



**KENYA ELECTRICITY
EXPANSION PROJECT
ADDITIONAL FINANCING
(KEEP~AF)**

**SLUM ELECTRIFICATION
COMPONENT**

**ENVIRONMENTAL &
SOCIAL MANAGEMENT
FRAMEWORK**

APRIL 2016

The Environmental & Social Management Framework (ESMF) has been prepared by Environment & Social Unit, Safety, Health & Environment (SHE) Department of Kenya Power. The ESMF has been prepared based on an overall Environmental & Social Assessment, which includes:

- The general baseline at project areas.
- Evaluation of potential Environmental & Social impacts of project and
- Assessment of environmental practices in different ongoing and completed projects.

The ESMF provides the guidelines for the preparation of all mitigation plans (Environmental & Social Management Plans and Construction Management Plan) to respond to the anticipated project impacts, once the project locations are finalized.

**ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK:
KENYA ELECTRICITY EXPANSION PROJECT-AF – IDA-GPOBA COMPONENT**

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LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
CFLs	Compact Fluorescent Lamp
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
GoK	Government of Kenya
GPOBA	Global Partnership on Output-Based Aid
HHs	House Holds
HIV	Human Immunodeficiency Virus
IDA	International Development Association
IESIA	Integrated Environmental and Social Impact Assessment
IP	Indigenous People
IVA	Independent Verification Agent
ISTS	Integrated Safeguard Tracking System
KEEP- AF	Kenya Electricity Expansion Project – Additional Financing
KP	Kenya Power
KPLC	Kenya Power & Lighting Company Ltd
Kshs.	Kenya Shillings
MoEP	Ministry of Energy and Petroleum
NEC	National Environment Council
OM	Operational Manual
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
PIU	Project Implementation Unit (in KPLC for GPOBA Electrification Sub-component of KEEP- AF)

SESA	Strategic Environmental & Social Assessment
SHE	Safety, Health & Environment
SLA	Subsidiary Loan Agreement
US\$	United States Dollars
ToR	Terms of Reference
UN	United Nations
UNCLOS	UN Convention on the Law of the Sea
VAT	Value Added Tax
WB	World Bank
WRMA	Water Resources Management Authority

EXECUTIVE SUMMARY

Background

The Government of Kenya has pledged to stimulate economic growth and accelerate job creation to improve the economic 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. The current trend of network expansion driven by customer demand is approaching saturation in the urban areas. . In the foreseeable future there is a likelihood of the annual connectivity stagnating at the 300,000-400,000 level. To jumpstart and accelerate connectivity, it is necessary to develop a new mind set, as initially happened at the previous period of expansion in 2004.

Kenya is one of the fastest urbanizing countries in sub-Saharan Africa. The country's informal or slum absorbing an increasing share of the expanding urban population and are home to the vast majority of the inadequate access to basic services such as water, sanitation, electricity and transportation. For example Nairobi slums show that only 22 percent of slum household have electricity connections (typically through providers). In comparison for Nairobi as a whole, electricity access is 52 percent. The same study has revealed between access to electricity and the poverty level. Apart from raising living conditions, access to electricity impact on household income to electricity can increase their productivity. Practically all residents in slums are enterprise and access to electricity can increase their productivity. About 73 percent of the dwellers in these settlements live on less than US\$ 42 per adult equivalent per month.

As in many slums worldwide, informal service providers have emerged in Kenya in response to lack of access to water and electricity and their services are often more expensive and are of poor quality. Many of the illegal and are maintained by criminal cartels, which add more insecurity to already very impoverished and often more expensive than the Kenya Power and Lighting Company (KPLC) tariff, is typically provided a hazardous safety standards. For example, surveys of Nairobi slums carried out by KPLC in the framework of their connection policy show that peri-urban slum residents pay a very high proportion (33%) of the energy related expenditures.

To reduce the cost burden of increased connectivity on Kenya Power & Lighting Company (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 and medium voltage network on existing and other upcoming/new distribution transformers to reach households lying within transformer protection distance (maximization). This model would involve building low and medium voltage lines both single phase and in selected cases, three phase along GPOBA roads.

The Kenya Electricity Expansion Project- AF- to be financed by the World Bank Group through the International Development Association (IDA) and the Global Partnership for Output Based Aid (GPOBA) - aims to support the Government's initiatives of ensuring increased electricity access to Kenyans, particularly among low income groups in informal settlement areas. The existing and new distribution transformers (pole-mounted) shall be optimized through extension of the low and medium voltage network to reach households located in the vicinity of these transformers.

The exact sub-project sites are not yet definitively identified. Once they are established Environmental Impact Assessments (EIAs) and or Environmental Management Plans (EMPs) will be prepared as required by NEMA and World Bank guidelines.

Purpose of ESMF

The purpose of this Environmental and Social Management Framework (ESMF) is to provide a procedure for environmental and social assessment of the proposed KPLC projects (i.e. the slum electrification component of the KEEP-AF). This framework approach was selected because even though the footprint of the project is known (i.e. the GPOBA geographic areas are known but the selection of which settlements in these areas are to be included in the project is not yet finalized), specific designs and the precise location of the investments are not yet definitively identified. The ESMF will guide KPLC in determining the appropriate level of environmental and social assessment required for the sub-projects and in preparing the necessary environmental and social mitigation measures for these sub-projects, using a standardized ESMP, during the preconstruction, construction and operational phases.

Objectives of the ESMF

The objective of this ESMF is to ensure that the implementation of the slum electrification component of the Kenya Electricity Expansion Project Program (KEEP- AF), for which the exact locations of the sub-project sites are not definitively identified at this stage, will be carried out in an environmentally and socially sustainable manner. The ESMF will provide the project implementers with an environmental and social screening process and environmental management procedure that will enable them to identify, assess and mitigate potential environmental and social impacts of sub-project activities, including through the preparation of a site-specific Environmental Impact Assessment (EIA) where applicable.

The Environmental and Social Management Framework (ESMF) seeks to institute a consistent and effective environmental and social screening process for application in all KPLC distribution and transmission and transmission component projects at local and national levels. Specifically, the following are the objectives of the ESMF:

- To ensure that all projects are screened for potential adverse environmental and social impacts and that appropriate mitigation and monitoring measures, including cost estimates, are identified and implemented by qualified personnel at the local and national levels;
- To support and empower Kenya Power and Lighting Company officers to carry out the environmental and social screening process as outlined in this Framework, including the implementation and monitoring of mitigation measures of all projects as necessary.

Methodology used

Several methods were involved in the preparation of this ESMF to meet Government of Kenya requirements and World Bank Operational Policies for environmental safeguards. 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 standardized environmental 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:

- In-depth Literature review -This was done through a thorough review of the project appraisal documents focusing on project description- project development objective and key indicators, project components, project target areas, institutional and implementation arrangements, and monitoring and evaluation of outcomes.

- Participatory Stakeholder Forums were held in different slum areas within during the first phase of GPOBA. The public forums were held in a bid to create awareness on the GPOBA project. The need to get connected with safe power was emphasized and avoids illegal connections which were a major safety risk and concern in the settlements. Further the Kenya Power team informed members present that prepaid meters would be installed and customers will be in-charge and will be able to control their electricity consumption.
- Due to the nature of electricity supply in slum areas public safety campaigns have been stepped up in the last one year or so. The campaign revolves on safe electricity supply and discouraging illegal connections because they pose a threat to the public and general environmental issues. Apart from public campaign the department carried out the same campaigns in different avenues including road shows bill boards and through local media both print and electronic.
- Preparation of ESMF

Baseline Information

This section describes the overall baseline condition of Kenya in terms of the bio-physical, socio-economic and cultural environment. The proposed IDA-GPOBA slum electrification component of the KEEP- AF project will be implemented in up to 50 locations across the country hence the baseline information presented is for the entire country but is not site specific.

Regulatory, Administrative and Legal Framework

A number of legislations, policies and instruments are available to support environmental management and the Environmental Impact Assessment process in Kenya. The Environmental Management Coordination Act is the key instrument covering environmental management in all development sectors. The Environmental Impact Assessment Guidelines prescribe the process, procedures and practices for conducting an EIA and preparing the EIA reports. In addition to these instruments, there are sector specific policies and legislations that prescribe the conduct for managing the environment.

However, the national legislation does not include procedures for screening smaller-scale investments for potential adverse environmental and social impacts. To close this gap between national legislation and the Bank's OP/BP 4.01 Environmental Assessment (which requires that all investments proposed for Bank-financing are screened for potential adverse environmental and social impacts and appropriate environmental work be carried out based on the screening results), this ESMF is being prepared. Based on the screening results, the sub-project will either prepare a separate EA report; implement simple mitigation measures as proposed in the standardized Environmental Management Plan, or (as determined by the screening process) may not require any environmental management, apart from the normal safety measures..

KPLC Kenya Electricity Expansion Project- AF Description

KPLC has a total of 35,000 distribution transformers spread across the country. The transformers were installed for various reasons, i.e., for new customers, reinforcement of existing transformers due to load growth, and reinforcement to reduce length of the low voltage lines. As such, the majority of the transformers have varied lengths of the low voltage network emanating from them, some of which will be passing in close proximity to ready and potential customers. Other transformers will require extensions and additional transformers to enable access for those potential customers located further from existing transformers.

Data collected from across regions served by KPLC indicates that the company has the potential to connect approximately 472,002 households (corresponding to approximately 1.2 million customers) that are within 600 meters of the transformers through individual service lines. Of these households, some will be within developed areas, the majority of who will be reached by a service cable drop or a pole, whereas in the more dispersed zones in the GPOBA and rural areas, construction of a 600m low voltage line for a single customer may well be required. Some areas will require an MV extension which nevertheless will not exceed 2kms with installation of new 50KVA transformers to cater for those potential customers located further than 600metres from existing transformers. It is estimated that the addition of new transformers in GPOBA areas will lead to additional connections for 122,500 households benefiting an estimated 618,750 people.

The Kenya Electricity Expansion Project- AF is intended to support the Government's initiatives of ensuring increased electricity access to Kenyans, particularly among the low income groups and those in GPOBA areas. The existing and new distribution transformers shall be exploited to the maximum through extension of the low and medium voltage network to reach households located in the vicinity of these transformers.

World Bank safeguards policies

The activities in the KEEP- AF are expected to trigger OP/BP 4.01 (Environmental Assessment), OP 4.12: Involuntary Resettlement and OP/BP 4.04 (Natural Habitats) although only as a precautionary measure, OP/BP 4.11 Physical Cultural Resources. However the Slum Electrification Component of KEEP-AF only triggers OP 4.01, and (as a precaution) OP 4.11 and OP 4.12 . The safeguards instruments prepared for any sub-projects will address the requirements of any applicable policies.

OPERATIONAL SAFEGUARDS TRIGGERED BY THE SLUM ELECTRIFICATION COMPONENT OF KEEP- AF PROJECT	YES	NO
OP/BP 4.01: Environmental Assessment	X	
OP/BP 4.04 Natural Habitats		X
OP/BP 4.36 Forests		x
OP 4.09 Pesticide Management		x
OP/BP 4.11 Physical Cultural Resources	X	
OP/BP 4.10Indigenous Peoples		X
OP/BP 4.12 Involuntary Resettlement	x	
OP/BP 4.37 Safety of Dams		x
OP 7.50 Projects in International Waters		x
OP 7.60 Projects in Disputed Areas		x

Environmental and social impacts

Benefits/Positive impacts

- Employment and wealth creation
- Local Material Supplies
- Up Scaling Electricity Access to the Poor
- Improve connectivity due Connection payment model
- Social Inclusion
- HIV/AIDS education and awareness
- Health benefit of the project

- Benefits to education
- Improved standard of living
- Increase in Revenues
- Improved Security
- Improved Communications
- Gender Considerations

Negative Environmental and Social Impacts

- Impact on Natural Vegetation and Biodiversity
- Impacts on air quality from vehicle exhaust emissions
- Risk of sparks/fire from live conductors
- Solid waste
- Electric shocks and electrocution of people
- Occupation safety and health hazards
- Public health risk
- Construction material sourcing-wooden poles
- Oil Leaks from transformers
- Noise during construction
- Contamination from CCA & creosote-treated poles

KPLC Support in Screening Process

Through this ESMF all sub-projects will be screened for potential adverse environmental and social impacts. Based on the screening results, each subproject will include local costs of implementing and monitoring the mitigation measures. This will be done through involvement of National Environment Management Authority and KPLC Environment Unit in coordination with the Project Implementation Unit (PIU). This will be complemented by the availability of County Environmental Officers who are the environmental custodians for their own counties.

Screening Process

The environmental and social screening process will take place once sub-projects are identified prior to implementation. This section identifies and illustrates the specific steps to be involved in the environmental and social screening process leading towards the review and approval of the sub-projects from environmental and social management aspects. The steps followed incorporate the requirement of both relevant national laws and the World Bank's Operational Safeguards Policies to be triggered for this Project.

KPLC as an implementing agency for the KEEP- AF project will screen the sub-projects per region to identify adverse environmental and social impacts using the screening form provided. Then the institution will introduce into the sub-project design the required measures to mitigate impacts identified from use of the screening form and checklist before submission of the sub-project design to the respective implementing units for review and clearance.

In addition to the Environmental and Social Screening Form, an Environmental and Social Checklist will be prepared and availed to facilitate the identification of simple mitigation measures for KEEP- AF sub-projects not requiring a separate EA report. Main features of the checklists will include: a detailed description of the activities to be

undertaken, potential adverse impacts (environmental and social concerns), mitigation measures to be undertaken and the organization/person responsible for each activity, and monitoring responsibilities, and cost estimates.

Public Consultations and Participation

As per World Bank 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.

One of the key mandate of the SHE department is to carry out public safety awareness campaigns. The aim is to inform the public on safe use of electricity. These campaigns have been taking place and are more concentrated in the slum areas. A detailed account of public campaigns carried out during the first phase of GPOBA and normal routine are presented in chapter of public consultation.

The Forums began with an introduction and description of the KEEP- AF Project, and an explanation of the reporting and management requirements with regard to social and environmental issues. This was followed by specific presentations on the environmental and social safeguard documents under the project, including an explanation of the grievance redress mechanism. It was emphasised that more consultations will be held with communities that will be proposed as targeted beneficiaries, during the sub-project selection process.

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 continue throughout the selection of sub-projects and will continue as needed. Consultations will be conducted in a timely manner in the context of key project preparation steps, in an appropriate language, and in accessible places. The results of the consultations will be adequately reflected in the project design and in the project documentation. For consultations on this framework ESMF please refer to Chapter 9 and Annex 10 of this document.

Proposed Mitigation Measures

After environmental and social screening, mitigation measures will be identified for each adverse impact identified during the screening process – with a particular focus on the safe disposal of PCB and creosote and CCA -treated poles, Occupational (and Public) Health and Safety, and loss of vegetation. The Mitigation measures will be implemented by the contractor based on LOT specific standardized ESMPs with monitoring undertaken by KPLC PIU, KPLC's Environment and Social Unit, and regional staff.

Potential Impacts and Proposed Mitigation Measures

Proposed mitigation measures will have the following positive impacts:

- The use of Environmental Guidelines for Contractors will ensure that environmentally and socially sustainable construction techniques are applied in a standardized manner and construction sites are properly managed.
- Knowledge gained through training on environmental management and importance of mitigation measures will be used in other projects by KPLC.
- Tree plantation to replace any trees cut down during construction , though there is expected to be minimal cutting of trees, as KPLC will minimize tree cutting

- Tree planting will directly contribute to elimination of carbon dioxide hence reducing Greenhouse Gas emissions.

Capacity Building for KPLC Staff

KPLC has a well-staffed Safety, Health and Environment (SHE) department. The SHE staff will support the Project Implementation Unit (PIU) for the GPOBA sub-component. This KPLC PIU Unit will have a dedicated environment and social position. KPLC PIU staff with help from regional staff will be continuously involved in the implementation of the environmental screening process for projects. The KEEP- AF project will assist in strengthening KPLC PIU staff through 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 from the PIU and SHE department staff will undergo training in environmental management systems and impact assessment, implementation of the environmental and social screening process outlined in this ESMF, Strategic Environmental and Social Assessment, Hazardous waste management and pollution control and Occupational Health & Safety.

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 Project implementation 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. The total cost for training and implementation of the ESMF (including sub-project EA implementation) is estimated at approximately USD **100,000**. Actual costs will be determined during the implementation phase, when the specific number of people required for training will be identified and the level of technical assistance required.

1 CHAPTER ONE: INTRODUCTION

1.1 Background

The Government of Kenya has pledged to stimulate economic growth and accelerate job creation to improve the economic wellbeing of Kenyans. Among the many interventions to achieve this is expansion of the power distribution system to enable more Kenyans to connect to the grid at affordable cost and hence initiate economic activities at the micro-economic level. The current trend of network expansion driven by customer demand is approaching saturation in the urban areas. In the foreseeable future there is a likelihood of the annual connectivity stagnating at the 300,000-400,000 level.

The Government of Kenya (GoK)'s strategy for expanding electricity infrastructure to support the achievement addresses among others, issues including the equity of access to quality energy services at least cost manner. The Government's target is to reach 70% electrification rate by 2017, with an immediate target to households in the next five years. Furthermore to implement the strategy, the government has prepared Least Cost Power Development Program (LCPDP) 2009-2029; the Rural Electrification Master Plan and Kenya Investment and Policy Prospectus. The investments included in the program cover all three elements of strategy for electricity development simultaneously capacity expansion, enhanced security and increased connections.

Kenya is one of the fastest urbanizing countries in sub-Saharan Africa. The country's informal or slum settlement is absorbing an increasing share of the expanding urban population and is home to the vast majority of the inadequate access to basic services such as water, sanitation, electricity and transportation. For example Nairobi slums show that only 22 percent of slum household have electricity connections (typically through providers). In comparison for Nairobi as a whole, electricity access is 52 percent. The same study has revealed between access to electricity and the poverty level. Apart from raising living conditions, access to electricity impact on household income to electricity can increase their productivity. Practically all residents in slums are enterprise and access to electricity can increase their productivity. About 73 percent of the dwellers in these settlements live on less than US\$ 42 per adult equivalent per month.

As in many slums worldwide, informal service providers have emerged in Kenya in response to lack of access to services as water and electricity and their services are often more expensive and are of poor quality. Many of them are illegal and are maintained by criminal cartels, which add more insecurity to already very impoverished and often more expensive than the Kenya Power and Lighting Company (KPLC) tariff, is typically provided a hazardous safety standards. For example, surveys of Nairobi slums carried out by KPLC in the framework of their connection policy show that peri-urban slum residents pay a very high proportion (33%) of the energy related expenditures.

Furthermore, increasing lower-income households' access to electricity is also challenged by the cost of power provided by KPLC, which is often beyond households' ability to pay. The costs are high because investments needed to build new generation, transmission and distribution facilities combined with the high electricity supply. Many households therefore will not be able to pay for access without programs to affordable power.

With a country wide connection rate of about 20%, there are still a sufficient number of customers who are able to meet fully connection fee of US\$ 460 particularly in Nairobi's mushrooming middle class in peri-urban

areas. KP annual target of 200,000 connections and its commercial interests naturally tend to focusing on these.

Recognizing the special characteristics of slum residents, the Government and KPLC have introduced connection fee for slum amounting to Ksh. 1160 (US\$ 15) or about five percent of the connection cost in the slum areas to encourage households to switch service from informal service providers to KPLC. This significant reduction fee has made it more affordable and spurred demand for new connections.

However the special fee has also created a funding gap. As the average connection costs in slum areas at the remaining US\$ 380 per connection is underfunded. KPLC has used its own internal funds to close this has been slow, as funds are limited and only a portion of these investments can be justified for a company that is a partially private –owned utility, with its shares floated on Nairobi stock exchange. KPLC has no legal obligation of the poor slum residents and its capacity to subsidize connections is therefore limited to its corporate social responsibility.

At the same time KPLC is interested in displacing informal/illegal electricity providers with its own service as theft and poor technical conditions of illegal lines in poor areas do contribute to KPLC power system loss. The company has already launched a pilot in the Kibera slum to test its new service provision model, adapted to the special needs of slum residents. Preliminarily financial analysis indicates that with some subsidy, KPLC can include new connections in the poor areas, which would include some regularization of illegal connections.

The bank's Country Partnerships Strategy (CPS) for Kenya (2010-13) also recognizes the access to basic electricity, as a key developmental issue. The strategy sets improving core infrastructure as one of the projects the bank will be engaged in. It also emphasizes the importance of mobilizing concessional funding to expand the sector including electricity generation, transmission and distribution to meet the government's economic growth targets.

The Kenya Electricity Expansion Project- AF– to be financed by the World Bank Group through the International Development Association (IDA) –GPOBA aims to support the Government's initiatives of ensuring increased safe electricity access to Kenyans, particularly among the low income groups and those in slum areas.

1.2 ESMF Requirement

This Environmental and Social Management Framework (ESMF) is an environmental assessment and management tool for the IDA- GPOBA slum electrification component under the World Bank-financed KEEP-AF project. The capital works will contribute to improving the reliability of power supplies and reducing illegal connections in the informal settlement area hence ensuring safe access to electricity in Kenya's 42 Counties. KPLC plans to strengthen and modernize the power distribution network in the entire County, to improve the network efficiency and reliability, and to meet growing demand for electricity. Planning and design of the network upgrade is underway by KPLC and its Engineers, and will include upgrading and installing new transformers, up-rating and extending the existing distribution lines and installing a new dispatch /systems control room. The proposed works include optimal utilization of existing transformers to improve electricity access to low-income, currently unserved customers.

The World Bank (WB) Operational Policy OP 4.01 – Environmental Assessment - requires the borrower to prepare environmental safeguard documents (in this instance an Environmental and Social Management Framework [ESMF]) that will enable KPLC to assess the environmental and social impacts of its proposed activities before undertaking them, and to delineate the mitigation, monitoring and institutional measures to be undertaken during preparation, implementation and operation of the Project to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable minimal levels.

1.3 Purpose of ESMF

The purpose of this Environmental and Social Management Framework (ESMF) is to provide a procedure for environmental and social assessment of the proposed KPLC projects. This framework approach was selected because even though the footprint of the project is known (i.e., the IDA-GPOBA geographic areas are known but the exact locations are not yet identified. selection of which settlements in these areas are to be included in the project is not yet finalized), specific designs and the precise location of the investments are not yet definitively identified. The ESMF will guide KPLC in determining the appropriate level of environmental and social assessment required for the sub-projects and in preparing the necessary environmental and social mitigation measures for these sub-projects, using a standardized ESMP, during the preconstruction, construction and operational phases

1.4 Objectives of the ESMF

The objective of this ESMF is to ensure that the implementation of the Kenya Electricity Expansion Project (KEEP- AF), for which the exact locations of the -project sites are not definitively identified at this stage, will be carried out in an environmentally and socially sustainable manner. The ESMF will provide the project implementers with an environmental and social screening process and procedure that will enable them to identify, assess and propose mitigation measures for the negative environmental and social impacts of project activities, including through the preparation of a site-specific Environmental Impact Assessment (EIA) where applicable.

The Environmental and Social Management Framework (ESMF) seeks to institute a consistent and effective environmental and social screening process for application in the proposed IDA -IDA-GPOBA) for KPLC distribution component for the informal settlements at local and national levels. Specifically, the following are the objectives of the ESMF:

- To ensure that all projects are screened for potential adverse environmental and social impacts and that appropriate mitigation and monitoring measures, including cost estimates, are identified and implemented by qualified personnel
- To support and empower Kenya Power and Lighting Company officers to carry out the environmental and social screening process as outlined in this Framework.

1.5 Environmental and social screening

The KPLC Project Implementation Unit (PIU) - with the help of regional staff - will be responsible for completing the Environmental and Social Screening Form for each -project, 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 exact locations and scope of the slum electrification sub-projects have not been definitively identified, and therefore potential adverse localized environmental and social impacts cannot be precisely identified. Furthermore, Kenya's environmental legislation does not provide for the environmental and social screening of small-scale projects, such as those included in this component of the KEEP- AF project, whereas World Bank OP 4.01 requires that all projects are screened for potential adverse environmental and social impacts to determine the appropriate level of mitigation measures.

1.6 Level of Environmental Work

The appropriate level of environmental work for the IDA-GPOBA slum electrification component could range from the application of simple environmental mitigation measures (using the Environmental and Social screening Checklist); to the preparation of a comprehensive EIA Report; to no environmental mitigation work being required apart from the standard application of safety measures. The environmental and social screening process is consistent with Kenya's environmental policies and laws as discussed in this Framework, as well as with the World Bank's Operational Policy 4.01 - Environmental Assessment.

It is expected that the project will have minimal or limited adverse environmental impacts. Significant adverse environmental and social impacts that would require extensive mitigation measures and possibly the preparation of a comprehensive EIA are unlikely, given the limited scope of the civil works and that GPOBA targets informal settlements most of which are in urban set up.

1.7 Coordination of Environmental and Social Screening at KPLC

During the implementation of the KEEP- AF project; KPLC Safety, Health & Environment (SHE) unit will coordinate closely with the infrastructure division and County Environmental Officers in the evaluation of environmental impacts and the determination of appropriate mitigation measures.

1.8 Preparation and Use of this Framework

This ESMF has been prepared by KPLC based on previous experience on similar projects, including the African Development Bank (AfDB) financed Last Mile Connectivity Programme and GPOBA phase one. This ESMF will be a living 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 which guides environmental protection and management.

1.9 Potential Users of the ESMF

This framework has been prepared as a reference document for use by key stakeholders who will be involved in the planning, implementation, management and operation of the proposed Kenya Electricity Expansion Project- AF for KPLC. As a reference document the framework is useful to the following proposed project key stakeholders:

- World Bank as the Funding and development partner
- Senior government officials responsible for policy making and project & development planning;

- Government extension workers in the various ministries; and
- Non-governmental organizations involved in natural resource management.
- KPLC as the implementing agency;
- Central government and County officials responsible for environmental planning and management including NEMA;
- Politicians and local traditional leaders;
- Sector Environmental management Coordinators
- County Environmental Management Officers and Committees;
- Potential consumers of electricity;
- The private sector;
- Planners and engineers for the preparation of plans and designs of the subproject activities; and
- Engineers and contractors to be involved in implementation of the sub-project activities.

2 CHAPTER TWO: METHODOLOGY AND CONSULTATION

Several methods were involved in the preparation of this ESMF to meet the requirements. This ESMF provides a screening process for the potential environmental and social impacts for the planned future project activities and recommends a standardized environmental 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.

2.1 Detailed & In-depth Literature Review

This was done through a thorough review of the project appraisal documents focusing on project description, project development objective and key indicators, 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 KEEP- AF project. The World Bank Operational Safeguard Policies were reviewed to identify the likely policies to be triggered by subprojects.

Bearing in mind that KEEP- AF subproject sites were not definitively identified at the time of the preparation of this ESMF, the literature review further encompassed the overview of Kenya's physiographic and climatic issues, the state of the general environment and population and population dynamics throughout the country.

Among the documents that were reviewed in order to familiarize and further understand the project included:

World Bank Related Documents

- *World Bank Project documentation for KEEP- AF*
- *World Bank Safeguards Policies*
- *World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines"). <http://www.ifc.org/ifcext/sustainability.nsf/Content/EHSGuidelines>*
- *IFC Performance Standards*

Kenyan Documents

- Kenyan Constitution 2010
- Environmental Management and Coordination Act (1999)
- Water Act 2002
- Energy Act 2006
- Transport Act
- Land Acquisition Act
- Public Health Act Wildlife Act 2006
- Forest Act 2005

2.2 Interactive Discussions with potential customers and the public

Several stakeholder engagement and discussions have been taking place at different levels. The SHE department had been consulting with the project office and the engineers in charge of IDA-GPOBA in preparation of this ESMF.

During the first phase of GPOBA, several public engagements were carried out in different informal settlement areas within Nairobi. The team from KPLC endeavored to share information with the potential project beneficiaries so as to achieve support for the project. The issues shared during the consultation meetings included; dangers of illegal power supply, safe electricity, safe use of electricity at home and the proposed new project model GPOBA and its benefits.

2.3 Preparation of ESMF

Preparation of the ESMF included the following stages:

- Collation of baseline data on the environmental conditions of the country in general;
- Identification of potential positive and negative environmental and social impacts of the proposed projects ;
- Identification of potential environmental and social mitigation measures;
- Preparation of screening procedures to be used while screening KEEP-AF project;
- Formulation of a generic environmental and social management and monitoring plan.

3 CHAPTER THREE: KENYA ELECTRICITY EXPANSION- AF IDA-GPOBA PROJECT DESCRIPTION

3.1 Introduction

The energy sector plays a critical role in the socio-economic development of a country. Kenya is committed to universal access to modern forms of energy by year 2030, as articulated in the national economic development blueprint, the Vision 2030 (the Vision). The goal of the Vision is to make Kenya a middle income country enjoying a high quality of life by the year 2030. The objectives of the Vision have been adopted as GoK's national development objectives. Under this Vision, Kenya expects to achieve an economic growth rate of 10 % and above.

Energy is identified as a critical enabler of this vision. Currently, only 45% of the households (4.3 million), have electricity access from the national grid or mini-grids. The electrification rate is planned to be increased to 70 % by 2017 and 100 % by 2030. To attain these goals, policy and regulatory frameworks have been articulated for the energy sector through energy policy (Sessional Paper No.4 of 2004) and the Energy Act of 2006. A draft Energy Bill 2013 is under consideration.

Currently, the draft energy policy and the Act are being reviewed to align them with the Vision, the new Constitution of Kenya (2010) and global trends. The energy policy under review aims to set out the national policies and strategies for the energy sector that are aligned to the new Constitution and in tandem with the Vision.

The government has strategies to accelerate access to modern energy services through public and private initiatives. The government, with support from development partners, has allocated substantial resources for development of energy infrastructure including exploitation, transmission and distribution...

Kenya Power supports the efforts of the Government of Kenya in the Electrification Schemes and is responsible for implementing GPOBA. Kenya Power projects involve in significant amount of construction work for distribution lines, but with minimal environmental impacts. The Low Voltage lines to households shall be subjected to environmental screening so as to determine impacts and propose various mitigation measures on the impacts to be identified and implemented in compliance with the donors' safeguard policies (in the case of KEEP- AF, the World Bank safeguard policies) as well as relevant national environmental legislation.

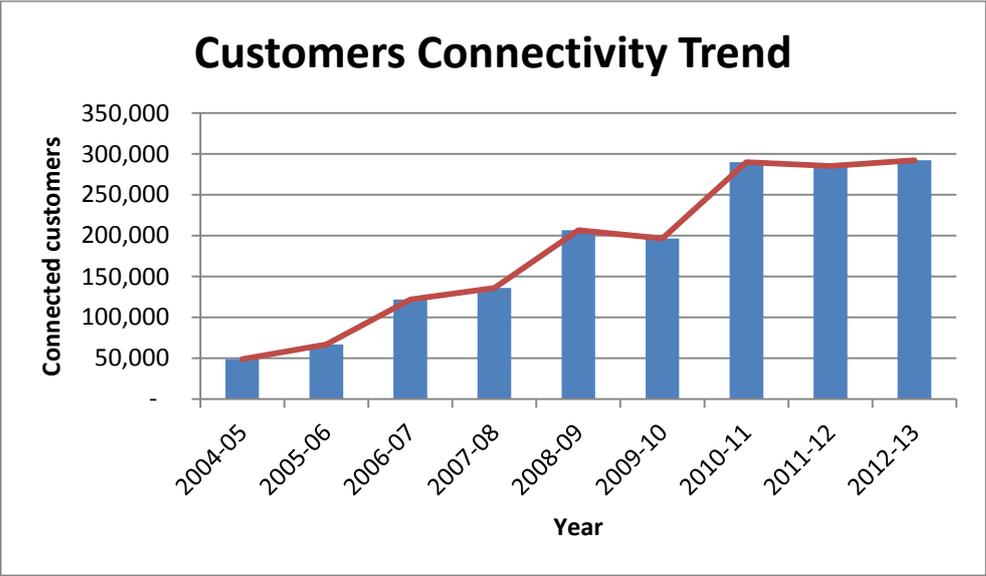
3.2 Background

The rationale for the project concept is driven by the imperative to dramatically improve reliability of electricity supply and to increase access to electricity to underpin economic activity and to sustain electrification. Electricity service interruptions in recent years have a number of contributing causes. They include inadequate generation capacity (especially during dry periods when hydropower availability is reduced), congestion in the transmission infrastructure that constrains power transfers from Mombasa where there is surplus generation capacity to Nairobi and the western regions where there is a deficit, scheduled

interruptions for line work and unscheduled interruptions due to a weak network, inadequate preventive maintenance, vandalism, inadequate automation, etc. The project is designed to address the problem of illegal connection and unsafe power supply in informal settlements alongside increasing electricity access to at subsidized rate for low income earners.

Over the last 10 years the country has seen a steady growth in electricity connections both in urban and rural areas. This has been driven by a combination of various factors chief among them being the incoming of a new political dispensation in 2002. The new government demanded that the company accelerate connectivity. This 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 cognisance of the more empowered customer and public. In it, among other things, the cost for connection to customers on low voltage was standardized for single phase and three phase to a minimum of KShs. 32,480 and KShs. 44,080 respectively (between 3 and 8KVA, including connection charges @ KShs. 1000/= per KVA, VAT inclusive, and within 600m of a distribution transformer). This saw an unprecedented increase in connections as shown by the huge jump between FY 2005-2006 and 2006-2007. The increase continued year to year.

Figure 1: Customers Connectivity Trend



(Source: KPLC Annual Reports & Financial Statements)

In order to accelerate the connectivity rate and achieve annual connections in the range of 1.3 million, it is proposed that a new model be adopted that will help overcome the current bottlenecks in the connectivity pipeline. This new model focuses on availing the service connection, transformers for those outside the existing transformers 600m radius including the meter to the customer premises prior to engaging the customer to pay for the service dubbed Last mile connective project. As such, activities such as way leave acquisitions together with attendant county and other authorities' permits and approvals, materials procurement/delivery logistics, construction, etc. shall be addressed prior to the customer being requested to connect.

The county governments are gradually finding their ground and are expected to spur growth of businesses in their jurisdictions as they put more focus on infrastructure development. Coupled with the upcoming Vision

2030 flagship projects with the attendant ripple effect in their vicinity, the proposed strategy is bound to lead to accelerated economic growth and expansion. The KEEP-AF (GPOBA) comes to complement efforts for increased electricity access

Some of the benefits of this proposed model are:

- Accelerated access to electricity
- Improved standards of construction hence improved quality of supply;
- Provision of new supply in a shorter time;
- Opportunity for the company to develop long term network expansion plans
- Safe power supply.

3.3 The Kenya electrification

This IDA-GPOBA financed slum electrification project is a component of the KEEP –AF The additional investment will take place over a period of 2years and will cover the 42 counties.

The design of the project incorporates innovative technical and financing components to fit the unique requirements of the households living in informal areas in Kenya. These requirements include (1) limited ability to pay the full amount up front,(2) serious security risk and,(3) lack of legal options for electricity provision.

The estimated cost of connection in densely populated areas in US\$ 395. User connection charges in --- recently mandated by the regulator US\$15- leaving a US\$ 380 “funding gap” and therefore the need for subsidy.

3.4 Targeting

The project uses geographic targeting by focusing on the largest Nairobi slum with one of the highest population in the country, as well as slum settlements in other provinces. Most existing data on slum settlements comes from MoEP, the team has been working with KPLC and a parallel World Bank project on slum upgrading to identify other viable connections outside Nairobi.

Practically all Kenyan slum residents can be classified as poor. The 2006 study of Nairobi slums⁵ revealed that the slum dwellers live on less than US\$ 42 per adult equivalent per month, excluding rent. The high rate of poverty is accompanied by extremely low living conditions and other forms of non- economic poverty. The housing structures are illegal, sub- standard in quality and crowded. Yet the rents are high. Unlike in many other cities of the world, about 92% of the slum dwellers are rent –paying tenants (rather than squatters who own their units). Units are owned by absentee landlords who seem to be operating a highly profitable business in providing shelter to the poor.

Slum dwellers have poor access to gainful employment. About 49 percent of adult slum dwellers have regular jobs and 19 percent work in a household micro-enterprise, but at least 26 percent are unemployed. (49 percent report that they are unemployed). At the household level, micro enterprises are helping diversify the incomes. Adults appear to be assisting in the struggle against poverty. About 30 percent of households report that they operate enterprises and encouragingly, ownership of an enterprise is negatively correlated with poverty.

Yet, slum dwellers pay a very high proportion of their income (33%) for energy related expenditures, either providers of kerosene, batteries, cooking fuels and other alternative sources of energy. According to the data given out in the framework of the preparation of KPLC connection policy , an average slum household pays Ksh.1000 monthly for energy related expenditures, of which about half can be substituted by electricity.

For comparable amount would buy over 160 kWh of electricity under current KPLC tariff structure. For many households electricity access may represent actual monetary savings of about US\$15 per month (assuming average consumption of 94kWh/month), while simultaneously improving their living conditions.

3.5 Eligible Customers

Customers are eligible for the OBA subsidy if they are a resident of an informal settlement. This distinction was reached by Energy Regulatory Commission and KPLC. The table below shows KPLC's estimates for the number of customers in several of the largest settlements which could receive a grid power connection⁹, which shows there is program beyond the initial target. KPLC plans to begin with connections in Kibera because of their past incomplete connections but ideally will quickly move into making connections in slums across the provinces of Kenya. There is a great World Bank project focused on slum upgrading and the team will work to coordinate the slums are target and where we think it will be beneficial. The table below shows target for GPOBA phase 1.

People settlement	Expected population	electrifiable	Name of region
Kibera	300,000		Nairobi
Mathare valley	75,000		Nairobi
Korogocho	50,000		Nairobi
Kariobangi	50,000		Nairobi
Mukuru	25,000		Nairobi
Nyarenda	75,000		Kisumu
Nyawita	50,000		Kisumu
Muthata	25,000		Kisumu
Kaptembwa	70,000		Nakuru
Kwa roda	30,000		Nakuru
Kiandutu	100,000		Thika
Kiawara	45,000		Nyeri
Majengo	35,000		Nyeri
Total	930,000		

Kenya power will be using GPS and Google Earth to tag (and relocate for follow up) on the connections program so it can be verified that the connections are within the informal areas.

Phase two of IDA-GPOBA has proposed to target the following customers in slum areas

No.	SCHEME NAME	REGION	TOWN	COUNTY	DCS REF	Customers
1	Rhonda	Central Rift	Nakuru	Nakuru	S23102015090070	300
2	Kaptembwa B Slum - Suppl.	Central Rift	Nakuru	Nakuru	123102015112943	1,500
3	Kaptembwa B Slum - Suppl.	Central Rift	Nakuru	Nakuru	123102015112939	3,000
4	Kaptembwa B 1 Slum	Central Rift	Nakuru	Nakuru	S23102014100006	1,572
5	Kaptembwa Slum	Central Rift	Nakuru	Nakuru	S23102014070005	200
6	Gilani's Slum	Central Rift	Nakuru	Nakuru	S23102015090072	150
7	Kingongo Huruma Kapsaos Slum	North Rift	Soy	Uasin Gishu	S27102015020003	60
8	Karagita Slum	Central Rift	Naivasha	Nakuru	S23102014070001	200
9	Kamere Project - Naivasha	Central Rift	Naivasha	Nakuru	S23102014070003	160
10	Maweni Scheme	Coast	Malindi	Kilifi	S22122015090020	270
11	Laibon/ Majengo	Central Rift	Kericho	Kericho	S24302014110003	30

No.	SCHEME NAME	REGION	TOWN	COUNTY	DCS REF	Customers
12	Swahili Village	Central Rift	Kericho	Kericho	S24302014110002	50
13	Hilton II	Central Rift	Nakuru	Nakuru	S23102015090007	300
14	Kibaoni Timboni	Coast	Malindi	Kilifi	S22222014090042	31
15	Hill Tea & Hill Farm People Settlement	Central Rift	Eldama Ravine	Baringo	S23402015090011	550
16	Kimose	Central Rift	Eldama Ravine	Baringo	S23402015090002	100
17	Kampi Nane Slum	Central Rift	Kabarnet	Baringo	S23552015070004	95
18	Kaprogonya Slum - Kabarnet	Central Rift	Kabarnet	Baringo	S27502015040006	41
19	Kisok & Katunoi Slums	Central Rift	Kabarnet	Baringo	S23552015090013	140
20	Loruk Slum	Central Rift	Kabarnet	Baringo	S23552015090009	150
21	Lower Bondeni Slum - Kabarnet	Central Rift	Kabarnet	Baringo	S27502015040004	93
22	Kamirai & Kapjoshua Settlement	Central Rift	Chemagel	Bomet	S23702015110025	230
23	Chemagel Settlement Scheme	Central Rift	Chepalungu	Bomet	S23702015090004	300
24	Sotik Town Settlement	Central Rift	Chepalungu	Bomet	S23702015090002	600
25	Ainamoi & Kipchimchim	Central Rift	Belgut	Kericho	S23602015070023	270
26	Momul & Sanga Markets	Central Rift	Belgut	Kericho	S23602015070029	170
27	Samutet & Kabokyek Slums	Central Rift	Belgut	Kericho	S23602015090001	220
28	Sbi & Ngecherok Settlements	Central Rift	Belgut	Kericho	S23602015070011	331
29	Sophia Wanjohi Village	Central Rift	Kipipiri	Laikipia	S23302015050007	180
30	Migingo Slum - Kiligoris	Central Rift	Kiligoris	Narok	S23212015040003	300
31	Maji Moto - Ewaso Nyiro	Central Rift	Mau Narok	Narok	S23212015090005	500
32	Mulot	Central Rift	Mau Narok	Narok	S23212015090003	400
33	Geta Center	Central Rift	Kipipiri	Nyandarua	S23302015090005	400
34	Kagongo Village	Central Rift	Kipipiri	Nyandarua	S23302015090010	150
35	Malewa & Environs	Central Rift	Malewa	Nyandarua	S23302015090009	200
36	Idsowe Village	Coast	Garsen	Garsen	S22202015040014	285
37	Ngao Village	Coast	Garsen	Garsen	S22202015040003	314
38	Oda Slum	Coast	Garsen	Garsen	S22202015040005	400
39	Tarasa Slum	Coast	Garsen	Garsen	S22202015040006	310
40	Majengo Mapya - Shariani	Coast	Bahari	Kilifi	S22122015090026	505
41	YMCA System AFD	Coast	Bahari	Kilifi	S22122014100018	122
42	Sokoni Stage	Coast	Bhari	Kilifi	S22122014080028	209
43	Ramada – Gongoni	Coast	Gongoni	Kilifi	S22222015090003	103
44	Kakuyuni Slum	Coast	Kakuyuni	Kilifi	S22222015030003	170
45	Mahenzo Village	Coast	Kaloleni	Kilifi	S22222015090001	86
46	Mwezangombe	Coast	Kaloleni	Kilifi	S22122015060012	175
47	Ramisi Barabarani	Coast	Msambweni	Kwale	S22712015030015	216
48	Mtongwe A	Coast	Likoni	Mombasa	S22112015030008	861
49	Mikindani Kwa Kopa	Coast	Mikindani	Mombasa	S22122015030001	476
50	Birikani Village	Coast	Voi	Taita Taveta	S22412015090004	476
51	City Cotton Slum 2 - Buruburu	Nairobi North	Buruburu	Nairobi	S21132015010019	900
52	Kiambiu Slum Next To City Cotton	Nairobi North	Buruburu	Nairobi	S21122015020001	1,000
53	Dandora Phase 3	Nairobi North	Dandora	Nairobi	S21132015080032	500
54	Mathare 4A Part 1 Slums	Nairobi North	Mathare	Nairobi	S21122015020002	700
55	Mathare 4A Slum Near Tx 31339 Part 3	Nairobi North	Mathare	Nairobi	S21122015020012	720
56	Kangundo	Nairobi South	Kangundo	Machakos	S21132015090018	350
57	Kayole Matopeni A	Nairobi South	Embakasi	Nairobi	S21132015010020	560
58	Kayole Matopeni B	Nairobi South	Embakasi	Nairobi	s21132015010021	440
59	Kayole Matopeni C	Nairobi South	Embakasi	Nairobi	S21132015010022	620
60	Mukuru Kwa Reuben - Gateway	Nairobi South	South B	Nairobi	S21132015080007	3,000
61	Gatina Primary School	Nairobi West	Dagoreti	Nairobi	S21112015030011	4,000
62	Congo - Kawangware	Nairobi West	Kawangware	Nairobi	S21112015100002	2,000

No.	SCHEME NAME	REGION	TOWN	COUNTY	DCS REF	Customers
63	Kianda Kibera	Nairobi West	Kibera	Nairobi	S21112015030023	3,000
64	Raila II Slum	Nairobi West	Kibera	Nairobi	S21112015030025	1,890
65	Bullar Punda	North Eastern	Garrissa Town	Garissa	S28112015070011	2000
66	Modika	North Eastern	Garrissa Town	Garissa	S28112015070015	400
67	Sankuri	North Eastern	Garrissa Town	Garissa	S28112015070013	400
68	Kibichiku	North Eastern	Kikuyu	Kiambu	S28712015070005	200
69	Kakeani	North Eastern	Kakaeni	Kitui	S28112015070008	600
70	Kakumuti	North Eastern	Kalindilo	Kitui	S28112015070012	600
71	Mwitika 2	North Eastern	Wikiliye	Kitui	S28112015070010	400
72	Kyevaluki Slum	North Eastern	Kangundo	Machakos	S21432015090006	50
73	Bulla Jamhuri	North Eastern	Mandera	Mandera	S28112015070026	300
74	Bulla Mpya	North Eastern	Mandera	Mandera	S28112015070025	300
75	Bulla Shaf Shafey	North Eastern	Mandera	Mandera	S28112015070033	200
76	Bulla Tawakal	North Eastern	Mandera	Mandera	S28112015070027	600
77	Elwak	North Eastern	Mandera	Mandera	S28112015070028	500
78	Lafey	North Eastern	Mandera	Mandera	S28112015070031	100
79	Rhamu	North Eastern	Mandera	Mandera	S28112015070030	400
80	Takaba	North Eastern	Mandera	Mandera	S28112015070029	600
81	Shauri Yako	South Nyanza	Homa Bay	Homa Bay	S24422014080005	600
82	Kendu Old Town & Environs	South Nyanza	Kendubay	Homa Bay	S24422015050005	800
83	Makongeni Homabay & Environs	South Nyanza	Kendubay	Homa Bay	S24422015050003	800
84	Mjini Slum	South Nyanza	Kendubay	Homa Bay	S24422014080009	159
85	Lwanda Nyamasare & Environs	South Nyanza	Mbira	Homa Bay	S24422014090008	200
86	Magen Market	South Nyanza	Nyamache	Kisii	S24402015050009	1,450
87	Mogonga Market	South Nyanza	Nyamache	Kisii	S24402015050013	900
88	Nyatike Market	South Nyanza	Nyamache	Kisii	S24402015050012	450
89	Athiko Slum - Awendo	South Nyanza	Awendo	Migori	S24402015030005	360
90	Bundo Village	South Nyanza	Nyamira	Nyamira	S24412015050004	600
91	Kijauri Stage Slum	South Nyanza	Nyamira	Nyamira	S24412015040002	650
92	Nyabite Market	South Nyanza	Siamani	Nyamira	S24412015050002	550
93	Uplands – Malaba	West Kenya	Amagoro	Busia	S24602015050015	250
94	Karibuni - 48 Estate	West Kenya	Amukura	Busia	S24602015050001	215
95	Machakusi	West Kenya	Amukura	Busia	S24602015050017	305
96	Musoma	West Kenya	Nambale	Busia	S24602015050005	200
97	Sykunya	West Kenya	Nambale	Busia	S24602015050006	230
	TOTAL					54000

3.6 Description of Technology

Currently KPLC is using three phase transformers ranging from 50 Kva to 630Kva and running long extensions with bare conductors. From the many transformer failures due to overloads, there is urgent need to increase capacity and increase electricity penetration. KPLC proposes to penetrate the slum areas using small transformers erected on single concrete poles. The single phase transformers have low installation, transportation, labor and manoeuvrability.

The maximum number of connections will be 17 customers connected to the biggest 25kva transformers. The program proposes no new LV network will be constructed and only insulated service cables will come from the transformer. Any unavoidable LV network will be constructed above the 11kv High Voltage (HV) network. Where a three phase is required which is rare, three single phase transformers will be installed. In this proposal there will be no loophole for power thieves to have access to connection. The small number of

customers per transformer will encourage ownership to the customers who will offer its security from external/strange people intending to steal power or the transformer.

The use of small size transformers will limit large affected areas if and when it fails.

Due to lack of way leaves into most slum interiors, the proposed 11kv HV network will mainly use full Aerial Bundles Cables (ABC). On the main streets where there are adequate way leaves, the conventional bare cables will be used. Use of insulated cables, though slightly expensive, will offer safe clearances to the houses and limit shocks and fires. The 11kv ABC cables will over fly the households. Concrete poles will be used because it can resist fire and can be installed right they will not rot with time and hence will not require any treatment.

3.7 Layout of Technical Design

The top of each pole will also house one half of the “split” meters of each household (individual meters for two). The other half of the meter will be part of the ready board installed in the house. The ready boards are wired into settlements because they are low cost and do not require household wiring. Each board contains a light bulb and socket for plugging in appliances. KPLC has agreed to distribute CFL bulbs with the ready boards.

With regard to the illegal connections already in the areas, disconnection of all illegal lines should be done before the installation of the small size transformers and removal of the LV network so that those disconnected and willing to pay are connected at the same time to the KPLC system instead of reverting to the cartels.

3.8 KEEP- AF Project Objectives

The Project Development Objectives (PDO) for the original KEEP, and retained under this AF, are to

- (a) increase the capacity, efficiency, and quality of electricity supply; and
- (b) expand access to electricity in urban, peri-urban, and rural areas.

3.9 Project Sub Component Description for GPOBA Electrification

The relevant component covered by this ESMF is Slum Electrification. The AF will provide additional IDA support (and complementary GPOBA financing of US\$3 million) to finance, through an output-based mechanism, the connection of an additional 54,000 low-income households in Kenya’s slums. It will be implemented in accordance with the current implementation arrangements. Under the AF, the level of IDA subsidy will be reduced from US\$250 to US\$195 per connection while the level of GPOBA subsidy will be reduced from US\$125 to US\$55 per connection made in slums/informal settlements.

This component that will be implemented by KPLC will finance the design, materials and construction works required to electrify all households and businesses in selected high density GPOBA areas located close to existing electricity networks. KPLC has selected approximately 40 GPOBA areas in seven geographical regions, which is expected to connect 125,000 households. The areas were selected based on population density and their location close to existing electricity networks, in order to maximize the number of connections in a given area. KPLC’s proposal of areas has been reviewed and endorsed by the government. This component introduces new implementation arrangements (e.g., clearer responsibilities for each implementing agency and enhanced supervision arrangements) and new procurement arrangements (e.g.,

procurement of main equipment in bulk and independent contracts for construction and installation) to maximize the resources available and efficiently implement the project with the expectation to reduce cost and reach more customers.

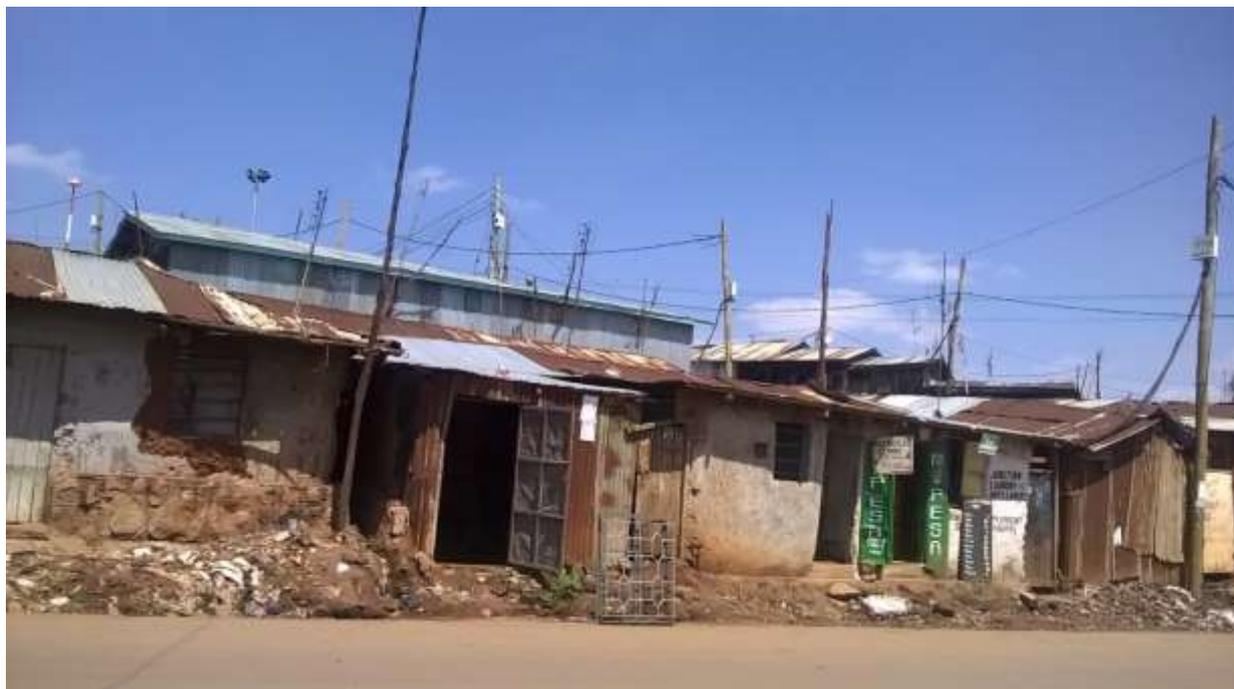
3.9.1 Construction Materials

The project will mainly use existing network to connect the customers and in the event some poles will need to be elected the use of concrete poles will be more preferred as was the case in GPOBA phase one due to the fact that they are stronger, will not need frequent replacement and there are a mitigation measure against deforestation that would occur in the case of using wooden pole

3.9.2 Way-leave Acquisition and Compensation for Low Voltage lines

As already noted the project will involve connection of power to end users i.e. to low-income households within project areas. The households will be mostly in settlements where the houses are grouped close together (the photos below are of such a settlement that possibly may be included in the project). Although the settlements will mostly comprise low-income households, these will be formal settlements, and will not encompass informal settlements. The medium and low voltage lines if required will be constructed along the road reserve and it is unlikely that the project will involve any resettlement..Where new medium and low voltage lines are constructed they may require way leaves acquisition to facilitate line construction and protection of power line. Way leaves by definition is an easement or rights of way (ROW) which gives the right of use or restricts the use of land of another in a way that benefits other people other than the owner of the land. Other than KPLC, rights of way are also established for railways, roads, airways, pipelines.

Some of the photos showing the slum areas





The KEEP-AF is not expected to involve land acquisition leading to economic or physical displacement of PAPs. There is ongoing resettlement in the project, and should the AF financed activities require a RAP, they will be guided by the Resettlement Policy Framework, which was prepared for the original KEEP project. This ESMF includes measures for compensating for lost trees (where there is no land acquisition).

While the project does not expect any resettlement, there may be need, nevertheless, to compensate people whose assets, namely trees and crops may be damaged during project implementation. Way leaves is necessary for protection of power lines and it is not just a matter of facilitating line construction. The Energy Act 2007 provides that when a public electricity supplier intends to lay a power line on land owned by another person, the supplier must obtain consent (way leaves) beforehand.

The Way leave acquisition process entails the following main steps especially for the connection to customers.

- Survey, design and payment by the customer
- File is forwarded to way leaves officer who checks to see where the line will pass in order to identify the people to consult Way Leave officer talks to land owners or public utility representatives e.g., roads authority on the need for a way leave consent
- The land owners sign the way leave consent allowing KPLC to lay line on their land
- Once consent is given the construction engineer/contractor proceeds with construction. Clearing of bushes and cutting of trees if any exists, will be undertaken with, minimal disturbance wherever possible to pave way for the line. The wayleaves officer will pay the tree owners as stipulated by the law and RPF prepared for the project as per OP 4.12 and records will be kept.
- Once construction is done, the construction engineer does a memo to the way leave officer to visit the site and assess the impact, if any damage to property has taken place.
- In such a case, damage assessment and recording is done by way leave officer in the presence of the owner and construction engineer or contractor who also sign the property damage report.
- Costing for damages is done by the way leave officer using property damages standard rates for the companies which are developed by the chief way leaves officer in liaison with government agencies such as ministry of agriculture and Kenya Forest service.
- The cost of damages are forwarded to finance for processing the funds
- Once the funds are ready the way leave officer talks to the local administration i.e. chief/assistant chief and arrange for a date when payments will be made. The officer then notifies all the concerned persons on the day and time of payment for damages which is done at the chiefs/assistant chiefs office
- Once payment is done the owner, wayleave officer, a representative from finance (accountant) and the chief signs the payment record sheet.

It is important to note that when granted, wayleave does not mean ownership of land but only limited use to the land. This project may occasionally do damage to properties of third parties accidentally or necessitated by line construction, survey and maintenance.

The same procedure shall be followed in this project. The main emphasis is that the contractor/supervisor shall record all damages occasioned in the presence of the owner or his/her representative and forward to the way leave officer who shall arrange for payments.

3.9.3 Project Implementation, Supervision and management IDA-GPOBA Electrification

KPLC will be the Implementing Agency for the IDA-GPOBA 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 independent verification agent (IVA) consultant to be recruited through competitive bidding process will reinforce the capacity of the Project Implementation Unit.

3.9.4 Environmental and Social Assessment

There are no significant and/or irreversible adverse environmental issues anticipated from the IDA- GPOBA slum electrification activities, as these will all be located in urban areas. Potential negative impacts are expected to be small-scale and site-specific and appropriate mitigation measures will be included to address these impacts.

It is envisaged that most of the network upgrades and expansion will be done using overhead lines. The replacement of lines will take place along existing routes to minimize potential right of way (RoW) issues.

Effectiveness in addressing environmental and social concerns requires a number of functions. These include:

- Ensuring that proper appraisal of environmental and social effects of new interventions takes place and proper measures are put in place to mitigate these effects. This is a KPLC function;
- Setting out the basis for compliance and enforcement of terms and conditions of approval of project plans. This should be an integral part of KPLC and other representatives from the government departments;
- Designing compliance strategies by the SHE Department of KPLC; and
- Monitoring compliance and management of environment and social issues.
- The Director of NEMA in charge of enforcement and compliance may conduct independent follow-up to verify compliance.

KPLC will provide guidance to communities where the sub-projects will be implemented to ensure compliance with policies of the Ministry of Environment and NEMA as well as World Bank safeguard policies. The communities will give their views in regard to the proposed sub-projects and give suggestions on the design and implementation of the sub-projects so that the Project is implemented in a sustainable way taking into consideration of environmental and social issues of those communities.

The environmental and social screening process will be used at the planning stage of the sub-projects to determine potential adverse environmental and social impacts and design of the distribution lines. KPLC PIU staff - with help of regional staff - will complete the environmental and social screening forms. KPLC's Environmental Unit will analyse the forms and advise on the most suitable alternatives as necessary.

Nevertheless, it is essential that timely and informed consultations be held with stakeholders, (particularly those in project areas), early in the sub-projects preparation process. Based on experience to date, KPLC's SHE Team has sufficient capacity to mitigate potential adverse environmental and social impacts. Nevertheless, during Project preparation KPLC's capacity to implement World Bank safeguard policies will be closely monitored, and any measures deemed necessary to strengthen this capacity will commence prior to Project approval.

3.9.5 Monitoring and evaluation of Project Implementation

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. The PIU will provide regular implementation reports.

4 CHAPTER FOUR: BASELINE INFORMATION

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

4.1 Background

Urbanization has increasingly become a challenging issue for the vast majority of African governments and planners. The urban population explosion has changed the landscape of African cities and also outstretched the meager financial resources at the disposal of city officials. Instead of bringing inclusive growth and major developments to African cities, urbanization has resulted in the proliferation of informal settlements, commonly known as slums, widening income inequalities and rising urban poverty. Despite the informal nature of such settlements, slums are increasingly becoming a major challenge for policymakers. For instance, according to the United Nations Population Fund's 2007 report on the State of the World, 72 percent of urban residents in sub-Saharan Africa live in slum-like conditions. The unintended consequences of rapid urbanization in the region have posed major intricate policy challenges in relation to scarce livelihood opportunities for the poor and exposure to pernicious health conditions and low access to electricity and other social services.

4.2 Slums in Kenya

Slums in Kenya have no pattern as they are found in every corner of every major town housing bottom of the pyramid individuals. However, Nairobi the capital city hosts several slums in the country and has the highest population of slum dwellers. From a population of 350,000 in the 1962 census to 3,375,000 in the 2009 census, Nairobi typifies the rapid urbanization and population explosion in sub-Saharan Africa. As the capital and largest city of Kenya, Nairobi has always been the major attraction of various segments of the Kenyan population—from rural and other urban areas—in search of better livelihood opportunities. The consequence of the rapid and uncontrolled population explosion is the proliferation of informal settlements in Nairobi, with between 60 and 70 percent of Nairobi residents estimated to be living in slums. For example, Kibera, a slum in Nairobi, has grown from a population of 3,000 in 1960 to 287,000 in 1999. Similarly, Korogocho went from a population of 2000 in 1970 to 44,000 in 1999. Meeting the increasing demand of this new population is a daunting challenge for policymakers and, specifically, for Nairobi authorities. Slums are characterized by abject poverty, overcrowding, lack of access to basic amenities like water and electricity, as well as exposure to HIV/AIDS and sexually transmitted infections (STIs). Thus, addressing the needs of slum residents will be at the center of reducing poverty and improving overall living conditions in the city.

To understand and address the needs of slum residents calls for appropriate measures that specifically focuses on informal settlements. Therefore, GBOPA seeks to address the issue of electricity access to the slum dwellers.

4.3 Land ownership and nature of housing

Much of the land in slums is government owned and the rest is owned by lords in the slums who build the shacks and rent them out to 99 percent of the tenants. The average area of a room in the slum is 12ft by 12ft with mud or corrugated tin walls. Due to the nature of the housing units there are technically no way leaves for penetration of the power cables. In the past the residents have illegally connected power to their

households which they often pay high rates to the cartels involved and further expose them to risks of electrocutions and shocks. Most of the slums to benefit from the project are spread all over the country in 42 counties

4.4 Location and Size

Kenya (**Figure 1**) 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 semi- arid areas, the Coastal Margin, the Rift Valley, the Highlands and the Lake Victoria Basin.

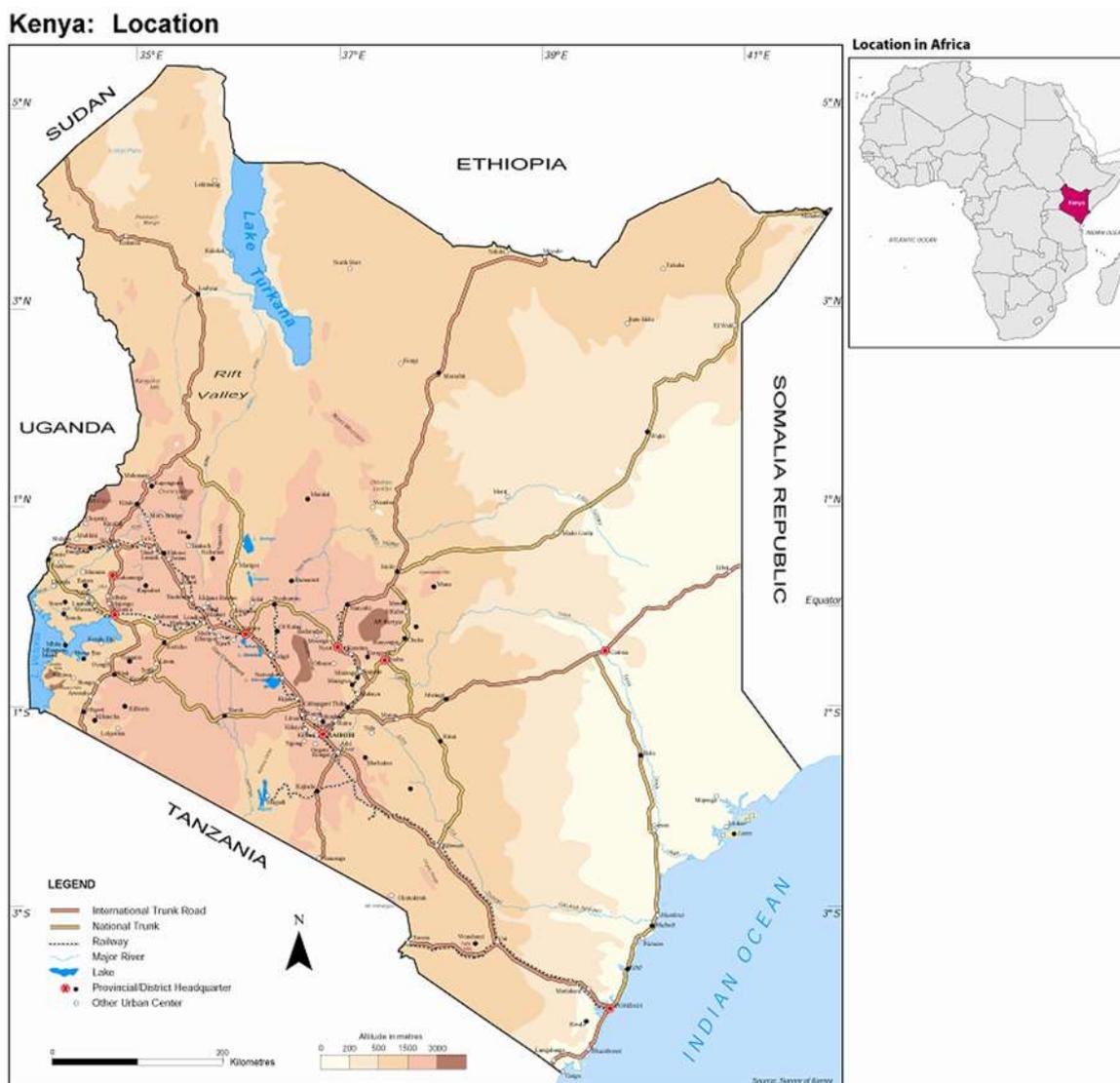


Figure 1: Map of Kenya

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 152 Metres 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.

4.5 Physical Environment

4.5.1 Climate

Kenya enjoys a tropical climate. It is hot and humid at the coast, temperate inland and very dry in the north and northeast parts of the country. The average annual temperature for the coastal town of Mombasa (altitude 17 Metres) is 30.3^o Celsius maximum and 22.4^o Celsius minimum, the capital city, Nairobi (altitude 1,661 Metres) 25.20 Celsius maximum and 13.60 Celsius minimum, Eldoret (altitude 3,085) 23.6^o Celsius maximum and 9.5^o Celsius minimum, Lodwar (altitude) 506 Metres) 34.8^o Celsius maximum and 23.7^o Celsius minimum.

The long rains occur from April to June and short rains from October to December. The rainfall is sometimes heavy and when it does come it often falls in the afternoons and evenings. The hottest period is from February to March and coldest in July to August.

4.5.2 Topography and Drainage

The Republic of Kenya has an area of approximately 582,646 sq. km. comprising of 97.8% 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.

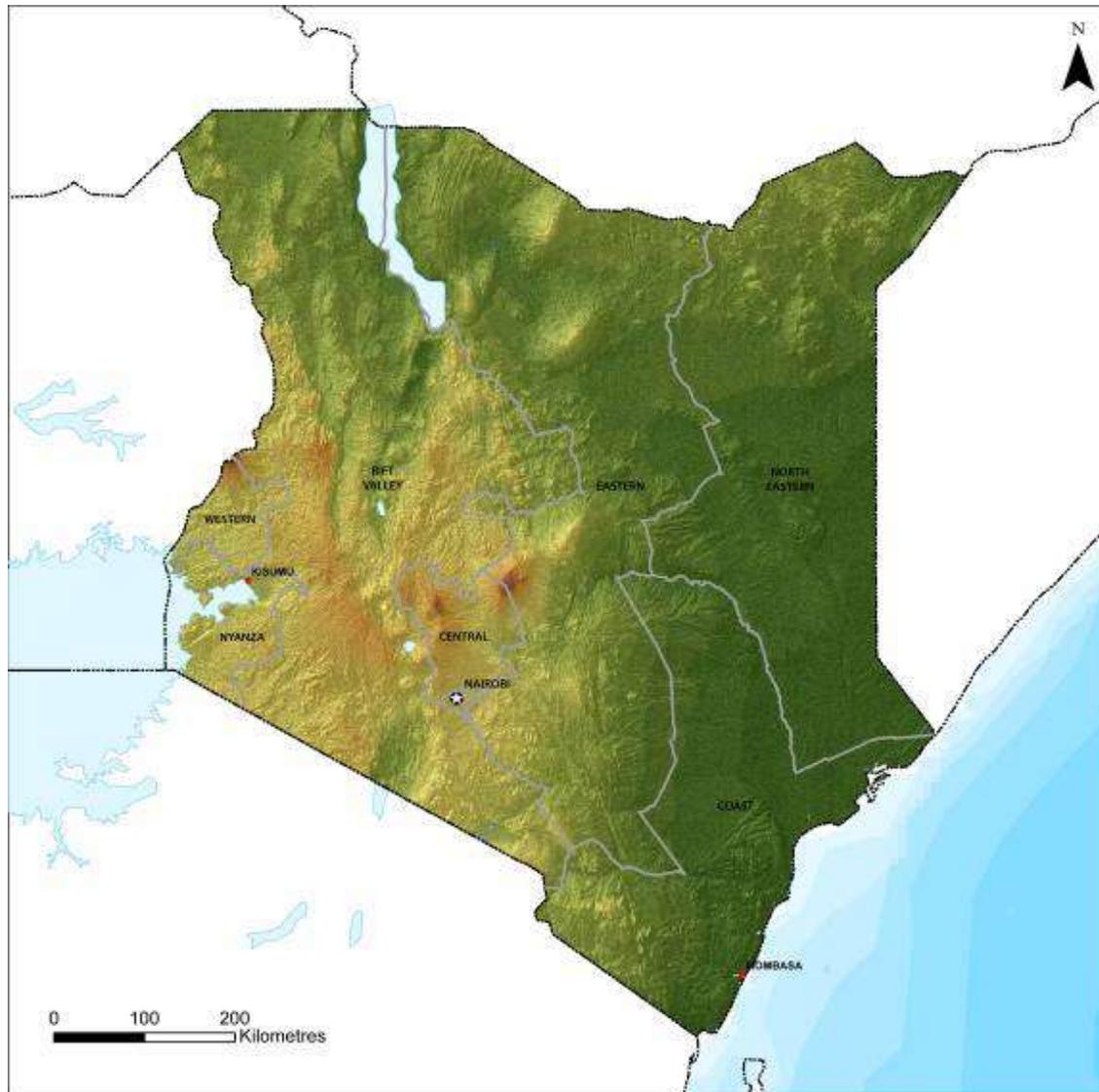


Figure 2: Relief Map of Kenya

Kenya's relief can be roughly divided into six major regions: the lowlands of the coastal belt and plains; the Buruma Waiir 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 (Survey of Kenya 2003).

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 southeasterly 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 sloped areas. On groundwater, the country is divided into three broad areas. These are volcanic rocks, Precambrian metamorphic basement rocks and Precambrian intrusive 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 evaporate minerals within the sediments.

4.5.3 Hydrology

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 East African 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 (11 per cent of Kenya's land area) provides 7 per cent, the lowest share among Kenya's major drainage areas (Survey of Kenya 2008 and MOWI.).

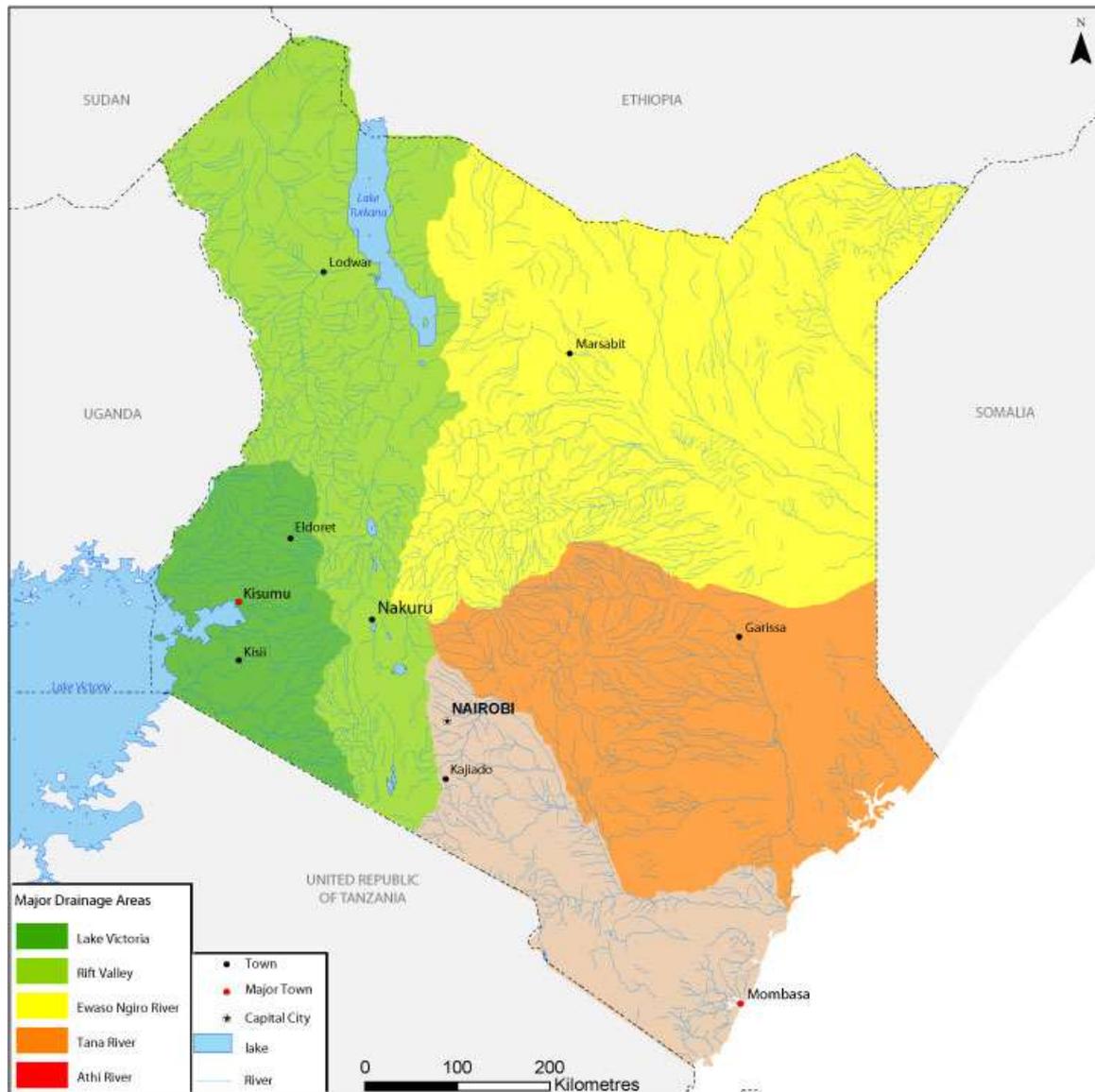


Figure 3: hydrological Map of Kenya

4.5.4 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

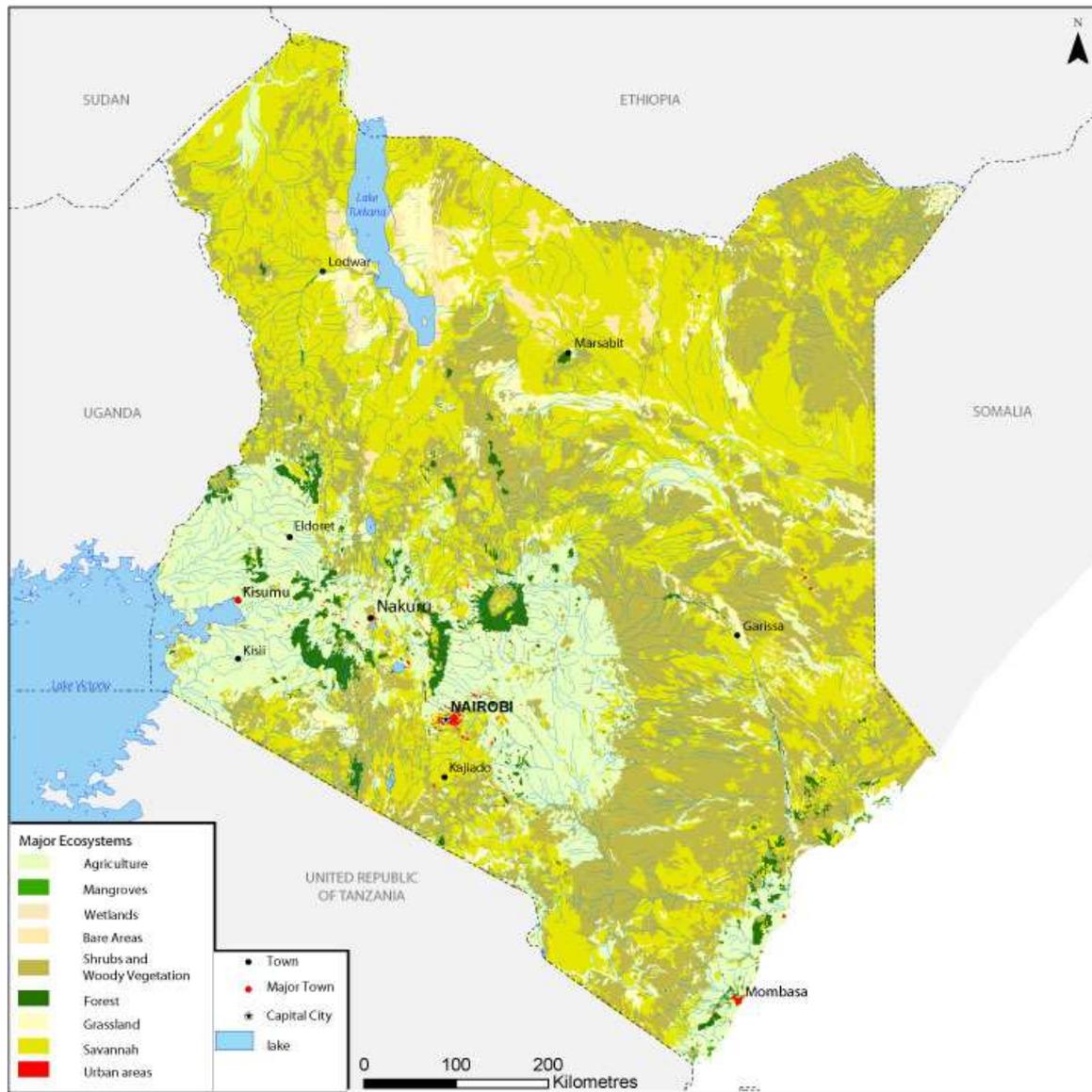


Figure 4: Major ecosystems in Kenya

4.5.5 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 2.4 per cent of Africa's total meadows and pastures (FAO 2008).

4.5.6 Forests

Forests cover 2.9 per cent of Kenya's land area (KFMP 1995). The main forest types are moist highland forest, dry forest, tropical rain forest, coastal forest, and riverine and mangrove forests (Survey of Kenya 2003). 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 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 (Survey of Kenya 2003).

4.5.7 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).

4.5.8 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.

4.5.9 Wetlands

Kenya's wetlands occur in both fresh and salt waters. They include coral reefs, 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 (Mach aria 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).

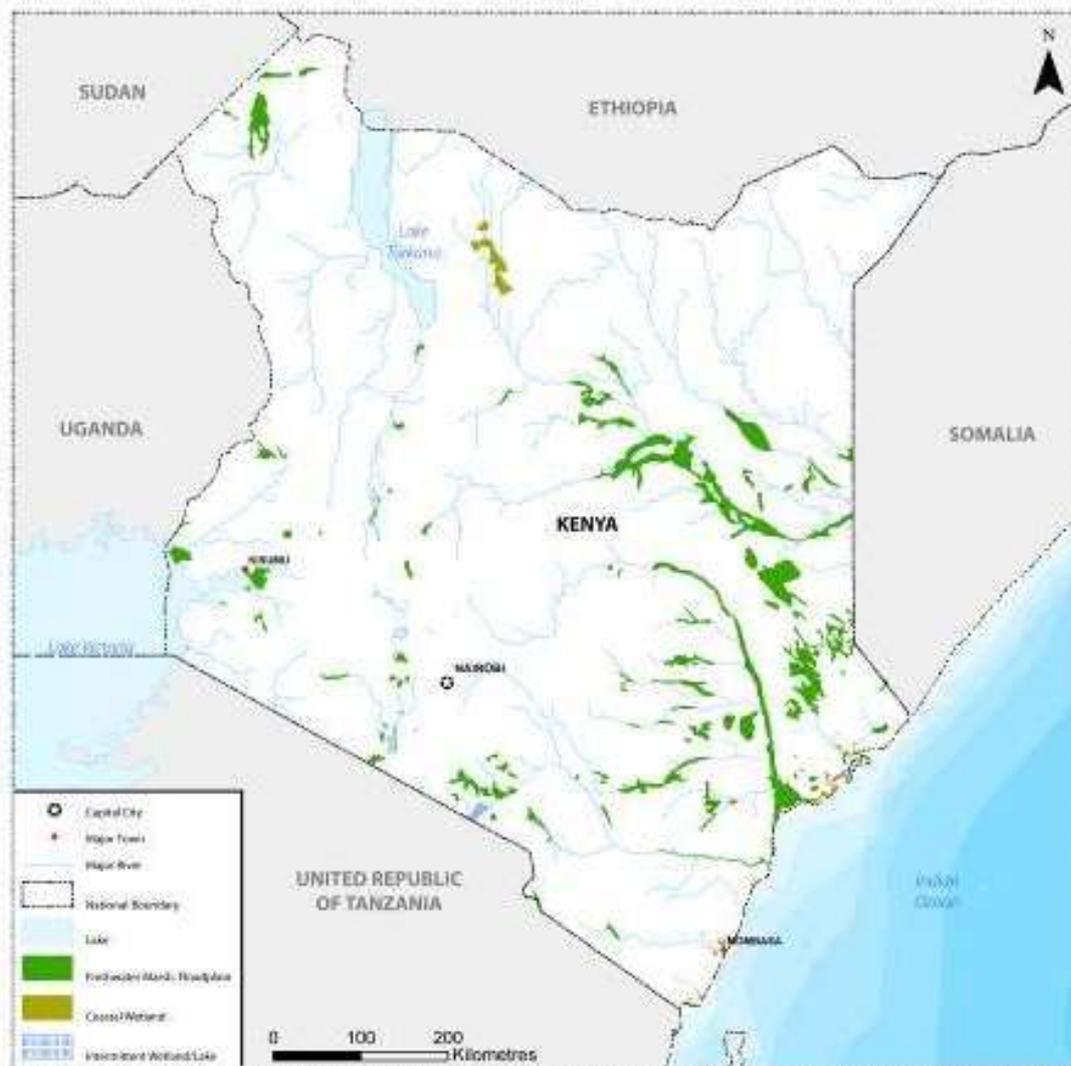


Figure 5: Kenya’s Largest Wetlands

They include the shallow lakes Nakuru, Naivasha, Magadi, Kanyaboli, Jipe, Chala, Elementaita, Baringo, OI’ 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)

4.5.10 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.

4.5.11 Wildlife

Kenya's game parks and spectacular wildlife attract nearly two million tourists each year (UN Water 2006) and generate important domestic revenues. Wildlife conservation is thus a high priority. Formed in 1946, Nairobi National Park, just outside the city, was the country's first protected area. By 2008, about 75 237.9 km² (WCPA 2007) of the nation's land area had been set aside as national parks and game reserves.

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 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 (MPAs).

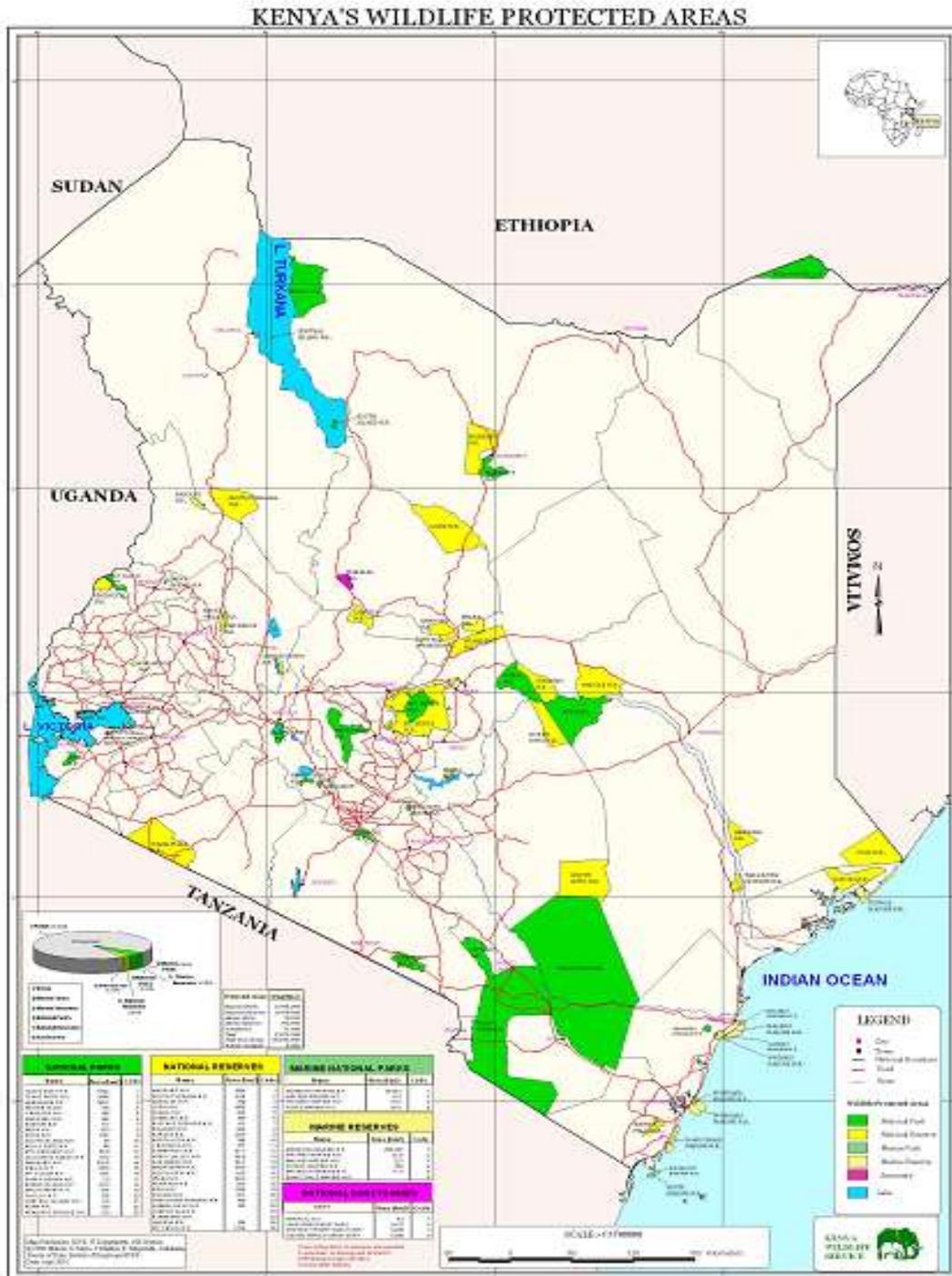


Figure 6: Protected Areas in Kenya

Examples of endangered species include the Sokoke scops owl (*Otusireneae*); Taita blue-banded papilio (*Papilodesmonditeita*); the highly endangered Tana River mangabey (*Cercocebusgaleritus*) and the Tana River red colobus (*Piliocolobusrufomitratrus*); 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.

Physical Regions of Kenya

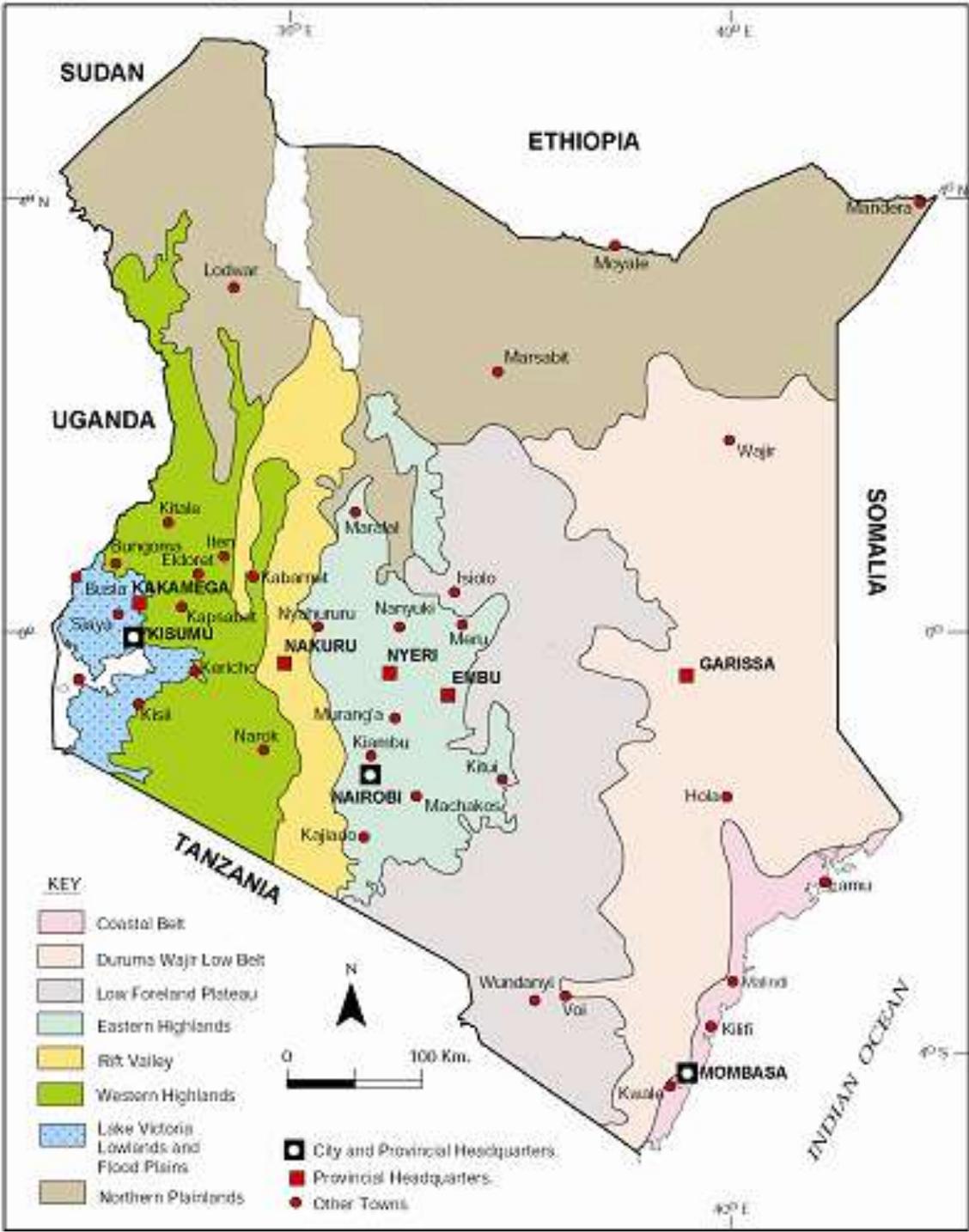


Figure 7: Physical Regions of Kenya

4.6 Socio-Economic Background

4.6.1 Population

Kenya's population increases by an estimated one million a year. The government revised population based on the 2009 census is 39.8 million, an increase of over 35 percent in the past decade. The population report shows the distribution of the population across the country, with Rift Valley Province being the most populous with 10.1 million people. Nairobi, the capital, has 3.1 million people, according to the report released by the Ministry of Planning and National Development. Demographic trends show that more people are moving to urban areas and the Bank estimates that half of Kenya's population will live in cities by 2050. Better macro-economic conditions in the past decade helped improve the welfare of Kenyans, but the poor remain vulnerable to drought and other crises induced by climate change. Rural and urban poverty remain a challenge. Recent analysis of the data from the 2005 to 2006 Kenya Integrated Household Budget Survey (KIHBS) indicates that national absolute poverty declined from 52.3 percent in 1997 to 46.1 percent in 2005 to 2006. While this decline in poverty compares well with other Sub Saharan African countries, it can still be considered high in comparison to neighboring countries such as Tanzania (about 36 percent) and Uganda (about 31 percent). In rural areas, overall poverty declined from 52.9 percent to 49.1 percent, while in urban areas, poverty declined from 49.2 percent in 1997 to 38.8 percent over the same period.

The Kenyan poverty profile also reveals strong regional disparities in the distribution of poverty. According to the 2005 to 2006 survey, the lowest incidence of rural poverty was in Central province (30.3 percent), followed by Nyanza (47.9 percent), Rift Valley (49.7 percent), Eastern (51.1 percent), Western (53.2 percent), Coast (69.7 percent), and North Easter province (74.0 percent). Inequality in Kenya remains high. The distribution of income, measured by the Gini coefficient (a measure of inequality of income distribution—the higher the percentage the higher the level of inequality) was estimated at 39 percent in rural areas and 49 percent for urban areas (pre-crisis). Income disparities in the rural areas have gone down since 1997, while the disparities in the urban areas have increased slightly. The Commission on Revenue Allocation is using the development and poverty data to develop a model for more equitable distribution of public resources.

There has been additional progress with respect to other dimensions of social development over the past years. For example, net primary education enrolment was only 80 percent in 2003, but has since increased to about 90 percent in 2008 (with an equal enrolment ratio between boys and girls). In 2004, only about 60 percent of primary students completed their education compared with about 80 percent in 2008. The transition from primary to secondary and later to tertiary and university education has also improved in recent years due to increased public and private investment in the education sector.

4.6.2 Economic Growth & Setting

Kenya's economy recorded high growth rates of real Gross Domestic Product (GDP) averaging 6.6% per annum during the immediate post-independence years (1964-1973) and towards the end of that decade. Deceleration of this growth which started in late 1970s, continued until 2002 when the economy registered a record negative growth rate of 0.2%. During the years 1997-2002 economic growth declined steadily with GDP recording an average annual growth rate of only 0.9%, against a population growth rate of 2.9% per annum. The economy has been on a recovery path since 2003 when real GDP grew by only 0.5% to 6.1 % in 2007, giving rise to an annual growth rate of about 4.3% against a population growth rate of about 2.8% per annum.

Among the key factors contributing to the economic decline were poor infrastructure, particularly bad roads, inadequate energy supply, inadequate water supply, a weak institutional framework, weak performance of the major sectors of the economy namely; agricultural and manufacturing sectors, and poor macro-economic management. More recently, about 46.6% of Kenya's population of 35.5 million people in 2005/06¹ was estimated to be living below the country's poverty line in both rural and urban areas.

Despite a number of economic challenges, Kenya will still experience a satisfactory growth rate of 4.3 percent in 2011. This will be higher than Kenya's long-term growth rate of 3.7 percent but still a full percentage point below the average projected for Sub-Saharan Africa. In the first half of 2011, the Kenyan economy grew by 4.5 percent, driven by a strong performance in the financial sector (8.2 percent), construction (8.1 percent), as well as hotels and restaurants (6.4 percent). Moderate growth was recorded in the agricultural and industrial sectors. Overall growth for 2011 is expected to be balanced across all key sectors, with the services sector maintaining its position as the growth engine over the last decade

Agriculture has performed average despite the moderate drought. Agriculture production grew by 3.5 percent in the second first half of the year as rains normalized, especially in Kenya's "bread basket", the Rift Valley, and production held up again. The drought mostly affected Kenya's livestock production in Northern and Eastern regions. It is estimated that the drought shaved off 0.2 percentage points from GDP growth, mainly as a result of livestock mortality. Beyond these arid regions, low rainfall and high temperatures affected tea production. In addition, the crises in North Africa and Europe adversely affected the demand for Kenya's cash crops, mainly horticulture, coffee and tea.

Industrial sector growth remains driven by construction while manufacturing is lagging. The construction sub-sector recorded an impressive 8.1 percent growth in the first half compared to a 2.2 percent growth in the same period in 2010. Manufacturing grew at a modest 3.2 percent, compared to 5.5 percent in the same period last year. The drought impacted hydro power generation and the resulting high cost of energy has adversely affected the industrial sector. The share of hydro power in Kenya's energy supply declined from 57 percent in July 2010, to 43 percent in July 2011. This in turn increased dependence on back-up thermal power generation, which uses expensive imported fuel as its feedstock. Industries that depend on imported raw materials, saw their production costs increase significantly due to high import costs (oil and steel), along with the depreciation of the shilling.

The costs of imported machinery and equipment also increased substantially. The combined effect of these factors has negatively impacted the competitiveness of industry, resulting in a sluggish performance in 2011.

The services sector is holding up, fuelled by continued growth in ICT and a strong performance in tourism. Services grew by 4.3 percent in the first half of 2011, mainly driven by financial intermediation (8.2 percent); hotels and restaurants (6.4 percent), and transport and communication (5.2 percent). Tourist arrivals increased by 13.6 percent in the first half of 2011, compared to 2010 levels. Despite Europe's economic slowdown, 46 percent of arrivals were still from Europe, 25 percent from the rest of Africa, 12 percent from the Americas, and 10 percent from Asia. However, the emerging security concerns stemming from Kenya's incursion in Somalia will dampen tourist arrivals for the remainder of the year, though the high season is over.

The ICT revolution is reaching new milestones and is stimulating growth in other services. The mobile phone revolution has continued, with subscriptions peaking at 25.3 Million at the end of June 2011, which is more than the number of adults in Kenya. Since June 2010, subscriptions increased by more than 25 percent. In the same period, internet users increased by 60 percent, climbing to 12.5 Million.

This indicates that the data revolution is now also in full swing. A key factor in the growth of internet usage is the new affordable tools, including smart phones and social networking applications with both internet and mobile interface that are proving increasingly popular, especially among the urban youth. The sector has also generated additional innovations, including banking, linking mobile money with personal bank accounts, M-credit, and M-insurance, which are expanding the reach of financial services to previously unbanked segments of the population.

4.7 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;

4.7.1 Public Works Sub-Sector

Sufficient investments in the Public Works sub-sector are required to facilitate provision of adequate building space for all stakeholders in Government. It is therefore necessary to develop innovative ways of resource mobilization and prudent utilization for optimal growth.

With rapid population and urbanization, proliferations of informal settlements increasingly continue to pose social and economic challenges for the housing sub sector. This can be mitigated by aggressive investment in housing infrastructural facilities and provision of appropriate incentives to foster private sector participation in housing development. Various legislative frameworks relevant to housing such as Building Laws; Housing Bill, Tenant and Landlord Bill need to be fast tracked for enactment to spur growth in the housing sector.

4.7.2 Metropolitan development sub sector

Metropolitan development sub sector has experienced inadequate funding although this has been rising gradually. However, as a result of the continuous capacity building in terms of personnel, facilities and equipment, the sub sector's actual expenditure has been increasing progressively. It is envisaged that the increase in resource allocation as well as the progressive capacity building will enable the sub - sector delivers its services through effective project implementation.

Successful implementation of projects in the roads' sub-sector will be realized if effective collaboration with key stakeholders is enhanced. It is notable that liquidity levels for road contractors have increased on account of reduction of withheld VAT from 16% to 8%. However the refund systems of input VAT continues to be too bureaucratic causing undue delays in the refund. The sub sector has endeavored to address the challenge of outstanding bills, through timely completion of ongoing projects and did not take to start any new projects to ensure that ongoing ones are adequately funded and are completed on time. Further, reduction of the percentage earmarked for maintenance of Class DE/Other roads to 10% and equal distribution of the same across all constituencies continues to impact negatively on road maintenance.

4.7.3 Energy sub-sector

The energy sub-sector is critical in ensuring sufficient and efficient power supply. However, it continues to experience inadequate power supply capacity resulting to over-reliance on hydropower. Some of the challenges experienced by the sub sector include inability of KPLC to connect all customers due to weak transmission and distribution network; high cost of power compared to other regional players; dependence on donor financing and their stringent conditionality, and ever rising prices of fossil fuels.

Rural Electrification Program: This program will facilitate supply of power from the national grid to 460 trading centres and 110 secondary schools among other public facilities. In addition the Program intends to spend Kshs. 180 million to provide solar electricity generators to 74 public institutions such as secondary schools, boarding primary schools, health centres and dispensaries. Some isolated mini diesel power stations will also be constructed to serve areas which are uneconomical to be supplied power from the national grid.

Geothermal Appraisal at Olkaria IV: Six (6) appraisal wells will be drilled to assess the commercial viability of producing 140 MW of electricity. In the medium the drilling campaign will be stepped up to other areas with geothermal resources to realize adequate steam to produce equivalent 600MWe Coal Exploration: Initial exploratory drilling at Mui Basin in Kitui and Mwingi Districts has indicated the existence of coal in this area. During the MTP period, appraisal drilling and assessment will be undertaken to determine the quantity and quality with a view to ascertaining the commercial viability of the coal deposits. Coal exploration will thereafter be extended to cover other areas such as Karoo in the Coast Province.

Wind Power Generation: Wind power generation by KenGen and IPPs is expected to supply a total of about 150 MW. Cogeneration: Power will also be produced in the process of producing sugar. The sugar factories in the country have the potential of producing about 120 MW using bagasse as the base.

4.7.4 Transport sub-sector

Transport sub-sector provides leadership in Transport policy development and therefore requires enhanced empowerment to facilitate effective co-ordination. With Kenya being strategically located with good access to sea and air connections to most parts of the world, there is pressure to ensure safety in all modes of

transport. Piracy in Kenyan water is a concern and requires the concerted efforts and collaboration of the sub-sector and that of Defense by increasing the patrolling in the Kenyan waters along the Indian Ocean. As the road infrastructure is improved, there is need to ensure safety. To do this, road safety awareness campaigns, erection of studs in black spot and adoption of best tested and piloted systems will be enhanced. Effective sub-sector capacities are a pre-requisite in transforming challenges into opportunities through efficient program implementation.

Dredging and Deepening the Mombasa Port: The dredging of the port to deepen the channel to 16 metres will enable larger post-Panama vessels to access the port and thereby remove the risk of the port slowly evolving into a feeder facility which larger vessels have no access. Dredging the port to 16 meters to accommodate Panama vessels is underway. Under Port Container Terminal Expansion, Procurement of consultancy for civil works supervision is complete. Awarding of civil works contract is at an advanced stage.

Nairobi Metropolitan Region Rapid Bus Transit System: The Government has laid plans for the development of a rapid bus transport system starting with the following three transport corridors: Athi River Town to Kikuyu Town (approximately 38 km); Thika Town to the Central Business District (approximately 50 kms); and Jomo Kenyatta International Airport to the Central Business District (approximately 25 kms). The Nairobi Metropolitan region rapid bus transit is expected to be operational in four years' time. So far a feasibility study on Mass Rapid Transit System for Nairobi Metropolitan region is being undertaken together with development of commuter rail services in an effort to decongest Nairobi Metropolitan region.

Development of Light Rail for Nairobi and its Suburbs: The area expected to be served by the light rail stretches from Nairobi Railway Station, situated in the Central Business District, to Embakasi/Jomo Kenyatta International Airport, a distance of 15.6 kilometres, and borders the heavily populated industrial area, Makongeni, Makadara, Buru Buru, Doonholm and Pipeline, Jogoo Road, Outer Ring Road, Airport Roads, Mombasa Road, the Airport Siding and the Nairobi-Makandara. It is projected that the new light rail services will serve at least 150,000 daily passengers, which is 5 per cent of the future public transport demand in the Nairobi metropolitan area. To make this possible, a feasibility study for light Rail/Commuters trains to JKIA, CDB and suburbs (Athi River to City Centre, Kikuyu Town to city centre and Thika Town to the Central Business District) is in progress.

Development of a New Transport Corridor to Southern Sudan and Ethiopia: This corridor will link Lamu, Kenya's North Eastern province, Ethiopia and Southern Sudan: The project involves the development of a new transport corridor from the new port at Lamu through Garissa, Isiolo, Maralal, Lodwar, and Lokichogio to branch at Isiolo to Ethiopia and Southern Sudan.

Rehabilitation and Maintenance of Airstrips and Airport Expansion and Modernisation: This will involve rehabilitation and expansion of airstrips and airports serving tourist and commercial sites in the country.

5 CHAPTER FIVE: DESCRIPTION OF THE ADMINISTRATIVE, POLICY AND REGULATORY FRAMEWORK

5.1 Introduction

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 Assessment is a useful tool 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.

A detailed review of relevant institutional and legal as well as policy framework that bears significance or implication to the KEEP- AF project is presented in this chapter of the ESMF report. The World 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.

5.2 Environmental Problems in Kenya

There are many environmental problems and challenges in Kenya today. Among the cardinal environmental problems include: loss of biodiversity and habitat, land degradation, land use conflicts, human animal conflicts, water management and environmental pollution. This has been aggravated by lack of awareness and inadequate information amongst the public on the consequences of their interaction with the environment. KPLC is aware of the important role the environment plays and as such strives to carry its activities in an environmentally friendly way.

5.3 Administrative / Institutional Framework

At present there are over twenty (20) institutions and departments which deal with environmental issues in Kenya. Some of the key institutions include:

5.3.1 National Environment Management Authority (NEMA)

The objective and purpose for which NEMA is established is to exercise general supervision and co-ordinate over all matters relating to the environment and to be the principal instrument of the government in the implementation of all policies relating to the environment. However, NEMA's mandate is designated to the following committees:

5.4 Provincial and District Environment Committees

According to EMCA, 1999 No. 8, the Minister by notice in the gazette appoints Provincial and District Environment Committees of the Authority in respect of every province and district respectively. The Provincial and District Environment Committees are responsible for the proper management of the

environment within the Province and District in respect of which they are appointed. They are also to perform such additional functions as are prescribed by the Act or as may, from time to time be assigned by the Minister by notice in the gazette. The decisions of these committees are legal and it is an offence not to implement them.

5.4.1 Public Complaints Committee

The Committee performs the following functions:

- Investigate any allegations or complaints against any person or against the authority in relation to the condition of the environment in Kenya and on its own motion, any suspected case of environmental degradation and to make a report of its findings together with its recommendations thereon to the Council.
- Prepare and submit to the Council periodic reports of its activities which shall form part of the annual report on the state of the environment under section 9 (3) and
- To perform such other functions and exercise such powers as may be assigned to it by the Council.

5.4.2 National Environment Action Plan Committee

This Committee is responsible for the development of a 5-year Environment Action Plan among other things. The National Environment Action Plan shall:

- Contain an analysis of the Natural Resources of Kenya with an indication as to any pattern of change in their distribution and transmission quantity over time.
- Contain an analytical profile of the various uses and value of the natural resources incorporating considerations of intergenerational and intra-generational equity.
- Recommend appropriate legal and fiscal incentives that may be used to encourage the business community to incorporate environmental requirements into their planning and operational processes.
- Recommend methods for building national awareness through environmental education on the importance of sustainable use of the environment and natural resources for national development.
- Set out operational guidelines for the planning and management of the environment and natural resources.
- Identify actual or likely problems as may affect the natural resources and the broader environment context in which they exist.
- Identify and appraise trends in the development of urban and rural settlements, their impact on the environment, and strategies for the amelioration of their negative impacts.
- Propose guidelines for the integration of standards of environmental protection into development planning and management.
- Identify and recommend policy and legislative approaches for preventing, controlling or mitigating specific as well as general diverse impacts on the environment.
- Prioritise areas of environmental research and outline methods of using such research findings.
- Without prejudice to the foregoing, be reviewed and modified from time to time to incorporate emerging knowledge and realities and;
- Be binding on all persons and all government departments, agencies, States Corporation or other organ of government upon adoption by the national assembly.

5.4.3 Standards and Enforcement Review Committee

This is a technical Committee responsible for environmental standards formulation, methods of analysis, inspection, monitoring and technical advice on necessary mitigation measures.

5.4.4 National Environment Tribunal

This tribunal guides the handling of cases related to environmental offences in the Republic of Kenya.

5.4.5 National Environment Council (NEC)

EMCA 1999 No. 8 part iii section 4 outlines the establishment of the National Environment Council (NEC). NEC is responsible for policy formulation and directions for purposes of EMCA; set national goals and objectives and determines policies and priorities for the protection of the environment and promote co-operation among public departments, local authorities, private sector, non-governmental organisations and such other organisations engaged in environmental protection programmes.

5.5 The Legal, Regulatory and Policy Framework

5.5.1 The Constitution of Kenya, 2010: Constitutional provisions

Kenya now has a new Supreme law in form of the New Constitution which was promulgated on the 27th of August 2010 and which takes supremacy over all aspects of life and activity in the New Republic. 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 of the document 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-

- *Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;*
- *Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;*

- *Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;*
- *Encourage public participation in the management, protection and conservation of the environment;*
- *Protect genetic resources and biological diversity;*
- *Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;*
- *Eliminate processes and activities that are likely to endanger the environment; and*
- *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.

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

Every person has 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 and other measures, particularly those contemplated in Article 69; and*
- To have obligations relating to the environment fulfilled under Article 70*

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 thus:

(1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

(2) On application under clause (1), the court may make any order, or give any directions, it considers appropriate—

- To prevent, stop or discontinue any act or omission that is harmful to the environment;*
- To compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or*
- To provide compensation for any victim of a violation of the right to a clean and healthy environment.*

(3) For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury.

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.

5.5.2 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.

5.5.3 The Environment Management and Co-ordination Act, 1999

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. This Act is divided into 13 Parts, covering main areas of environmental concern as follows: Preliminary (I); General principles (II); Administration (III); Environmental planning (IV); Protection and Conservation of the Environment (V), Environmental impact assessments (EIA), audits and monitoring (VI); Environmental audit and monitoring (VII); Environmental quality standards (VIII); Environmental Restoration orders, Environmental Easements (IX); Inspection, analysis and records (IX); Inspection Analysis and Records (X); International Treaties, Conventions and Agreements (XI) National Environment Tribunal (XII); Environmental Offences (XIII).

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:

5.5.3.1 The Environmental (Impact Assessment and Audit) Regulations, 2003

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.

Electrical infrastructure as an activity is listed on section 9 in the second schedule of EMCA as among projects that require full 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 projects.

5.5.3.2 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.

KPLC will manage all the construction waste as per the provision of this regulation.

5.5.3.3 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.

5.5.3.4 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.

5.5.3.5 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.

5.5.3.6 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.

5.5.4 Public Health Act (Cap. 242)

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) advises 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.

5.5.5 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.

section 135 (1) states that the Cabinet Secretary may make regulations for the better carrying out of the purposes and provisions of this Act and such Regulations may be made in respect of all county governments and further units of decentralization generally or for any class of county governments and further units of decentralization comply to the set regulations and by laws.

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.

5.5.6 Physical Planning Act, 1996

The Local Authorities are empowered under section 29 of the Act to reserve and maintain all land planned for open spaces, parks, urban forests and green belts. The same section, therefore allows for the prohibition or control of the use and development of land and buildings in the interest of proper and orderly development of an area.

Section 24 of the Physical Planning Act gives provision for the development of local physical development plan for guiding and coordinating development of infrastructure facilities and services within the area of authority of County, municipal and town council and for specific control of the use and development of land. The plan shows the manner in which the land in the area may be used.

Section 36 states that if in connection with development application a local authority is of the opinion that, the proposed activity will have injurious impact on the environment, the applicant shall be required to submit together with the application an Environmental Impact Assessment report. The environmental impact assessment report must be approved by the National Environmental Management Authority (NEMA) and followed by annual environmental audits as spelled out by EMCA 1999. Section 38 states that if the local authority finds out that the development activity is not complying to all laid down regulations, the local

authority may serve an enforcement notice specifying the conditions of the development permissions alleged to have been contravened and compel the developer to restore the land to its original conditions.

5.5.7 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.

5.5.8 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 under this if the 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.

The procedure for land acquisition is laid out in Part VIII of the Act.

5.5.9 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.

5.5.10 Water Act, 2002

Part II, section 18, of the Water Act 2002 provides for national monitoring and information system on water resources. Following on this, sub-section 3 allows the Water Resources Management Authority (WRMA) to

demand from any person or institution, specified information, documents, samples or materials on water resources. Under these rules, specific records may require to be kept by a facility operator and the information thereof furnished to the authority.

The Water Act Cap 372 vests the rights of all water to the state, and the power for the control of all body of water with the Minister, the powers is exercised through the Minister and the Director of water resources in consultation with the water catchments boards, it aims at provision of conservation of water and appointment and use of water resources. Part II Section 18 provides for national monitoring and information systems on water resources. Following on this, Sub-section 3 allows the Water Resources Management Authority to demand from any person, specified information, documents, samples or materials on water resources. Under these rules, specific records may be required to be kept and the information thereof furnished to the authority on demand.

Section 76 states that no person shall discharge any trade effluent from any trade premises into sewers of a licensee without the consent of the licensee upon application indicating the nature and composition of the effluent, maximum quantity anticipated, flow rate of the effluent and any other information deemed necessary. The consent shall be issued on conditions including the payment rates for the discharge as may be provided under section 77 of the same Act.

5.5.11 Energy Act of 2006

The Energy Act of 2006 replaced the Electric Power Act of 1997 and The Petroleum Act, Cap 116. The Energy Act, amongst other issues, deals with all matters relating to all forms of energy including the generation, transmission, distribution and transmission , supply and use of electrical energy as well as the legal basis for establishing the systems associated with these purposes.

The Energy Act, 2006, also established the Energy Regulatory Commission (ERC) whose mandate is to regulate all functions and players in the Energy sector. One of the duties of the ERC is to ensure compliance with Environmental, Health and Safety Standards in the Energy Sector, as empowered by Section 98 of the Energy Act, 2006. In this respect, the following environmental issues will be considered before approval is granted:

1. The need to protect and manage the environment, and conserve natural resources;
2. The ability to operate in a manner designated to protect the health and safety of the project employees; the local and other potentially affected communities.

Licensing and authorization to generate and transmit electrical power must be supported by an Environmental Impact Assessment Report (EIA) approved by NEMA.

Part IV Section 80(1) provides that a person shall not conduct a business of importation, refining, exportation, whole sale, retail, storage or transportation of petroleum, except under and in accordance with the terms and conditions of a valid license.

Part IV Section 90 (1) stipulates that a person intending to construct a pipeline, refinery, bulk storage facility or retail dispensing site shall before commencing such construction, apply in writing to the Energy Regulatory commission for a permit to do so. The application shall: specify the name and address of the proposed owner; be accompanied by three (3) copies of plans and specifications and be accompanied by an

Environmental Impact Assessment (EIA) Report.

Part IV section 91(1) stipulates that the Energy Regulatory Commission shall, before issuing a permit under section 90, take into account all relevant factors including the relevant government policies and compliance with Environment Management and Coordination Act, 1999 and in particular EIA report as per Impact Assessment and Audit Regulations 2003, the Physical Planning Act, 1996 and the Local Government Act.

Part iv section 100 (1) provides that it is an offence if a person being the owner or operator of a refinery, pipeline, bulk liquefied Petroleum gas or natural gas facility, service station, filling station or storage depot, fails to institute appropriate environmental, health or safety control measures. The offence if convicted, he/she shall be liable to a fine not exceeding two million shillings or to a maximum term of imprisonment of two years, or to both.

5.5.12 Building Code 1968

Section 194 requires that where sewer exists, the occupants of the nearby premises shall apply to the local authority for a permit to connect to the sewer line and all the wastewater must be discharged into sewers.

5.5.13 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.

5.5.14 Wildlife Conservation and Management Act, 2013

This Act provide for the protection, conservation, sustainable use and management of wildlife in Kenya and for connected purposes. 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.

5.5.15 The Forestry Services Act, 2005

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.

5.5.16 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.

5.5.16.1 Health

The premise must be kept clean; a premise must not be overcrowded. The circulation of fresh air must secure adequate ventilation of workrooms. There must be sufficient and suitable lighting in every part of the premise in which persons are working or passing. There should also be sufficient and suitable sanitary conveniences separate for each sex, must be provided subject to conformity with any standards prescribed by rules. Food and drinks should not be partaken in dangerous places or workrooms. 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.

5.5.16.2 Safety

Fencing of premises and dangerous parts of other machinery is mandatory. Training and supervision of inexperienced workers, protection of eyes with goggles or effective screens must be provided in certain specified processes. Floors, passages, gangways, stairs, and ladders must be soundly constructed and properly maintained and handrails must be provided for stairs. Special precaution against gassing is laid down for work in confined spaces where persons are liable to overcome by dangerous fumes. Air receivers and fittings must be of sound construction and properly maintained. Adequate and suitable means for extinguishing fire must be provided in addition to adequate means of escape in case of fire must be provided.

5.5.16.3 Welfare

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. Sitting facilities for all female workers whose work is done while standing should be provided to enable them take advantage of any opportunity for resting. Every premise shall be provided with readily accessible means for extinguishing fire and persons 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 program 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) advises the*

Proponent on safety and health aspects, potential impacts, personnel responsible for implementation and monitoring, frequency of monitoring, and estimated cost.

5.5.17 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.*

5.5.18 The Traffic Act Cap 403 Of 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.

5.5.19 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 is not proximal to any airstrip and this act will not be triggered.

5.6 World Bank Operational Safeguard Policies and their applicability

The proposed KEEP- AF project—is classified as environmental Category A according to the Bank's OP 4.01, similar to the original KEEP project, and consists of the following components: (i) Support towards cost increase in the contract for Olkaria I and IV steam gathering and distribution system works; (ii) Distribution (Slum Electrification). to support the financing, through an output-based mechanism, the connection of an additional 54,000 low-income households in Kenya's slums; and (iii) Sector Institutional Development and Operational Support

As indicated earlier, this ESMF is intended to cover the Slum Electrification component. The sub-projects under that component are expected to have significant positive environmental and social impacts, with relatively minor and localized negative impacts. The ESMF has been developed to ensure environmental and social due diligence for subprojects. The Bank environmental safeguards policy on Environmental Assessment (OP 4.01), is triggered by the IDA-GPOBA electrification component of the KEEP- AF project. OP 4.11 (Physical Cultural Resources) and OP 4.12(Involuntary Resettlement) are also triggered for this component, out of precaution.

The World Bank's environmental and social safeguard policies are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to the local people and their environment in the development process. These policies provide guidelines for Bank-funded projects in the identification, preparation, and implementation of programs and projects. The effectiveness and development impact of projects and programs supported by the Bank has substantially increased as a result of attention to these policies. Safeguard policies have often provided a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations for the projects and programs that are being implemented. A summary of the ten safeguard policies is provided in Chapter 6, but only those environmental safeguards triggered by the GPOBA electrification component of KEEP- AF are discussed below.

5.6.1 OP 4.01 Environmental Assessment

The objective of OP 4.01 is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate environmental screening, analysis of actions and mitigation of their likely environmental impacts and monitoring. This Therefore, OP 4.01 has been triggered, and in line with this operational policy, the environmental and social screening process for the distribution component of the Kenya Electricity Expansion Project (KPLC) funded sub-projects has been prepared.

5.6.2 OP 4.04 Natural Habitats

This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity. Natural habitats comprise terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species. The World Bank supports the protection, management, and restoration of natural habitats in its project financing. The World Bank supports, and expects borrowers to apply a precautionary approach to natural resource management to ensure environmentally sustainable development. This policy is triggered for the KEEP-AF but because of the geothermal and not relevant for the Slum Electrification and hence not further considered in this ESMF.

5.6.3 OP 4.12 Involuntary Resettlement

The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.

This policy covers not only physical relocation, but any loss of land or other assets resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location. This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

5.6.4 OP 4.09 Pest Management

The aim of the policy is to ensure pest management activities follow an Integrated Pest Management (IPM) approach, minimize environmental and health hazards due to pesticide use and contribute to developing national capacity to implement IPM and to regulate and monitor the distribution and use of pesticides. The policy has not been triggered because pesticides and/or herbicides won't be used under the KEEP- AF Project's distribution (slum electrification) component.

5.6.5 OP 4.11 Physical Cultural Resources

The Physical Cultural Resources (PCR) includes archaeological and historical sites, historic urban areas, sacred sites, graveyards, burial sites, unique natural values. The policy aims to ensure that Physical Cultural Resources (PCR) are identified and protected in World Bank financed projects, and national laws governing the protection of physical, cultural property are complied with. The policy is implemented as an element of the Environmental Assessment. The distribution lines will mainly be constructed along road reserves hence OP 4.11 has been triggered as a precaution. Therefore, the ESMF includes guidance in the event chance finds are made (see Annex 2).

5.7 International Conventions and Treaties Ratified by Kenya

Kenya has ratified a number of international conventions pertinent to land administration, environmental protection and human rights. Some of these conventions are:

Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar Convention) 2001

United Nations (UN) Convention on Biological Diversity 1994

UN Framework Convention on Climate Change, 1992

Kyoto Protocol to the United Nations Framework Convention on Climate Change

Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal (Basel Convention) 1989

Montreal Protocol on Substances that Deplete the Ozone Layer

Vienna Convention on the Ozone Layer 1985

UN Convention on the Law of the Sea (UNCLOS), Montego Bay, 1982

Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region (Abidjan Convention) 1981

Convention Concerning the Protection of the World Cultural and National Heritage (World Heritage Convention), Paris, 1975

Convention on the Conservation of Migratory Species of Wildlife Animals, 1979

Convention on the Prevention of Marine Pollution By Dumping of Wastes and Other Matter, 1972 (amended 1992)

African Convention on Conservation of Nature and Natural Resources, 1968

Convention on International Trade In Endangered Species of Wild Fauna And Flora

6 CHAPTER SIX: DESCRIPTION OF WORLD BANK OPERATIONAL SAFEGUARD POLICIES

This ESMF has been designed so that all sub-projects that will be implemented under the slum electrification component of KEEP- AF comply with the Operational Safeguard Policies of the World Bank and all the applicable environmental policies, laws and regulations of the Government of Kenya (GoK). In this chapter, the World Bank's safeguards policies and their applicability are discussed. The World Bank's Operational Safeguard Policies are outlined below and summarized in **Table 3** below and thereafter a determination has been made on the safeguards that will be triggered as a result of the KEEP- AF project.

The World Bank's 10 Safeguard Policies are:

1. Environmental Assessment (OP/BP 4.01)
2. Forests (OP/BP 4.36)
3. Involuntary Resettlement (OP/BP 4.12)
4. Indigenous Peoples (OP/BP 4.10)
5. Safety of Dams (OP/BP 4.37)
6. Pest Management (OP 4.09)
7. Physical Cultural Resources (OP/BP 4.11)
8. Natural Habitats (OP/BP 4.04)
9. Projects in Disputed Areas (OP/BP 7.60)
10. Projects on International Waterways (OP 7.50)

The environmental issues that might arise as a result of the slum electrification (IDA-GPOBA) component of the KEEP- AF project trigger three of the ten safeguard policies namely:

Environmental Assessment (OP/BP 4.01);

Physical Cultural Resources (OP/BP 4.11)

Involuntary Resettlement. (OP/BP 4.11)

A complete description of the Bank safeguards and their triggers for applicability is summarized in Annex I to be used as part of the environmental and social screening process presented in chapter 9 of this ESMF.

Table 1: Summary of World Bank Operational Safeguards objectives

OPERATIONAL SAFEGUARD	OBJECTIVE	TRIGGER FOR THE POLICY
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<p>Environmental Assessment (OP/BP 4.01)</p>	<p>To ensure that Bank-financed projects are environmentally sound and sustainable, and that decision making is improved through appropriate analysis of actions and their likely environmental Impacts assessment and Environmental Management Plan (EMP). When the project is likely to have sectoral regional impacts, sectoral or regional EA is required. The Borrower is responsible for carrying out the EA.</p>	<ul style="list-style-type: none"> • This OP/BP 4.01 is triggered through the mandatory Environmental and Social Screening Process through which the project is assigned a Category based upon its potential environmental and social risks and impacts in its area of influence. • This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts in its area of influence. Depending on the project, and the nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP). When the project is likely to have sectoral regional impacts, sectoral or regional EA is required. The Borrower is responsible for carrying out the EA. • These potential risks and impacts include physical, biological, socio-economic, health, safety, cultural property, Trans-boundary impacts and global impacts including Greenhouse Gas (GHG) emissions and vulnerability to climate change effects. <p><i>Under KEEP- AF, SHE has prepared this ESMF and will comply with national EIA regulations which outline the environmental screening process to be applied to sub-projects implementation.</i></p>
<p>OP/BP 4.04 Natural Habitats</p>	<p>This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal</p>	<ul style="list-style-type: none"> ■ This policy is triggered by any project (including any sub-project under a sector investment or financial intermediary) with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project). ■ This OP/BP can be 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,

	<p>species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species. Specific objective of the OP includes but not limited to the following</p> <ul style="list-style-type: none"> ■ 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. 	<p>commercial harvesting, agriculture, livestock, fisheries and aquaculture).</p>
<p>OP/BP Forests</p>	<p>4.36 The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest</p>	<p>This policy is triggered whenever any Bank-financed investment project</p> <ul style="list-style-type: none"> • Has the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or • Aims to bring about changes in the management, protection or utilization of natural forests or plantations.

	plantations to help meet growing demands for forest goods and services.	
OP 4.09 Pest	<p>The objective of this policy is to promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and strengthen the capacity of the country’s regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest management, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides.</p>	<p>The policy is triggered if :</p> <ul style="list-style-type: none"> • Procurement of pesticides or pesticide application equipment is envisaged (either directly through the project, or indirectly through on lending, co-financing, or government counterpart funding); • The project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. <p>This includes projects that may;</p> <ul style="list-style-type: none"> ■ Lead to substantially increased pesticide use and subsequent increase in health and environmental risks; ■ Maintain or expand present pest management practices that are unsustainable, not based on an IPM approach, and/or pose significant health or environmental risks.
OP/BP 4.11 Physical Cultural Resources	<p>The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, “physical cultural resources” are defined as 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. Physical cultural</p>	<p>This policy applies to all projects requiring a Category A or B Environmental Assessment under OP4.01, project located in, or in the vicinity of, recognized cultural heritage sites, and projects designed to support the management or conservation of physical cultural resources.</p>

	resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level, or within the international community.	
OP/BP 4.10 Indigenous Peoples	The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter- generationally inclusive social and economic benefits.	The policy is triggered when the project is undertaken in areas where Indigenous Peoples (with characteristics described in OP 4.10 para 4) are present in and/or have collective attachment to the project area.
OP/BP 4.12 Involuntary Resettlement	The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.	This policy covers any involuntary taking of land resulting in: <ul style="list-style-type: none"> • Relocation or loss of shelter; • loss of assets or access to assets; • Loss of income sources or means of livelihood, whether or not the affected people must move to another location. This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.
OP/BP 4.37 Safety of Dams	The objectives of this policy are as follows: For new dams, to ensure that experienced and competent professionals design and supervise construction; the borrower adopts and implements dam safety measures for the dam and associated works. For existing dams, to ensure that any dam that can influence the performance of the	This policy is triggered when the Bank finances: (i) a project involving construction of dam and (ii) a project which is dependent on an existing dam. For small dams, generic dam safety measures designed by qualified engineers are usually adequate.

	project is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented.	
OP 7.50 Projects in International Waters	<p>The objective of this policy is to ensure that Bank financed Projects affecting international waterways would not affect:</p> <p>(i) Relations between the Bank and its borrowers and between states (whether members of the Bank or not); and</p> <p>(ii) The efficient utilization and protection of international waterways.</p> <p>The policy applies to the following Types of projects:</p> <p>(a)Hydroelectric,irrigation,floodcontrol,navigation,drainage,water and sewerage ,industrial and Similar projects that involve the use or potential Pollution of international waterways; And(b) Detailed design and engineering studies of projects Under(a) above, include those carried out by The Bank as executing agency or in any other capacity.</p>	This policy is triggered if (a) any river, canal, lake or similar body of water that forms a boundary between, or any river or body of surface water that flows through two or more states, whether Bank members or not; (b) any tributary or other body of surface water that is component of any waterway described under (a); and (c) any bay, gulf, strait, or channel bounded by two or more states, or if within one state recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters.
OP 7.60 Projects in Disputed Areas	The objective of this policy is to ensure that projects in disputed areas are dealt with at the earliest possible stage: (a) so as not to affect relations between the Bank and its member countries; (b) so as not to affect relations between the borrower and neighboring countries; and (c) so as not to prejudice the position of either the Bank or the countries concerned.	This policy is triggered if the proposed project will be in a “disputed area”. Questions to be answered include: Is the borrower involved in any disputes over an area with any of its neighbors. Is the project situated in a disputed area? Could any component financed or likely to be financed as part of the project be situated in a disputed area?

6.1 World Bank’s Safeguards likely to be triggered by KEEP- AF (slum electrification component)

The likely locations for subprojects under this component of KEEP- AF are not yet known, but will most definitely include urban and GPOBA peri-urban areas of Kenya. Further preparatory work needs to be

concluded as to the specific geographic reach of the proposed activities (e.g. selection and location of infrastructure investments). Further details on the state/county and social/physical environment of the project activities will be provided in the later stage.

The slum electrification activities in the KEEP- AF are for the moment expected to trigger only OP/BP 4.01 (Environmental Assessment), and possibly OP 4.12: Involuntary Resettlement. The safeguards instruments prepared for any subprojects will address the requirements of any applicable policies.

Table 2: Operational safeguards triggered by IDA-GPOBA SLUM ELECTRIFICATION COMPONENT

OPERATIONAL SAFEGUARDS TRIGGERED BY THE GPOBA SLUM ELECTRIFICATION COMPONENT OF KEEP- AF PROJECT	YES	NO
OP/BP 4.01: Environmental Assessment	x	
OP/BP 4.04 Natural Habitats		X
OP/BP 4.36 Forests		X
OP 4.09 Pesticide Management		X
OP/BP 4.11 Physical Cultural Resources	X	
OP/BP 4.10 Indigenous Peoples		X
OP/BP 4.12 Involuntary Resettlement	X	
OP/BP 4.37 Safety of Dams		x
OP 7.50 Projects in International Waters		x
OP 7.60 Projects in Disputed Areas		x

	SAFEGUARD POLICY	POLICY TRIGGERED	JUSTIFICATION
1	OP 4.01: Environmental Assessment	YES	The policy is triggered due to the small-scale physical interventions that would be financed under the slum electrification activities of KEEP-AF. These activities are not expected to result in significant, negative or irreversible impacts. Due to the nature of interventions, some sub-projects could result in adverse environmental impacts which are expected to be site-specific and temporary in nature. The ESMF includes methodology to apply an environmental and social screening process that will guide in determining the potential environmental and social impacts of sub-projects and in the application of appropriate mitigation measures. Site-specific EMP will be prepared during implementation and before construction as required for the subprojects. Screening of KEEP- AF slum electrification sub-projects will be done to determine whether sub-projects would require a full environmental assessment; NEMA approval will be sought before commencement of detailed design to ensure that good practices are included in the technical

			design. The ESMF will serve as the environmental safeguards document in cases where a full environmental assessment is not deemed necessary based on the findings of the screening. The ESMF also requires that all construction materials (in particular wooden poles treated with creosote) are sourced from firms that have undergone a satisfactory environmental impact assessment/audit and have received NEMA approval.
2	OP 4.04: Natural Habitats	NO	The policy is triggered for KEEP- AF but for mainly for the off-grid electrification component. The slum electrification activities are not expected to cause conversion or degradation of natural habitats or critical natural habitats as defined by the policy.
3	OP 4.09: Pest Management	NO	The policy is not triggered. The project activities will not involve the use of pesticides for pest management at any stage. No pesticides or application machinery shall be procured. The projects do not include purchase or use of pesticides. Any clearing of vegetation will be undertaken manually.
4	Indigenous Peoples OP/BP 4.10	NO	
5	OP 4.11: Physical Cultural Resource	YES	The policy is triggered as a precaution, although the sub-projects are not expected to traverse areas of cultural or historical importance. Chance find procedures will be included in contracts and EMPs.
6	OP 4.12: Involuntary Resettlement	YES	The AF is not expected to involve land acquisition leading to economic or physical displacement of PAPs. There is ongoing resettlement in the project, and should the AF financed activities require a RAP, they will be guided by the RPF for the original project. This ESMF includes measures for compensating for lost trees (where there is no land acquisition).
	Forests OP/BP 4.36	NO	The policy is not triggered. Although there will be a need for replacement of trees that will be removed along the Right of Way (RoW), no natural forest will be affected in urban areas
	Safety of Dams OP/BP 4.37	NO	The policy is not triggered as KEEP- AF projects under IDA financing will not include construction of dams as defined in the policy nor rely on dams.
	Projects on International Waterways OP/BP 7.50	NO	The policy is not triggered as the project will not undertake any activities in the catchment areas of international waterways and shared aquifers.

	Projects in Disputed Areas OP/BP 7.60	NO	The policy is not triggered as project activities will not be implemented in any disputed areas.
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6.1.1 Environmental Assessment (OP4.01)

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 KEEP- AF.

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 Trans-boundary and global environmental aspects.

However, since the exact location of these investments will not be identified before World Bank appraisal of the project, the EA process calls for the Kenya Power to prepare an Environmental and Social Management Framework (ESMF).

OP/BP 4.01 is triggered in case of KEEP- AF, as the World Bank will finance project works that will ensure increased electricity access to Kenyans, particularly among the low income groups in slum areas. The existing and new distribution transformers shall be exploited to the maximum through extension of the low voltage network to reach households located in the vicinity of these transformers. The exact locations and scope 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 KEEP- AF 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 4.01 further requires that the ESMF report must be disclosed as a separate and stand-alone document by the Government of Kenya and the World Bank as a condition for World 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 KEEP- AF as a whole to be environmentally screened to determine the extent and type of the EA process. The World Bank system assigns a project to one of the four project categories, as defined below:

Category “A” 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 with attributes such as pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbance of the site or surroundings; extraction, consumption or conversion of substantial amounts of forests and other natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental

quantities; and involuntary displacement of people and other significant social disturbances which require the preparation of RAP.

Although the nature of the sub-projects under KEEP – AF (Additional Financing) are clearly of limited and reversible impact (which would classify them as a B) the overall Category remains an A for the purposes of World Bank classification, given the nature of the complex investments under the parent project.

Category “B” Projects

Although a full EIA is not always required, some environmental analysis is necessary. Category B projects have impacts that are ‘less significant, not as sensitive, numerous, major or diverse. Few if any, impacts are irreversible and remedial measures can be more easily designed.’ Typical projects include rehabilitation, maintenance, or upgrades, rather than new construction. Although an EIA is not always required, some environmental analysis is necessary. Category B projects are likely to have detrimental site-specific environmental and / or social impacts that are less adverse than those of Category A projects and can be minimized by applying appropriate management and mitigation measures or incorporating internationally recognized design criteria and standards.

Category “C” Projects

No EIA or other analysis is required. Category C projects result in negligible or minimal direct disturbance of the physical environment. Typical projects include education, family planning, health, and human resource development. Category C 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 C 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 F1 Projects

A Category F1 project involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts. The Projects involve Bank lending to Financial Intermediaries (FIs) who on lend or invest in sub-projects 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.

6.1.2 Physical Cultural Resources (OP/BP 4.11)

For the purposes of this policy, ‘physical cultural resources’ are defined as 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. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. Their cultural interest may be at local, provincial or national level, or within the international community. It is in the interests of the World Bank to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. OP 4.11 applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01, applies to projects located in, or in the vicinity of, recognized cultural heritage sites, and projects designed to support the management or conservation of physical cultural resources. When OP 4.11 is triggered, the borrower assesses the project’s potential impacts on physical

cultural resources as an integral component of the Environmental Assessment (EA). The process steps for the physical cultural resources component of the EA are the same as for Category A and B projects.

The physical cultural resources component of the EA provides for (a) an assessment of physical cultural resources likely to be affected by the project, (b) documentation of the characteristics and significance of these resources, and (c) an assessment of the nature and extent of potential direct and indirect impacts on these resources. Where the EA predicts adverse impacts on physical cultural resources, the cultural resources component of the EA includes a management plan which includes: (a) actions to mitigate adverse impacts, (b) provisions for the treatment of physical cultural resources discovered during project implementation and operation (hereafter referred to as “chance finds”), (c) any necessary measures for strengthening institutional capacity to implement the management plan, and (d) a monitoring system to track progress of these activities.

6.2 Alignment of WB and GOK Policies relevant to this ESMF

- Both the World Bank safeguards policies and GoK laws are generally aligned in principle and objective: Both require Environmental Assessment before project design and implementation (which also includes an assessment of social impacts).
- Both require public disclosure of EIA reports and stakeholder consultation during preparation.
- While OP 4.01 of World Bank stipulates different scales of EIA for different category of projects, Kenya’s EMCA requires environmental screening to be undertaken for new projects. In the event that notable environmental impacts will occur as a consequence of the sub- project, then an EIA will be undertaken for those sub-projects. If there would only be minimal impacts for a sub-project then the results of the environmental screening will be prepared and submitted to NEMA and the World Bank.
- Where EMCA requires Strategic Environmental Assessments, OP 4.01 requires that an Environmental Assessment be conducted, the complexity and nature of which depends on the project category.
- EMCA recognizes other sectoral laws while WB has safeguards for specific interests.
- The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project which is equivalent to the EMCA requirements. Additionally, statutory annual environmental audits are required by EMCA.

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 World Bank safeguard policies on EA. All the sub projects under the KEEP- AF are not likely to fall under schedule II of EMCA and thus may not require a full scale EIA process. Further, in order to fully insure against triggers to WB safeguard policies, individual investments will be screened against each policy as part of the EIA project report requirements.

5.3 Requirements for Public Disclosure

This ESMF will be disclosed in line with the World Bank requirements through posting on the Kenya Power’s website www.kplc.co.ke and on the World Bank’s external website. The final version will be publicly disclosed through the Bank’s Info shop.

7 CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL IMPACTS

7.1 Introduction

The sub-projects under the KEEP- AF Slum Electrification Component on connection of new electricity users in high settlement density will be located in slum areas across the country. These GPOBA areas are already populated and there is existing infrastructure in place including roads and provision of a level of water treatment and water supply systems. This project relates to last-mile connectivity in many aspects but will have additional salient features including using MV lines in addition to LV, and additional transformers and upgrading of substation this ESMF has been prepared to suit this broader scope of investment and screening process will also be enhanced to cover a wider area.

Cumulative environmental impacts are not expected to be significant, as the project -although nationwide - is relatively limited in geographic scope and environmental impact. Induced impacts will be largely positive or benign - for example, decreased use of fuel wood and kerosene, improved economic welfare as a result of electricity provision allowing for job creation and opportunities to study after nightfall. Since this component addresses GPOBA areas, the electrification works will not be supported by the construction of large civil works (such as access roads or forest clearing) that may result in loss of biodiversity or impact natural habitat or forested areas.

7.2 Positive Environmental and Social Impacts

7.2.1 Project Beneficiaries

Preliminary data collected for the KEEP- AF project and indicates that KPLC will add additional 1,000 distribution transformers across the country. Majority of the transformers will have varied lengths of low and medium voltage network emanating from them some of which pass close to ready and potential customers. The estimated number of targeted customers with the available funding from World Bank will be 122, 500. This translates into an estimated 618,750 people as direct beneficiaries accessing electricity.

Electricity access will replace kerosene lamps which are expensive to operate. Kerosene is costly both for low income households that buy it, and for governments that subsidize it. In parts of Africa, for instance, kerosene costs make up 10-25% of household monthly budgets according to a report by Lighting Africa market trends report 2013. A study on Energy Kiosks for Lighting up Kenya presented in at Light Africa conference 2010 found that on average a family spends about 750 per month for lighting kerosene. Empirical data presented by Kenya National Bureau of Statistics found 2013 indicates that a family consuming about 50kw/h of electricity which is mainly domestic paid a bill of Kshs 586 in February 2012, Kshs. 568 in January 2013 and 564 in February 2013 which gives an average bill of Kshs. 572. Comparing these two costs of consumption electricity bills seem to be cheaper than using kerosene for lighting by about Kshs. 128. Therefore the Kenya Electricity Expansion Project- AF means greater savings on the part of the households.

7.2.2 Expected Impact on Poverty Alleviation

7.2.2.1 Employment and wealth creation

The Kenya Electricity Expansion Project- AF 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 during construction of the infrastructure.. These job opportunities will be made available to the locals thereby easing unemployment in the country. In addition this will translate into incomes at the household levels which will trigger other spending and demand in the local economy.

7.2.2.2 Local Material Supplies

Another positive impact of the project involves local material sourcing mainly sale of wooden poles for use in the project. An estimated 237, 359 wooden poles will be required for the project according to the preliminary engineer's estimates. Some of these can be expected to be sourced locally and the rest through importation.. Therefore the project will generate new income revenues for the local population across the country in harvesting, pole treatment and transportation of poles. The new income revenues received will create demand for other goods and services causing a trickledown effect to the entire economy

7.2.2.3 Up Scaling Electricity Access to the Poor

According to Kenya Power's annual report of 2012/2013, electricity access stood at 2,330,962 customers as at June 2013. This translates to about 27% of the total population accessing electricity. This is a small percentage owing to the fact that there exists many transformers within reach of the 600metre protection radius but the uptake has been low even with the existing connection rate of Kshs. 34,480 for single phase. Needless to say, the uptake has been low due to the situation that the cost of connection has to be paid up front keeping in mind that about 46.6% of the Kenyan population is poor.

7.2.2.4 Connection payment model

From a social point of view, the Kenya Electricity Expansion Project- AF should respond to the challenge of paying for connection charges upfront by utilizing a deferred mode of payment for the connection charges. A deferred model of payment has been used in the company before and is commonly referred to as 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. More than 49,000 Kenyans have benefitted (May, 2014) from the loan scheme with customers paying 20% upfront with the balance payment spread out over a period of 24 months. According to the Engineers preliminary estimates the average cost of connecting one household under the Kenya Electricity Expansion Project- AF is \$ 1,151 equivalent to about Kshs. 101,288

To allow more people and especially those in the low socio economic echelon (the poor) including the vulnerable groups (widows, widowers, orphans, persons with disabilities) to benefit, the government should consider allowing them to pay Kshs. 35,000 on deferred mode while the government provides a subsidy on the difference. Kenya Power suggest that the government considers availing funds to utilize this kind of a model in the KEEP-AF and probably extend the payment period to five years so that the payments to the individual customers loaded in the monthly bills is affordable.

In 2009/10, The Kenya Power & Lighting Company implemented a Demand Side Management program which involved retrofitting CFL bulbs in exchange with Incandescent light bulbs. The main objective of the project was to reduce system peak demand and mitigate load shedding due to poor hydrology then. The

implementation of the project saw the peak demand reduced by about 50MW and increase in awareness on the use of CFLs to increase efficiency of use of energy. The supply side also resulted in a savings in energy purchase cost of Kshs. 122.9 million. At the demand side fuel cost reduction savings/year was 7.2 billion. At individual level, a CFL uses 80% less electricity than an ordinary bulb. So, if a customer was using ordinary bulbs and they are replaced with energy saving ones, the bill for lighting (note that the customer will also be using the electricity for other things as well) will reduce by 80%.

Kenya Power has plans for a similar project. The project aims at replacing (approximately) 3,300,000 ICLs with high quality CFLs in Kenyan households free of charge across the country under the Green Light for Africa Small Scale Programme of Activities herein referred to as SSC-PoA. The PoA is currently under validation by an independent UN accredited body, Bureau Veritas. The CFLs will be rated 15,000hours lifetime with an average power rating of 14 watts and 22 Watts. The existing ICLs will be replaced with CFLs of similar light output. The distribution will mainly be to the low income households. The company through customer service should step up its campaigns of the importance of using the energy saving bulbs to the new beneficiaries of this project so that the bills will be affordable.

7.2.2.5 Social Inclusion

The Kenya Electricity Expansion Project- AFaims at scaling up access of electricity to low-income households. This is in line with the tenets of social inclusion which the World Bank 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.

7.2.2.6 HIV/AIDS

Kenya Power's HIV/AIDS policy underscores the fact that HIV/AIDS has no cure and the only way to stop its spread is through attitudinal and behavioral changes as well as management that can be secured effectively through education (awareness and information campaigns). One of the positive impacts of this project will be disseminating of HIV and AIDs information to communities and workers who otherwise would not have had the correct information on three levels:

a) Direct beneficiaries of the project i.e. those who will be connected will have the benefit of health education messages through use of radios and TV as using electricity to power these gadgets is more reliable. Benefits are higher because the beneficiaries will be able to access HIV/AIDS information that is reliable and which comes from time to time as they can use the T.V and radios at will. The beneficiaries will also benefit from expert's opinion on the pandemic such as listening to doctors and nutritionists regarding HIV/AIDS.

b) The other method of disseminating HIV/AIDS information during project implementation will be through the contractor. The contactors will be expected to disseminate information to the workers as part of their daily tool box talks. SHE department will liaise with NACC to get materials (if they are available at the time) on HIV/AIDS that can be distributed by the contractors during the tool box talk. This will reach more people as the project is being implemented country wide.

c) During the Environment Impact Assessment for other projects the Safety Health and Environment department disseminates HIV/AIDs to the public during public consultations meetings.

7.2.2.7 Health benefits of the project

According to the 2009 population census access to electricity stood at 23%, while 31% used lantern lamps and 39% was using tin lamps for lighting. This indicates that 70% of the population was using kerosene for lighting. Although access to electricity has improved a majority of Kenyans are still using kerosene for lighting. This poses health problems as reported by World Bank report 2008 on the Welfare of Rural Electrification. The report notes 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 liter 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 nearsightedness (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.

7.2.2.8 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. Appropriate lighting through electricity will provide school going children in homes an opportunity to study after household chores especially girls who have to assist their mothers in preparing dinner.

7.2.2.9 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, fridges, television sets, washing machines to mention but a few. Use of electricity for lighting implies that the people will not be exposed to smoke arising from use of kerosene lamps which predisposes people to respiratory diseases.

7.2.2.10 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.

7.2.2.11 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.

7.2.2.12 Communications

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.

7.2.2.13 Gender Considerations

The vision of National Gender and Equality Commission is “A society that upholds gender equality, dignity and fairness for all”. The Commission is guided by a mission “To effectively and efficiently promote gender equality and freedom from discrimination of all persons in Kenya”. Kenya Powers Gender mainstreaming policy is in line with the NGEV Vision and Mission. The company’s gender vision is a world class power provider that is free from inequality and discrimination. The gender mission is promoting gender equality in powering people for better lives. The gender policy of Kenya Power is to mainstream gender within the company’s procedures, management and monitoring and evaluation processes for the equal benefit of men and women by 2015.

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.

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.

7.3 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. The following are the negative impacts and suggested mitigation measures.

7.3.1 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 but the alignment of lines will be undertaken in a manner so as to minimize cutting of large or old-growth trees. Grass and short vegetation will be manually cleared to pave way for erection of poles. The clearing of trees will be very minimal and not widespread since some of the GPOBA areas are devoid of trees, and other areas are very lightly forested. No large-scale cutting of trees will take place under the project.



Figure 8: Example of GPOBA area with no trees

7.3.2 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.

7.3.3 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

7.3.4 Solid waste

Little if any solid waste will be generated which includes conductor cuttings and tree cuttings. For the civil works at substations and for the electrification of households, key factors are to ensure that appropriate safety guidelines are adopted, and that obsolete equipment and construction waste is disposed of in an environmentally sustainable manner.

7.3.5 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. To implement live-line maintenance, the project will provide special safety training for maintenance teams, and the provision of specialized tools and equipment to ensure safety of maintenance teams and bystanders during live maintenance works.

7.3.6 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 occupational risks like falling from heights, being pressed by poles etc.

7.3.7 Public health risk

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).

7.3.8 Construction material sourcing-wooden poles

Majority of these service lines are constructed using wooden poles. This would impact on the environment because many poles will be used during construction.

7.3.9 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.

7.3.10 Noise during construction

Noise pollution from the proposed development during construction noise will be generated from the construction machines and construction workers

7.3.11 Contamination from CCA and creosote-treated poles

Soil and water pollution due to unsafe disposal of CCA and creosote-treated poles may occur if proper care and management procedures are not put in place

7.4 E-Waste Mitigation Measure and Management/Disposal Plan

This ESMF contains potential mitigation measures through which the adverse impacts associated with E-Waste emanating from this project can be managed. The mitigation measures or guidelines have been designed in order to avoid, minimize and reduce negative environmental and social impacts at the project level. The mitigation measures are presented in the following tables in a descriptive format.

7.4.1 Procurement of Electronic Equipment from Credible Manufacturers

The project will as a mitigation measure ensures that all electronic devices are procured from manufacturers that are credible and that all equipment will have a clear date of manufacture and warranty. This will avoid

procurement of refurbished or used second hand electronic devices with a shorter shelf life a common problem that leads to generation of E-waste as a result of obsolescence.

7.4.2 Recycling

All the E-wastes generated from will be taken to Nairobi where there is a facility that recycles E-waste at no cost. The East African Compliant Recycling Company is operating Kenya’s first E-waste recycling facility, operating to international health, safety and environmental standards and establishing a local, sustainable IT E-waste recycling industry.

The East Africa Compliant Recycling was designed as a scalable model for E-waste recycling. It was established in Mombasa in October 2011 as a pilot project with funding from HP. The EACR is the first facility of its kind in East Africa to test a practical approach to E-waste recycling. The objectives behind its establishment were to:

- Analyze and measure volumes of E-waste returned
- Establish the process to safely separate the products into parts
- Identify facilities and markets to process all the resulting dismantled materials

Since beginning official operations, the EACR remains the only recycling facility in Kenya to accept, dismantle and separate all E-waste components and not just the valuable resources. Plastics, glass, batteries - everything - are all disposed in accordance with the highest international criteria while generating local income and employment opportunities. Until now, the facility receives end-of-life IT from business and public sector customers, as well as from the informal sector for recycling. EACR facility offers its workers advice on handling E-waste containing hazardous materials such as lead and cadmium.

Table 3: E-Waste Management/Disposal Plan

Issue: Procurement and provision of Electronic Devices e.g. Solar panels and batteries				
Impact	Mitigation	Monitoring	Responsibility	Budget (USD)
Air Pollution through improper disposal which leads to release of toxic, hazardous and carcinogenic gaseous	Procure Electronic devices from credible manufactures to avoid purchasing second hand, refurbished or obsolete devices with a short shelf life or already categorised as E-Waste Recycle all E-waste; Transport all E-wastes to the East African Compliant Recycling Company in Nairobi. Conduct awareness and sensitization targeting the users of the electronic devices to ensure that they engage in best practise for E-waste management.	Warranty for Electronic Devices purchased Credibility of manufacturers supplying the electronic devices Availability of E-waste receptacles in each school Number of awareness and training conducted for users of electronic devices on E-waste Certificate of disposal of E-wastes given by the East African Compliant Recycling Company attesting that E-waste from the program have been successfully disposed	MOEP/KPLC, and NEMA	5,000 USD for transport and purchase of recycling bins. The East African Compliant Recycling Company offers free recycling services.
Human Health Impacts due to poor disposal.	Procure Electronic devices from credible manufactures	Warranty for Electronic Devices purchased	MOEP/KPLC, and NEMA	5,000 USD for transport and purchase of recycling

<p>Electrical and electronic equipment contain different hazardous materials, which are harmful to human health and the environment if not disposed of carefully.</p>	<p>to avoid purchasing second hand, refurbished or obsolete devices with a short shelf life or already categorised as E-Waste</p> <p>Recycle all E-waste;</p> <p>Transport all E-wastes to the East African Compliant Recycling Company in Nairobi.</p> <p>Conduct awareness and sensitization targeting the users of the electronic devices to ensure that they engage in best practise for E-waste management.</p>	<p>Credibility of manufacturers supplying the electronic devices</p> <p>Availability of E-waste receptacles in each school</p> <p>Certificate of disposal of E-wastes given by the East African Compliant Recycling Company attesting that E-waste from the program have been successfully disposed</p>		<p>bins. The East African Compliant Recycling Company offers free recycling services.</p>
<p>Pollution of land resources including landfills</p> <p>Electrical and electronic equipment contain different hazardous materials, which are harmful to human health and the environment if not disposed of carefully.</p>	<p>Procure Electronic devices from credible manufactures to avoid purchasing second hand, refurbished or obsolete devices with a short shelf life or already categorised as E-Waste</p> <p>Recycle all E-waste;</p> <p>Transport all E-wastes to the East African Compliant Recycling Company in Nairobi.</p>	<p>Warranty for Electronic Devices purchased</p> <p>Credibility of manufacturers supplying the electronic devices</p> <p>Certificate of disposal of E-wastes given by the East African Compliant Recycling Company attesting that E-waste from the program have been successfully disposed</p>	<p>MOEP and NEMA</p>	<p>5,000 USD for transport and purchase of recycling bins. The East African Compliant Recycling Company offers free recycling services.</p>
<p>Pollution of water bodies</p> <p>Electrical and electronic equipment contain different hazardous materials, which are harmful to human health and the environment if not disposed of carefully.</p>	<p>Procure Electronic devices from credible manufactures to avoid purchasing second hand, refurbished or obsolete devices with a short shelf life or already categorised as E-Waste</p> <p>Recycle all E-waste;</p> <p>Transport all E-wastes to the East African Compliant Recycling Company in Nairobi.</p> <p>Conduct awareness and sensitization targeting the users of the electronic devices to ensure that they engage in best practise for E-waste management.</p>	<p>Warranty for Electronic Devices purchased</p> <p>Credibility of manufacturers supplying the electronic devices</p> <p>Certificate of disposal of E-wastes given by the East African Compliant Recycling Company attesting that E-waste from the program have been successfully disposed</p>	<p>MOEP and NEMA</p>	<p>5,000 USD for transport and purchase of recycling bins. The East African Compliant Recycling Company offers free recycling services.</p>

8 CHAPTER EIGHT: THE ENVIRONMENTAL AND SOCIAL SCREENING PROCESS FOR THE KENYA ELECTRICITY EXPANSION PROJECTS

8.1 The Environmental and Social Screening Process in Kenya

The Environmental Management Coordination Act of 1999 and the Environmental (Impact Assessment and Audit) Regulations (June 2003) prescribe the conduct for Environmental Impact Assessment for development projects. However, these instruments do not contain guidelines regarding the screening, identification, assessment and mitigation and monitoring of potential adverse, localized environmental and social impacts of small-scale investments, where the project details and specific project sites are not known at the time of appraisal of the parent project.

8.2 Environmental and Social Screening in the Framework

The Environmental and Social Screening Process outlined in the ESMF complements Kenya's EIA procedures for meeting the environmental and social management requirements. The Environmental and Social Screening Process also meets the requirements of the World Bank. It provides a mechanism for ensuring that potential adverse environmental and social impacts of projects by KPLC are identified, assessed and mitigated and monitored as appropriate, through an environmental and social screening process (see *Environmental and social screening form in (Annex 1)*). This will be undertaken by qualified NEMA registered EIA/EA experts within KPLC staff at the national supported by regional staff.

8.3 Application of the Screening processes

The objectives of the screening process are to:

- Determine the potential adverse environmental and social impacts of the proposed sub-project;
- Determine the appropriate environmental category as per OP/BP 4.01 environmental assessment;
- Based on the assigned environmental category, determine the appropriate level of environmental work required (i.e. whether an EIA is required or not (environmental category A); whether the application of simple mitigation measures will suffice (environmental category B); or whether the project has negligible adverse environmental and social risks. (Environmental category C).
- Determine appropriate mitigation measures for addressing adverse impacts using the Environmental and Social Checklist (annex 2); this checklist can be adjusted to reflect project-specific environmental management requirements;
- Determine the extent of potential solid and liquid waste generation, including hazardous wastes such as PCB and creosote, and appropriate mitigation measures;
- Determine potential adverse impacts on physical cultural resources, and provide guidance to be applied in the case of chance finds;
- Incorporate environmental mitigation measures as presented in the screening form and/or separate EA report into the proposed project design;
- Determine potential adverse social impacts due to land acquisition;
- 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); and

- Provide environmental and social monitoring indicators to be followed during the construction, rehabilitation, operation and maintenance of the infrastructure service facilities and related project activities.

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

- Proposed sub-project construction/expansion will avoid or mitigate adverse impacts of the sub-project construction / expansion on physical cultural resources, including ensuring government authorities responsible for the protection of cultural assets are notified and have the opportunity to document chance finds, etc. “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;
- Proposed sub-project construction/expansion will not be located within conservation areas, protected areas, sanctuary, and forest areas as designated by Wildlife Conservation and Forest Departments;
- Proposed sub-project will not be located within a wetland or on a reservation of surface water bodies.
- Potential environmental impacts associated with location will be minimized by selection of alternative sites;
- All stages of the sub-project screening, design and implementation will be done in a participatory manner with public consultation with potential affected persons;
- Solid and liquid waste management facilities under the proposed sub-project will not be sited adjacent to settlements; will not include treatment of hazardous waste. The PCB wastes will be disposed of by using of powerful reagents such as sodium. The reagent does not affect the basic oil itself, but breaks down the PCB, generating a residue which may be removed by physical separation. In the hands of expert contractors, such technologies can be carried out even whilst a transformer is in use and operating. The residues will be disposed of by incineration process. Waste oils can be recovered and recycled, either directly in the case of high oil content wastes, or after some form of separation and concentration from high aqueous content materials. While certain types of waste oils, lubricants in particular, can be subjected to regeneration processes which give products of comparable quality to the original material, a large volume of waste oil is used for its energy content, as a secondary or substitute fuel.
- The disposal of creosote treated wood, however, is subject to local regulation of disposing of the Insecticide, Fungicide, and Rodenticide. In case the local regulations will not apply then the international regulations shall apply on the three major wood preservations--namely, creosote, pentachlorophenol, and inorganic arsenicals. Among other things, these rules require that wood which has been treated with creosote should not be burned in an outdoor fire or in stoves or fireplaces; rather, this wood should be buried in a non-hazardous waste landfill unless otherwise required by the law. This requirement was included to ensure that no toxic contaminants would be released as a result of the burning process.
- Proposed sub-project with some significant environmental impacts will be undertaken but adequate mitigation measures will be put in place so as to minimize those impacts to the manageable size throughout the project period.

The following procedure will be followed for the sub-projects that are under the above criteria.

- (a) The first step in environmental assessment will be preliminary screening. The KPLC PIU staff with assistance of regional staff will accomplish this task by completing the environmental and social screening form (annex 1) described in the ESMF.
- (b) The completed environmental and social screening form (annex 1 of the ESMF) is attached to the recommendation and submitted to NEMA regional level for review and clearance purposes.
- (c) Sub-projects assessed to have some adverse environmental impacts and assigned the environmental category 1 will be required to go through a full EA.
- (d) The environmental assessment will be undertaken in a participatory manner and the stakeholder consultations will be documented in the environmental assessment documents; in case a consultant will be used, KPLC Environment and Social Unit will prepare TOR and be involved in recruitment of EA consultants. Although currently KPLC has adequate capacity to carryout screening.
- (e) The Environmental Guidelines for Contractors (annex 4) will be attached to the bidding documents to ensure environmentally and socially sound construction practices.
- (f) For sites where Environmental assessments will be undertaken, NEMA approval will be sought before commencement of detailed design in order to ensure that good practices are included in the technical design.
- (g) As regards the approval of environmental and social screening results, NEMA's regional offices will provide review and clearance prior to the commencement of works.
- (h) KPLC Environment Unit will ensure that environmental concerns are addressed during planning, design, construction, and operations of the sub-projects and appropriate mitigation measures are in place.

Proposed sub-project selection, design, contracting, mitigation, monitoring and evaluation will be consistent with agreed process outlined in this ESMF and ESMP will be fully integrated into the Project Implementation Plan/Operations Manual and project cost tables.

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 sub-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 sub-projects are carried out in accordance with the ESMF. In addition ***Environmental Guidelines for Contractors (Annex 3)*** will be implemented and monitored by the KPLC SHE staff.

8.4 The Screening Process

The extent of environmental work that might be required, prior to the commencement of construction and rehabilitation of the slum electrification activities will depend on the outcome of the screening process described below.

8.4.1 Step 1: Screening of project activities and sites

Prior to going to the field, a desk appraisal of the construction and rehabilitation plans, including transformers, and distribution lines designs, will be carried out by KPLC/PIU and Environment unit staff or selected consultant. KPLC PU with the help of regional staff will carry out the initial screening in the field, by completing the Environmental and Social Screening Form (Annex 1).

The screening form, when correctly completed, will facilitate the identification of potential environmental and social impacts, potential water and oil pollution, soil erosion, the need for safe disposal of creosote treated poles, PCB, need for way-leave acquisition, the determination of their significance, the assignment of the appropriate environmental category (consistent with OP/BP 4.01 Environmental and Social Assessment), the determination of appropriate environmental and social mitigation measures, and the need to conduct an Environmental Impact Assessment (EIA) and/or Resettlement Action Plans (RAPs).

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

8.4.2 Step 2: Assigning the Appropriate Environmental Category

The environmental and social screening form, when completed, will provide information on the assignment of the appropriate environmental category to a particular sub-project.

The KPLC PIU will be responsible for assigning the appropriate environmental category to the proposed slum electrification sub-project in accordance with the requirements of OP/BP 4.01, Environmental Assessment and EMCA 1999.

Categorization follows the principle of using the appropriate type and level of environmental and social assessment for the type of operation. Working with Bank operations staff, the borrower proposes a category, providing sufficient supporting documentation and baseline data to allow the Bank's Compliance and Safeguards function to review and validate the proposed category. The responsibility of appropriate categorization is therefore shared by the Bank and its borrowers and should be based on reasonably accurate due diligence material.

Although the nature of the sub-projects under the slum electrification component of KEEP – AF (Additional Financing) are clearly of limited and reversible impact (which would classify them as a B) the overall Category remains an A for the purposes of World Bank classification, given the nature of the complex investments under the parent project.

A. **Category A:** A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area

broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an EIA (or a suitably comprehensive or sectoral EA) that includes as necessary, elements such as environmental audits or hazard or risk assessments.

- B. **Category B:** A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A. Like Category A, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.
- C. **Note:** The KEEP-AF, similar to its Parent project – KEEP, is categorized as an A due to the significant environmental impacts occasioned by geothermal power generation. Most of the impacts from the Slum Electrification component however are reversible and can be mitigated against.
- D. **Category C:** A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.
- E. **Category FI:** A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that might result in adverse environmental impacts. **Note:** This environmental category will not apply to any of the Kenya Electricity Expansion Project funded sub-projects as it will not involve the investment of Bank funds through financial intermediaries.

8.4.3 Step 3: 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. These measures will be captured in the Environmental and Social Management Plan (ESMP) which will be prepared as part of the EIA process for each project. **Environmental and Social checklist (Annex 2)** will be used for category B2 projects; and **Generic EA TOR in Annex 5** will guide EA study for category B1 projects in case they occur.

Preparation of the EIA, the ESMP be carried out in consultation with the relevant sector Ministries including potentially affected persons. The relevant government departments in close consultation with the Ministry of Environment, Water and Natural Resources and the Project Management Team will arrange for the (i) preparation of EIA terms of reference for projects;(ii) recruitment of a service provider to carry out the EIA; (iii) public consultations; and (iv) review and approval of the EIA through the national EIA approval process.

8.4.4 Step 4: Review and Approval of the Screening Activities

The results and recommendations presented in the environmental and social screening forms and the proposed mitigation measures presented in the environmental and social checklists will be reviewed by KPLC Environmental Unit and Validated by NEMA at the County level. Where an EIA has been carried out, NEMA will review the reports to ensure that all environmental and social impacts have been identified and that effective mitigation measures have been proposed.

Based on the results of the above review process, and discussions with the relevant stakeholders and potentially affected persons, NEMA, in case of sub-projects that don't require EIA make recommendations to the County Environmental Committee for approval/disapproval of the screening results and proposed mitigation measures. As regards to EIA reports, County Environmental Officer will recommend EIA reports to the NEMA for approval while RAPs will be approved by the Ministry of Lands, Housing and Urban Development.

8.4.5 Step 5: Public Consultations

Public consultation is a regulatory requirement by NEMA and donors 'safeguards for new projects by which the public's input on matters affecting them is sought in regard to the project. Its main objectives will be improving the efficiency, transparency and public involvement in the proposed projects that will enhance the compliance of the environmental laws and policies in regard to the implementation of the projects. It will involve notification (to publicize the matter to be consulted on), consultation (a two-way flow of information and opinion exchange) as well as participation involving interest groups. Through public participation, environmental conservation will be enhanced.

8.4.6 Step 6: Environmental Monitoring

This describes the processes and activities that need to take place to characterize and monitor the quality of the environment in the project sites. This will be used towards the preparation of environmental screening, as well as in many circumstances in which the project activities carry a risk of harmful effects on the natural environment. All monitoring strategies and programmes for the sub-projects shall have reasons and justifications which will be designed to establish the current status of an environment or to establish trends in environmental parameters where the projects shall be implemented. In all cases the results of monitoring will be reviewed, analysed statistically and published for the purpose of project implementation. The sub-project design should have a monitoring programme which must have regard to the final use of the data before sub-project monitoring starts. This environmental monitoring for the sub-projects should be continuous throughout the project life.

8.4.7 Step 7: Environmental Monitoring Indicators

These are the measurements, statistics or values that provide a proximate gauge or evidence of the effects of environmental management programs or of the state or condition of the environment that could result from the sub-projects that could be implemented by KPLC. The environmental indicators that need to be monitored include; air quality, water quality, flora and fauna, human health, social and economic conditions.

9 CHAPTER NINE: PUBLIC CONSULTATION & PARTICIPATION

Participatory Stakeholder Forums were held in different slum areas within during the first phase of IDA/GPOBA engagement in KEEP. The public forums were held in a bid to create awareness on the GPOBA project. The members present were informed that the project is sponsored by the World Bank and customers were required to pay KES 1,160.00 to be connected. Secondly the need to get connected with safe power was emphasized and avoids illegal connections which were a major safety risk and concern in the settlements. Further the Kenya Power team informed members present that prepaid meters would be installed and customers will be in-charge and will be able to control their electricity consumption.

The discussions stressed more questions from the public around the project and the people asked more questions which the team from KPLC addressed. The team together with the public walked along the line in a bid to reach more people.

Public safety awareness in Kenya power and consultation is generally a continuous process aimed at engaging the stakeholder efforts throughout the planning, design, construction, and operation a project. The objectives of consultation is mainly to provide an opportunity for the public to access more information and to raise general public awareness by providing information about a sub-project to all stakeholders, particularly the -projects affected persons (PAPs) in a timely manner, and to provide opportunity to the stakeholders to voice their opinions and concerns on different aspects of the project. The opinions and suggestions of the stakeholders and public assist in taking appropriate decisions for effective planning including environmental management of the projects. It would help facilitate and streamline decision making whilst fostering an atmosphere of understanding among individuals, groups and organizations, who could affect or be affected by the sub-projects.

Due to the nature of electricity supply in slum areas public safety campaigns have been stepped up in the last one year or so. The campaign revolves on safe electricity supply and discouraging illegal connections because they pose a threat to the public and general environmental issues. Apart from public campaign the department carried out the same campaigns in different avenues including road shows bill boards and through local media both print and electronic.

The safety campaigns will continue and will be more focussed on GPOBA in the areas where the project will be located. The campaigns will also include environmental issues related to the project prior ot implementation. Therefore, an effective public consultation and access to information plan (PCAIP) will be developed. The specific objectives of Public Consultation are:

- To discuss the GPOBA project, benefits and cost implications
- To keep stakeholders informed about the -projects at different stages of implementation,
- To address the environmental and social concerns/ impacts, and device mitigation measures taking into account the opinion/ suggestions of the stakeholders,
- To generate and document broad community support for the sub-projects,
- To improve communications among interested parties, and
- To establish formal complaint submittal / resolution mechanisms.
-

Some of the public awareness campaigns carried out are annexed at annex section of this report/framework including lists of attendance

9.1 Consultation Process

A critical element of the KEEP- AF project will be the implementation of a comprehensive participatory consultation. Considering the importance of effective participation and consultation in a wide spread project area along with the time and resource constraints in the project, the following participation techniques will be followed:

Information dissemination and information sharing techniques will be used to advise stakeholders in a timely manner of proposed actions being undertaken in project sites. Tools and techniques used will include:

- consultations with different stakeholders
- Focused Group Discussion (FGDs)
- Key Informant interviews or consultations for specific people like opinion leaders and administrators
- Public campaigns with the communities
- Any other forum that will be deemed necessary to achieve project support from targeted communities. .

The focus group discussions (FGDs) will have representations from the cross-sections of the stake-holders of various professions and categories for the project beneficiaries' different categories of people. Including, business persons, housewives, women groups, vulnerable groups, NGOs/CBOs, local government, administrator and development organizations,. The SHE department and customer service will work closely on these campaigns.

10 CHAPTER TEN: GRIEVANCE REDRESS MECHANISM

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.

The World Bank Group standards outline requirements for grievance mechanisms for some projects. Grievance mechanisms should receive and facilitate resolution of the affected institutional or communities' concerns and grievances. The World Bank states the 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. 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. As such this ESMF has developed a grievance management process to serve as a guide during project implementation.

Process	Description	Time Frame	Other Information
Identification of grievance	<p>Face to face; phone; letter, e-mail; recorded during public/community interaction; others</p> <p>The responsible party to receive the grievances will be the engineer in charge i.e of the project to the the contact person.</p> <p>The grievance can also be passed through the administrators such as the chief office because the public are more conversant with this office. The chief would then pass the complaint to the KPLC contact person</p>	1 Day	Email address; hotline number

Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book) It will be prudent to have a grievance record book where the grievances are recorded for follow up	3-6 Days	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	3 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-8 Days	
Response signed off	Redress action approved at appropriate	8-15 Days	
Implementation and communication of response	Redress action implemented and update of progress on resolution communicated to complainant	5-9 Days	

KPLC as a proactive organization has developed a grievance Redress Mechanism procedure to use in case of any incidence or complaint from the public or affected persons. **See Annex9.** 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.

11 CHAPTER ELEVEN: MITIGATION MEASURES

11.1 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 crew off site and avoid camps and in absence of that, educate the crew 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.

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 4 and 5. The table are not intended to be exhaustive in content but rather to indicate in general the scope of ESIA's 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 ESIA's and ESMPs, impacts shall be categorized according to project phase (planning, construction, operation, and decommissioning) and for all project types.

Table 4: ESMP and Mitigation Program

No .	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Kshs.)
1.	<p>Electric shocks and electrocution of people.</p> <p>Electricity, though a good master and a bad servant, is a hazard and safety precautions must</p>	<ul style="list-style-type: none"> • Proper public education to the people on safe use of electricity • Proper wiring in the customers' premises by qualified technicians 	Inspection	Supervising Engineer Contractor	<ul style="list-style-type: none"> • No of Public safety awareness sessions held 	operation	2,350,000

No .	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Kshs.)
	be adhered to and properly used.	<ul style="list-style-type: none"> Use of danger/hatari signs on the poles 			<ul style="list-style-type: none"> No of accidents recorded No of deaths Medical Records Presence of Hazard communication signs Availability of wiring certificate 		
2.	<p>Occupation safety and health hazards.</p> <p>During construction many people will be engaged in working. Such people are exposed to occupational risks like falling from heights, Accidents etc.</p>	<ul style="list-style-type: none"> 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; 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 	Inspection	Safety Engineer; contractor ; Technical Engineer	<ul style="list-style-type: none"> Workers in PPE Records of safety awareness sessions held with workers Fully stocked First Aid Kit Competency records Tool box talk records 	Construction Operation & decommissioning	235,000

No	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Kshs.)
		<ul style="list-style-type: none"> Observe OSHA 2007 regulations 					
3.	<p>Public health risk</p> <p>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).</p>	<ul style="list-style-type: none"> Public awareness of the public health issues identified. Provision of condoms Distribution of HIV & AIDS awareness materials in collaboration NACC 	Inspection	Safety Engineer/ Project Engineer	<ul style="list-style-type: none"> Availability of Condoms No of public health awareness sessions with workers 	Construction	150,000
4.	<p>Impact on Natural Vegetation</p> <p>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.</p> <p>Grass and short vegetation will be cleared to pave way for erection of poles.</p>	<ul style="list-style-type: none"> KPLC to plant trees as a way of compensation for the cleared ones Clear limited areas only where the pole will be erected Select alternative alignments to avoid sensitive natural features 	Inspections	Environmental ist	<ul style="list-style-type: none"> No of trees planted 	Construction & operation	2,000,000
5.	<p>Construction material sourcing-wooden poles.</p> <p>Majority of these service lines are constructed using wooden poles. This would impact on the environment as close to a million poles will be needed according to the preliminary estimates.</p>	<ul style="list-style-type: none"> 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 	Inspection	Environmental ist/ project Engineer	<ul style="list-style-type: none"> No concrete poles used No of trees planted 	Construction period	1,500,000

No .	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Kshs.)
6.	<p>Impacts on air quality from vehicle exhaust emissions</p> <p>Exhaust emissions are likely to be generated by the vehicles used to ferry materials during construction. These exhaust emissions can impact on the quality of air.</p>	<ul style="list-style-type: none"> Drivers shall not leave vehicles idling so that exhaust emissions are lowered. Maintain all machinery and equipment in good working order to ensure minimum emissions are produced. 	Inspection	<ul style="list-style-type: none"> Project engineer 	<ul style="list-style-type: none"> No vehicle idling onsite Vehicle maintenance Records 	Construction	Nil
7.	<p>Solid waste</p> <p>Little if any solid waste will be generated which includes conductor and tree cuttings.</p>	<ul style="list-style-type: none"> All left over conductor cuttings to be disposed appropriately or be returned to the store for proper disposal Proper budgeting of materials to reduce wastage practice 3 Rs of waste management: reduce, reuse, recycle of materials Manage storage, transfer, and disposal of transformer oils according to industry standards 	Inspection	Project Engineer	No waste on site Records of material return to store if any	Construction & Decommissioning	
8.	<p>Noise</p>	<ul style="list-style-type: none"> Proper servicing of vehicles Not necessary for power lines of such low voltage. However 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) Work through community liaison officers to agree on working hours and to respond promptly to complaints. 	Inspection	Project Engineer / Safety Engineer	Vehicle maintenance Records	Construction & decommissioning	Nil

No	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Kshs.)
9	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	<ul style="list-style-type: none"> No burning of vegetation along the distribution lines rights-of-way Timely maintenance of the right of way Time maintenance of transformers 	Routine maintenance	Operation and Maintenance Engineer	Way leave and Transformer maintenance Records	Operation	1,000,000
10.	Damage to crops and trees-	Compensation for loss of crops and trees to the owners	Verification with owners of crops	Socio-economist	Records of payments made	Construction and operation	Nil
11	Loss of physical cultural resources	Physical Cultural Resources may be triggered as a precaution, although the sub-projects are not expected to traverse areas of cultural or historical importance. Chance find procedures will be included in contracts and in the environmental documents.	Close monitoring of the contractor	Environmental specialist	Records of any chance finding and report to the NMK	Construction	20,000
12.	Oil Leaks -The refilling and emptying 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 surface and groundwater as well as soil.	<ul style="list-style-type: none"> 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. 				Operation and decommissioning	400,000

Table 5: Typical impacts and mitigation measures for new LV and MV distribution lines and Way leave acquisition

Project Activities / Environmental Aspects	Potential and Associated Impacts	Mitigation Measures
Acquisition of Right of Way (ROW)	Anxiety among potentially affected landowners and users	<ul style="list-style-type: none"> • Work through community liaison officers to keep public fully informed
	Dissatisfaction with compensation; disruption of livelihoods	<ul style="list-style-type: none"> • Prepare and implement compensation plan in accordance with the guiding principles and way leave regulations
	Loss of natural habitat	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Select alternative alignments to avoid physical cultural resources • Where avoidance is impossible, comply with World Bank OS2 and consult with national authorities and/or local leaders on best way to preserve or relocate cultural property. • Formulate and implement chance finds procedure
Clearance of RoW	Loss or fragmentation of or increased access to natural habitat, leading to reduction in biodiversity, possible impacts on rare or endangered species	<ul style="list-style-type: none"> • Give preference in site selection to land already converted • Minimize width of cleared area • Use labor-intensive mechanical clearing methods to maximize employment opportunities and avoid impacts of herbicides
	Accumulation of brush and debris	<ul style="list-style-type: none"> • Use appropriate disposal techniques; prohibit burning
Pole installation and Cable Stringing; Equipment Delivery and Installation	Soil / groundwater contamination from accidental fuel/engine oil spill refueling	<ul style="list-style-type: none"> • Store fuel and chemicals on an impermeable surface with a bund that will hold 110% of the capacity of fuel and chemicals stored. • Train personnel in safe fuel handling • Use drip pans to contain any spills during refueling activities
	Onsite noise and vibration and other hazards.	<ul style="list-style-type: none"> • Maintain all work equipment at optimal operating condition • Enforce use of PPE • Implementation of weekly Health and Safety (H&S) training • Daily tool box talks
	Disturbance by noise and vibration in surrounding communities	<ul style="list-style-type: none"> • Maintain all work equipment at optimal operating condition • Monitor noise levels at sensitive receptors (residential areas, schools, hospitals) • 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

Project Activities / Environmental Aspects	Potential and Associated Impacts	Mitigation Measures
	Risk of accidents to life and property	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Routine inspection, and prompt repair of any damage
	Working at heights and in confined spaces.	<ul style="list-style-type: none"> Adequate ladder should be provided Provision of climbing shoes Provide safety harness
Distribution line operation	Risk of electrocution, injury or property damage	<ul style="list-style-type: none"> 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
	Pollution from Improper disposal of solid and liquid wastes	<ul style="list-style-type: none"> 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
Distribution line maintenance	Damage to natural habitat	<ul style="list-style-type: none"> Set and enforce restrictions on hunting by workers Minimize width of cleared area Use labor-intensive mechanical clearing methods to maximize employment opportunities and avoid impacts of herbicides
	Accumulation of brush and debris	<ul style="list-style-type: none"> Use appropriate disposal techniques; prohibit burning
	Soil / groundwater contamination from accidental fuel/engine oil spill refueling	<ul style="list-style-type: none"> Train personnel in safe fuel handling Use drip pans to contain any spills during refueling activities
	Risk of accidents to life and property	<ul style="list-style-type: none"> Set and enforce speed limits Mandatory driver training Use warning signs and, where necessary, personnel to direct traffic

11.2 Environmental and Social Management Plan (ESMP)

The purpose of the Environmental and Social Management Plan (ESMP) is to provide guidance during the implementation of the Proposed KPLC Projects regarding the institutional responsibilities and cost estimates for effective environmental and social management. 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.

Thus, the provided ESMP (annex 6) (i) describes the potential adverse environmental and social impacts of future projects; (ii) outlines proposed mitigation measures to be adopted and indicate parties responsible for implementing mitigation measures; (iii) identifies parties that will carry out the monitoring of the implementation of the mitigation measures; (iv) outlines the time horizons for the various activities; and (v) detail the associated costs and sources of funds. The ESMP will be included in the Project Implementation Manual and the cost estimates for implementing the ESMP will be included in project cost tables.

11.3 Monitoring Plan

Monitoring of the implementation of the ESMP will be done by KPLC Environment unit with assistance from regional safety officers/engineers. The ESMP will outline the institutional arrangements and cost estimates for environmental and social management during the implementation, operation and decommissioning of the KPLC Projects. The following are specific institutional responsibility for the projects:

- Play the role of facilitating the implementation of the projects
- To produce annual and periodical reports to the bank indicating the actions that has been undertaken towards the implementation of projects on the environmental status.
- Drawing up project objectives for monitoring purposes
- Develop the key indicators for monitoring purposes with the bank and ensure the monitoring capabilities.
- Carrying out Environmental awareness campaigns and collaborates with other stakeholders where these projects will be implemented.
- KPLC will be fully involved in the implementation of the project.

The capacity building needed for KPLC SHE department will be in terms of training which will involve regional safety engineers/officers and environmental unit staff in KPLC since they will be involved directly in implementing all KPLC projects and in carrying out environmental screening and monitoring. These trainings will ensure the SHE staffs have adequate manpower in all aspects of environment for sustainable development. Provision of necessary equipment for better execution of their duties and proper monitoring of these projects to ensure continuity and sustainability should be provided.

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

KPLCSHE department needs manpower development to cope with its many tasks, which include the donor funded projects.

12 CHAPTER TWELVE: INSTITUTIONAL CAPACITY FOR ENVIRONMENTAL MANAGEMENT

12.1 Responsibilities for Environmental and Social Monitoring

Environmental and social monitoring will be carried out by the KPLC PIU 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 construction and rehabilitation of the existing and new distribution and transmission lines and substations, as well as during their operation and maintenance.

The table below provides some of the key environmental and social monitoring indicators, to be adapted to the projects as necessary.

Table 6: Key environmental and social monitoring indicators

ISSUE	REMARKS
Reduction in soil erosion	
Increase in re-forestation	
Drainages around infrastructures	
Wayleave acquisition	
Hectarage of land acquired	
Number of people affected	
Type and amount of assets to be affected for the community members and government by the project	
Number of persons expressing willingness to relocate	
Number of persons expressing unwillingness to relocate	
Livelihood status prior to project	
Livelihood status after project	
Has standard of living increased, decreased, or remained the same	
Number of women employed by civil works	
Number of employees receiving HIV/AIDS awareness training at work site	
Number of community members receiving HIV/AIDS awareness training during project implementation	
Number of people employed from project surrounding areas	
Construction Works of the proposed projects	
Hectarage of land clearance	
Project areas where infrastructure will be constructed	
Number of pit latrines for workers at camp site	
Number of water points for workers at camp site	
Number of environmental mitigation measures implemented and financed by projects	
Implementation status of safe disposal of creosote-treated poles	

ISSUE	REMARKS
Implementation status of the Environmental Guidelines for Contractors	
Number of staff and other personnel having completed environmental training	
Implementation status of safe disposal of PCB	
Number of complaints on inconveniences caused by the construction works (complaints against dust)	
Number of Accidents	
Number of cases contravening health and safety procedures	
Number of disposal sites for wastes from the construction sites and camp sites	
Number of Disposal sites that will be restored to original or better state in terms of environmental degradation.	

The SHE department ensures compliance with national and international environmental regulations and with the World Bank Operational Safeguards. The staff will include environmental and social specialists and a Socio-economist. The SHE department has prepared a number of ESIA's, RAPs, and/or Environmental Audits as well monitoring of other projects for Kenya Power.

12.2 Monitoring, evaluation and reporting

Monitoring, evaluation and reporting on environmental issues will be part of project implementation processes and reporting systems. KPLC will keep records of all activities that will be undertaken under each project site, which will be compiled and used in enhancing environmental sustainability of the project sites. The KPLC PIU will be responsible for environmental and social monitoring at local levels. KPLC's Environmental Unit, Project engineers and Regional Safety Officers/engineers will distil environmental and social screening actions from the completed Environmental and Social Screening Forms (Annex 1). Compliance to environmental and social screening requirements will also be generated based on quarterly reports, annual reports, evaluation reports, feedback meetings and Implementation support missions. KPLC's Environment Unit will regularly report to the World Bank on the status of environmental and social management of projects in the project's Quarterly Reports.

12.3 Capacity Building and Environmental Training

Capacity building should be undertaken for the SHE department and Regional Safety Officers/Engineers to ensure that the ESMF is effectively operationalized. The KPLC PIU and regional staff involved in environmental matters have to be exposed to formal training in the management of environmental issues. The training program for various role players will include an orientation program on the ESMF to be done by SHE department which will include environmental assessment processes and participatory methodologies. Capacity building will 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.

Capacity building will enhance the ESMF management capacity by allowing real application of the best practices such as the following:

- Screening of investments for potential environmental and social impacts, scoping assessments, planning mitigation options, public consultation to assess feasibility and acceptability options; steps 1-7 to implement the environmental and social screening process for projects;
- Environment: site selection to minimize environmental impacts and social disruption; restoration of drainage patterns including mitigation matters in contracts; management of impacts during construction; monitoring of effectiveness of measures;
- Monitoring and grievance redress: transparency and supervision responsibilities.

As regards the institutional capacity building, the KPLC PIU 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 World Bank safeguard policies. 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. The three major areas for anticipated trainings are:

- 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 will 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. This training will 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.

The PIT will be attending various courses towards enhancing capacity building when they are identified. These courses include;

Environmental conservation and management;	Project management;
SEA Trainings	Climate change among others.
ESMF implementation and Monitoring Trainings	Environmental quality assessment and monitoring
Monitoring and evaluation;	Ecological assessment trainings on Fauna and Flora
Waste management;	

13 CHAPTER THIRTEEN: AN 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 World Bank safeguard policies. Based on experience from other related assignments the estimated cost for technical assistance for capacity building would be 80,000 USD.

Furthermore, screening and reviewing processes would also involve some cost implications. Every sub-project would be screened and reviewed by the implementing unit while involving Environmental Experts. The estimated costs for such processes would be 60,000 USD.

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. Based on previous experience from related projects, the estimated costs for monitoring would be 30,000 USD.

Table 7: Estimated level of costs for ESMF implementation

S/NO	ESMF proposed actions)	Concerned institutions	Level of cost (USD)
1	Training and capacity Building	SHE, Procurement, infrastructure and Network Management	40,000
2	Screening and reviewing	Project Implementation Unit	30,000
3	Monitoring activities	PIU, NEMA	30,000
4	Total Costs		100,000

The cost implications for implementing this ESMF are reflected in table 6 above. The estimates 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 will be identified and the level of technical assistance required.

14 CHAPTER FOURTEEN: 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 the slum electrification component of the KEEP AF Project.

This ESMF is meant to ensure that the implementation of the KEEP- AF, of which the specific sub-project 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 World Bank safeguard policies particularly Environmental Assessment (OP/BP 4.01).

Consequently, specific information on the number of sub-projects, site location of sub-projects, Land requirements, geo-physical 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 with precision.

The framework delineates the World Bank 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;

- Training needs. Staff who will be appointed to the Project Implementation Unit (PIU) For GPOBA Electrification sub-component of the Project, 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 KEEP- AF 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 KEEP- AF project as well as its subprojects must comply with the Kenyan Policies and Laws as well as World Bank Polices as defined in chapter 5 and 6.
- Adherence to ESMF requirement. 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 KEEP- AF. Furthermore, appropriate roles and responsibilities, for managing and monitoring environmental and social concerns related to sub-projects should also be followed.

15 REFERENCE

- Building Code 1968
- County Government Acts, 2012
- Energy Act of 2006
- Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations 2006
- Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006
- Environmental Management and Coordination (Noise and Excessive Vibration pollution) (Control) Regulations, 2009: Legal Notice 61
- Government of Kenya Wayleave Act
- Government of Kenya Roads Board Act
- Government of Kenya State of Environment 2010
- Government of Kenya Public Procurement and Disposal Act
- Government of Kenya Agriculture Act
- Government of Kenya Roads Act
- Government of Kenya Fiscal Management Act (CAP 5) of 2009
- Government of Kenya Antiquities and Monuments Act, Cap 215 of 1983
- Government of Kenya Employment Act, 2007
- Government of Kenya Maritime Authority Act 2006
- Kenya Vision 2030: A Globally competitive and prosperous Kenya 2007
- Land Act, 2012
- Occupational Safety and Health Act, 2007
- Penal Code Act (Cap.63)
- Physical Planning Act, 1996
- Public Health Act (Cap. 242)
- The Civil Aviation Act No. 21 of 2013
- The Constitution of Kenya, 2010: Constitutional provisions
- The Environment Management and Co-ordination Act, 1999
- The Environmental Management Coordination (Water Quality) Regulations): Legal Notice 120
- The Environmental Management Coordination (Waste Management) Regulations): Legal Notice 121
- The Environmental (Impact Assessment and Audit) Regulations, 2003
- The Forestry Services Act, 2005
- The Land and Environment Court Act 2011
- The Traffic Act Cap 403 Of 2009
- Wildlife Conservation and Management Act, 2013
- Urban Areas and Cities Act No. 13 of 2011
- Water Act, 2002
- Work Injury and Benefits Act, (WIBA) 2007
- Kenya power Safety Rules Handbook 2014
- World Bank Project documentation for KEEP- AF
- World Bank Safeguards Policies
- World Bank Group Environmental, Health, and Safety Guidelines
- IFC Performance Standards

16 ANNEXES

16.1 Annex 1: Environmental and Social Screening Form

ENVIRONMENTAL AND SOCIAL SCREENING FORM

Introduction

This form is a tool to standardise the environmental and social screening process of KEEP AF sub-projects in the GPOBA Electrification Sub 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 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.

GENERAL PROJECT DESCRIPTION AND SETTING		
	General Aspects/Questions	Provision of answers to project aspects
1.	Name and/or Title	
2.	Project Type	
3.	Expected start and end date (month/year) & project duration (in months) of the construction phase:	
4.	List the technology and machinery to be used in the construction and operation phases	
5.	List the materials to be used during the construction and operation phases (e.g., infrastructure, creosote treated poles, fuels and oils):	
6.	Expected number of workers during construction& operation:	
7.	Provide a map with the geographical location of the project;	
8.	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	
9.	Is the project area or its immediate surroundings subject to pollution or environmental damage caused by other (existing) activities?	
10.	Is there any other infrastructure in or close to the project area?	
THE SOCIAL ASPECTS		
	Social issues around the project area	Describe the potential issues/impacts
11.	Existing land uses on and around the (existing transformer)/project area	

12.	Land uses on or near the project area which will be negatively affected by project implementation?	
13.	Presence of residential/sensitive areas e.g. community facilities	
14.	Present owner(s)/users of the project area	
15.	Population density	
16.	Job opportunities (for the local people)	
17.	Effects of project on people's access to land or natural resources	
	Compensation to property damage	
18.	Effects of project on incomes, value of land and other economic activities?	
19.	Construction workers (number and how long they will spend in project area)	
20.	Exposure of community/public to diseases	
21.	Safety of workers (e.g. occupational health and safety issues)?	
22.	Public engagement (role of the project beneficiaries across all phases of the project)	
23.	Public risk to shocks and electrocution	
24.	Public awareness on use of the service (electricity)	
25.	Population density	
26.	Presence of Indigenous Peoples in the project area	

Conclusion from the screening process

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ENVIRONMENTAL ASPECTS

	Existing environment:	Description –describe features and indicate sensitivity to disturbance
Physical Features		
27.	Topography/terrain	
28.	Soil (type & quality)	
29.	Surface water (presence & quality)	
30.	Sediments/substance (Type and quality)	
31.	Ground water (local use & quality)	
32.	Air quality (any pollution issues)	
Biological features		
33.	Vegetation (trees, ground cover, aquatic vegetation)	

34.	Wetlands (e.g. bogs, fens and marshes)	
35.	Fish and fish habitant	
36.	Birds (water fowl, migratory birds and others)	
37.	Mammals	
38.	Special habitat areas (special designations or identifies sensitive zones)	
39.	Archaeological resources (recorded or potential for them to exist)	
40.	Special designations (parks, protected areas)	
41.	Traditional economic/cultural activities (trapping, fishing, collection of medicinal plants)	
Conclusion from the screening process		

Screening Form was completed by:

Name _____

Position _____

Signature _____

Date _____

Screening Results were reviewed and approved by:

Name _____

Position _____

Signature _____

Date _____

16.2 Annex 2: Environmental and Social Checklist Form

Please note that this checklist does not concern itself with screening which was done through Annex 1

Potential Environmental & Social Impacts of Distribution component	Proposed Mitigation Measures
Creation of social conflict or inequity	Community participation & buy-in
Erosion of economic land value	Plan land use change Compensation, relocation
Damage to historical/cultural monuments or artefacts	Follow chance find procedures
Increased Deforestation	Afforestation
Nuisance – dust, smell or noise	Planning and siting
Water and soil pollution	Control of water and soil pollution
Soil Erosion	Provide and use approved storm water drainage
Health hazards to workers and communities	Sensitize workers and community on safety and health measures
Increasing incidence of communicable diseases	Communication and awareness
Impacts of creosote-treated poles	Proper disposal of waste creosote treated poles
Impacts of PCB at sub-stations	Contractor, workers and community awareness
Impacts on aquatic flora and fauna	Minimize clearing of the natural habitat
Strain on vegetation cover	Minimize clearing of the natural habitat
Changes in migration patterns of humans and animals	Integrate with rural planning
Inundation of cultural or archaeological resources or artefacts	Consider alternative siting Remove resources;
Water logging of soil	Micro-engineering solutions
Loss of scenic value	Re-vegetate
Disruption of land tenure, ownership rights	Community participation & buy-in; implementation of RPF & RAP
Population migration to the area	Integrate with rural planning
Relocation of people	Community participation & buy-in; implementation of RPF
Indigenous Peoples	NA
Community participation & support, implementation of IPPF	Cooperation among all stakeholders
Sub-project specific recommendations	
Sub-project	Recommendations
Substation (Transformers)	
Power Lines (distribution and transmission , medium voltage, low voltage, high voltage)	
Way leaves/Access roads	

16.3 Annex 3: Environmental Guidelines for Contractors

General Environmental Management Conditions

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 fulfil 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:
 - 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.
 - 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.
 - Upon discovery of ancient heritage, relics or anything that might or believed 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.
 - 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.
 - Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
 - Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
 - Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long distance transportation.
 - 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 and compensation for socio-economic disruption resulting from implementation of any works.

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 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.
11. 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

12. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
13. 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.

14. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
15. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
16. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
17. 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.
18. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
19. Minimize erosion by wind and water both during and after the process of reinstatement.
20. 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

21. The Contractor shall at all costs avoid conflicting with water demands of local communities.
22. 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.
23. Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.
24. No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.
25. Wash water from washing out of equipment shall not be discharged into water courses or road drains.
26. 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

27. 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.
28. Upon the completion of civil works, all access roads shall be ripped and rehabilitated.

29. 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

30. Unusable materials and construction elements such as electro-mechanical 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

31. 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.

32. Adequate road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

33. Construction vehicles shall not exceed maximum speed limit of 40km per hour.

Repair of Private Property

34. 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.

35. In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client has to be informed by the Contractor through the Supervising Engineer.

This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

Contractor's Environment, Health and Safety Management Plan (EHS-MP&ESMP)

36. 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.

37. 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.

38. 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

39. 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.

40. 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.

41. 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

42. 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 raising on social issues).

Cost of Compliance

43. 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.

16.4 Annex 4: 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 on-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 hours 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

16.5 Annex 5: Generic EA Terms of Reference

I. Introduction and context

This section will be completed at the appropriate time, and will provide the necessary information with respect to the context and methodological approaches to be undertaken.

II. Objectives of the study

This section will (i) outline the objectives and particular activities of the planned activity; and (ii) indicate which activities are likely to have environmental and social impacts that will require appropriate mitigation. (Adapted to specific activities)

III. Terms of Reference

The consultant will perform the following tasks:

- a) 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;
- b) 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;
- c) Assess the potential environmental and social impacts due to construction or rehabilitation activities, and recommend mitigation measures as appropriate, including cost estimates;
- d) Assess the potential environmental and social impacts due to the provision of water supply and sanitation facilities that might be needed for the planned facility and make appropriate recommendations;
- e) Assess the need for liquid and solid waste collection, disposal and management in the facility, and make recommendations accordingly;
- f) Discuss alternative project designs and make recommendations;
- g) Assess alternative project designs and make recommendations;
- h) 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;
- i) Review the Conventions and Protocols to which the country is a signatory;

- j) Assess the country'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;
- k) 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 the implementation of the mitigation measures; (f) cost estimates for these activities; and (g) time horizons for implementing the ESMP.
- l) 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.

IV. Report Plan

- Cover page
- Table of Contents
- List of acronyms
- Executive summary (as necessary, in English and French)
- Introduction
- Description of the proposed activity
- Description of the environment of the area where the activity will take place
- Description of the policy, institutional and regulatory framework.
- Methods and techniques used during evaluation and impact analysis of the proposed activity.
- Description of potential alternatives to the proposed project design.
- Description of environmental and social impacts of the proposed activity.
- Discussion of consultations with relevant stakeholders, including potentially affected persons.
- Environmental Management Plan for the proposed activity.
- Monitoring indicators for the proposed activity.
- Recommendations
- References.
- List of individuals/ institutions contacted.
- Summary table of the Environmental Management Plan (EMP).

16.6 Annex 6: Environmental and Social Management Plan (ESMP)

Guidelines for the preparation of ESMP

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.
2. **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.
4. **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.

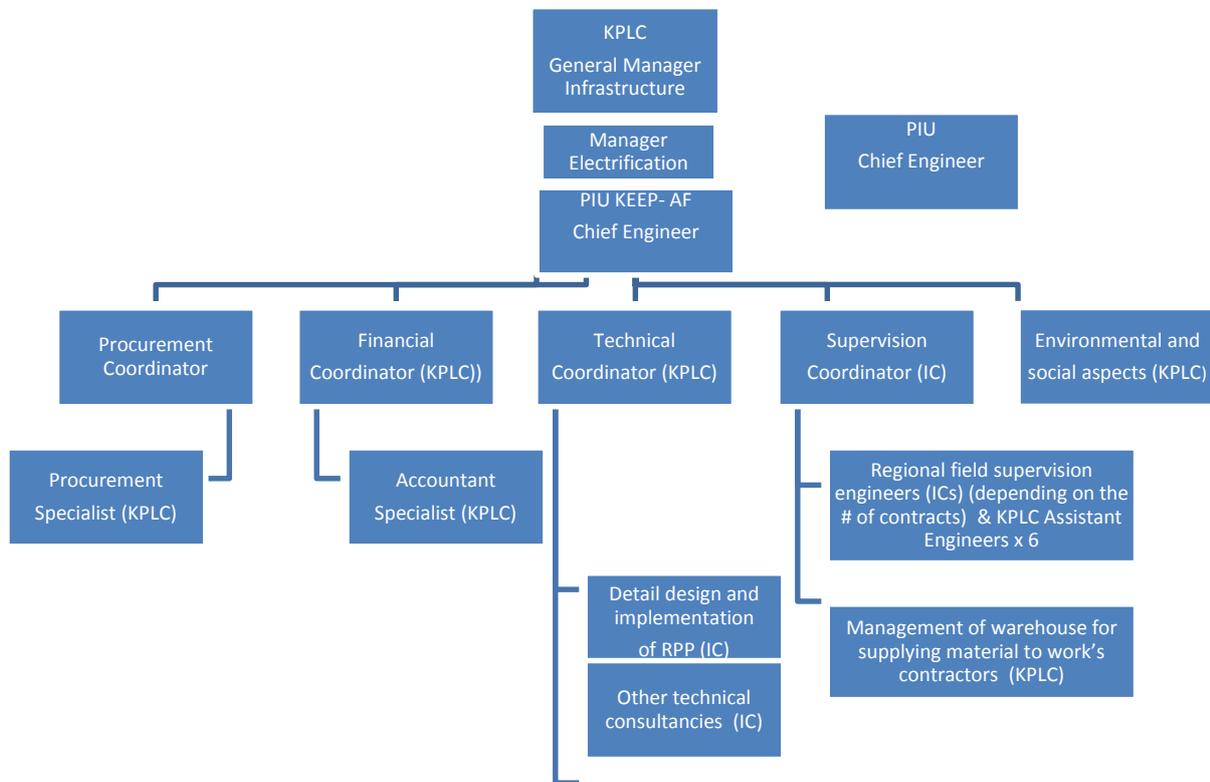
7. **Implementation Schedule:** The frequency, timing and duration of mitigation measures and monitoring should be stated in the implementation schedule. Links between mitigation measures and development of relevant institutions and legal requirements of the project should be stated.
8. **Reporting:** 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.
9. **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.

16.7 Annex7: Sample of ESMP

Project Activities	Potential Environmental & Social Impacts	Proposed Mitigation Measures	Responsibility for implementing mitigation measures	Responsibility for Monitoring implementation of mitigation measures	Time Horizon	Cost Estimates (US\$)
<p>Construction of new substations;</p> <p>Construction of new access roads;</p> <p>Use of quarries and borrow pits</p> <p>Establishment of camp sites</p>	<p>Loss of vegetation, noise, dust, soil erosion,</p> <p>Construction waste,</p> <p>Generation of wastewater,</p> <p>Increase of water use;</p> <p>Loss of livelihoods;</p> <p>Spoil materials due to construction material excavation</p>	<p>Apply Environmental Guidelines for Contractors</p> <p>Implement RPF</p> <p>Implement EA and/or screening recommendations through contract requirements</p> <p>Use of separators Contractors.</p>	<p>Contractor</p> <p>KPLC-PIU</p>	<p>KPLC-PIU and Environment unit and Regional staff</p>	<p>Throughout construction period</p> <p>Prior to civil works</p>	<p>Incl. in Contract</p>
<p>Rehabilitation of existing substations (Transformers) and Lines</p>	<p>Interruption of services</p>	<p>Inform public of planned works and their potential environmental and social impacts</p>	<p>KPLC – PIU</p>	<p>KPLC-PIU and Environment unit and Regional staff</p>	<p>Throughout construction period</p>	<p>None</p>
	<p>Loss of livelihoods and/or land for the projects</p>	<p>Implement RPF</p>	<p>KPLC – PIU</p>	<p>KPLC-PIU and Environment unit and Regional staff</p>	<p>Throughout construction period of the sub project components</p>	<p>Incl. in Contract</p>

Project Activities	Potential Environmental & Social Impacts	Proposed Mitigation Measures	Responsibility for implementing mitigation measures	Responsibility for Monitoring implementation of mitigation measures	Time Horizon	Cost Estimates (US\$)
	Increase of noise, dust, soil erosion, Construction waste, Generation of wastewater, Increase of water use Soil and water pollution due to PCB	Apply Environmental Guidelines for Contractors; Implement EA and/or screening recommendations through contract requirements Contamination sites should be covered with a barrier or coating to avoid contacts. Laboratory screening tests PCB waste management	Contractor KPLC-PIU Contractor and KPLC-PIU	KPLC-PIU and Environment unit and Regional staff	Throughout construction period	Incl. in Contract
Construction of new power lines	Loss of vegetation, noise, dust, soil erosion, Construction waste Use and disposal of Creosote treated poles Loss of livelihoods	Apply Environmental I Guidelines for Contractors	KPLC-PIU	KPLC-PIU and Environment unit and Regional staff	Throughout construction period	Incl. in Contract
Rehabilitation of existing power lines	Interruption of services	Inform public of planned works	KPLC-PIU	KPLC-PIU and Environment unit and Regional staff	Throughout Rehabilitation period	None
	Loss of livelihoods and/or land Use and disposal of creosote treated poles	Implement RPF Burning of this woods in high temperature incinerators Recycle and use of the poles Waste poles to be disposed in landfills	Contractor	KPLC-PIU and Environment unit and Regional staff	Before construction works	To be calculated when affected sites will be identified

16.8 Annex 8: Kenya Electricity Expansion Project- AF Implementation Structure for IDA-GPOBA Slum Electrification Sub-component



16.9 Annex 9: Kenya Power's Grievance Redress Mechanism

1. Introduction

A resettlement plan (RAP) is needed when a project is expected to cause displacement of people, property and livelihoods. In the process of RAP implementation complaints and issues may arise which needs to be resolved for successful implementation of the project. Therefore the grievance redress mechanism comes later in the RAP implementation. The GRM will also receive all other non-RAP related complaints.

To address such arising issues the proponent shall form a Grievance Redress Committee

2. The constitutions of the grievance redress committee

The basic idea in the formation of the committee is to have all the stakeholders represented. Therefore the proponent, the government and the affected community shall have representatives in the committee.

The committee therefore shall be comprised of:

- The proponent's representatives (Valuer, Socio –economist, Surveyor, Environmentalist and Wayleave Officer.
- The local community representatives/PAPs representatives
- Local Administration Officers
- Any other relevant stakeholders

The roles of the committee include;

- Resettlements and compensations of on the ground,
- Ensuring that grievances are promptly addressed
- Linking PAPs to the other stakeholders

3. The grievance redress process

- **Publicizing the grievance management procedures**

The grievance mechanism will be introduced to the project stakeholders as a part of the project stakeholder engagement program stating the purpose of the projects grievance mechanism and the type of responses complainants can expect from the GRC. The uptake channels should be publicized and advertised via local media, the implementing agency and—where relevant—contractors.

- **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.

The members who receive complaints verbally should put them in writing for them to be considered. 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 received will be documented and records kept. 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 councils or 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 M (SHE) 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 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

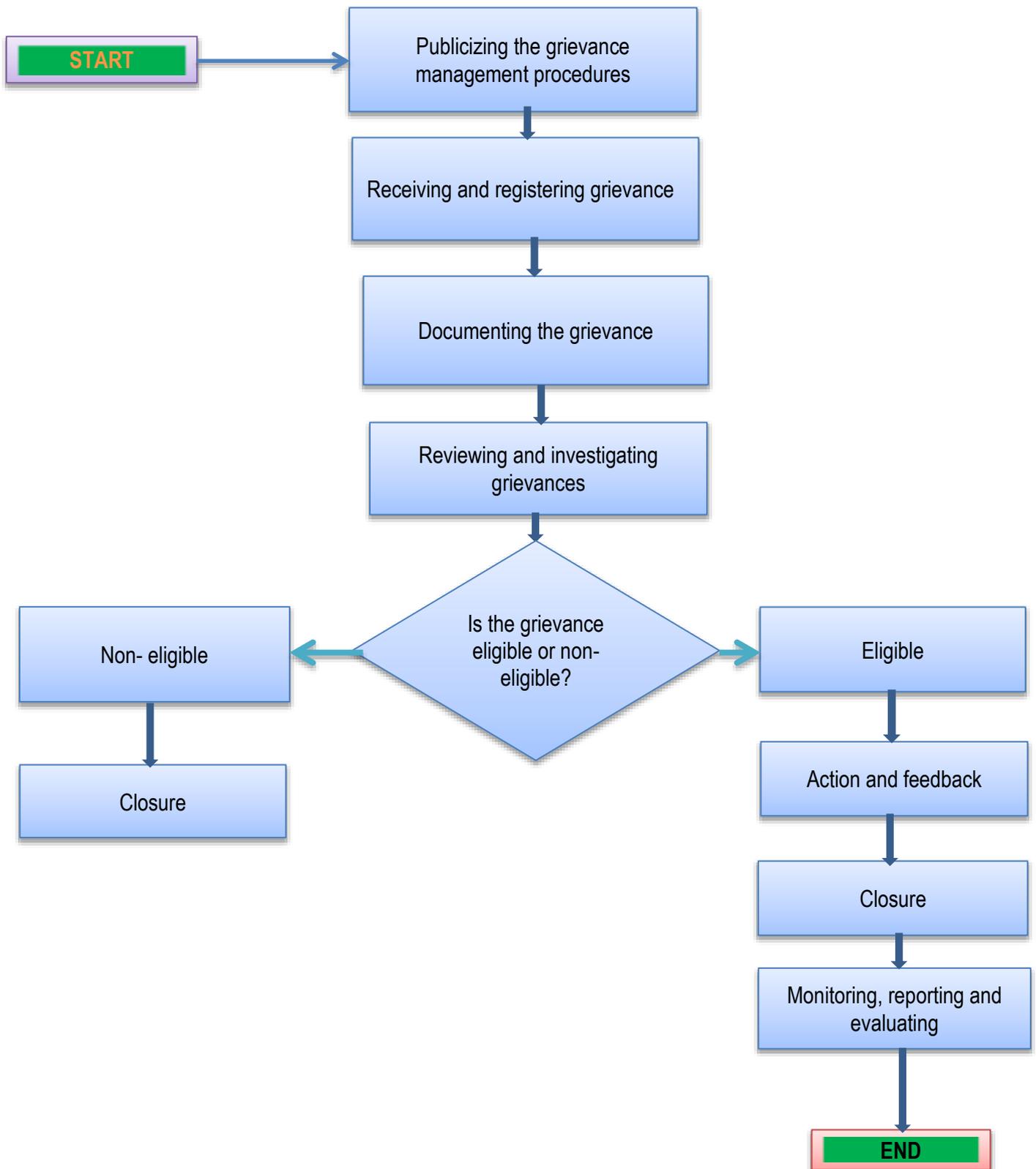
- **Closure**

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 MECHANISM PROCESS



16.10 Annex 10: ESMP for GPOBA (slum electrification)



**ENVIRONMENTAL AND SOCIAL MANAGEMENT
PLAN (ESMP)**

FOR

KENYA POWER'S GPOBA PROJECT

PREPARED BY

**SAFETY, HEALTH & ENVIRONMENT
DEPARTMENT (SHE)-KPLC**

MARCH 2016

The Environmental and Social Management Plan (ESMF) has been prepared by Environment and Social Unit, Safety, Health and Environment Department (SHE), Kenya Power, Nairobi. The ESMP has been prepared based on the current project design and scope including; the general baseline conditions at project areas, past environmental and social assessment of first phase of GPOBA project, and evaluation of potential environmental and social impacts of different project activities and past experience on environmental and social assessment of other project.

The ESMP provides a guideline for the implementation of all mitigation measures and actions to respond to any anticipated project impacts, once the GPOBA project begins.

GENERIC ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FOR IDA-GPOBA PROJECT 2016

1. Project Information

The project involves connection of customers within 600m of existing transformers within slum areas. Of these households, some will be within developed areas, majority of who will be reached by a drop or a pole or two. This can also be achieved by extending the low voltage network on existing and other upcoming distribution transformers to reach households lying within transformer protection distance. Consequently, the potential negative environmental and social impacts anticipated are negligible because of the nature of the works being undertaken in the project.

The project's beneficiaries will include mainly include individuals at household level who mainly live in slum areas. These connections will only require very minimal materials including 6mm drop cable, poles for extensions and transformers where the population have outstripped the capacity of existing transformer, ready boards with socket, switch and bulb and meters which will mainly be mounted on poles. Due to the fact that negative impacts are minimal a generic Environmental and Social Management Plan (ESMP) has been prepared to guide project implementation.

2. Environmental And Social Management Plan (ESMP)

Environmental and Social Management Plan (ESMP) for development projects provides a logical framework within which identified negative environmental and socio-economic impacts can be mitigated and monitored. In addition, the ESMP assigns responsibilities of actions to various actors and provides a timeframe within which mitigation measures and monitoring can be done. This section presents a generic environmental and social management plan (ESMP) for the proposed IDA-GPOBA project. The ESMP covers information on the management and/or mitigation measures that will be taken into consideration to address impacts in respect of the following project phases: design, construction, operation and decommissioning.

This is a generic (ESMP) for IDA-GPOBA project to guide implementation as the project is tentatively planned to cover 42 counties across the country. This ESMP addresses the potential impacts associated with the proposed IDA-GPOBA project. The ESMP specifies the mitigation and management measures which the proponent will undertake and shows how the project will mobilize organizational capacity and resources to implement these measures.

3. Objectives of the ESMP

The main aim of the ESMP is to ensure that the project complies with applicable national environmental and social legal requirements and the donors (WB) environmental and social policies. Further, the ESMP aims at identifying the program's environmental and socio economic benefits of the project as well as identify the potential negative environmental and socio economic impacts. To mitigate the negative impacts and enhance projects benefits the ESMP describes measures that will be taken to prevent, minimize, mitigate and or compensate for adverse environmental and social impacts.

4. Coordination of Environmental and Social Aspects of the project at KPLC

It will be of critical importance during the implementation of program whose funding is expected from development partners to maintain the highest level of coordination from the different departments concerned spearheaded by the Infrastructure Development Division. The Safety Health and Environment department will ensure that ESMPs are implemented and monitored in order to ensure compliance with relevant legal framework in Kenya.

5. Beneficial Impacts of the Project

The proposed GPOBA project will provide a milestone in spurring social and economic development in the country and will greatly help in achieving Vision 2030. Some of the socio-economic benefits expected to accrue from the program includes but not limited to:-

Employment opportunities

During implementation of the program various employment opportunities will be available. These include building of the service lines and wiring of individual houses. Given the magnitude of the project and number of connections envisaged, this program will create a considerable number of job opportunities across the country. This will go a long way in easing unemployment in the nation while the new income revenues received will create demand for other goods and services causing a trickledown effect to the entire economy.

Education

Access to electricity at the household level and schools will lead to betterment of education services. Children will have opportunity to extend their study time because of better lighting system at home.

Reduction of pollution associated with use of thermal power, kerosene and wood fuel:

Electricity supplied from National Grid would ensure less or no people use diesel generator sets for domestic power needs like pumping water, reduced reliance on kerosene both for lighting and cooking and will be an alternative to wood fuel and charcoal because of better and effective use of electrical appliances like cookers and electric irons. Consequently, this results in less carbon dioxide being released to the environment while less use of charcoal means reduced destruction of forests which will go a long way in conserving the environment.

Improved standard of living

The implementation of this project will result in connecting 24, 000 households to the national grid resulting to electricity access of approximately 120,000 individuals. Access to electricity will change the standard of living of the people as they can use domestic appliances like iron boxes, fridges, television sets, washing machines to mention but a few. Use of electricity for lighting implies that the people will not be exposed to smoke arising from use of tin lamps which predisposes people to respiratory diseases.

Opportunity for business development

Availability of power for more customers provides opportunities to establish small micro enterprises such as salons, barber shops, charging of phones, welding, baking, use of electric sewing machines, agribusiness like poultry farming among others. The incomes earned by these people will create demand for other goods and services hence promoting accelerated growth in the economy.

Increase in Revenues

The implementation of the project will boost income streams accrued from increased sales of electricity to KPLC. These revenues will go to system reinforcement to ensure reliable quality supply while some of it goes to the government as taxes which results to improvement in service provision by the government to its citizens.

Security

There will be enhanced security in the country arising from well-lit social and individual premises. With the implementation of the program, the level of security will increase across the country. This is as a result of more security lights which helps keep off opportunistic crimes while other people are able to use electric fences.

Communications

Improved communication amongst the communities and connectivity to global facilities through internet, mobile technology etc. all powered by electricity.

Improved gender relations at homes and communities

Most tensions within families and communities revolve around resources, overwhelming tasks, time burdens and low quality of lives. With electricity, significant improvement of life will be evident – mechanized tasks and efficiency; time burdens will be significantly reduced – leading to investments in more income productive activities; leisure activities will be more readily available, e.g. television and radio. Women's access to information will be greatly enhanced and empowerment facilitated through increased media access.

6. Potential 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. The following are the potential negative impacts and suggested mitigation measures.

a. 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. Grass and short vegetation will be cleared to pave way for erection of poles.

b. 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.

c. 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.

d. Solid waste

Little if any solid waste will be generated which includes conductor cuttings and tree cuttings.

e. 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.

f. 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 occupational risks like falling from heights, being pressed by poles etc.

g. Public health risk

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).

h. Construction material sourcing-wooden poles

Majority of these service lines are constructed using wooden poles. This would impact on the environment because many poles will be used during construction.

i. 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.

j. Noise during construction

Noise pollution from the proposed development during construction noise will be generated from the construction machines and construction workers

k. Contamination from creosote-treated poles

Soil and water pollution due to unsafe disposal of creosote-treated poles may occur if proper care and management procedures are not put in place.

7. Enhancement and Mitigation Program

No.	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Ksh)
1.	<p>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.</p>	<ul style="list-style-type: none"> • 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 	Inspection	Supervising Engineer Contractor	<ul style="list-style-type: none"> • No of Public safety awareness sessions held • No of accidents recorded • No of deaths • Medical Records • Presence of Hazard communication signs • Proper wiring /certificate 	operation	2,350,000
2.	<p>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, being pressed by poles or manual handling of materials etc.</p>	<ul style="list-style-type: none"> • 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 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; 	Inspection	Safety Engineer; contractor ; Technical Engineer	<ul style="list-style-type: none"> • Workers in PPE • Records of safety awareness sessions held with workers • Fully stacked First Aid Kit • Competency records 	Construction Operation & decommissioning	235,000

No.	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Ksh)
		<ul style="list-style-type: none"> 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 and arrangement for emergency evacuation Observe OSHA 2007 regulations 					
3.	Public health risk At 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)).	<ul style="list-style-type: none"> Public awareness of the public health issues identified. 	Inspection	Safety Engineer/ Project Engineer	<ul style="list-style-type: none"> No of public health awareness sessions with workers 	Construction	150,000
4.	Public Safety Falling in holes Electrocutation Fires	<ul style="list-style-type: none"> Sensitization and awareness creation of the public Adequate site safety supervision Use of warning signage/ tapes Design to best safety standards 	Inspections	Safety Engineer/ Project Engineer	<ul style="list-style-type: none"> Records of safety awareness sessions held with the public Availability of signage 	Construction	100,000
4.	Impact on Natural Vegetation The program will involve short extension service lines mainly along the road reserve. No tall growing trees will be allowed below the lines or along the way leave trace.	<ul style="list-style-type: none"> Clear limited areas only where the pole will be erected 	Inspections	Way leave officer/engineer	<ul style="list-style-type: none"> No of trees cut 	Construction & operation	-

No.	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Ksh)
	Grass and short vegetation will be cleared to pave way for erection of poles.						
5.	Construction material sourcing- wooden poles. Majority of these service lines are constructed using wooden poles. This would impact on the environment as close to a million poles will be needed according to the preliminary estimates.	<ul style="list-style-type: none"> Consider use of concrete poles to avoid deforestation 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 	Inspection	Engineer	<ul style="list-style-type: none"> No. of concrete poles used No of trees planted 	Construction period	1,500,000
6.	Impacts on air quality from vehicle exhaust emissions Exhaust emissions are likely to be generated by the vehicles used to ferry materials during construction. These exhaust emissions can impact on the quality of air.	<ul style="list-style-type: none"> Drivers shall not leave vehicles idling so that exhaust emissions are lowered. Maintain all machinery and equipment in good working order to ensure minimum emissions are produced. 	Inspection	<ul style="list-style-type: none"> Project engineer 	<ul style="list-style-type: none"> No vehicle idling onsite Vehicle maintenance Records 	Construction	Nil
7.	Solid waste Little if any solid waste will be generated which includes conductor and tree cuttings.	<ul style="list-style-type: none"> All left over conductor cuttings to be disposed appropriately or be returned to the store for proper disposal Proper budgeting of materials to reduce wastage Reuse of materials 	Inspection	Project Engineer	No waste on site Records of material return to store if any	Construction & Decommissioning	
8.	Noise	<ul style="list-style-type: none"> Proper servicing of vehicles Not necessary for power lines of such low voltage. However contractor should ensure minimal noise generation during construction and decommissioning phases 	Inspection	Project Engineer / Safety Engineer	Vehicle maintenance Records	Construction & decommissioning	Nil

No.	Potential negative impacts	Mitigation measures	Monitoring activities and surveillance	Responsibility for Monitoring	Performance Indicator	Timing	Estimated Cost (Ksh)
9	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	<ul style="list-style-type: none"> • No burning of vegetation along the distribution lines rights-of-way • Timely maintenance of the right of way • Time maintenance of transformers 	Routine maintenance	Operation and Maintenance Engineer	Way leave and Transformer maintenance Records	Operation	1,000,000
10.	Damage to crops and trees-	<ul style="list-style-type: none"> • Compensation for loss of crops and trees to the owners 	Verification with owners of crops	Way leave officer	Records of payments made	Construction and operation	Nil
11.	Oil Leaks - The refilling and emptying 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 surface and groundwater as well as soil.	<ul style="list-style-type: none"> • 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. 				Operation and decommissioning	200,000

8. Public Consultations/campaigns

Public participation/consultation is one of the ways to solicit project acceptability by the community and a means of decreasing grievances that could arise from a project. The process of consultation will provide an opportunity to explain the project to the people in terms of its benefits, negative impacts, mitigation measures of the negative impacts and creating awareness on safety of using electricity.

The target groups of people to be consulted by Kenya power include the customers/beneficiaries and administrators. The consultation will take the form of; focused groups meetings, baraza and individual interactions with key stakeholders. The expected goal of the process includes:

- Project acceptability
- Dissemination of safety messages
- Taking up of roles by different stakeholders in the project.
- Public support for the project
- Avoidance of protracted conflicts and costly delays;
- Spirit of cooperation and trust between the agency and the public.

9. Responsibility and Institutional Arrangements

The responsibility of implementing the ESMP falls directly on the implementing agency which is Kenya Power. The main departments involved include Projects Development department, way leaves and Safety Health and Environment department. Other external stakeholders that may be involved include National Environmental Management Authority (NEMA) and financiers.

10. Estimated Cost

The estimated cost of implementing the ESMP is Ksh 5,535,000.00.

11. Implementation Schedule And Reporting

The implementation of the ESMP will take place once construction activities begin. Once monitoring of ESMP begins the officers responsible will report all issues identified for appropriate actions within one week of site visit.

16.11 Annex 11: Minutes of different public safety awareness sessions carried out.

1. Circulate Minutes to:

1. Manager – Safety, Health & Environment
2. Environmental & Social Specialists
3. Socio Economists

Agenda:

1. Safe power supply
2. Respond to issues from potential customers
3. Recruit Potential customers

In attendance were:

NAME	CONTACTS	Signatures
1. HOLWAAH GATHUO	0728361-625	[Signature]
2. DANIEL KALOKI	0712673944	[Signature]
3. JOSEPHINA EKARA Chair lady	072225	[Signature]
3. JOSEPHINE EKARA	0728539318	[Signature]
4. JACKHINE KAWIINGA	0714023541	[Signature]
6 Paul Thige Mungua	0725 742 535	[Signature]
7. Esther Mwikali	0720 977719	[Signature]
8. David Otieno Okello	0722 862608	[Signature]
9. JANE KERUSO	0723725180	[Signature]
10. T.M. Kibui	07 23 313 632	[Signature]
11. NYKLEP MOSE	0717725605	[Signature]
12. EVATUS NGONE	0724967173	[Signature]
13 ABEL MUMUNGA	0723029292	[Signature]
14 Peter Mitalu	0722 919489	[Signature]
15 ALICE NJERIMWAUKA	0711780041	[Signature]
16 CHARLES KARURI GITHARA	0720729465	[Signature]
17 SAMUEL ABATA	KPIC	[Signature]
18 STEPHEN GIKARIA NJUKI	0722352966 (Fireplace)	[Signature]
19. Novaline A. Ochi	0724825564 (Mkt. officer)	[Signature]
20. SIMON MWANGANGI	0722 595046 (SHE)	[Signature]
(21) Wbamu Mwikali	0717694164	[Signature]
(22) JARED OMDIEKI	0736362222	[Signature]
23 PATRICK MURURI	0727087918	[Signature]
24 JUSTUS KIOKO	0716348523	[Signature]

25	Joseph Njarambo	072594375	MA
26	Christine Wayua	0726612883	Kfue
27	EVELINE NDIRA	0723408181	LD
28	DORICE MOSEI	0713975220	DP
29	Evans Manchi	071048487474	Jug
30	BATROBA MARTHA	0721838495	P
31	JAMES KIDURU	0722812977	Q
32	KEVIN MURANGI	0721576302	MA
33	Charles Koi	0723827477	K
34	MONICA CHEPTOO	0718781388	MA
35	LABANS OMAJURI	0725114849	
36	Andrew MUGENE	0728745908	MA

	AGENDA	ACTION
1.0	MIN 1: 2014/01/23 – Safe power supply	
	<ul style="list-style-type: none"> The team from Kenya power briefed members present on the project. A line of about 2 kilometres had been constructed and twenty three 15 KVA transformers installed. Members present were informed that the project had been sponsored by World Bank and customers were required to pay KES 1,160.00 to be connected. The need to get connected with safe power was emphasized and avoids illegal connections which were a major safety risk and concern in the settlement. The Kenya Power team informed members present that prepaid meters would be installed and customers will be in-charge and will be able to control their electricity consumption. Members present also complained about people walking on their rooftops in the middle of the night doing illegal connections. Members also complained of the risk of fires associated with short-circuiting due to several wires criss-crossing the area. It was agreed that there was need to eradicate corruption and develop our country. 	INFO
2.0	MIN 2: 2014/09/31– Issues raised by potential customers	

	<ul style="list-style-type: none"> • What distance should a Customer be from a Transformer? 35 meters • If one is currently being supplied illegally, what is the best action? Best option is to apply and connect safely from Kenya power. All illegal connections will progressively be eliminated. • Where will the meter be installed and how will Kenya power protect it from cartels? It will be mounted in a box on top of pole above the power line and community policing is encouraged. • How does Kenya Power address issue of cartels and how will Kenya Power instil confidence and guarantee quality supply? Let everybody be connected to safe supply. The company in liaison with security agents will firmly deal with cartels. The law will also need to be enforced. • Members present urged Kenya power to consider engaging the locals to Man Transformers and electrical infrastructure. 	
3.0	MIN 3: 2014/01/23 – Recruitment of Potential customers	
	Members present walked along the constructed Power line and recruited about 30 Potential customers. Three of the applicants paid on the spot. It was agreed the contractor should connect all the customers who will have paid by 28 th Feb, 2014 and roll out the project to the rest of the residents	

 Kenya Power	ISO 9001:2008 QMS QUALITY MANUAL	Doc. No.	KP2A/1F- 2/7/GN.bw
	LOCATION: SHE, NAIROBI SOUTH REGION	Issue No.	3
		Revision No.	0
		Date of Issue.	02.08.2015
SUBJECT: PUBLIC SAFETY AWARENESS CAMPAIGN	VUMILIA SLUMS - DONHOLM		

PUBLIC SAFETY AWARENESS CAMPAIGNS

PLACE: VUMILIA SLUMS.

DATE: 02ND AUGUST, 2015

KENYA POWER TEAM

- | | |
|-------------------------|--------------------------|
| 1. James Thiaine | SHE, Central Office |
| 2. Bettynus N. Wanyonyi | SHE Nairobi South Region |

AUDIENCE

1. The Residents of Vumilia Slums
2. The Chief's Office

INTRODUCTION/MISSION OF STATEMENT

- James Thiaine

TOPICS COVERED: /James/Betty

Introduction

- What is electricity
 - Production of electricity
 - Production, transmission & distribution.
 - Kenya power, mission, visions
- i) Dangers of electricity
 - Electrical shocks
 - Electrical burns
 - Electrocution
 - Relevant previous examples countrywide.
 - ii) Safety in the home / domestic uses: Dos & DONs
 - Safe use of electrical appliances; tvs, radios, cookers etc
 - Overloading of power extensions / power plugs
 - Keep water off any electrical energized equipment
 - iii) Safety outside
 - Avoiding playing with or around power equipment, i.e transformers
 - Avoiding interference with damaged / fallen electricity equipments
 - Dangers of growing and or clearing any vegetation nearby power lines
 - Dangers trying fix appliances like bulbs, sockets.
 - iv) Environmental matter

- Conservation of environment by encouraging residents of Vumilia and enhance cleanliness.
- v) Marketing / Customer Relations new products
 - Ways of conserving power at home.
 - New customer care contact numbers: 95551
 - Practically tried calling 95551 and demonstrate that it's a real service
 - New ways of paying bills via financial institutions i.e. banks.
- vi) AOB
 - Gave as session of asking and answering questions from residents.
 - Z cards & Posters.
 - Call for help from Kenya power experts in case of any power problem
 - Encourage residents to have vital contacts; fire engines, police, hospitals, Kenya power, city council for use during emergency.

PHOTOS

Introductory and Mission Statement – James



The audience - Residents of Vumilia



Betty Wanyonyi: taking the Residents of Vumilia through preventive measures to electrical accidents



 Kenya Power	PUBLIC SAFETY AWARENESS BARAZA	Doc. No.	KPI/7D/1B/13/JT
		Issue No.	1
		Revision No.	0
		Date of Issue.	2.10.2015
	REUBEN SUB- LOCATION, IMARA DAIMA LOCATION, EMBAKASI SUB- COUNTY, NAIROBI SOUTH REGION	VENUE: Gatope Open Air Market	

PUBLIC SAFETY AWARENESS CAMPAIGNS

PLACE: Gatope Open Air Market, Off Enterprise Road

DATE: 30th September, 2015

KENYA POWER REPRESENTATIVE: James Thiaine, SHE Department

AUDIENCE

- Gatope and Kingstone Residents
- Imara Daima Location Chief
- Community leaders

Attendance: 107 (list attached)

Topics Covered

a) Safety presentation

- ✓ About Kenya Power – Mandate
- ✓ Good and poor conductors
- ✓ Dangers of electricity
- ✓ Causes of electrocutions
 - Illegal connections and extensions
 - Poor wiring
 - Contact with fallen or broken conductors
 - Vandalism of electrical infrastructure
 - Structures and activities below or near power lines
 - Wrong use of electrical appliances at home
 - Cutting of trees under power lines
- ✓ Prevention of electricity related incidents
- ✓ Safe use of electricity inside and outside the home

b) Incident reporting to KPLC - Use of 95551, 0703070707, twitter (@kenyapower) and Facebook (Kenya Power)

c) Relevant feedback from participants

- A number of Gatope residents applied for Power under GPOBA a long time ago but never got any feedback e.g. Agnes Kwamboka Tel No. 0720930312, ID No. 30619347

- Kenya Power to consider extending GPOBA to residents of Kingstone informal settlement to discourage illegal connections.
- There are two 11kV conductors frequently clashing and causing sparks outside the Gatoto Primary School gate. These can cause fire to mabati structures directly below the powerline

Event photos



Photo 1: A section of the audience at the baraza

Photo 2: Mr. Omeda, the Imara Daima Chief addresses the participants

Compiled by: James Thiaine, Chief Officer – Occupational Health and Public Safety, SHE Central Office

 <p>Kenya Power</p>	<p>PUBLIC SAFETY AWARENESS BARAZA</p>	Doc. No.	KPI/7D/1B/13/JT
		Issue No.	1
		Revision No.	0
		Date of Issue.	20.08.2015
	<p>MAKADARA LOCATION, MAKADARA SUB- COUNTY, NAIROBI NORTH REGION</p>	<p>VENUE: Chief's Camp, Makadara (at Hamza)</p>	

PUBLIC SAFETY AWARENESS CAMPAIGNS

PLACE: MAKADARA

DATE: 20TH AUGUST 2015

KENYA POWER TEAM

1. James Thiaine SHE, Central Office
2. Alfred Mbiu Safety Engineer, Nairobi North
3. Samuel Mbugua Environment Section, KPLC (SHE Dept)

AUDIENCE

Residents of Hamza, Jericho and Lumumba sub-locations

Number Attended: 48 (Attendance list attached)

Topics Covered

d) Environmental awareness - Samuel Mbugua

- ✓ Waste segregation
- ✓ Effects of plastics on the environment
- ✓ Planting of trees below powerlines – risks
- ✓ Waste disposal (dumping) and the blocked drains (connection)

e) Safety presentation – James Thiaine and Alfred Mbiu

- ✓ Dangers of electricity
- ✓ Causes of electrocutions and electricity related accidents
 - Illegal connections
 - Poor wiring
 - Cutting of trees near powerlines
 - Construction of structures under power lines
 - Contact with fallen conductors
 - Vandalism of transformers and cables
 - Illegal energizing of fences and gates
 - Other causes
- ✓ Safe use of electricity inside and outside the home
- ✓ Incidents of electrocutions in Nairobi North Region
- ✓ Prevention of electricity related accidents

f) KPLC projects - James Thiaine

- GPOBA
- Last mile connectivity
- Jua for Sure
- Boresha
- Street lighting

g) Questions & comments from the participants

- Illegal connections rampant in some of the areas in Makadara
- Are KPLC feeders ever serviced? – Some were constructed in the 1950s
- Why does cost of electricity keep going up?
- Some KPLC staff ask public to send 2000/- by MPESA for assistance during power outages
- Replace wooden poles in the area with concrete
- Some people have constructed structures below power lines...what doesn't KPLC stop this and only come to investigate when accidents happen?
- Nile Road alone has 5 transformers covering a very small area.....why this?
- Some KPLC surface turrets left open (not secured)
- Bathroom wiring in one house at Ofafa Jericho causing shock (House No.U-34482, Account No. 308723-02)
- Ndati Road, Maendeleo Road, Seme Road, Mathioya and Harambee roads all in Makadara lack street lights, hence insecure
- Who is the engineer in charge of Nairobi North
- Area experiences outages during rains

- People do illegal connections due to lack of information on how to apply for electricity and the various options available
- Transformer producing sparks along Rabai Road in Lumumba Estate
- Do KPLC meter readers actually do their work...sometimes KPLC sends outrageous bills
- KPLC Customer service should set up tent at chief's office occasionally to sensitize the public and answer all queries on power in the area
- Where is the regional offices for Nairobi North
- Contacts of KPLC security office needed so the police can notify KPIC on any vandalism cases
- Makadara Health Centre – Power always going off, leading to deaths in the maternity wing – KPLC to ensure steady power supply to the health centre

Event photos



Photo 1: Makadara Senior Chief, Caleb Opiyo addressing the meeting



Photo 2: Samuel Mbugua, KPLC Environmentalist addressing the meeting



Photo 3: Alfred Mbiu, Safety Engineer Nairobi North explains a point



Photo 4: A participant asks a question during the meeting

Compiled by: James Thiaine, Chief Officer – Occupational Health and Public Safety, SHE Dept, Central Office

	PUBLIC SAFETY AWARENESS BARAZA	Doc. No.	KP2C/7D/1B/2/JM
		Issue No.	1
		Revision No.	0
		Date of Issue.	27.08.2015
	LOCATION, LANG'ATA SUB-COUNTY	VENUE: KIBERA, SOWETO GROUNDS	

PUBLIC SAFETY AWARENESS CAMPAIGN

PLACE: SOWETO GROUNDS

DATE: 27th AUGUST, 2015

KENYA POWER TEAM

1. James Thiaine SHE, Central Office
2. Jennifer Misik SHE, Nairobi West

AUDIENCE

1. Deputy County Commissioner
2. Chiefs & Sub-Chiefs
3. District Education Officer
4. AP & NYS Officials
5. Pamoja FM Journalists
6. NGO Representatives
7. Soweto residents

Number Attended: 93

TOPICS COVERED

- Mission, Vision, Values and Mandate of KPLC
- Production, Transmission and Distribution of electricity
- Dangers of electricity
- Causes of electricity related accidents
 - ✓ Vandalism
 - ✓ Illegal connections
 - ✓ Poor wiring
 - ✓ Wrong use of electrical appliances
 - ✓ Cutting of trees under power lines
 - ✓ Construction of structures under power lines
 - ✓ Ignorance
 - ✓ Touching of fallen conductors
- Safe use of electricity inside and outside the home

Questions arising from the audience responded to by James Thiaine

- When is the Last Mile project implemented?
- How can one get compensated for hospital bill in case of an electrical Accident?
- Why is electricity from pre-paid meters expensive than electricity from post-paid meters?

Other activities

Distribution of Safety booklets

Event Photos

Government Officials



James Thiaine



Attendants



Report compiled by **Jennifer Misik**