improved
 upon or worse than before and to determine what further mitigation measures may be required.

11.2 Monitoring Methods and Reports

11.2.1 Internal Monitoring of the ESMF

KPLC PIT will undertake periodic review of the ESMF (and by extension ESMP) implementation. In this, they will work with other stakeholders including the supervising engineer.

11.2.1.1 Day to Day monitoring

The contractor and the supervising consultants will be required to submit reports on monthly basis.

The contractor and supervising consultant must employ EHS officer will help in compiling monthly reports and submit them to the proponents PIT in time. KPLC Regional Safety Health and Environment engineers based in our regional offices will also day to day monitoring and report on monthly basis as well.

Towards working to this, the PIT will also require contractors and supervising engineers to submit reports on Monthly Basis. Refer to the Sample E&S report outline in annex 10.

It's key to note that the results of monitoring activities may have implications for the borrower's/client's compliance with AfDB loan conditions and actions to be taken in the case of failure to comply. KPLC will therefore outline key E&S requirements and clauses for actions on noncompliance in Contractors contracts.

11.2.1.2 Periodic Monitoring

The SHE Department will conduct onsite visits of level 3 and 4 subprojects at least once in a quarter to monitor the implementation of their ESMPs.

As part of their regular activities, KPLC staff will monitor and document (including pictures) contractor environmental and social performance for each subproject throughout construction. This will involve both spot check visits to work locations, and reviews of records kept by the contractor and of reports submitted by the contractor. The frequency of site visits should be commensurate with the magnitude of activities and their associated environmental and social impacts. Sites where serious accidents are recorded should be visited within one working day of the accident. Overall, each construction site should be visited at least once every quarter during subproject implementation.

Each visit and interaction with a contractor should be documented in the database, including identification of contractor noncompliance, the significance of the non-compliance, and guidance provided on actions to be taken. KPLC will follow up as needed to ensure timely resolution of issues of noncompliance with environmental and social clauses. This may include additional visits to the contractor's site or offices, further communications with contractor personnel, issuance of notices of deficiency or warnings to the contractor, and other actions as needed (see Section on Contractor clauses).

11.2.2 External Monitoring

An independent annual technical audit of both environmental and social measures will be conducted by an entity acceptable both to the AfDB and the Government of Kenya. AfDB will provide input into the ToR. The project E&S annual audit is an independently commissioned environmental and social audit that will be carried out on an annual basis, as required to ensure sound implementation of ESMF (and ESMPs). It provides a strong incentive for MoE and KPLC and other relevant implementing parties to ensure that the ESMF is implemented and the subproject ESMPs and other required safeguards instruments are developed and implemented, as recommended

The audit will inter alia, assess:

- Whether the ESMF process is being correctly adhered to;
- The level of compliance by the proponent with the conditions of the environmental and social management plan and site-specific E&S plans, as applicable
- The relevant mitigation measures have been identified and implemented effectively; and
- The extent to which all stakeholder groups are involved in sub project implementation.
- If the monitoring programs, parameters, equipment (if any) and procedures in place for control and corrective actions are working and adhered to, and if relevant

The principal output of the annual E&S Audit/reviews is a comprehensive report that documents the Audit/review methodology, summarizes the results, and provides practical recommendations and more specifically a section referring to the overall ESMF performance, and mitigation measures, etc.

The audit will also indicate whether any amendments are required in the ESMF approach to improve its effectiveness and ensure that the sub-project ESMPs are developed/cleared and effectively implemented. The nature of the subprojects in focus does not warrant significant changes in the ESMF. However, just in case, if the amendments in the ESMF are significant, AfDB review and approval will be needed, and the disclosure protocols will be decided in this case as well. The draft report will be reviewed and cleared by AfDB prior to submission to NEMA.

11.2.3 AfDB Monitoring

On quarterly basis, the PIT unit in Nairobi will submit to AfDB a consolidated Environmental and Social Safeguards Implementation quarterly report summarizing monitoring results, and whose content and requirements will be agreed on with the Bank but also includes:

Monitoring data on environmental and social measures detailed in ESMPs

- Screening requirements and results for projects including the licenses acquired
- Number of people trained (disaggregated by gender) on environmental and social issues
- List of consultations held, including locations and dates, name of participants and occupations
- Main points arising from consultations including any agreements reached
- A record of grievance applications and grievances addressed
- Number of Word Bank cleared ESMPs, abbreviated ESMPs and E&S certificates prepared and
- cleared
- Number of technical audit recommendations that have been implemented
- Permits register for all sub projects

Quarterly reporting is in line with AfDB reporting requirements for Category 2 projects.

In addition, monthly E&S online meetings with the E&S staff at the bank will assist in periodic monitoring. Twice a year (minimum), the Bank will hold implementation support missions. Other missions are carried out as and when needed.

In addition, to the quarterly and annual reports, a completion report will be submitted to the financier.

11.2.4 NEMA Compliance Monitoring

NEMA usually carries out compliance monitoring to ensure construction and operation any facility is done as per the agreed ESMP and conditions in the license. This can be done by NEMA on quarterly basis and will give an improvement order where there is deviation from the agreed ESMP.

11.2.5 Completion Reports

Upon completion of subprojects, KPLC will prepare a subproject completion report, to identify any unresolved environmental or social, with recommended remedial action. This report will be brought to the attention of the LMCP Manager within KPLC who will decide the way forward.

For subprojects with significant environmental or social impacts, the completion report might recommend periodic routine inspections/monitoring during operation of the facility by KPLC environmental and social specialists.

In Addition, a final Last Mile 3 completion report will be prepared and submitted to the bank.

11.3 Subproject Environmental and Social Database

To make it easier to manage various sub projects, KPLC will establish and maintain a database of subprojects. The database will include for each subproject:

- Type Of Subproject, Name Of Subproject
- Safeguards Risk Level
- Timeline (Clearance Of Screening Form, Clearance Of Tors, Clearance Of Safeguard Instruments)
- Supervision Reports By KPLC
- Contractor Reports
- Noncompliance By Contractors

Cross References to the Grievance Redress Mechanism's Log of Complaints.

12 ESMF IMPLEMENTATION BUDGET

The ESMF implementation budget refers to all costs that will be incurred to implement the requirements or recommendations of the ESMF. The ESMF requirements ensure that implementation of the projects integrates environmental and social issues for the sustainability of the project as well as the sub-projects. Among other things the ESMF recommends the following key issues, namely; training, capacity building, screening, reviewing and monitoring mechanisms. These issues are clearly described here under; the staff- who will be involved in the implementation of the project should be trained to enhance their skills on environmental and social issues. Building the capacity of staff from implementing Division/departments/ sections such as projects, SHE, Network Management, Chain Supply Management and Finance will enable them to screen, review and monitor environmental issues in the sub-projects to ensure compliance with requirements of the national policies and Acts as well as AfDB safeguard policies.

Furthermore, screening and reviewing processes would also involve some cost implications. Every sub-project would be screened and reviewed, Environmental Impact Assessments and Mitigation Measures implementation monitoring by the implementing unit while involving Environmental Experts.

Monitoring plan: there will be monitoring during the implementation of the sub-projects in order to measure the effectiveness of the mitigation measures. The monitoring and reporting procedures will ensure early detection of conditions that necessitate particular mitigation measures and will furnish information on the progress and results of mitigation. The monitoring component will involve some cost implications covering routine monitoring of the ESMF implementation, Annual ESMF Review/Audit and Completion audit of ES performance..

S/NO	ESMF proposed actions)	Description	Number	Unit Coast KES	Total Cost (Kes)
1.	ES Document preparation and				
	Mitigation				
	Screening	Environmental and	66	201,000	13,266,000
а		social Screening of			
		subprojects			
b	Preparation of	Estimated cost of	30	600,000	18,000, 000
	specific sub project ESIA	each ESIA and			
		number of ESIAs			
		to be done			
	ESMF Implementation	ESMP costs Minus			72,650,000
с	of specific sub project	Cost of Land take			
	ESMP/Mitigation				
	ESMF Implementation Related to	ESMP Costs	5years	Lump sum	40,000,000
d	Land Take	Related to Land			
		take			
2.	Training and capacity Building				
	Training of staff / PIT	Training sessions	Lump sum	Lump sum	25,000,000
а					

Table 12-1: Estimated level of costs for ESMF implementation

	Training of Contractors	5 workshops (1 per	5	1,500,000	7,500,000
b		year)	workshops		
			(1 per year)		
	Training Grievance Redress		5 years	2,000,000	10,000,000
С	Committees				
3.	Grievance Redress Management	Meetings and	5 years	2,000,000	10,000,000
		consultations,	,		
		documentation,			
		resolutions etc.			
4.	Public sensitization and	Public Baraza	5 years	4,000,000	20,000,000
	education/disclosure/community	meetings per			
	meetings/consultations	County			
5.	Monitoring				
	Routine monitoring of the ESMF	Quarterly	5 years	4,300,800	21,504,000
	implementation	Monitoring in			
a		45counties/			
		8regions			
b	Annual Review/Audit	5 Audit	5 years	3,000,000	15,000,000
	Completion audit	Audit will be done	8 regions	2 000 000	16 000 000
с	of FS performance	in 8 regions	oregions	2,000,000	10,000,000
	Subtotal Costs				268,920,000
	Contigency (10%)				26,892,000
	Total Costs				295,812,000

13 CONCLUSION AND RECOMMENDATIONS

This Environmental and Social Management Framework (ESMF) has been prepared to establish the mechanism to determine and assess future potential adverse environmental and social impacts of sub-projects that are to be identified and cleared under Last Mile Connectivity program/Project.

However, this ESMF is meant to ensure that the implementation of the LMCP, of which the sub-project specific sites are unknown at this stage, will be carried out in an environmentally and socially sustainable manner. The ESMF provides the project implementers with an environmental and social screening process that will enable them to identify, assess and mitigate potential environmental and social impacts of sub-project activities, including the preparation of site-specific Environmental Impact Assessments (EIA) where applicable, in accordance with the EMCA, 1999 as well as AfDB safeguard policies particularly Environmental Assessment (OS1).

Consequently, specific information on the number of sub-projects, site location of subprojects, Land requirements, geophysical land features, nature, type and use of equipment, etc. are not available at this stage.

Therefore, exact details and the intensity of social and environmental impacts and their effective mitigation cannot be determined.

However, the framework among other things mentions the AfDB Operational Safeguards that are likely to be triggered by the proposed power connectivity project, identifies potential environmental concerns/impacts, environmental and social management plan, institutional responsibilities, capacity building, training needs, and technical assistance required.

In view of all these the ESMF therefore recommends the following;

- Capacity Building; The ESMF recognizes existing gaps and weaknesses for implementing ESMF under this project and realizes the importance of strengthening the capacity of key implementing departments and PIT. However, currently, most Departments and units/sections are lacking the necessary capacity to able to comply with requirements of national policies and Acts as well as AfDB safeguard policies. This will provide conducive enabling environment to address environmental and social issues in the company across all counties under this project and implementation of ESMF.
- Training needs; Staff who will be appointed to the Project Implementation Team (PIT), Implementing units and other sections which will be responsible for coordinating activities across the company for managing sub-projects for the purpose of maintaining a formative monitoring system throughout the project to assess the quality of implementation, use of funds, and impacts should have the necessary skills in Environmental and Social Management. Therefore they should undertake training in environmental management. Training topics may include an overview of environmental issues within the power sector, introduction to EIA processes and methods, impact analysis, EIA review, the role of the public and stakeholders, EIA experience in Kenya, and case studies. Other training needs are explained in chapter 10.
- The implementation of LMCP sub-projects should strongly integrate environmental and social issues in relation to the sub-project as outlined in this ESMF. Furthermore, the implementation of the LMCP project as well as its subprojects must comply with the Kenyan Policies and Laws as well as AfDB Polices..
- Adherence to ESMF requirements; The ESMF requires this project to ensure that procedures are followed in relation to environmental and social screening, review and approval prior to implementation of sub- projects to be financed under the LMCP. Furthermore, appropriate roles and responsibilities, for managing and monitoring environmental and social concerns related to sub-projects should also be followed.
- KPLC will develop an overall Environmental and Social Management System (ESMS) that envelops all of the individual Sub-Activities, Environmental and Social Impacts, Climate Change and Procedures for assessing the Impacts.

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ANNEXES

Annex 1: Minutes and Lists of Attendance of Stakeholder Consultations

Annex 2: Target Number of Households and Transformers for Maximization

	County	No of existing TXs to be Maximized	New Hook Up TX	New TX with HT line -1.2KM	Targeted Number of Transformers	Targeted Number of Commercially viable customers to be Connected under LMCP AfDB III	Targeted Number of Households to be Connected under LMCP AfDB III
1	Baringo	17	19	12	48	162	2,310
2	Bomet	16	17	10	43	247	3,525
3	Bungoma	23	27	18	68	423	6,042
4	Busia	18	21	14	53	309	4,403
5	Elgeyo- Marakwet	20	16	16	52	175	2,490
6	Embu	13	14	8	35	170	2,424
7	Garissa	20	21	12	53	135	1,925
8	Homa Bay	21	25	16	62	246	3,501
9	Isiolo	14	12	4	30	208	2,970
10	Kajiado	3	17	10	30	142	2,025
11	Kakamega	25	33	24	82	437	6,241
12	Kericho	15	18	12	45	244	3,480
13	Kiambu	0	36	24	60	450	6,420
14	Kilifi	17	21	14	52	333	4,743
15	Kirinyaga	11	13	8	32	169	2,405
16	Kisii	21	26	18	65	466	6,648
17	Kisumu	12	17	14	43	257	3,663
18	Kitui	22	25	16	63	171	2,433
19	Kwale	15	15	8	38	175	2,499
20	Laikipia	12	12	6	30	116	1,643
21	Lamu	11	10	4	25	128	1,824
22	Machakos	33	22	16	71	304	4,333
23	Makueni	20	21	12	53	160	2,277
24	Meru	21	26	18	65	344	4,911
25	Migori	21	25	16	62	280	3,994
26	Murang'a	17	21	14	52	217	3,097
27	Nakuru	16	25	22	63	323	4,612
28	Nandi	16	18	12	46	206	2,942
29	Narok	20	21	12	53	195	2,776
30	Nyamira	12	14	8	34	261	3,726
31	Nyandarua	14	16	10	40	143	2,032
32	Nyeri	10	15	12	37	159	2,271
33	Samburu	20	17	6	43	145	2,071
34	Siaya	19	21	12	52	190	2,703
35	Taita Taveta	12	13	8	33	147	2,098
36	Tana River	17	15	6	38	214	3,051
37	Tharaka Nithi	12	12	6	30	150	2,137
38	Trans Nzoia	16	17	10	43	207	2,944

	County	No of existing TXs to be Maximized	New Hook Up TX	New TX with HT line -1.2KM	Targeted Number of Transformers	Targeted Number of Commercially viable customers to be Connected under LMCP AfDB III	Targeted Number of Households to be Connected under LMCP AfDB III
39	Turkana	23	23	12	58	175	2,491
40	Uasin Gishu	3	20	12	35	205	2,919
41	Vihiga	13	15	10	38	324	4,617
42	West Pokot	21	19	8	48	110	1,562
43	Mandera	23	23	12	58	386	5,513
44	Wajir	22	23	12	57	307	4,377
45	Marsabit	17	17	8	42	206	2,932
	Grand Total	744	874	542	2,160	10,521	150,000

Annex 3: Material Specifications

No	Category	Specification Number
1	Poles - Concrete	KP1-13D-4-1-TSP-07-002-SPECIFICATION FOR CONCRETE PRODUCTS
2	Conductor and Cables	KP1-6C-13-TSP-06-021 specification for aluminium conductors (soft drawn)
3	Conductor and Cables	KP1-6C-13-TSP-06-022-2-SPECIFICATION FOR ALUMINIUM CONDUCTORS STEEL REINFORCED- PART2-75MM2 & 150MM2-BARE & PVC COVERED
4	Conductor and Cables	KP1-6C-13-TSP-06-035 Specification for aluminium binding wire (2)
5	Conductor and Cables	KPLC1-3CB-TSP-06-020 Specification for All Aluminium Conductors(Bare& PVC Covered) (5)
6	Conductor and Cables	TSP 06-025 Specification for PVC Covered Copper Conductors (Earthing)
7	Conductor and Cables	TSP-05-001-SPECIFICATION FOR ALUMINIUM 4 CORE PVC INSULATED STEEL WIRE ARMOURED CABLE
8	Conductor and Cables	TSP-05-004 specification for PVC insulated single-phase concentric aluminium cables (low voltage)
9	Fuse and others	KP1-3CB-TSP-11-010-Specification for miniature circuit breakers (for use in domestic-residential buildings and similar premises)
10	Fuse and others	KP1-6C.1-13-TSP-11-022-Specification low voltage cartridge fuses (fuse links)
11	Fuse and others	KP1-6C.1-13-TSP-11-023-SPECIFICATION FOR LOW VOLTAGE FUSE CUT-OUT
12	Fuse and others	KP1-6C-4-1-TSP-03-016-SPECIFICATION FOR LOW VOLTAGE PLASTIC FUSE CHANNEL
13	Fuse and others	KPLC1-3CB-TSP11-020 SPECIFICATION FOR 11KV EXPULSION FUSE LINKS
14	Fuse and others	KPLC1-3CB-TSP-11-021 Specification for 33kV Expulsion Fuse Link
15	Fuse and others	TSP11-017 - Specification for 11kv expulsion fuse cut-out (drop-out type)
16	Over Head fitting	KP1-3CB-TSP-02-004 Specification for Multipurpose Overhead line Clamps
17	Over Head fitting	KP1-3CB-TSP-04-017-3 SPECIFICATION FOR 11KV COMPOSITE PIN INSULATORS PART 3 - COASTAL APPLICATION
18	Over Head fitting	KP1-3CB-TSP-04-017-4 SPECIFICATION FOR 33KV COMPOSITE PIN INSULATORS PART 4- COASTAL INSTALLATION
19	Over Head fitting	KP1-6C 1-13-TSP-02-003-1-Specification for fasteners and washers for overhead lines Part 1- Bolts Nuts and Washers (12)
20	Over Head fitting	KP1-6C.1-13-TSP-11-018-Specification for 33KV expulsion fuse cut-out drop-out type
21	Over Head fitting	KP1-6C-4-1-TSP-11-036 - SPECIFICATION FOR 12KV & 36KV SURGE ARRESTERS
22	Over Head fitting	KP1-6C-13-TSP-03-003-SPECIFICATION FOR STEEL STRUCTURES FOR OVERHEAD LINES
23	Over Head fitting	KPLC1-3CB-TSP-04-017-1-Specification for 11KV & 33KV composite insulators part 1-suspension- tension insulators for inland applications
24	Over Head fitting	KPLC1-6C 1-13-TSP-06-036-1-Specification for overhead line fittings-Part 1- fittings for 10-300MM2 conductors (4)
25	Over Head fitting	KPLC-3CB-TSP-04-011-Specification for low voltage insulators - shackle insulators LV
26	Over Head fitting	TSP-04-016-SPECIFICATION FOR PORCELAIN STAY INSULATORS - LV -11KV & 33KV
33	Poles - Wooden	KP1-3CB-TSP-03-001-1 Specification for treated wood poles- part 1- Eucalyptus poles
27	Signs	KP1-6C-4-1-TSP-02-002-Specification for safety pole signs accessories (1)
28	Support Structure	KP1-6C.1-13-12-TSP-03-021-Specification for stay wires & guy grips
29	Support Structure	KP1-6C.1-13-TSP-03-022-Specification for stay rods and turnbuckles
30	Support Structure	KP1-13D-4-1-TSP-07-002-SPECIFICATION FOR CONCRETE PRODUCTS
31	Transformers	KP1-13D-13-TSP-10-001-01 Distribution Transformers - Part 1 -Pole Mounted Single Phase Oil Type Distribution Transformer
32	Transformers	KP1-13D-13-TSP-10-001-02 Distribution Transformers - Part 2 -Pole Mounted Three Phase Oil Type Distribution Transformer

Annex 4: Environmental and Social Screening Form

ENVIRONMENTAL AND SOCAL SCREENING FORM

Introduction

This form is a tool to standardise the environmental and social screening process of Last Mile Connectivity distribution projects / project areas in the Distribution Component.

The main objective of the screening process is to identify and highlight environmental and social issues that need to be taken into account in further decisions, planning, and design of a project. The aim is to support the sustainable implementation of the planned investments under the above project.

The screening will help the PIT in i) identifying the relevant Environmental and Social Standards (ESS), ii) establishing an appropriate environmental and social risk rating for these subprojects and iii) specifying the type of environmental and social assessment required, including specific instruments/plans. The completed forms shall be signed and record kept.

The screening must be carried out at an early stage of the sub-project (i.e., prefeasibility), in accordance with the requirement for donor financed projects. The proponent must complete each section of this form, as outlined below.

LCMP III ENVIRONMENTAL AND SOCIAL SCREENING FORM

General Background

1.	Sub project Name	
2.	Sub project Type	
3.	Sub project Location, sub county,	
	County	
4.	Coordinates (GPS)	
5.	Land Area (approximate)	
6.	Current Land Use &	
	Development on site	
7.	Describe any Possible	
	Alternative Site(s)_	
8.	Brief Sub project Description	
9.	Provide an appropriately-scaled	
	map clearly showing:	
	The project area with existing	
	buildings. infrastructure.	
	vegetation, and land use if	
	Possible:	
	The project area with any	
	planned construction, plants,	
	lines, or access roads if Possible	
10.	Is there any other infrastructure	
	in or close to the project area?	
11	Expected subproject duration	
	(and start date)	
12	Present owner(s)/users of the	
	project area	
13.	Expected start and end date	
	(monun/year) &	
	project duration (in months) of	
	the construction phase:	

14.	List the technology and	
	construction and operation	
	phases	
15.	List the materials to be used	
	during the construction and	
	operation phases (e.g.,	
	infrastructure, creosote treated	
	poles, fuels and oils):	
16.	Expected number of workers	
	during construction & operation:	
17.	Is the project area or its	
	immediate surroundings subject	
	to pollution or environmental	
	damage caused by other	
	(existing) activities?	

Policy Triggers

	Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why
18.	Does the project fall under the second schedule of EMCA Cap. 387		
19.	Does the project trigger one or more of the Bank Safeguard policies		
20.	Does the project fall under/trigger any sensitive GoK Policies and Laws?		

Project Location Sensitivity

	Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why	Risk level (H/M/L)
21.	Is the proposed site a protected or reserved site (or neighboring one? Provide proximity in kms)			
	Biosphere Reserve			
	National park			
	Wildlife / Bird Sanctuary			
	Wetland			
	Important Bird Areas			
	Coastal/aquatic area with corals			
	Mangrove areas (or Estuary with, mangroves)			
	Natural lakes			

	Habitat of migratory birds (outside protected areas)		
	Migratory Route of Wild Animals/Birds		
	Area with threatened/ rare/endangered fauna (outside protected areas)		
	Area with threatened/rare/ endangered flora (outside protected areas)		
	Reserved/Protected Forest		
	Zoological Park /Botanical Garden		
22.	Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project?		
23.	Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses, coastal zone, mountains, mangroves, forests or woodlands, migratory routes, water bodies, lakes, ponds which could be affected by the project?		
24.	Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?		
25.	Is the project in a location where it is likely to be highly visible to many people?		
26.	Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project?		
27.	Is the project located in a previously undeveloped area where there will be loss of greenfield land?		
28.	Are there existing land uses on or around the location e.g. homes, gardens, private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining, or quarrying which could be affected by the project?		
20.	uses on or around the location		

		which could be affected by the project?		
3	30.	Are there any areas on or around		
		the location which are densely		
		populated or built up, which could		
		be affected by the project?		
3	31.	Are there any areas on or around		
		the location which are occupied by		
		sensitive land uses e.g. hospitals,		
		schools, places of worship,		
		community facilities which could be		
		affected by the project?		
3	32.	Are there areas on or around the		
		location which are subject to		
		pollution or environmental damage		
		e.g. where existing legal		
		environmental standards are		
		exceeded, which could be affected		
_	22	by the project?		
3	ეე.	is the site already degraded (low		
2	2/1	Will the proposed project be		
	J .	implemented in the areas		
		surrounding water bodies lakes		
		and nonds and intend to use		
3	35.	Are there steep slopes in the		
_		proximity of the investment site?		
		Will the proposed project be		
		implemented in areas located in		
		high risk zones such as landslide		
		prone area, steep slopes, highly		
		degraded lands, hills, riverine		
		areas susceptible to annual		
		flooding, or in areas causing large-		
2	26	Scale soil erosion?		
3	50.	will the proposed project involve		
		slones?		
3	37.	Will the proposed project involve		
		logging and cutting of vegetation		
		and trees and shrubs?		
3	38.	Will the proposed project endanger		
		indigenous plant species of		
		ecological significance?		
3	39.	Will the project affect Fish and fish		
		habitant or mammals?		
4	ŧ0.	Is the site vulnerable to natural		
		nazards (in floodplain, near		
		voicano, on seismic fault, near		
	11	coastine in nurricane zone)?		
4	+1.	bu people live on the proposed		
4	12	Do indigenous peoples live on or		
		near the site?		
4	13.	20. Is the site vulnerable to natural		
		hazards (in floodplain, near		
-	_			

	volcano, on seismic fault, near coastline in hurricane zone)?		
44.	Are there land title conflicts?		
	are there known archaeological, historical or other cultural property? Are any of these world heritage/ UNESCO designated etc		
45.	Will the project result to conflicts or disputes among communities		

<u>Cultural</u>

	Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why	Risk level (H/M/L)
46.	Will the proposed project be implemented in the areas surrounding heritage/religious temple /religious site/grave yards?			
47.	Will the project result in disruption or removal of human remains?			
48.	Will the project result in Increased potential for vandalizing, or sabotaging archaeological resources?			
49.	Will the project result in Ground disturbances in an area with potential cultural resource sensitivity based on the location of known historic sites?			

Socio-economic impacts

	Questions to be considered	Yes/No. Briefly Describe	Is this likely to result in a significant effect? Yes/No/? -why	Risk level (H/M/L)
50.	Will it include any activity that promotes or involves incidence of child labor?			
51.	Will it require some families losing their farmland and/or assets on the land? (how many)			
52.	Will it cause displacement/ resettlement of families due to implementation or construction of infrastructure?			
53.	Clearance of encroachment/ squatting from government/ urban local body land?			
54.	Acquisition of private/community land? and/or restrictions on land use?			
55.	Cause Traditional economic/ cultural activities (trapping, fishing, collection of medicinal plants) loss?			

56.	Will it result in significant change/		
	loss in livelihood of individuals?		
57.	Will it adversely affect the		
	livelihoods and or rights of women?		
58.	Will it induce further encroachment		
	of nearby areas?		
59.	Will project involve inward		
	migration of people from outside		
	areas for employment or other		
	purposes?		
60.	Is the project likely to significantly		
	affect the cultural traditions of		
	affected communities, including		
61	gender-based roles?		
01.	would the proposed project		
	brock up into small fragments" of a		
	community? If yos, explain how?		
62	Will the project involve use		
02.	storage transport handling or		
	production of substances or		
	materials which could be harmful to		
	human health or the environment		
	or raise concerns about actual or		
	perceived risks to human health?		
63.	Will the project affect/lead to traffic		
	and Pedestrian Safety?		
64.	Will the project Interfere with the		
	normal health and safety of the		
	worker/employee/public?		
65.	Will the project introduce new		
	practices and habits?		
66.	Will the project lead to child		
	delinquency (school drop-outs,		
67	child abuse, child labour, etc.?		
67.	Does the project area present		
	Exploitation and Abuse (SEA) risk2		
68	Will the project lead to social evils		
00.			
	consumption crime etc.)?		
69.	Increase exposure of the		
	community to communicable		
	diseases such as HIV/AIDS?		
70.	Public risk to shocks and		
	electrocution?		
71.	Will the project lead to gender		
	disparity?	 	
72.	Will the project Interfere with the		
	normal health and safety of the		
	worker/employee/public?		
73.	Is the project likely to provide local		
	employment opportunities,		
	including employment opportunities		
	for women?		

74.	Is the project being designed with sufficient local participation of women in the planning design and implementation process?		
75.	Is there any other project or potential project nearby likely to be affected or to affect this project?		
76.	Other Key Risks not covered above		

CONCLUSIONS:

1. Proposed project is eligible for financing under the project criteria

.....

2. Proposed Environmental and Social Risk Ratings (High, Substantial, Moderate or Low). Provide Justifications.

.....

3. Proposed Categorisation as per AfDB ISS.....

4. Proposed Environmental and Social Management Plans/ Instruments

.....

Completed by..... Name..... Position in the executing agency Date......Signature.....

Assisted by: Name of officer Position	
Date	Signature

Verified and Validated by:	
Name of the Manager	
Position	
Date	Signature

In determining the appropriate risk classification, the PIT will take into account relevant issues including: the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; alongside the available resources and safeguard instruments to manage the environmental and social risks and impacts in a manner consistent with the OSs.

The classification of the project risks falls into one of four classifications: High (H) Risk, Substantial (S) Risk, Moderate (M) Risk or Low (L) Risk.

 High and Substantial Risk: Subprojects which involve adverse risks or impacts or significant risks or impacts on the environment, community health and safety, labor and working conditions, biodiversity or cultural heritage, as high or substantial risk. If not under the first category, subprojects which may have major environmental impacts; thus, necessitating Environmental and Social Impact Assessments. Such subprojects require screening, preparation and implementation in accordance with the AfDB's policies and relevant national laws.

- ii) Moderate Risk: Subprojects that are expected to have only moderate (in spread and severity) environmental and social risks and impacts. These impacts are mostly generic in nature and in most cases mitigation measures can be designed more readily than for subprojects in High Risk and Substantial Risk. Moderate risk projects are likely to have site specific / localized environmental and/or social impacts that are less adverse and can be adequately minimized and or mitigated by the application of mitigation measures.
- iii) Low Risk: Subprojects which are expected to have low or insignificant environmental and social risks and impacts. However, such subprojects STILL require screening, preparation and implementation in accordance with the national policies and laws and AfDB policies E.G as long as a project appears on the Second schedule of EMCA (Legal Notice 31), the required ESIA needs to be done. The screening process is not a substitute for project-specific environmental and social assessments or specific mitigation plans.

Annex 5: Generic Environmental Assessment Terms of Reference

I. Introduction and context

The country's long-term development blue print, Vision 2030 aims at transforming Kenya into a globally competitive newly industrialized middle income and prosperous country. The Second Medium Plan 2013-2017 identifies energy as one of the enablers for transformation into "a newly industrializing, middle-income country providing a high quality of life to all its citizens in a clean and secure environment" Efficient, accessible and reliable infrastructure is identified as an enabler for achieving sustainable economic growth, development and poverty reduction by lowering the cost of doing business and improving the country's global competitiveness.

The Government of the Republic of Kenya is seeking the financial support of US\$150 million from the Africa Development Bank for the Last Mile Connectivity Project-III (LMCP-III). The proposed implementation period is 5 years. The project would aim to improve the power systems and electricity access and reliability, in line with the Kenya Growth and Development Strategy.

Over the past two decades or so, Kenya has seen a steady growth in electricity connections both in urban and rural areas. According to the Kenya National Bureau of Statistics (KNBS) Population census, 50.4 percent of households in overall were connected to power in 2019 as opposed to 23% in 2009. In rural areas the change is from 5percent to 26.3percent while in urban areas this is from 50% to 88.4percent.

The above shift has been driven by a combination of various factors chief among them being the incoming of a new political dispensation in 2002. The regime at that time demanded that the company accelerate connectivity, which called for a totally new approach in the connectivity model within KPLC. In 2004, a new connection policy was developed to address this new challenge and also take cognizance of the more enlightened customer. Other factors supporting the increased pace of electrification, includes off-grid solutions such as solar, the fruits of the State's last-mile connectivity programme, which was launched in 2014 mainly targeting rural areas, as well as the cost for installation of electricity was dropped from Sh35,000 down to only Sh15, 000 to speed up the Government's agenda to have at least 75 per cent of Kenyan households connected to electricity by 2022.

The Government of Kenya aims at stimulating economic growth and accelerates job creation to improve the wellbeing of Kenyans. Among the many interventions to achieve this is expansion of the power distribution system to be within reach and thus enable more Kenyans to connect to the grid at affordable cost and hence initiate economic activities at the micro-economic level.

To reduce the cost burden of increased connectivity on KPLC, as well as reduce the amount paid by the customer, the strategy proposed was to extend the distribution network to as near the customer as possible through government funding. This is being achieved by extending the low voltage network on existing and other upcoming distribution transformers to reach households lying within transformer protection distance (maximization) under the Last Mile Connectivity Program.

Project Description and Components

Last mile Connectivity Phase III is geared towards scaling up access and network improvement to accelerate connectivity, improve system reliability and quality electricity supply. The Project is broadly packaged into six key components, reflecting on the prevailing electricity supply industry circumstances, in line with the GoK efforts of achieving universal access to electricity, building on the achievements, and lessons learned under the Development Projects-supported previous and ongoing last-mile connectivity operations in Kenya. The components are described below

	Component Name	Component Description
1	Medium Voltage(MV) system upgrade and uprating	This component involves the construction of new 33/11 kV substations, 33 kV switching stations, and 33 kV lines.
2	Grid extensions	This component will comprise of densifications, intensifications including distribution transformer maximizations, and last-mile connections. It will involve construction of low-voltage lines and the installation of energy meters.
3	Project administration and management	It comprises both consulting and non-consulting services namely consultancy supervision services, Environmental and Social (ES) audits, and financial, operational and compliance audits.
4	Institutional support and capacity building	The component is meant to promote sustainable development of electricity supply industry (i) comprising technical assistance to MoEP for monitoring and evaluation of rural electrification schemes, (ii) consultancy services to undertake feasibility studies for strengthening the distribution network and expand electricity access for productive use, and (iv) capacity building for KPLC and MoEP and NT staff in sustainable development of the electricity supply industry. Providing technical assistance to develop and support KPLC's internal capacity in undertaking bankable proposals, feasibility studies, and PPPs.
5	Promoting Energy transition	Promoting the transition from using polluting fuels (such as firewood, charcoal, and kerosene) to modern energy (particularly electricity) in cooking.
6	Environmental and Social risks management	Besides the ES impacts that will be managed and monitored under components in (3 and 4) above, the ESMMP implementation will cover the Resettlement Action Plan (RAP) related activities including gender-responsive compensation and resettlement of Project Affected Persons (PAPs) where applicable.

Project Description Works

The projects encompass engineering, procurement and construction of the Low voltage line, Medium Voltage Lines, Transformer installation, primary substation construction & upgrade, network reinforcement and metering. Implementation of the project will be on a Turnkey basis.

Engineering Works have been categorized into two components:

- Distribution Maximization: MV line densification, MV line extension, construction of low-voltage distribution lines and metering
- System Reinforcement: Construction of new substations, upgrading of existing substations and extension of associated lines.

II. Scope of Project

LMCP 111 consists of subprojects developed during project implementation. KPLC has prepared an Environmental and Social Management Framework (ESMF) to meet the requirements of the African Development Bank Operational Safeguard 1 (OS 1), and to comply with the relevant laws and regulations of the Government of Kenya. KPLC in parallel has prepares a Resettlement Policy Framework (RPF) to cover requirements under the Resettlement Policy (OS 2).

These ToRs cover the preparation of the ESIA for a portion of the project i.e. the sub project.

The section will then describe what the sub project is including its description of the project; covering geographical location, type of development envisaged, including a description of project activities. Also include current status of the project. Provide brief information on any other study already completed/on-going or proposed)

III. Objectives of the study

This section outlines the objectives and particular activities of the planned activity; and (ii) indicate which activities are likely to have environmental and social impacts that require appropriate mitigation. (Adapted to specific activities)

The overall objective is to undertake an Environmental and Social Impact Assessment (ESIA), documenting the present condition of the environment and social and identifying the positive and negative impacts that may result from the implementation of the proposed sub project, and mitigation measures, in line with the relevant laws and regulations of the Government of Kenya, and compliance with AfDB policies.

The specific Objectives of the assignment are to:

- i) Identify and analyze environmental issues that may affect the project and the sector.
- ii) Establish the environmental baseline in the study area, and identify any significant environmental issues (direct/indirect/induced/cumulative)
- i) Undertake social assessments, social interactions and consultative meetings to obtain views and opinions of the stakeholders on the proposed sub project.
- ii) Assess impacts of the project, and provide for measures to address the adverse impacts by the provision of the requisite avoidance, mitigation and compensation measures
- iii) Integrate the environmental issues in the project planning and design; and
- iv) Develop appropriate management plans for implementing, monitoring and reporting of the suggested environmental mitigation and enhancement measures.

The environmental assessment studies and reporting requirements to be undertaken under these TOR must conform to the Government of Kenya regulations and AfDB Operational Safeguards (Oss) and guidelines as defined in the Integrated Safeguards Systems (ISS) and its guidance materials.

IV. Scope of Works

The Consultant shall perform all work necessary as called for in these Terms of Reference. In carrying their work, the Consultant shall co-operate fully with the concerned agencies of the Government of

Kenya, in particular the, KPLC, Ministry of Energy, National Environment Management Authority (NEMA), AfDB, County government among others. The Consultant shall provide the necessary support services related to and necessary for the completion of the assignment.

The work shall cover but not be limited to the aspects outlined in these Terms of Reference.

- (a) Project Description: This will describe the entire Project, including components/subcomponents and a map of the Project potential intervention areas, as well as activities that may cause impacts. Concisely describes the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (If any i.e. workforce camps, quarry, etc.).
- (a) Carry out a review of the respective national environmental policies, legislation, regulatory and administrative frameworks in conjunction with the donors' safeguard policies, indicate which of these policies is triggered by the planned activity, identify any gaps that might exist, and make recommendations as to how potential gaps should be bridged in the context of the planned activity. Identifies relevant international environmental agreements to which the country is a party

This section will: (i) present applicable AfDB Policies and associated documents; (ii) present relevant national laws and regulations, and: (iii) highlight any differences between the AfDB requirement and national laws and regulations that must be taken into account.

(b) Baseline:

Carry out a description of the biophysical characteristics of the environment in which the planned activity will take place, and highlight the major constraints that need to be taken into account during construction as well as during operation of the facility;

Carry out a description of the socio-economic environment of the planned investment, and highlight the major constraints that need to be taken into account during construction as well as during operation of the facility;

The Section assesses the dimensions of the study area and describes relevant physical, biological, and socioeconomic conditions (e.g. population characteristics and trends, revenue disparities, gender differences, health problems, natural resource access and ownership, land use patterns and civil society organization level, among many others) including any changes anticipated before the project commences. Also takes into account current and proposed development activities within the project area but not directly connected to the project. Data should be relevant to decisions about project location, design, operation, or mitigation measures. The section indicates the accuracy, reliability, and sources of the data. Indicate potential for contribution to cumulative impacts, given other similar activities in the same watershed, pastureland, etc.

Consultants shall consolidate this information into maps of adequate scale, figures and tables etc. to better illustrate the various environmental and social components.

(c) Impacts Assessment: Assess the potential environmental, social, cultural, economic etc. impacts in quantitative terms to the extent possible, due to the planning, construction, operation and decommissioning phases and make recommendations

The Consultant will analyse and describe all significant changes that would be brought about by the project. This should encompass environmental, ecological and social impacts as a result of the project. The Consultant will analyse effects on human and natural environments such as land tenure system, population, settlements, land use, cultural practices, forestry, agriculture, water, soils, fragile habitats, air/climate, hydrological conditions, roadside development, gender, GBV/SEA/SH, child labour and disturbance on vegetation among others. The Consultant will make prioritization of all the concerns identified and differentiate between direct and indirect, short, medium- and long-term impacts, unavoidable or irreversible impacts. This section will also identify and describe the nature, extent, and likelihood of these positive and negative environmental and social impacts that might result from subproject activities.

Section will address cumulative as well as residual impacts in line with AfDB policy.

Impact mitigation measures. This section will indicate appropriate, cost efficient and sufficient measures to mitigate the potential impacts listed in section i), which meet the requirements of the AfDB and comply with national laws and regulations.

For each issue, the consultants shall prepare a menu of alternative avoidance, mitigation, compensation, enhancement and/or mitigation measures, as required/necessary.

(a) Discuss alternative project designs and make recommendations; Systematically compares feasible alternatives to the proposed project site, technology, design, and operation—including the "without project" situation--in terms of their potential environmental and social impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements.

To be procedural, this component normally comprises two sections. The first section identifies and describes the potential feasible alternatives that would allow to reach the project objectives. The second section presents a comparison of the potential alternatives on the basis of technical, economic, environmental and social criteria, as well as of public views and concerns.

The Results of the comparison of alternatives are derived and one alternative is picked. The alternative comparison shall address the proposed project site, technology, design, and operation, in terms of their potential environmental and social impacts and the feasibility of mitigating these impacts. For each of the alternatives, the environmental and social impacts shall be quantified as possible, including their economic values where feasible. The selected alternative shall be the most environmentally and socially sustainable, taking into account the technical and economic feasibility.

(b) Assess the organisation's environmental assessment and management capacity, as well as the capacity to implement the proposed mitigation measures, and make appropriate recommendations, including potential capacity building and training needs, and their costs; (c) Prepare an Environmental and Social Management Plan (ESMP) for the planned activity. The ESMP should outline (a) potential environmental and social impacts resulting from the activity; (b) proposed mitigation measures; (c) institutional responsibilities for implementation of the mitigation measures; (d) monitoring indicators; (e) institutional responsibilities for monitoring and enforcement of the implementation of the mitigation measures; (f) verifiers for the performance indicators (g) robust cost estimates for these activities; and (h) time horizons for implementing the ESMP. These costs shall be verified for common works items in line with the rate analysis for other works. The consultants shall organize consultations with line departments and will the finalize the EMP.

Development of monitoring plan: The Consultant will be required to design comprehensive monitoring and evaluation plans which will act as measures of compliance during implementation and operation stages of the projects. The Consultant is required to give specific descriptions and technical details of monitoring measures including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, and definition of thresholds that will signal the need for corrective actions as well as deliver monitoring and reporting procedures. The Consultant should provide a time frame and implementation mechanism, staffing requirements and cost

(d) Public consultations: EIA results and proposed mitigating measures will then be shared with the potentially affected population, NGOs, local authorities and the private sector working in the area where the activity will take place. Minutes of this consultation will form an integral part of the report.

Consultation with the stakeholders shall be used to improve the plan and design of the project rather than merely having project information dissemination sessions. The consultants shall carry out consultations with Experts, NGOs, concerned Government Agencies and other stakeholders to: (a) collect baseline information; (b) obtain a better understanding of the potential impacts; (c) appreciate the perspectives/concerns of the stakeholders; and (d) secure their active involvement during subsequent stages of the project. Consultations shall be preceded by a systematic stakeholder analysis, which would: (a) identify the individual or stakeholder groups relevant to the project and to environmental issues; (b) include expert opinion and inputs; (c) determine the nature and scope of consultation with each type of stakeholders; and (d) determine the tools to be used in contacting and consulting each type of stakeholder group. A systematic consultation plan with attendant schedules will be prepared for subsequent stages of project preparation as well as implementation and operation, as required.

As part of these consultations with the Client, The EA consultants shall make design recommendations, related to alignment, cross- sections, construction material use, and mitigation and enhancement measures. The EA consultants shall interact regularly with the Client, so that the EA inputs are in conformity to the needs of the overall project.

(e) Monitoring and reporting. This section will detail the procedures to monitor the implementation of the ESMP. It will describe the types of reports, define roles and responsibilities (who reports - who gets the reports), when and how frequently reports are prepared, the management of corrective actions, and define a set of standard safeguard indicators that will reported on. The same set of indicators will be included in every subproject ESMP.

V. Deliverables

The main deliverable is an ESIA report.

All reports shall be in the English language and prepared on A4 metric size paper. The following Reports shall be prepared and submitted for comments or approval by the Client:

- (a) Inception Reports: These reports shall comprise of a brief of the project, description of baseline information and project overview including summary of the initial perception or findings. The Consultant shall further give defined proposals covering the methodologies of the Environmental and Social Impact Assessment and the detailed work program of all major activities of the assignment
- (b) Draft Final ESIA Reports: These reports shall summarize the findings, analysis, results and recommendations of the assessment including consultative public participation and shall contain all supporting material. The Report shall be presented to the stakeholders for review, inputs and contributions.
- (c) Final ESIA Reports: These reports shall incorporate all revisions and comments proposed by the Employer following discussions and agreement between the Employer and the Consultant. Comments of stakeholders shall be taken into account in the Final Report

(d) Comprehensive ESMMP- This shall contain all the potential impacts and related enhancement and mitigation measures.

Report Plan

- Cover page
- Table of Contents
- List of acronyms
- Executive summary
- Introduction
- Project Description
- Baseline Environmental and Social Conditions
- Description of the policy, institutional and regulatory framework.
- Description of potential alternatives to the proposed project design.
- Description of environmental and social impacts of the proposed activity including Methods and techniques used during evaluation and impact analysis of the proposed activity. Mitigation and enhancement measures
- Discussion of consultations with relevant stakeholders, including potentially affected persons.
- Environmental and Social Management Plan for the proposed activity.
- Monitoring Plan
- Conclusion and Recommendations
- References.
- Annexes including evidence for public participation, and tools used e.g Field Assessment Questionnaires, screening form
- Summary table of the Environmental Management Plan (EMP).

VI Consultant Qualifications and Experience

This shall be defined in due time

Annex 6: Guidelines for the preparation of Environmental and Social Management Plan (ESMP)

Specifically, the ESMP:

- Identifies and summarizes all anticipated significant adverse environmental and social impacts (including those involving vulnerable communities and or indigenous people);
- Describes with technical details each mitigation measure, including the type of impact to which it relates, the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, equipment descriptions, and operating procedures;
- · Estimates any potential environmental and social impacts of these measures; and
- · Provides linkage with any other mitigation plans required for the project.
- Indicated costs required for these measures implementation

The preparation of an ESMP should include the following key sections:

- 1. **Summary of Impacts:** Anticipated adverse environmental impacts should be identified and summarized as well as their relationship to social impacts and the appropriate mitigation measures.
- Description of Mitigation measures: The mitigation measures proposed for the various impacts should be described in relation to the corresponding impacts while stating the conditions under which they are required. Adequate description of the consultations should be done and justified.
- 3. Description of monitoring program: A detailed monitoring program should be described in the ESMP, listing environmental performance indicators and their link with impacts and mitigation measures. The ESMP should also describe the parameters to be measured, methods to be used, sampling location and frequency of measurements, detection limits and a clear definition of thresholds that indicate the need for corrective measures. Monitoring and supervision schedules should be clearly stated and agreed with the Bank to ensure timely detection of needs for remedial action and also provide information on the level of compliance with ESMP in accordance with Bank safeguards. These arrangements must be clearly stated in the project implementation/operations manual to reinforce project supervision.
- Legal requirements and bidding/contract documents: The ESMP should be incorporated in all legal documents to enforce compliance by all contractors participating in the project. The ESMP should be summarized and incorporated in the bidding and contract documents.
- 5. **Institutional arrangements:** The ESMP should clearly state who is responsible for monitoring, execution of remedial action and the reporting order and format to allow for a defined channel of information flow. It should also recommend institutional strengthening for relevant agencies and the funding authorities for the various activities.
- 6. Capacity Development and Training: To support timely and effective implementation of environmental project components and mitigation measures, the ESMP draws on the EA's assessment of the existence, role, and capability of environmental units on site or at the ministry level. If necessary, the ESMP recommends the establishment or expansion of such units, and the training of staff, to allow implementation of EA recommendations. Specifically, the ESMP provides a specific description of institutional arrangements i.e. who is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, most ESMPs cover one or more of the following additional topics: (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.

- 7. **Implementation Schedule:** The frequency, timing and duration of mitigation measures and monitoring should be stated in the implementation schedule. Links between mitigation measures and development of relevant institutions and legal requirements of the project should be stated.
- 8. Reporting: The order of information flow as it concerns monitoring reports should be clearly defined. The relevant officers to receive these reports should be those who have authorities to facilitate implementation of the results of the monitoring. These reports should also be communicated to the Bank via media to be agreed and specified in the ESMP. Adequate arrangements should be made by the Bank to facilitate the circulation of the ESMP through the selected means.
- Cost estimate: The cost of carrying out monitoring and implementation of the mitigation measures at the various stages of the project should be integrated into the total cost of the project and factored into financial negotiations. These costs should include administrative, design and consultancy, operational and maintenance costs – resulting with meeting required standards and project design.

Annex 7: Sample of ESMP

Project Activities	Anticipated Environmental & Social Impacts	Proposed Management Measure(s) and Objective of Management Measure(s) (Mitigation)	Monitoring and Report- ing (including performance indicators)	Responsibility for implementation of mitigation measures	Timing	Cost Estimates (KES)	Comments
Pre-Construction Phase							
Construction Phase							
Operation and Maintenance Phase							
Decommissioning Phase							

Annex 8: Outline for a Monitoring Plan

Monitoring Parameter (what do we want to know)	Monitoring Indicator or Target Level / Standard (How do we know)	Measurement Unit /Method (How do we collect the data)	Responsibility for Monitoring (Who collects the data)	Monitoring Frequency (When do we collect the data)	Monitoring Location (Where do we collect the data)	Indicative budget Required
Dust emissions	No complaints from residents/or general public	Visual Inspection Air quality tests	Contractor EHS has primary responsibility Others Supervising Consultant Environmental inspectors	Daily For tests (monthly)	Access roads to project sites Active construction sites	here covers costs of the air quality test)

Annex 9: General Environmental Management Conditions for Construction Contracts

General

- 1. In addition to these general conditions, the Contractor shall comply with any specific Environmental Management Plan (EMP) for the works he is responsible for. The Contractor shall inform himself about such an EMP, and prepare his work strategy and plan to fully take into account relevant provisions of that EMP. If the Contractor fails to implement the approved EMP after written instruction by the Supervising Engineer to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the Contractor.
- 2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance Requirements specified in an EMP. In general these measures shall include but not be limited to:
 - (a) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
 - (b) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
 - (c) Upon discovery of ancient heritage, relics or anything that might or believe to be of archaeological or historical importance during the execution of works, immediately report such findings to the Supervising Engineer so that the appropriate authorities may be expeditiously contacted for fulfilment of the measures aimed at protecting such historical or archaeological resources.
 - (d) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
 - (e) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
 - (f) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
 - (g) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
 - (h) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
- 3. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan /strategy to ensure effective feedback of monitoring information to project management so that Impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
- 4. Besides the regular inspection of the sites by the Supervising Engineer for adherence to the Contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental Authorities may carry out similar inspection duties. In all cases, as directed by the Supervising Engineer, the Contractor shall comply with directives from such inspectors to implement measures. Required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment.

Work site/Campsite Waste Management
- 5. All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous Chemicals shall be bonded in order to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in Line with applicable government waste management regulations.
- 6. Used oil from maintenance shall be collected and disposed of appropriately at designated sites or be re-used or sold for re-use locally.
- 7. Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures Such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

New Extraction Sites:

- 8. Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.
- 9. Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.
- 10. The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the Supervising Engineer.
- Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the Supervising Engineer and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

Soil Erosion Prevention

- 11. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
- 12. Always remove and retain topsoil for subsequent rehabilitation. Soils shall be stripped when they are wet as this can lead to soil compaction and loss of structure.
- 13. Re-vegetate stockpiles to protect the soil from erosion, discourage weed sand maintain an active population of beneficial soil microbes.
- 14. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
- 15. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
- 16. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
- 17. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
- 18. Minimize erosion by wind and water both during and after the process of reinstatement.
- 19. Re-vegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

Water Resources Management

- 20. The Contractor shall at all costs avoid conflicting with water demands of local communities.
- 21. Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.
- 22. Abstraction of water from wetlands shall be avoided. Where necessary authority has to be obtained from relevant authorities.
- 23. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
- 24. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
- 25. Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

Traffic Management

- 26. Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
- 27. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
- 28. Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.

Disposal of Unusable Elements

29. Unusable materials and construction elements such as electromechanical equipment, cables, accessories and demolished structures will be disposed of in a manner approved by the Supervising Energy Expert (SE). The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

Health and Safety

- 30. In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.
- 31. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.
- 32. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

33. Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.

Contractor's Environment, Health and Safety Management Plan (EHS-MP&ESMP)

34. Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of

these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:

- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a Supervising Engineer, to ensure that the Contractor is fully
 prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the
 Contractor's EHS performance.
- 35. The Contractor's EHS-MP shall provide at least: a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP ;a description of specific mitigation measures that will be implemented in order to minimize adverse impacts; a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and the internal organizational, management and reporting mechanisms put in place for such.
- 36. The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts as spell out in the ESMF, and has defined appropriate measures to counteract any potential impacts.

EHS Reporting

37. The Contractor shall prepare bi-weekly progress reports to the Supervising Engineer on compliance with these general conditions, the project ESMP if any, and his own LOT specific EHS-MP. An example format for a Contractor EHS report is given below. It is expected that the Contractor's reports will include information on:

EHS management actions/measures taken, including approvals sought from local or national authorities;

- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.
- 38. It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keeps his own records on health, safety and welfare of persons, and damage to property.
- 39. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an incident notification and detailed report are given below.

Details of EHS performance will be reported to the Client through the Supervising Engineer reports to the Client.

Training of Contractor's Personnel

40. The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP.

General topics should be:

- EHS in general (working procedures);
- Emergency procedures; and social and cultural aspects (awareness rising on social issues).

Cost of Compliance

41. It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental and Social Management Conditions" in the Bill of Quantities covers these costs. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable EHS impact.

Annex 10: Example Format: EHS Report

Contract:

Period of reporting:

EHS management actions/measures:

Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.

EHS incidents:

Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

EHS compliance:

Report on compliance with Contract EHS conditions, including any cases of non-compliance.

Changes:

Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.

Concerns and observations:

Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.

Signature (Name, Title Date):

Contractor Representative

Example Format: EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No:	Date of Incident:	Time:
Location of incident:		
Name of Person(s) involved:		
Employing Company:		

Type of Incident:

Description of Incident:

Where, when, what, how, who, operation in progress at the time (only factual)

Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):

Contractor Representative

Example Format: Detailed EHS Incident Report

The Incident Notification should be follow-up by a Detailed EHS Incident Report

Containing the following information where applicable

1. Incident Summary

2. Specific Details

Date

Time

Place

Weather/Visibility

Road conditions

3. Persons Involved

Name/s

Age/s

Experience

Date joined Company

Last Medical Check

Current Medical Treatment

Evidence of Drugs/Alcohol

Last Safety Meeting attended

Infringements/Incidents record

4. Equipment Involved

5. Description of Incident

6. Findings of Investigation Team Interim/Final

Investigation Team Members

Persons Interviewed

Recommendations & Remedial Actions

Investigation Methodology

7. Signature (Name, Title, Date):

8. Attachments

Photographs

Witness Statements and Incident Notification Report

Annex 11: Last Mile Connectivity Project Implementation Structure



Annex 12: Stakeholder Engagement Plan

The objective of the engagements will be to enhance project acceptance and make a significant contribution to successful project design and implementation. The stakeholder engagements will be done timely, with relevant, understandable, and accessible information, in a culturally appropriate way free of manipulation, interference, coercion, discrimination, and intimidation.

The process of stakeholder engagement will involve:

- vii) Stakeholder identification and analysis: As discussed below but also when identifying participants in consultations involving multiple stakeholders, choose a wide range of interests and opinions, paying particular attention to women, the poor and to more vulnerable groups (young people, vulnerable ethnic minorities, elderly people, etc.).
- viii) Planning how the engagement with stakeholders will take place, including identification of appropriate venues, consideration on how to ensure inclusivity, Identification of socio-cultural factors that could influence the consultation process, Definition of the parameters, goals and expected results of the consultation process, Consideration of the various alternative approaches based on the particularity of the sub-project and adapting the participation process to the preferences of the stakeholders or context (individual meetings, focus groups, advisory committee, workshop, etc.); undertaking logistics for the consultation etc.
- ix) Consultation with stakeholders including disclosure of information in an open and transparent manner to ensure meaningful consultations, providing a response to the concerns expressed (if applicable);
- x) Addressing and responding to grievances; and
- xi) Reporting to stakeholders
- xii) Recording the key issues raised and addressing these in the design of the project or ensuring that the results of the consultation are reflected in the SEA studies and in the documents prepared throughout the cycle of the sub-project

1. Stakeholder Identification

For the purposes of this ESMF, a stakeholder will be defined as "a person, group, or organization that has a direct or indirect stake in a project/organization because it can affect or be affected by the Project/organization's actions, objectives, and policies"

Stakeholders thus will vary in terms of the degree of interest, influence and control they have over the project. Stakeholders will be classified into the following two categories.

- Project-affected parties Stakeholders who are affected or are likely to be affected by the project.
- Other interested parties Stakeholders who have an interest in the project.

2. Stakeholder Analysis

Stakeholder analysis is a process of examining the relative influence that different individuals and groups have over a project as well as the influence of the project over them. The purpose of stakeholder analysis will be to: study their profile and the nature of the stakes, understand each group's specific issues, concerns as well as expectations from the project and gauge their influence on the Project.

The significance of a stakeholder group will be categorized considering the magnitude of impact (type, extent, duration, scale, and frequency) or degree of influence (power and proximity) of a stakeholder group and urgency/likelihood of the impact/influence associated with the stakeholder group in the project context. The magnitude of stakeholder impact/influence will be assessed by taking the power/responsibility and proximity of the stakeholder group and the group is consequently categorized as negligible, small, medium, or large. The urgency or likelihood of the impact on/influence by the stakeholder will be assessed on a scale of low, medium, and high. The overall significance of the stakeholder group is assessed as per the matrix provided in the table below.

Table 0-1: Stakeholder Significance and Engagement Requirement

		Likelihood of Influence on/ by Stakeholder			
		Low	Medium	High	
Magnitude of	Negligible	Negligible	Negligible	Negligible	
impuot	Small	Negligible	Minor	Moderate	
	Medium	Minor	Moderate	Major	
	Large	Moderate	Major	Major	

The table above will be used to classify the identified stakeholders (directly or indirectly impacting the project) in accordance with their levels of influence on the project. The influence and priority have both been primarily rated as:

- **High Influence**: This implies a high degree of influence of the stakeholder on the project in terms of participation and decision-making or high priority to engage with the stakeholder.
- **Medium Influence**: This implies a moderate level of influence and participation of the stakeholder in the project as well as a priority level to engage the stakeholder which is neither highly critical nor insignificant in terms of influence; and
- Low Influence: This implies a low degree of influence of the stakeholder on the project in terms of participation and decision-making or low priority to engage that stakeholder.

The intermediary categories of low to medium or medium to high primarily imply that their influence and importance could vary in that range subject to context-specific conditions or also based on the responses of the project towards the project.

In line with the nature of the project and its locations, the possible stakeholders have been identified and listed in the table given below.

No.	Stakeholder	Potential Role in Project	Interest	Influence
1.	Project Affected persons- beneficiaries and community members neighbouring the projects	Apply for power, do wiring in their premises, grant way leaves, pay connection fees and consume power and pay for power Affected by the project impacts or may own the land on which some of the sub projects will be located	High	Low - Medium
Other in	nterested parties			
2.	County Governments including various technical departments	Grant approvals for the project	High	medium
3	NEMA	Ensure environmental and social compliance	High	High
4	EPRA	Project approval and ensure compliance	High	High
5	DOSH	Oversight on occupational Health & safety compliance.	High	High
6	Kenya Power	Project implementation and coordination including stakeholder engagement	High	High
7	Contractors and sub-contractors and their workers	Construction of the project	High	High

Table 0-2: Stakeholders and potential role in the project

No.	Stakeholder	Potential Role in Project	Interest	Influence
8	GOK - Ministry of Energy & Petroleum	Project financing & oversight of project implementation	High	High
9	National Treasury			
10	AfDB	Financing partner Monitoring of Compliance	High	High
11	Roads agencies-Kenya Highways Authority, Kenya Urban roads Authority and Kenya Rural Roads Authority	Grant approvals to use road reserve for the distribution lines	High	High
12	Other Government Agencies (KWS,KFS, WRA etc)	Provide approval for clearances for project locations in sensitive environments	Medium	High
13	County/National Administration (County Commissioners, Deputy/Assistant County Commissioners/ chiefs and Sub Chiefs)	Provide security Organize for the stakeholder engagement	High	High
14	Civil Society/NGOs	Compliance monitoring Sensitize the public Advocacy for fairness	Medium	Medium

3. Stakeholder Engagement Schedule and Methods

Stakeholder engagement is a continuous process that will be carried out till project implementation. The table below shows other stakeholder engagements that will be carried out throughout the project cycle.

Project Stage	Topic/ Messages	Stakeholders Involved	Responsibility	Methods Used	Remarks
Feasibility phase	Awareness creation on the project-project information.	Target communities and beneficiaries	Infrastructure development, Safety Health & Environment (SHE) and Customer service	Public Barazas	31 public barazas done in 15 counties
ESMF/RPF Phase	Awareness creation on the project-project information.	Target communities and beneficiaries	Infrastructure development, Safety Health & Environment (SHE) and Customer service	Public Barazas	41 stakeholders forum done in 10 Counties - 39 public barazas and 2 Key

Project Stage	Topic/ Messages	Stakeholders Involved	Responsibility	Methods Used	Remarks
					stakeholder workshops
	Awareness creation on the project Assessment of project impacts	Target communities and beneficiaries	Infrastructure development, Safety Health & Environment (SHE) and Customer service	Public Barazas, face-to-face engagements, questionnaires, and Baseline surveys focus group discussions	To be done for the three project components
Pre- Construction phase-design phase, ESIA phase	Various approvals required Assessment of project impacts	Relevant government agencies and administration/ Third Sector (Civil Society/NGOs)	Infrastructure development, Safety Health & Environment (SHE)	Letters, memos, Key Informant Interviews, some e.g., local administration (chiefs etc.) will be invited to the public barazas)	To be done
	Project and ESIA/ESMF disclosure	All stakeholders	Safety Health & Environment Department (SHE)	KPLC website	To be done
	ESMP/RAP awareness	Contractors	Infrastructure development, Safety Health & Environment (SHE)	Meetings	To be done
Construction phase	ESMP monitoring	Communities and beneficiaries Contractors and Sub-contractors.	Infrastructure development, Safety Health & Environment (SHE)	Random interviews and site visits for observations	To be done quarterly
Operations Phase	Annual environmental audits	Communities	Safety Health & Environment (SHE)	Questionnaires and face-to-face interviews	Once per year

Gender and cultural norms will be considered in the choice of engagement methods and other logistical elements such as venue.

4. Disclosure

This ESMF will be disclosed on the AfDB website as well as KPLC's website for easy access to persons with internet. Similarly, all RAPs and ESIAs prepared for the sub projects will also be disclosed on KPLC website as well as availed on site.

Annex 13: Cost of the Materials and Works (Contractor to Supply)

Code	Description	Unit of measure	Total Materials, quantity	Unit Price (KSh.)	Total materials, Value				
LV Mate	LV Materials Cost								
1.	LV Materials Cost				4,670,619,690.38				
	Sub Total				4,670,619,690.38				
Uprating	Uprating Transformer Maximized								
2.	25 KVA transformers (11kv) with all accessories	No	13	401,103.92	5,214,351.01				
3.	50 KVA transformers (11Kv) with all accessories	No	54	255,700.80	13,807,843.20				
4.	25 KVA transformers (33kv) with all accessories	No	9	425,175.16	3,826,576.40				
5.	50 KVA transformers (33Kv) with all accessories	No	36	528,622.80	19,030,420.80				
	Sub Total				41,879,191.42				
Metering	g Material	-							
6.	10MM2 PVC INSULATED SINGLE-PHASE CONCENTRIC ALUMINIUM CABLE	М	3,300,022	99.37	327,923,186.14				
7.	SMALL METER BOX	No	150,001	2,829.75	424,465,329.75				
8.	CUTOUT SERVICE	No	150,001	1,299.50	194,926,299.50				
9.	MCB 1P+N 60/80A(DOUBLE)		150,001	1,009.67	151,451,509.67				
10.	SERVICE CABLE FITTINGS	No	150,001	710.17	106,526,210.17				
11.	Enclosed End Board Complete with Earthing materials	No	75,001	4,000.00	300,002,000.00				
	Sub Total				1,505,294,535.23				
Sub-stat	tion Material								
12.	50 KVA transformers (33kv)	No	566	440,519.00	249,509,961.60				
13.	50 KVA transformers (11Kv)	No	850	213,084.00	181,036,166.40				
14.	33kV Sub Station Structures Complete with accessories	No	566	160,665.81	91,001,114.78				
15.	11 kV Sub Station Structures Complete with accessories	No	850	152,958.74	129,953,745.50				
16.	Complete Substation Earthing		1,416	51,607.48	73,076,191.68				
	Sub Total				724,577,179.97				
Ht Exter	nsion Material								
17.	POLE WOOD TREATED 12.0M - With Pole cap	No	4,336	13,702.53	59,414,170.08				
18.	POLE WOOD TREATED 11.0M - With Pole cap	No	6,504	12,801.94	83,263,817.76				
	MV POLE FITTINGS				-				
	33 KV Inter POLE FITTINGS	No	3,035.2	13,140.24	39,883,256.45				
10	33 KV VFA POLE FITTINGS	No	433.60	17,872.70	7,749,602.72				
19.	34 KV Double cross Arm POLE FITTINGS	No	433.60	24,925.23	10,807,579.73				
	33 KV Terminal fitting	No	217	17,388.26	3,769,774.77				
	33 kV TEE- off POLE FITTINGS	No	217	25,268.63	5,478,238.98				
20	11 KV Inter POLE FITTINGS	No	4,553	7,262.90	33,066,531.12				
20.	11 KV VFA POLE FITTINGS	No	650	9,639.81	6,269,732.42				

Code	Description	Unit of measure	Total Materials, quantity	Unit Price (KSh.)	Total materials, Value
	11 KV Double cross Arm POLE FITTINGS	No	650	14,006.08	9,109,554.43
	11 KV Terminal fitting	No	325	17,153.00	5,578,155.60
	11 kV TEE- off POLE FITTINGS	No	325	19,995.75	6,502,617.90
21.	75MM ASCR Conductor	М	1,951,200	156.78	305,903,945.81
22.	Complete with Aerial Earth	М	260,160.00	167.49	43,574,519.26
	33kV HV STAY COMPLETE- WOODEN - Normal	No	1,041	6,384.46	6,643,921.85
23	33 KV FLYING STAY LIGHT-WOODEN POLE	No	260	35,017.56	9,110,168.41
20.	11kV HV STAY COMPLETE- WOODEN	No	1,561	5,770.39	9,007,347.97
	11 KV FLYING STAY LIGHT -WOODEN POLE	No	390	23,252.58	9,074,086.82
	Sub Total				654,207,022.09
	Total				7,596,577,619.08
Cost of	the other Materials and Works				
Code	Description	Unit of measure	Total materials, quantity	Unit Price (KSh.)	Total materials, Value
24.	Single Phase Meters	No	139,480.00	3,333.33	464,933,333.33
25.	three Phase Meters	No	10,521.00	6,500.00	68,386,500.00
26.	Consultancy				500,000,000.00
27.	Installation costs	20%			1,625,979,490.48
28.	Site Office, Transport and test witness	3%			240,588,952.83
	Total				2,899,888,276.65
Estimate	ed Cost of Services				
29.	Design costs (Survey and documentation)	KSh.	2,459	54,300	133,524,590.2
30.	Sub Total				133,524,590.2
31.	Total Cost of Materials and Works				10,629,990,485.9
32.	Project Management Costs	KSh.			290,624,713.3
	Total Connection Cost				10,920,615,199.2
Other Co	ost	1			
33.	Material handling cost				26,665,992
34.	Contingency		10%		550,175,904
35.	Capacity Building				500,000,000
	Total Other costs				1,076,841,895
36.	System Reinforcement				3,102,646,000
37.	EIA/NEMA Approvals				32,501,500
Total Pro	oject Cost				15,132,604,595

Annex 14: Resettlement Policy Framework.