DECLARATION PAGE

This document has been prepared in accordance with Environmental (Impact Assessment and Audit) Regulations, 2003 of the Kenya Gazette Supplement No. 56 of 13th June 2003, Legal Notice No. 101.

LEAD EIA/AUDIT EXPERTS

Caleb Mango: EIA/Audit Expert Licence No. 0260

Signature: ________________________________

Date: 9/1/2019

Proponent:

For:

Kenya Electricity Transmission Co. Ltd
P.O. Box 34942 - 00200
Nairobi-Kenya
Tel: + 254 20 4956000
Email: info@ketraco.co.ke

Name: Dr. (Eng.) John Mativo
Designation: General Manager, Project Development Services

Signature: ________________________________

Date: 9/1/2019

Do hereby certify that this report was prepared based on the information provided by various stakeholders as well as that collected from other primary and secondary sources and on the best understanding and interprétation of the facts by the Environmental Social & Impact Assessors. It is issued without any préjudice.
### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>CBD</td>
<td>Convention on Biological Diversity</td>
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<td>CBO</td>
<td>Community Based Organizations</td>
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<td>DOSH</td>
<td>Directorate of Occupation Safety and Health</td>
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<td>DRSRS</td>
<td>Department of Resource Surveys and Remote Sensing</td>
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<td>EA</td>
<td>Environmental Audits</td>
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<tr>
<td>EMCA</td>
<td>Environmental Management and Co-ordination Act</td>
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<tr>
<td>ESIA</td>
<td>Environmental and Social Impact Assessment</td>
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<td>ESMMP</td>
<td>Environmental and Social Management and Monitoring Plan</td>
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<td>ESMP</td>
<td>Environmental and Social Management Plan</td>
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<td>GoK</td>
<td>Government of Kenya</td>
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<td>IKS</td>
<td>Indigenous Knowledge System</td>
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<td>KETRACO</td>
<td>Kenya Electricity Transmission Company Limited</td>
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<td>KFS</td>
<td>Kenya Forest Service</td>
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<td>KWS</td>
<td>Kenya Wildlife Service</td>
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<td>NBSAP</td>
<td>National Biodiversity Strategy and Action Plan</td>
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<td>NEAP</td>
<td>National Environment Action Plan</td>
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<td>NECC</td>
<td>National Environmental Complaints Committee</td>
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<td>NEMA</td>
<td>National Environment Management Authority</td>
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<td>NGOs</td>
<td>Non-Governmental Organizations</td>
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<td>NPEP</td>
<td>National Poverty Eradication Plan</td>
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<td>PEC</td>
<td>Poverty Eradication Commission</td>
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<td>PRSP</td>
<td>Poverty Reduction Strategy Paper</td>
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<td>RoW</td>
<td>Right of Way</td>
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<td>TL</td>
<td>Transmission Line</td>
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<td>WRA</td>
<td>Water Resources Authority</td>
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<td>WSSD</td>
<td>World Summit for Sustainable Development</td>
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EXECUTIVE SUMMARY

Introduction

The country’s development blue print and Government Big four agenda recognizes the energy sector as key sector in realization of the vision 2030. Energy is one of the economic and social enabler of the country, the correlation between the electricity consumption and economic growth is that economic empowerment will always depend on accessible, stable and affordable power, in line with this energy is key sector to the country’s development.

In line with this, Kenya Electricity Transmission Company Limited (KETRACO) which was established under ministry of energy Act 2012, whose mandate is to construct, own operate and maintain high voltage electricity transmission lines is tasked with construction of 40km Isinya-Konza 400kv transmission line and 400Kv Konza city Substation.

The Kenya Government policy on all new projects (under the second schedule of the Environmental Management and Coordination Act (EMCA), cap 387 requires that an Environmental and Social Impact Assessment (ESIA) study be carried out at the project planning phase, in order to ensure that significant impacts on the environment and social aspects are taken into consideration at the construction, operations and decommissioning stages of the project. For compliance to this provision, KETRACO has therefore used its’ in-house man-power consisting of Electrical and Civil Engineers, Socio-Economists, Land Economists, Surveyors and Environmental Experts to undertake the ESIA for the proposed project.

Study Objectives

The principal objective of this assessment was to identify significant potential impacts of the project on environmental and social aspects, and to formulate recommendations to ensure that the proposed project takes into consideration appropriate measures, to mitigate any adverse potential impacts to the environment and people’s health through all of its’ phases (construction, operation and decommissioning phases).

Scope

The ESIA study was done in consideration to the construction, operation and decommissioning phases of the project and was limited to:

- The baseline environmental conditions of the area,
- Description of the proposed project,
- Provisions of the relevant environmental laws,
• Public participation and stakeholder consultation,
• Identification and discussion of any adverse impacts to the environment anticipated from the proposed project,
• Appropriate mitigation measures,
• Development of an Environmental and Social Management Plan outline
• Analysis of project alternatives

**Study Methodology**

The approach to this exercise was structured so as to cover the requirements under the Environmental Management and Coordination Act (EMCA), Cap 387 and its’ constituent regulation, i.e. the Environmental Management and Coordination (Impact Assessment and Audit) Regulations of 2003. It involved largely an understanding of the project background, the preliminary designs and the implementation plan as well as decommissioning plan. In addition, baseline information was obtained through physical investigation of the site and the surrounding areas, desktop studies, public consultations with Lead Agencies and members of the community in the project areas, survey, photography, and discussions with key informants in KETRACO (the proponent).

The key activities undertaken during the assessment included the following:

• Consultations with the key project stakeholders including the project proponent, community members, the County government of Machakos and Kajiado counties administration and opinion leaders. The consultations were based on the proposed project, site planning, the project implementation plan, the potential environmental and social impacts and the mitigation measures thereof.

• Physical inspections of the proposed project area which included observation of available land marks, photography and interviews with the local residents and local administration,

• Evaluation of the activities around the project site and the environmental setting of the wider area through physical observations Review of available project documents, and

• Report writing, review and submission.
Policy, Legal and Regulatory Framework

The Environmental Management and Co-ordination Act (EMCA) cap 387, is the principal legislation that governs EIA studies in Kenya. This project falls under the Second Schedule of EMCA, Cap 387, which lists the type of projects that are required to undergo EIA studies in accordance with Section 58(1-4) of the Act.

Various other key national legislation that govern the management of environmental resources and those pertinent to the project have been discussed in the report.

Identified Potential Environmental and Social Impacts

The following positive and negative impacts are likely to be associated with the proposed project.

Positive Impacts

- National reliable and secure power supply
- Direct and indirect skilled and non-skilled Employment opportunities (*cleaners, tea girls, masons, carpenters, welders, drivers etc.*)
- Gains to the local and national economy and increase in revenue.
- Informal sectors benefits
- Development of other Sectors

Negative Impacts

- Noise pollution
- Generation of exhaust emissions
- Dust emissions
- Solid and liquid waste generation
- Oil spill hazards
- Destruction of existing vegetation and habitats
- Avifauna mortality
- Increased demand for material consumption
- Impacts on workers’ and community health and safety
- Soil erosion
- Fire outbreaks
- Visual and aesthetic impacts
- Incidences of electrocution
- Perceived dangers of electrostatic and magnetic forces
• Increase in social vices

**Proposed Mitigation Measures**
Mitigation of the potential impacts as described in chapter 6, and implementation of the Environmental and Social Management Plan and Environmental Monitoring Plan (chapter 8 and 9) will help to minimize the negative impacts, and enhance the positive outcomes of the project.

**Conclusion**
An Environmental and Social Management Plan (ESMP) outline has been developed to ensure sustainability of the site activities from construction through operation to decommissioning phase. The plan provides a general outline of the activities, associated impacts, and mitigation action plans, responsible actors, implementation timeline and the costs thereof.

A monitoring plan has also been developed and highlights some of the environmental and social performance indicators as identifiable parameters. Monitoring creates possibilities to call to attention, changes and problems in environmental quality. It involves the continuous or periodic review of operational and maintenance activities to determine the effectiveness of recommended mitigation measures. Consequently, trends in environmental degradation or improvement can be established, and previously unforeseen impacts can be identified or pre-empted.

It is strongly recommended that a concerted effort is made by the site management in particular, to implement the Environmental and Social Management and Monitoring Plan provided herein. Statutory Environmental and Safety Audits must be carried out in compliance with the national legal requirements, and the environmental performance of the site operations should be evaluated, against the recommended measures and targets laid out in this report.

It is quite evident from this study that the construction and operation of the proposed project will bring positive effects in the project area including improved supply of electricity, creation of Employment opportunities (welders, carpenters, masons, cleaners, drivers etc.), gains in the local and national economy, provision of market for supply of building materials, informal
sectors benefits, Increase in revenue, Improvement in the quality of life for the workers and community members, and Improved security.

Considering the proposed location, construction, management, mitigation and monitoring plan that will be put in place, the project is considered important, strategic and beneficial and given that no immitigable negative impacts were encountered and that no community objection was received, the project may be allowed to proceed and a NEMA EIA license issued thereof.
1 INTRODUCTION

1.1 PROJECT BACKGROUND

The country’s development blue print and Government Big four agenda recognizes the energy sector as key sector in realization of the vision 2030. Energy is one of the economic and social enabler of the country, the correlation between the electricity consumption and economic growth is that economic empowerment will always depend on accessible, stable and affordable power, in line with this energy is key sector to the country’s development.

In line with this, Kenya Electricity Transmission Company Limited (KETRACO) which was established under ministry of energy Act 2012, whose mandate is to construct, own operate and maintain high voltage electricity transmission lines is tasked with construction of 40km Isinya-Konza 400kv transmission line and 400kV Konza City Substation.

Kenya’s legal framework stipulates that all new projects requires an Environmental and Social Impact Assessment (ESIA) this is anchored in the Environment Management and Coordination Act (EMCA) Cap 387. ESIA study is meant to be carried out at the project planning phase in order to ensure that environmental issues are taken into consideration at the project planning stage and adequately addressed during project implementation: construction, operations and decommissioning stages, therefore KETRACO involved the in-house expertise to undertake the ESIA study.

The aim of this Environmental and Social Impact Assessment (ESIA) study is to examine the positive and negative effects that the proposed project is likely to have on both the physical and the socio economic environment. An identification of possible impacts and management of the same will ensure environmental sustainability in that, its development does not adversely interfere with natural environment. This study is important because it plays the roles described in the figure below.
1.2 ESIA STUDY

1.2.1 Study Objectives

This ESIA study is undertaken under requirements of EMCA, Cap 387 schedule II as stipulated by National Environment Management Authority (NEMA) that requires all development projects to do so in order to avert the potential adverse impacts of a project and thereby recommending appropriate mitigation measures.

In this study, the proposed project’s activities are broken down into four phases, i.e.:

- Design phase
- Construction phase
- Operational phase
- Decommissioning phase

The study has two main objectives:

- Ensuring sustainable development and good environmental practice through wise use of natural resources to ensure inter- and intra-generational equity.
- Identification, prevention, avoidance or offset any negative impacts that may come up from the project thus preventing losses or any disadvantages to any stakeholders.

Achievement of these two main objectives would reduce negative impacts and promote or enhance the projects positive impacts.

The ESIA will cover the following aspects:

Figure 1: Importance of ESIA study
• Establish the existing environment where the project falls
• Definition of the legal, institutional and policy framework of the proposed project
• Identify, consult and involve all stakeholders to facilitate all study objectives, Analysis of potential impacts of the proposed project
• An Analysis of the alternatives available to the proposed project
• Develop accurate and practical mitigation measures for the significant negative impacts
• Develop an Environmental and Social Management and Monitoring Plan (ESMMP) for the significant negative impact

1.2.2 Methodology
To achieve these objectives, the study collected baseline data firstly through desktop studies on a: national level; regional, and then finally scoping down to the study area and its immediate environs. This was done using detailed study, information from previous similar studies; developed checklist, and professional knowledge. The checklist focussed on information gained from the screening process and other cross-sectorial issues such as: health and safety, biodiversity, pollution etc.
Figure 2 illustrates the methodology and process that was employed in undertaking the ESIA study.

![Methodology and Process for the ESIA](image-url)
1.2.2.1 Screening
Screening of the project was undertaken to evaluate the need of conducting an EIA and the level of study. Transmission lines are listed under schedule II of EMCA, Cap 387 among projects requiring EIA before commencement. In addition, other considerations taken into account during the screening process included the physical site location, zoning, nature of the immediate neighbourhood, sensitivity of the areas surrounding the site and socio-economic activities in the area, among others.
From the screening exercise, it was determined that ESIA report for the proposed Transmission line was a requirement.

1.2.2.2 Literature Review
The literature review undertaken involved review of legislature, policies, development plans and past studies carried out in the area. It also informed the ESIA study on the baseline conditions and solidified the legal, institutional and environmental setting of the proposed project.

1.2.2.3 Site assessment
The site assessment was carried out within 28th November to 8th December 2018 to take into stock the following:
- The site landscape
- The flora, fauna and avifauna found in the proposed project area
- The sensitive receptors in the proposed project area
- The environment and social status of the project
- Land ownership and usage.
Photography was used to capture salient features and baseline conditions in the project site and its neighbourhood. The photos were used to define existing features in the project area and identify soils and floral species in the area.

1.2.2.4 Public consultation
Stakeholders were consulted to facilitate all objectives of the study and the methods used included:
- Key Informant Interviews and questionnaires
- Public meeting/baraza
1.2.2.5 Reporting

The ESIA Study Report was written in accordance with the Environmental (Impact Assessment and Audit) Regulations, 2003.

1.3 ESIA Team

The multi-disciplinary ESIA team comprised of the following experts:

1. Caleb Mango- Lead EIA/Audit Expert
2. Richard Godana- Lead EIA/Audit Expert
3. Linet Mbova - Associate EIA/Audit Expert
4. Mildred Ogendo - Socio-economist
5. Douglas Kingori- Land Surveyor

1.4 Report Structure

The structure of this ESIA Report is as follows:

- Executive Summary
- Introduction (Chapter 1)
- Project Description (Chapter 2)
- Policy, Legal and Institutional Framework (Chapter 3)
- Environmental and Socio-economic Baseline Description (Chapter 4)
- Public and Stakeholder Consultation (Chapter 5)
- Impact Assessment and Mitigation Measures (Chapter 6)
- Analysis of Alternatives (Chapter 7)
- Environmental and Social Management Plan (Chapter 8)
- Environmental Monitoring Plan (Chapter 9)
- Conclusion and Recommendations (Chapter 10)
- References
- Appendices
  a. Appendix 1- Consultation with Key Informants
  b. Appendix 2- Sample filled Questionnaires- Community Members
  c. Appendix 3- Public Meeting minutes
  d. Appendix 4- Public Meetings attendance sheets
  e. Appendix 5- Expert Practicing license
2 PROJECT DESCRIPTION

2.1 PROJECT PROONENT

The project is being implemented by Kenya Electricity Transmission Company Limited (KETRACO).

2.2 NATURE OF THE PROJECT

The project will be composed of approximately 40Km Transmission Line from an existing Isinya Substation to new Konza city Substation. The TL will traverse through two counties: approximately 32 Km in Kajiado County and approximately 8km in Machakos County. It will occupy a wayleave corridor of 60m (30m on either side from the centre of the transmission line). It is important to note that construction activities will comprise of Isinya-Konza 400KV TL and 400KV new substation at Konza City.

2.3 PROJECT LOCATION

The proposed TL runs parallel to existing Mombasa – Nairobi 400kV TL from Isinya Substation for approximately 9.5km where Mombasa – Nairobi takes an angle turn at coordinates (268239.83E, 9805248.58N) towards Mombasa, whereas Isinya – Konza TL proceeds straight to Konza city substation (295044.84E, 9812169.73N). The line overflies SGR at coordinates (286929.26E, 9807220.02S) and then proceeds through Kapiti plains and LISA ranch and animal sanctuary.

The project co-ordinates are provided in Table 1 below

Table 1: Transmission Line and Substation Co-ordinates

<table>
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<th>COORDINATES ARE REFERED TO ARK 1960 ZONE 37S</th>
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Figure 3 below provides a map for the proposed Isinya-Konza 400KV TL.
2.4 **PROJECT OBJECTIVES AND JUSTIFICATION**

The main objective of the proposed project is to ensure provision of adequate and stable supply of electricity to the upcoming Konza smart city. Konza will be a smart city, with an integrated urban information and communication technology (ICT) network that supports delivery of connected urban services and allows for efficient management of those services on a large scale. It is expected that there will be high demand for power that cannot be met by the available power in Konza area and hence the need to bring in more power from elsewhere.

2.5 **PROJECT DESIGN**

2.5.1 *The 40km Transmission Line*

2.5.1.1 *Design Overview*

The 400 kV transmission line will be an overhead double-circuit transmission line supported by steel-lattice type transmission towers. The transmission tower will be placed at an interval of around 300-400 m, and the height will be around 45 m but may vary depending on the site topography and surrounding structures. Sufficient clearance height will be secured from the ground level as per Kenyan regulation. The four corners of the transmission tower base will be secured over a concrete foundation and will occupy an area of around 10 x 10 m. The exact location of the transmission towers will be determined in the ensuing detailed design study.

The general construction methodology for the transmission line is provided in the subsections below

*Plate 1: Typical design of a steel lattice type transmission tower*
2.5.1.2 Processes and activities

2.5.1.2.1 Pre-construction activity

The following activities form part of the pre-construction phase:

- Walkover surveys to identify the corridor;
- Detailed survey for fixing the alignment;
- Check surveys for exact tower spotting before actual construction; and
- Soil investigation of important tower locations to ascertain the type of foundation to be adopted.

2.5.1.2.2 Marking of the route and Right of Way (RoW)

All construction activities will be undertaken within the RoW for safe operations of the TL, considering minimum clearances as per international standards. The RoW is taken as 30m on both sides of the centre line of the TL making a total of 60M. The TL route will be marked by wooden pegs within the ground in accordance with the line design.

2.5.1.2.3 Clearing of tower sites

At the tower sites, all vegetation within the footprint of the tower base and for a distance of approximately 2m beyond the base in all directions will be cleared to ground level.

2.5.1.2.4 Excavation of tower foundation

Pit marking is done for the legs of the towers. Foundations will be dug to a depth of about 3m x 3m x 3m depending upon the ground conditions. This area may vary depending on the slope and soil type of the area.

2.5.1.2.5 Foundation for towers

Foundation for towers is laid depending upon the type of soil encountered. The formwork, reinforcing bars, the embedded parts of the towers and any earthing elements will be placed in the pits.

2.5.1.2.6 Backfilling

The foundation pits will be backfilled following the removal of the formwork with soil. The top part of the stub of the tower leg remains above the ground level after the backfilling. The backfilling soil will be compacted in accordance with good engineering practices.

2.5.1.2.7 Tower material delivery

The materials for construction of towers will be delivered from the storage yard directly to the site. Materials required for one particular tower will be issued for work at site. The materials will be brought to the construction site using either a tractor/trailer or manually depending on the terrain.

2.5.1.2.8 Erection of towers

Lag time will be maintained for curing of concrete before erection of the towers. Water is required for curing of foundations. Erection of towers is done manually by assembling prefabricated components of the lattice structure.
2.5.1.2.9 Stringing
This involves the stringing of the conductor wires which is done manually with the help of tractors/puller machines. Stringing is usually done between two angle towers at a time.

2.5.1.2.10 Reinstatement
Once backfilling is completed, the surface of the towers will be graded to ensure that water drains away from the tower support and that the surface is smooth. All excesses construction materials and debris will be removed from the site and disposed off in the rightful manner.

2.5.1.2.11 Testing and inspection
On completion of the work, physical inspection and checking of all foundation works, tower erection and stringing will be carried out to ensure strict adherence to the technical requirements.

Insulation and continuity test of the TL as well as earth resistance of each tower will be carried out before final commissioning.

2.5.1.2.12 Safety measures for operations
A warning sign will be attached to each tower approximately 2m above ground advising on high voltage. Once stringing is complete, anti-climbing devices will be placed on all faces of the tower. Also before the activation of the TL, the public will be sensitized regarding the operations of the TL for safety purposes.

2.5.2 The 400kV Konza City Substation
2.5.2.1 Design Overview

The layout of the substation is very important since there should be a Security of Supply. In an ideal substation all circuits and equipment would be duplicated such that following a fault, or during maintenance, connection remains available. Practically this is not feasible since the cost of implementing such a design is very high. Methods have been adopted to achieve a compromise between complete security of supply and capital investment.

Equipment for control, protection and auxiliary power will be housed in a small control building. The proposed substation layout consists essentially of the arrangement of a number of switchgear components in an ordered pattern governed by the function and rules of spatial separation. The spatial separation will include:

- Earth clearance, which is the clearance between live parts and earthed structures, walls, screens and ground.
- Phase clearance, which is the clearance between live parts of different phases and
• Isolating distance, which is the clearance between the terminals of an isolator and the connections thereto.

The section clearance is the clearance between live parts and the terminals of a work section. The limits of this work section, or maintenance zone, may be the ground or a platform from which the substation works are executed.

2.5.2.2 Processes and activities
The table below outlines the processes and activities that will be involved in the proposed 400kV Substation

Table 2: Project Activities and Processes

<table>
<thead>
<tr>
<th>PROJECT ACTIVITIES &amp; PROCESSES</th>
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<tr>
<td><strong>Design Phase</strong></td>
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<tr>
<td>This phase will involve preconstruction activities of mainly planning and managing the project. It will involve professionals who will undertake various studies geared towards designing the lounge such as engineers, architects, interior designers, land surveyors, quantity surveyors, geologists, environmentalists, project managers etc. Funding and other professionals will also be sourced during this phase, for subsequent phases.</td>
</tr>
<tr>
<td><strong>Construction Phase</strong></td>
</tr>
<tr>
<td>This phase activity will involve preparing the project site and setting up the structure. Professionals involved will include engineers, contractors, draughtsmen, technicians, masons, plumbers, electricians, gardeners/landscapers, architects and other project coordinators. Civil works will also be carried out during this phase and the main activities are listed as:-</td>
</tr>
<tr>
<td>o Removal of vegetation within the substation footprint</td>
</tr>
<tr>
<td>o Construction of access roads for the substation</td>
</tr>
<tr>
<td>o Terracing and leveling of the site</td>
</tr>
<tr>
<td>o Installation of foundations for infrastructure such as transformers, control room and radio tower</td>
</tr>
<tr>
<td>o Construction of bunds and oil holding dams (for emergency holding of transformer oil in the event of a spill)</td>
</tr>
<tr>
<td>o Compaction and filling with gravel of the areas between the foundations</td>
</tr>
<tr>
<td>o Creation of formal drainage and storm water control measures</td>
</tr>
<tr>
<td>o Delivery and installation of transformers, towers, bus bar and associated infrastructure</td>
</tr>
<tr>
<td>o Construction of control room and administrative infrastructure</td>
</tr>
<tr>
<td>o Construction of perimeter fencing and lighting</td>
</tr>
</tbody>
</table>

All construction activities including ground preparation, earth moving, materials delivery, building, walling, roofing and the installation of amenities (power, water, communication equipment, etc.), fittings (doors, windows, safety provisions, etc.) will be carried out by competent personnel
obtained through rigorous tendering procedure to ensure the set quality standards and time lines are met. The highly specialised and rugged equipment to be installed shall have the relevant international standards and best practice.

**Operational Phase**

Upon commissioning, this phase will involve the main intended activities of the proposed project. This will involve the running of the substation.

**Decommissioning Phase**

When the proposed project has reached the end of its life cycle this phase will come into effect and it will involve stopping all its activities, pulling down the structures and returning the environment back to at least its initial state. Professionals involved will include those involved in civil works such as plumbers, masons, engineers, contractors/demolition experts, landscapers, waste handlers, managers, environmentalists.

### 2.6 Major Equipment and Materials Required During Construction

Equipment and materials necessary for the construction of the project is listed in Table 3 below

**Table 3: Equipment and materials required**

<table>
<thead>
<tr>
<th>S/N</th>
<th>REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction of towers and the substation</strong></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Stubs of towers</td>
</tr>
<tr>
<td>2.</td>
<td>Stub setting templates</td>
</tr>
<tr>
<td>3.</td>
<td>Stub setting jacks</td>
</tr>
<tr>
<td>4.</td>
<td>Form boxes for concreting, wooden planks for shuttering</td>
</tr>
<tr>
<td>5</td>
<td>Concrete mixer machines, vibrators, dewatering pumps</td>
</tr>
<tr>
<td>6</td>
<td>Sand, cement and stone chips</td>
</tr>
<tr>
<td>7</td>
<td>Metal screens/sand screens etc. and other related tools/tackles for excavation/concreting and backfilling</td>
</tr>
<tr>
<td><strong>Erection of towers</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Tower steel members with nuts and bolts and various tower accessories</td>
</tr>
<tr>
<td>2</td>
<td>Derrick poles for lifting of tower members</td>
</tr>
<tr>
<td>3</td>
<td>Poly propylene ropes for guying purposes</td>
</tr>
<tr>
<td>4</td>
<td>Various single sheave pulleys and other related tools/tackles for tower erection</td>
</tr>
<tr>
<td><strong>Stringing of conductor and earth wire</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Conductor and earth wire drums</td>
</tr>
</tbody>
</table>
2.7 Vehicular Access Requirements

As far as possible, access to tower sites will be via existing roads and tracks. In some cases, temporary roads might have to be created in order to access the tower sites. These roads will not be graded and some of them would be retained for maintenance activity in future.

2.8 Manpower Requirements During Construction

An average of 20 workers (e.g. skilled and unskilled labour) are expected daily to be working at the construction sites. Most workers will be procured locally, although skilled foreigners may be hired for highly technical works. The entire recruitment process for the workers will be managed by the contractors in accordance with Kenya labour laws.

Normal working hours are planned to be from around 08:00-17:00 from Monday to Saturday. Works outside of normal working hours will require permission from KETRACO and relevant local authorities.
3 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 INTRODUCTION

The Republic of Kenya has a policy, legal and administrative framework for environmental management. The Government’s policy on energy is to provide efficient and reliable energy. Under the administrative framework, NEMA is responsible for ensuring EIAs are carried out for new projects and environmental audits on existing facilities as per the requirements of the EMCA Cap 387. Projects subject to this requirement are specified in the Second Schedule of the Act.

The Government of Kenya has established regulations to facilitate the process on ESIs and Environmental Audits (EA). The regulations are contained in Kenya Gazette Supplement No. 56, legislative, Supplement No.31, Legal Notice No.101 of 13th June 2003 and Environmental (Impact Assessment and Audit) (Amendment) Regulations of 2009. In Kenya, it is a legal requirement that any proposed project of the scale described in this report should undergo an ESIA. These requirements are stipulated in EMCA, Cap 387 and EIA/EA Regulations 2003. This section outlines the Policy, Legal and Institutional framework pertaining to the proposed 400kV Isinya-Konza TL project.

3.2 NATIONAL POLICY FRAMEWORK

4.2.1 National Environmental Action Plan (NEAP) of 1994

The National Environment Action Plan (NEAP) for Kenya was formulated in 1994 through a consultative process involving various stakeholders. The action plan was aimed at integrating environmental considerations into the country’s socio-economic development. The integration process was to be realised through development of a comprehensive framework that ensures linkage of environmental management of natural resources to decision-making processes. The NEAP also established the addresses the issue of social, economic and industrial activities and their impacts on the ecosystem as opposed to environmental sustainability. This policy also emphasizes environmental concerns to be accounted for in socio-economic developments. The EIA process was established in line with this policy and the key players in this were local authorities and other development partners.

4.2.2 The National Poverty Eradication Plan (NPEP) of 1999

The NPEP was formulated with an objective of reducing the high levels of poverty in Kenya by 50 percent by the year 2015, as well as to strengthen the capabilities of the poor and vulnerable groups to earn income. The plan also aimed at reducing gender and geographical disparities in order to create a healthy, better-educated and more productive population. The formulation of the plan was guided by the goals and commitments agreed during the World
Summit for Sustainable Development (WSSD) of 1995. The plan therefore focuses on the delivery of four WSSD themes of poverty eradication; reduction of unemployment; social integration of the disadvantaged people and creation of an enabling economic, political, and cultural environment through development of transport and communication sector. The plan is implemented by the Poverty Eradication Commission (PEC) that was established in collaboration with various Government Ministries, bilateral and multilateral donors, the private sector, Community Based Organizations (CBOs) and Non-Governmental Organizations (NGOs). The NPEP is relevant since the proposed project will create an enabling environment that will contribute immensely in the enhancement of economic growth in Kenya. The proposed project would also impact businesses, agricultural and tourism related activities that have great relevancy to poverty eradication in the country.

4.2.3 The Poverty Reduction Strategy Paper (PRSP) of 2000

The PRSP for Kenya has the broad objective of reducing poverty and promoting economic growth. This policy articulates Kenya’s commitment and approach to tackling endemic poverty through involvement of the poor communities in both rural and urban areas in various socio-economic development activities. The proposed project, during and after implementation will offer various employment opportunities to Kenyans and will therefore contribute directly towards the realisation of the broad national goal of reducing poverty in the country. In addition, the project would stimulate economic development by creating an enabling environment for other key sectors of the economy to thrive.

4.2.4 Environment and Development (Sessional Paper No. 6 of 1999)

The Kenya’s policy paper on the Environment and Development was formulated in 1999. The policy defined approaches that will be pursued by the Government in mainstreaming environment into development. The policy harmonized environmental and developmental objectives with the broad goal of achieving sustainable development. The policy paper also provided guidelines and strategies for government action regarding environment and development. With regard to wildlife, the policy reemphasized government’s commitment towards involving local communities and other stakeholders in wildlife conservation and management, as well as developing mechanisms that allow them to benefit from the natural resources occurring in their areas. The policy also advocated for the establishment of zones that allow for the multiple use and management of wildlife. This policy is relevant to the proposed development project in view of the potential impacts on the environment and involvement of the public in project planning.
4.2.5 The National Biodiversity Strategy and Action Plan of 2000

The NBSAP was formulated in order to enable Kenya address national and international commitments defined in Article 6 of the Convention on Biological Diversity (CBD). The strategy is a national framework of action for ensuring that the present rate of biodiversity loss is reversed and present levels of biological resources are maintained at sustainable levels for posterity. The general objectives of the strategy are to conserve Kenya’s biodiversity; to sustainably use its components; to fairly and equitably share the benefits arising from the utilization of biological resources among the stakeholders; and to enhance technical and scientific cooperation nationally and internationally, including the exchange of information in support of biological conservation. It advocates for sensitization and empowerment of communities through participatory management practices and use of environmentally friendly techniques and technologies to achieve Kenya’s vision to maintaining a clean and healthy environment with abundant biodiversity resources.

3.3 National Legal Framework

3.3.1 The 2010 Constitution of Kenya

The constitution declares that the people of Kenya are respectful to the environment, which is their heritage and they are determined to sustain it for the benefit of future generations and Article 42 states that every person has a right to a clean and healthy environment. Section 2 of Chapter 5 states that 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. Article 70 deals with enforcement of environmental rights and everyone who feels their right to a clean and healthy environment has been denied has the obligation to go to court to seek redress. The relevancy is that the proponent must ensure that all the applicable provisions of the Constitution are observed during the implementation of the project.

3.3.2 The Environment and Management Coordination Act (EMCA), CAP 387

EMCA, CAP 387 is the principal Act governing environmental protection. It contains various legal notices with regulations on environmental conservation and Management. This informs the conducting of the EIA on the proposed 40km 400kV Isinya-Konza transmission line. Schedule II confers the right of every person to a clean environment and therefore makes it mandatory to work in a clean environment and protect people living close to the project.
Part VI gives detailed mechanisms and stipulation regarding Environmental Impact Assessment.

The Act has also established a National Environmental Complaints Committee (NECC), which provides the administrative mechanism for addressing environmental degradation. The Committee has the mandate to investigate complaints relating to environmental damage and degradation. The NECC assesses for purposes of variation of the approved EIA license for the proposed project.

KETRACO should acquire an approval from NEMA before commencing the project.

The subsections below further describe regulations under EMCA that are related to the project.

3.3.2.1 Environmental (Impact Assessment and Audit) Regulations, 2003, Legal Notice No. 101

The Environmental (Impact Assessment and Audit) Regulations provide guidelines for conducting EIA studies. The regulations provide details on the parameters to be evaluated when undertaking an EIA study. It also provides guidelines on the conduct of environmental audits and development of project monitoring plans. The proposed project must comply with the requirements of the regulations that also include conducting continuous monitoring and annual audits on the proposed project.

3.3.2.2 Environmental Management and Co-ordination (water quality) Regulations, 2006 Legal notice No. 120

The EMCA (Water Quality) Regulations, 2006 provide guidelines on the use and management of water sources in order to safeguard quality of water for domestic use and irrigation, among others. The proposed project will need to comply with the requirements of this regulation in order to ensure water sources along the route are protected from pollution and over abstraction. The project will also need to comply with the regulations that prohibit undertaking of development within a minimum of 6m from the highest ever recorded flood level of a river system. Section 4(2), 6 and Section 24 of the regulation prohibits pollution of water bodies and requires that all substances discharged into the water bodies should meet the standards set under the Third Schedule of the regulation.

Everyone is required to refrain from any actions, which directly or indirectly cause water pollution, whether or not the water resource was polluted before the enactment of the Environmental Management and Coordination Act (EMCA) Cap 387. It is an offence to contravene the provisions of these regulations with a fine not exceeding five hundred thousand shillings. In response to the above, the project design team should be advised on
the requirements of this regulation and appropriately incorporate the regulations in the project design document.

Important in protection of ground water sources and meeting standards for discharge of effluent. In emptying onsite sewage disposal facilities, deal only with licensed liquid waste handlers. Also, ensure domestic water to meet drinking standards as set out under the second schedule.

3.3.2.3 Environmental Management and Coordination (Waste management) Regulations, 2006 Legal Notice No. 121

The relevant institution is NEMA, this act focuses on management of solid wastes, industrial wastes, hazardous wastes, pesticides and toxic substances and radioactive substances. Provides standards for handling, transportation, and disposal of different types of waste. Addresses concerns such as responsibility for waste generators and obligations for disposal. Section 4(1) states that No person shall dispose of any waste on a public highway, street, road, recreational areas or in any public place except in a designated waste receptacle. Section 4(2) stipulates that a waste generator shall collect, segregate, and dispose such waste in the manner provided under these regulations.

In compliance to this, the contractor and the proponent will ensure there exists proper contractual agreement with licensed solid waste handlers and that solid wastes are disposed in the manner prescribed. This has been addressed in the ESMP section of this report.

3.3.2.4 The Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 Legal Notice No. 61

The Noise and Excessive Vibration Pollution Control Regulations, 2009 prohibits excessive noise and vibration. It states that no person shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise which annoys disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. The contractor of the project will have to ensure that no excessive noise and vibrations are made during the construction stage. This is important since the construction of the project may involve use of heavy earthmoving equipment and trucks which can generate excessive noise and vibrations. Motor vehicles used during the construction of the proposed project should also adhere to the regulations which prohibit excessive noise. The provision of the act on motor vehicle states that no person shall operate a motor vehicle which produces any loud and unusual sound exceeding 84 dB(A) when accelerating. The Act also states that no person shall at any time sound the horn or other warning device of a vehicle except when necessary to prevent an accident or an incident. Any person carrying out construction, demolition, mining or quarrying
work should ensure that the vibration levels do not exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source. 

*All these provisions have been comprehensively catered for in this report at the ESMP and their adherence shall be closely monitored.*

### 3.3.2.5 The Environmental Management and Coordination (Air Quality) Regulations, 2008

NEMA is the body tasked with overseeing that no person shall necessitate emission of air pollutants listed in the first schedule, second schedule, & seventh schedule of the regulation to an extent that compromised the ambient air quality levels.

The proponent will strive to observe the provision of this regulation on air quality and emission standard throughout the project cycle.

### 3.3.2.6 Environmental Management and Co-ordination Act (Controlled Substances) Regulations, 2007

The EMCA (Controlled Substances) Regulations aimed at controlling the production, consumption and, exports and imports of controlled substances. Controlled substances are grouped into three lists as indicated below:

- Group 1 list consists of halogenated flouro-chemicals with ozone depleting substances.
- Group 2 list consist of hydrobromofluorocarbons with ozone depleting substances.
- Group 3 list consist of bromochloromethane with ozone depleting substances.

Products containing controlled substances include air conditioners, air coolers, refrigerants, portable fire extinguishers, heat pump equipment, dehumidifiers, insulation boards, panels and pipe covers, pre-polymers, etc.

*The project contractor and the proponent will need to ensure that the requirements of this regulation are observed in order to ensure that equipment, machinery, vehicles and chemicals containing such components are not imported into the country for use in the proposed project.*

### 3.3.2.7 Environmental Management and Co-ordination (Fossil Fuel Emission Control) Regulations, 2006

The EMCA (Fossil Fuel Emission Control) Regulations, 2006 aims at eliminating or reducing emissions emitted from internal combustion engines to acceptable levels. The regulation provides guidelines on use of clean fuels, use of catalysts and inspection procedures for engines and generators. This regulation is applicable to the proposed project since there would be use of vehicles, machineries and equipment that depend on fossil fuel as their source of energy. The requirements of the regulation must be implemented in order to
eliminate or reduce air quality degradation. Sections of the regulation citing the standards of recommended emission levels will be given to the contractor and or pinned at strategic points in the contractor’s field offices.

### 3.3.2.8 Environmental Management and Co-ordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006

The EMCA (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations, 2006 provides that no person shall engage in any activity that may have an adverse impact on any ecosystem; may lead to the introduction of any exotic species or to unsustainable use of natural resources, without an Environmental Impact Assessment License issued by the Authority under the Act.

The regulation requires NEMA in consultation with the relevant lead agencies, to impose bans, restrictions or similar measures on the access and use of any threatened species in order to ensure its regeneration and maximum sustainable yield.

### 3.3.2.9 Environmental Management and Co-ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009

The Environmental Management and Co-ordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009 applies to all wetlands in Kenya whether occurring in private or public land. The objectives of the regulations are to provide for the conservation and sustainable use of wetlands and their resources in Kenya and promote the integration of sustainable use of resources in wetlands into the local and national management of natural resources for socio-economic development. The act also aims at ensuring the conservation of water catchments and the control of floods and the sustainable use of wetlands for ecological and aesthetic purposes for the common good of all citizens. The act also makes provision for the protection of wetlands as habitats for species of fauna and flora. It also provides a framework for public participation in the management of wetlands.

The Act requires wetland resources to be utilized in a sustainable manner compatible with the continued presence of wetlands and their hydrological, ecological, social and economic functions and services. The Act requires special measures to be undertaken to preserve and maintain knowledge innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity in wetlands.

The regulation also calls for sustainable use of wetlands through integration into the national and local land use plans to ensure sustainable use of wetlands in the country. The contractor
will need to employ measures for the preservation and conservation of these wetlands and river systems by ensuring that their material suppliers (e.g. sand) do not harm wetlands and riverbeds

3.3.3 The Land Act, 2012

The body that oversees this is National Land Commission. The Act specifies the manner for determination and the award for compulsory acquisition to be served on the persons determined to have interest in the affected land.

According to Section 128 of the Act, any dispute arising out of any matter under the Act, which involves compulsory acquisition process, should be referred to the Land and Environmental Court for determination.

Sections 107-133 of the Land Act specify the procedure to be followed in the process of compulsory land acquisition.

Part II section 8 provides guidelines on management of public land by the National Land Commission on behalf of both national and county government.

According to Section 111 of the Act, just compensation shall be paid promptly to all persons whose interests have been affected by the land acquisition.

Proponent shall adhere to the requirements of the Act in the implementation of land acquisition, and any project affected people will be compensated accordingly.

3.3.4 The Energy Act, 2019

The Act provides the regulatory framework for the energy sector and, among other things, stresses the need for energy players in general and electrical energy players in particular to adopt environmentally friendly and sustainable practices in power generation, distribution and consumption. It sets standards for proper environmental management in the sector.

Section 30 (1) part (b) of the Act states compliance with the EMCA, Cap 387 as an important criterion to be considered by the ERC during the registration and supervision of sector players.

The ESIA Study has been undertaken in fulfilment of requirements of the Energy Act.

3.3.5 Wildlife Conservation and Management Act 2013

This Act was enacted to consolidate and amend the law relating to the protection, conservation and management of wildlife in Kenya, and for purposes connected therewith and thereto. Section 9 of the Act states that ‘the Director of Wildlife Conservation shall, through the officers of the service, control, manage and maintain all national parks’. It also states that within the National Park, the Director may:

- Reserve or set aside any portion of the park as a breeding place for animals or as nurseries for vegetation;
• Authorize the construction of such roads, bridges, airfields, buildings and fences, the provision of such water supplies, and the carrying out of such other works, as may be necessary for the purposes of the park;

• With the approval of the Minister, let sites for the erection of hotels, or other accommodation for the visitors to the park provided that nothing in any document connected with the letting shall be construed as in any manner abridging the overall control of the Park by the Service, or as preventing the Director from giving directions as to the manner in which the premises concerned shall be managed.

The project is located in a wildlife migratory corridor. The proponent shall therefore implement the proposed mitigation measures and ESMP towards protection and conservation of wildlife in the area.

3.3.6 The Water Act, 2002

Section 76(1) states that no person shall discharge any effluent from any trade premises into the sewers without the consent of the licensee. An application for consent shall be made to the licensee and shall state the following:

• The nature or composition of the trade effluent.

• The maximum quantity of the effluent which it is proposed to discharge on any one day.

• The highest rate at which it is proposed to discharge the effluent; and

• Any other information required by the licensee.

The licensee's consent may be given subject to conditions, including conditions requiring the payment to the licensee of charges for the discharge. "Trade effluent" means any liquid, whether with or without suspended particles, produced as a by-product in the course of any trade or industry. Provided that any owner or occupier considers that any such requirement is unreasonable may, within thirty days after service on him of notice of such requirement, appeal to the Water Appeal Board.

Section 25 of the Act requires a permit to be obtained for among others any use of water from a water resource, discharge of a pollutant into any water resource according to section 29 of the same Act. Application for such a permit shall be subject to public consultation as
well as an environmental impact assessment as per the Environmental Management and Co-
ordination Act, 2015.

The conditions of the permit may also be varied if the authority feels that the water so used
is causing deterioration of water quality or causing shortage of water for other purposes that
the authority may consider has priority. This is provided for under section 35 of the Act.

Section 36 gives the WRA to require applications or re-applications where it becomes
necessary to rationalize water use with respect to promotion of beneficial use of water in the
public interest, efficient management of the water resources or protect the water resources
quality. The Act further requires that a riparian reserve be provided for any water resources.

In the construction and operation of Proposed Transmission Line, these regulations and its
 provision on water pollution management shall be taken into consideration and closely
 monitored.

3.3.7 The Physical Planning Act (Cap 286)

An Act of Parliament to provide for the preparation and implementation of physical
development plans and for connected purposes enacted by the Parliament of Kenya Under
this Act, no person shall carry out development within the area of a local authority without a
development permission granted by the local authority under section 33. The County
Government concerned shall require the developer to restore the land on which such
development has taken place to its original condition within a period of not more than ninety
days. If on the expiry of the ninety days notice given to the developer such restoration has
not been affected the concerned local authority shall restore the site to its original condition
and recover the cost incurred thereto from the developer.

The Proponent shall secure all mandatory approvals and permits as required by the law.

3.3.8 The Occupational Safety and Health Act, 2007

The Occupational Safety and Health Act 2007 applies to all workplaces where any person is at
work, whether temporarily or permanently. The purpose of the Act is to secure the safety,
health and welfare of persons at work and protect persons other than persons at work against
risks to safety and health arising out of, or in connection with, the activities of persons at
work. Section 19 of the Act provides that an occupier of any premises likely to emit poisonous,
harmful, injurious or offensive substances, into the atmosphere shall use the best practicable
means to prevent such emissions into the atmosphere and render harmless and inoffensive
the substances which may be emitted.

Section 16 provides that no person shall engage in any improper activity or behaviour at the
workplace, which might create or constitute a hazard to that person or any other person.
The contractors of the proposed project and the operators will need to fully comply with the requirements of the Occupational Safety and Health Act 2007. The report advises the Proponent on safety and health aspects, potential impacts, personnel responsible for implementation and monitoring, frequency of monitoring, and estimated cost, as a basic guideline for the management of Health and Safety issues in the proposed project.

3.3.9 The Public Health Act

The Public Health Act regulates activities detrimental to human Health. An environmental nuisance is one that causes danger, discomfort or annoyance to the local inhabitants or which is hazardous to human health. Although the Act is primarily concerned with domestic water supplies and sources of water used for human consumption, its regime may be extended to cover rivers, streams, lakes and underground water resources since these are the basic water sources for the majority of Kenya’s population.

It also outlines the standards of construction of various facilities of any place. In terms of air pollution thermal plants are said to emit a variety of gases, volatile organic compounds and particulate matter depending on the amount and type of fuel used and method used for burning. It is therefore necessary to monitor the air pollution. The Act prohibits activities (nuisances) that may be injurious to health. The primary purpose of the Act is to secure and maintain public health. It defines nuisances on land and premises and empowers public health authorities to deal with such conditions.

Part IX, section 115, of the Act states that no person/institution shall cause nuisance or condition liable to be injuries 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 injuries or dangerous to human health.

On responsibility of the Local Authorities Part XI, section 129, of the Act states in part “It shall be the duty of every local authority to take all lawful, necessary and reasonably practicable measures for preventing any pollution dangerous to health of any supply of water which the public within its district has a right to use and does use for drinking or domestic purposes. Section 130 provides for making and imposing regulations by the local authorities and others the duty of enforcing rules in respect of prohibiting use of water supply or erection of structures draining filth or noxious matter into water supply as mentioned in section 129. This provision is supplemented by section 126A that requires local authorities to develop by laws for controlling and regulating among others private sewers, communication between drains, power lines, and sewers as well as regulating
sanitary conveniences in connection to buildings, drainage, cesspools, etc. for reception or disposal of foul matter. Part XII, Section 136, states that all collections of water, sewage, rubbish, refuse and other fluids which permits or facilitates the breeding or multiplication of pests shall be deemed nuisances and are liable to be dealt with in the matter provided by this Act.

*The Proponent shall observe its provisions and implement measures to safeguard public health and safety.*

3.3.10 County Government Act 2012

The Act empowers county governments to control or prohibit all businesses, factories and workshops that, by reason of smoke, fumes, chemical gases, dust, smell, noise or vibration or other cause may be a source of danger, discomfort or annoyance to the neighbourhood and to prescribe the conditions subject to which business, factories and workshops shall be carried on.

3.4 Institutional Framework

The EMCA Act, Cap 387 established a number of institutions for the management of the Environment in Kenya. The Apex is the parent ministry which is currently the ministry of Environment, Water and Natural Resources. Below the ministry is the National Environment Council. These key institutions and government departments are responsible for the environmental protection and natural resource management in Kenya forms the key stakeholders in the project implementation.

3.4.1 Ministry of Environment, Water and Natural Resources

The mandate of the ministry is to monitor, protect, conserve and manage the environment and natural resources through sustainable exploitation for socio-economic development aimed at eradication of poverty, improving living standards and ensuring that a clean environment is sustained now and in the future. The ministry comprises of various divisions at the headquarters and the following parastatals and departments.

- National Environment Management Authority
- Kenya Meteorological Department
- Mines and Geology Department
- Department of Resource Surveys and Remote Sensing (DRSRS)

The functions of the ministry include but not limited to the following:

- Environment and Natural Resources Policy formulation, analysis and review
- Sustainable management of Mineral resources and conservation of environment
- Continuous development of geo-database for integrated natural resources and environmental management systems
- Promote, monitor and coordinate environmental activities and enforce compliance of environmental regulations and guidelines

3.4.2 Kenya Electricity Transmission Company Limited (KETRACO)
KETRACO is the proponent in this project. KETRACO is therefore responsible for land acquisition, implementation and monitoring the project throughout all its phases.

3.4.3 National Environment Management Authority (NEMA)
National Environment Management Authority (NEMA) is the institution with the legal authority to exercise general supervision and coordination over all matters relating to the environment. It is the principal instrument of the government charged with the implementation of all policies relating to the environment. NEMA’s functions are more particularly set out in section 9(2) of the EMCA act, Cap 387.
According to section 68 of the environmental management and coordination Act (EMCA) Cap 387, The Authority shall be responsible for carrying out environmental audits on all activities that are likely to have a significant effect on the environment.

Environmental Auditing (EA) is a tool for environmental conservation and has been identified as a key requirement for existing facilities to ensure sustainable operations with respect to environmental resources and socio-economic activities in the neighbourhood of the facilities.

The government has established regulations to facilitate the process on Environmental Impact Assessments and Audits. The regulations are contained in the Kenya Gazette Supplement No. 56, legislative supplement No. 31; legal notice No. 101 of 13th June 2003.

The authority core functions are:
- Coordinating the various environmental management activities being undertaken by the lead agencies
- Promote the integration of environmental considerations into development policies, plans, programs and projects, with a view to ensuring the proper management and rational utilization of environmental resources, on sustainable yield basis, for the improvement of the quality of human life in Kenya.
- To take stock of the natural resources in Kenya and their utilization and conservation.
- Carry out surveys, which will assist in the proper management and conservation of the environment.
Advise the Government on legislative and other measures for the management of the environment or the implementation of relevant international conventions, treaties and agreements.

Undertake and coordinate research, investigation and surveys, collect, collate and disseminate information on the findings of such research, investigations or surveys.

Mobilize and monitor the use of financial and human resources for environmental management.

Identify projects and programs for which environmental audit or environmental monitoring must be conducted under this Act.

Initiate and evolve procedures and safeguards for the prevention of accidents, which may cause environmental degradation and evolve remedial measures where accidents occur e.g. floods, landslides and oil spills.

Monitor and assess activities, including activities being carried out by relevant lead agencies, in order to ensure that the environment is not degraded by such activities. Management objectives must be adhered to and adequate early warning on impending environmental emergencies is given.

3.4.4 National Environmental Council (NEC)

The National Environment Council established under section 4 of part 3 of the EMCA act consists a board which comprises the Chairman (Minister), PS of the relevant ministry, representatives from public universities, representatives from research institutions, NGO representatives, Director General (Secretary) and such number of members as may, from time to time, be co-opted by the minister to be members of the council.

3.4.5 The National Environmental Action Plan Committee

National Environmental committee is supposed to prepare a national environmental action plan after every 5 years for consideration and adoption by the National Assembly. The NEAP is a compilation of provincial Environment Action Plans which are prepared by the district environment committee.

3.4.6 The County Environmental Committee

County Environmental Action Plan Committee is charged with the responsibility of preparing a provincial environmental Action based on the county environmental plan. The county Environmental action plans are further compiled at the national level.
3.4.7 The National Environmental Complaints Committee

The Act (EMCA) has also established a National Environmental Complaints Committee, which provides the administrative mechanism for addressing environmental harm. The Committee has the mandate to investigate complaints relating to environmental damage and degradation. Its members include representatives from the Law Society of Kenya, NGOs and the business community.

3.4.8 Directorate of Occupational Health and Safety

The institution will be tasked for registration of the construction site as a workplace and enforcing compliance with Occupational Health and Safety Regulations at the construction site.

3.4.9 Department of Physical Planning

The department will monitor compliance with the building plans/design.
4 ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE INFORMATION

4.1 INTRODUCTION

The 400kV Isinya-Konza transmission line traverses Kajiado and Machakos Counties. The TL begins from the existing Isinya substation in Kajiado County and evacuates power to a proposed Konza city substation.

This chapter provides a description of the current environmental/natural and socio-economic conditions of the site and surrounding areas, which directly or indirectly may be affected by the proposed Transmission Line. The baseline data collection focussed on providing information to support the assessment of any potential impact of the proposed project. Information was therefore collected at the following levels:

- **County Level**: Secondary information was collected at the county level aimed at providing a contextual overview within the County.
- **Project Area**: Primary information was collected within the project area where the project is located. This included information captured on the parcel of land.

In order to capture information in the above levels mentioned, the following methodology was utilised:

- **Desktop Study**: A desktop study was carried out of publicly available scientific publication to investigate the natural environment that exists in the study area. This was complimented by the site visit conducted in the period of 27th November to 8th December, 2018. During the site visit, information pertaining to natural environment particularly existing flora, fauna, soils and hydrology within the Study and Project area was captured in photography and GPS.

- **Stakeholder Engagement**: A stakeholder Engagement exercise was taken as part of the ESIA Study *(for further detail see Chapter 5 of this Report)*. Most of the stakeholders consulted were found within the Project Area.

4.2 LOCATION AND SIZE

**Kajiado County**

The proposed Transmission Line passes approximately 32 KM in Kajiado County. Kajiado County is located in the southern part of Kenya. It borders Nairobi County to the North East, Narok County to the West, Nakuru and Kiambu Counties to the North, Taita Taveta County to the South East, Machakos and Makueni Counties to the North East and east
respectively, and the Republic of Tanzania to the South. It is situated between Longitudes 360 5’ and 370 5’ East and between Latitudes 10 0’ and 30 0’ South. The county covers an area of 21,900.9 square kilometres (Km2).

**Machakos County**

The proposed Transmission Line passes approximately 8km within Machakos County, specifically in Konza-Kimutwa sub location.

The Konza City substation site is located in Machakos County within the Konza City perimeter. The County borders eight counties: Nairobi and Kiambu counties to the West; Embu to the North; Kitui to the East; Makueni to the South; Kajiado to the South West and Muranga and Kirinyaga to the North West. It lies between latitudes 0º45´South and 1º31´South and longitudes 36º45´ East and 37º45´ East. It covers a total area of 6208.2 km².

### 4.3 BIO-PHYSICAL ENVIRONMENT

#### 4.3.1 Climatic conditions

Overall, Kenya has been divided into seven agro-climatic zones using a moisture index (Sombroek et al, 1982). The index used is annual rainfall expressed as a percentage of potential evaporation (Eo). Areas with an index of greater than 50% have a high potential for cropping, and are designated zones I, II and III. The semi-humid to arid regions (zones IV, V, VI, and VII) have indexes of less than 50% and mean annual rainfall of less than 1100 mm as shown in Table 4 below.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Classification</th>
<th>Moisture index (%)</th>
<th>Annual rainfall (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Humid</td>
<td>&gt;80</td>
<td>&gt;1800</td>
</tr>
<tr>
<td>II</td>
<td>Sub-humid</td>
<td>60-80</td>
<td>1500-1800</td>
</tr>
<tr>
<td>III</td>
<td>Semi-humid</td>
<td>50-60</td>
<td>1100-1500</td>
</tr>
<tr>
<td>IV</td>
<td>Semi-humid to semi-arid</td>
<td>40-50</td>
<td>600-1100</td>
</tr>
<tr>
<td>V</td>
<td>Semi-arid</td>
<td>25-50</td>
<td>450-900</td>
</tr>
<tr>
<td>VI</td>
<td>Arid</td>
<td>15-25</td>
<td>300-550</td>
</tr>
</tbody>
</table>

Table 4: Agro-ecological Zones in Kenya
Kajiado County
The county has a bi-modal rainfall pattern. The short rains fall between October and December while the long rains fall between March and May. There is a general rainfall gradient that increases with altitude. The bimodal rainfall pattern is not uniform across the County. The long (March to May) rains are more pronounced in the western part of the County while the short (October to December) rains are heavier in the eastern part. The rainfall amount ranges from as low as 300mm in the Amboseli basin to as high as 1250mm in the Ngong hills and the slopes of Mt. Kilimanjaro.

Temperatures vary both with altitude and season. The highest temperatures of about 34°C are recorded around Lake Magadi while the lowest of 10°C is experienced at Loitokitok on the eastern slopes of Mt. Kilimanjaro. The coolest period is between July and August, while the hottest months are from November to April.

![Figure 4: Climatic conditions in Kajiado County](image)

Machakos County
The County receives bimodal rainfall with short rains in October and December while the long rains from March to May. The rainfall range is between 500mm and 1250mm, which is unevenly distributed and unreliable. The altitude mainly influences rainfall distribution in the county. The high areas such as Mua, Iveti and Kangundo receive an average rainfall of 1000mm while the lowland areas receive about 500mm. Temperatures vary between 18°C
and 29°C throughout the year. The dry spells mainly occur from January to March and August to October.

**Figure 5: Climatic conditions in Machakos County**

### Study area

The proposed project is located within arid and semi-arid land with a mean annual rainfall ranges from 300 to 800 mm. The project area has a bimodal rainfall pattern with precipitation generally occurring in the months of March to May and October to December.

#### 4.3.2 Physical and topographic features

**Kajiado County**

The main physical features of Kajiado County are plains, valleys and occasional volcanic hills ranging from an altitude of 500 metres above sea level at Lake Magadi to 2500 metres above sea level in Ngong Hills. Topographically, the county is divided into three different areas namely; Rift Valley, Athi Kapiti plains and Central Broken Ground. The Rift Valley is a low depression on the western side of the county running from north to south. It is made up of steep faults giving rise to plateau, scarps and structural plains. The depression has important physical features such as Mount Suswa and Lake Magadi. The lake has substantial deposits of soda ash and it is commercially exploited. The altitude ranges between 600 and 1740 metres above sea level.
The Athi Kapiti Plains consist mainly of gently undulating slopes, which become rolling and hilly towards the Ngong hills. The altitude ranges from 1580 to 2460 metres above sea level. The hills are the catchment areas for Athi River, which is fed by Mbagathi and Kiserian tributaries.

The Central Broken Ground is an area stretching 20-70 kilometres wide from the North Eastern boarder across the county to the southwest where altitude ranges from 1220 to 2073 metres above sea level.

**Machakos County**

The County has unique physical and topographical features. These include hills rising between 1800 – 2100m above sea level and Yatta plateau, which is elevated to about 1700m above sea level and slopes to the South East. There are isolated hills in the North West. In the plains, the soils are well-drained, shallow, dark and red clay soils. In addition, the vegetation across the entire County varies according to the altitude. The plains receive less rainfall and are characterized by open grassland with scattered trees as compared to high altitude areas, which receive high rainfall and have dense vegetation.

**Study area**

The proposed project passes through Athi Kapiti plains as depicted in the map below.
4.3.3 Geology and soils

The area consists of three geological regions: quaternary volcanic, Pleistocene and basement rock soils. Alluvia soils are also found in some areas. Quaternary Volcanic soil is found in the Rift Valley. Basement System Rocks which comprise various gneisses, cists, quartzite and crystalline limestone, are found mainly along the river valleys and some parts of the plains. The project area is predominantly covered by black cotton soil which is underlain by volcanic rocks, mainly agglomerates, tuffs and phonolites. Figure 7 below depicts the soils in the project area.

![Soils in the project area](image_url)

Figure 7: Soils in the project area

4.3.4 Hydrology

The major sources of water in the project area for domestic and livestock use are sub surface sources such as water pans, dams and shallow wells. The amount of surface water varies from area to area. There were no rivers observed in the project area, however a marsh was observed during site visit being overflown by the proposed project as per Figure 8 below.
4.3.5 Flora

Generally, vegetation in the area is determined by altitude, soil type and rainfall. In many instances it has been modified by animal and human activity. Grazing, browsing, charcoal burning, extraction of fuel wood and cultivation are the major causes of vegetation reduction. The vegetation in the study area is sparsely distributed, this area being ASAL; the most occurring vegetation are grasslands, species of acacia trees and short shrubs. But in the areas which has the high water tables the taller species of acacia tree grows a considerable height, the picture bellow shows different types of vegetation found around the corridor and areas surrounding the TL.
Plate 2: Acacia sp. occurring along the TL.
Plate 3: open grassland and acacia trees occurring along TL

Plate 4: open grassland with few stunted acacia species and ostrich
4.3.6 Fauna

The project area lies within the Athi-Kaputei ecosystem according to Government of Kenya (GoK), report on wildlife migratory corridors and dispersal areas, 2017. The area supports a large wildlife population (more than 20 species, including the migratory wildebeest and zebras). The semi-arid plains to the south of the Nairobi National Park are home to the Kaputiei Maasai community, which depends for its livelihood on livestock keeping. In also hosting a rich wildlife population, these plains are critical to the health of the Nairobi National Park, in that 70-80% of the park’s larger mammals roam outside its boundaries at one time or another (Ogutu et al., 2013).

The study area is a migratory/dispersal area for wildlife. The core area for wildebeest was around Olooloitikoishi, Kaputiei North, the Machakos ranches, and the Nairobi National Park. The pattern was similar for zebra, except for in the park, which they utilize as a dispersal area. Giraffes were widely dispersed, with core areas around Olooloitikoishi and towards the south. Figure 9 below describes the migratory routes/corridors and threats in the Athi-Kaputei Ecosystem while Table 4 describes the routes.
Figure 9: Migratory routes/corridors and threats in the Athi-Kaputei Ecosystem. This map should be read together with Table 4 describing the routes.
Table 5: Connections and linkages and conservation threats in the Athi-Kaputiei Ecosystem.

<table>
<thead>
<tr>
<th>Route</th>
<th>Threat</th>
<th>Description</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Runs to and from Nairobi NP through upper eastern part of sheep and goat open land, and towards Olooloitikoishi-Kipeto open lands</td>
<td>Privately owned but critical passage to the park. Also imminent blockade by the proposed Mlolongo - Mbagathi bypass.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Exits the park at Sheep and Goat open land and crosses Kitengela and Olooloitikishi Riversto Enkasiti and Kisaju</td>
<td>The sheep and goat open land is a critical link to Nairobi National Park</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Runs from the upper Machakos ranches to east of Kitengela town, and crosses Ilasit and Olturoto in the south, and then to wildebeest calving zone in Enkirigirri (Kaputiei North).</td>
<td>Housing developments (shopping Centres, residential estates) along the Kitengela-Namanga highway</td>
</tr>
<tr>
<td>4 &amp; 5</td>
<td>4 - Runs to and from Ilasit in the east of Olturoto and crosses Olturoto River to Emarti in Kaputiei Central. 5 - Cross Emarti and connect calving zone in Enkirigirri to Machakos ranches</td>
<td>Land subdivisions between Ilasit and Olturoto, and gypsum mining at Ilopolasat and Enkirigirri</td>
<td></td>
</tr>
<tr>
<td>6 &amp; 7</td>
<td>2nd triangle to ensure 1st and Connects the wildebeest and zebra movements to Nairobi NP</td>
<td>Blocked</td>
<td></td>
</tr>
</tbody>
</table>

During the filed visit, it was noticed that there were a lot of both wild and domestic animals occurring in this area, roaming freely along the TL. Some of the wild animals observed were the antelope species, ostrich, zebras, wild beasts and a lot of bird species. Below is some of the animals found along the TL.
Plate 6: A pack of Zebra grazing along the TL

Plate 7: Wild beast grazing around the project area
4.4 SOCIO-ECONOMIC BASELINE

4.4.1 History and Culture

Kajiado County

Kajiado County was formed after the successful implementation of Kenya’s Constitutional Referendum of 2010 which yielded the 47 counties in the Country. Kajiado was initially occupied by the Maasais but people from other Kenyan tribes as well as foreigners have since moved in. The Maasai are nomadic cattle herders, although some members of this community practice subsistence agriculture. Maasais consider cattle a sacred gift from their god Enkai. The animals are a sign of wealth in the community and are often used in payment of dowry. The Maasai are renowned for their colourful dressing that consists of red shuka (light blankets), wrapped around the body and multi-coloured beaded jewellery worn around the necks and arms. The Maasai men are traditionally polygamous, while women are allowed to have intimate relationships with their husbands' age-mates so as to bring forth warriors.

Machakos County

Machakos was established in 1887, ten years before Nairobi. Machakos was the first administrative centre for the British colony, but they moved the capital of Kenya to Nairobi in 1899 since Machakos by-passed the Uganda Railway that was under construction. The county is predominantly dominated by the Kamba Community who belong to the Bantu group. As the fifth largest tribe, Kambas make up about 11 percent of Kenya's total population. They speak the Kamba (or Kikamba) language. Kamba people have special skills in woodcarving and basketry. In gift shops, open-air markets and art galleries in the major cities and towns of Kenya, you are bound to find beautiful handcrafts - woodcarvings, sisal baskets and well decorated artifacts made by the Kambas. They are also involved in other activities such as hunting, farming and pastoralism.

4.4.2 Demography

Kajiado County

The county has a population growth rate of 5.5 percent; total population was estimated at 807,070 with 401,785 being females and 405,245 males as at the statistics of 2012. The population is projected to grow to 1 million by the year 2017. During the site visit, it was noted that the area is sparsely populated. This is attributed to the fact that the area is underdeveloped and semi-arid in nature.
Apart from Maasais, other residents of Kajiado County include Kikuyu, Kalenjin, Ameru, Kamba, Luhyia and Luo among other tribes. Other people of foreign origin can also be found in Kajiado. Some have intermarried with the Maasais, others settled primarily to do business while some are employment by government and non-governmental organisations such as AMREF and ActionAid.

**Machakos County**

The population density and distribution in the County is driven by the economic activity carried out in the specific sub county. As at 2009 the County had a population density of 177 per Km², it was projected at 188 per Km² as at 2012, 200 per Km² as at 2015 and 212 per Km² as at 2017.

**4.4.3 Education**

**Kajiado County**

A total of 28% of Kajiado County residents have a secondary level of education or above. Kajiado North constituency has the highest share of residents with a secondary level of education or above at 49%. A total of 42% of Kajiado County residents have a primary level of education only. Kajiado South constituency has the highest share of residents with a primary level of education only at 47%. This is 9 percentage points above Kajiado West constituency, which has the lowest share of residents with a primary level of education only. Some 31% of Kajiado County residents have no formal education. Kajiado Central constituency has the highest share of residents with no formal education at 48%. Umma University, the first Islamic institution of higher education in Kenya, offering Certificate, Diploma and Degree programmes is located right opposite Isinya Substation.
Machakos County
The County has 1,736 Early Childhood Development (ECD) centres, 688 primary schools and 190 secondary schools. The County has one medical training institution (MTC) located in Machakos town and two private universities Daystar University and Scott Christian University which are situated in Mavoko and Machakos Town constituencies respectively. Other universities such as Nairobi University, Kenyatta University, Nazarene University St. Pauls University and Jomo Kenyatta University of Agriculture and Technology have also opened various campuses in the County. Most of the campuses are situated in Machakos town. The institutions have created opportunities for the youth to acquire skills and knowledge.

4.4.4 Economy/Land use
Kajiado County
The main Economic Activities include pastoralism, livestock herding, tourism and agriculture. Livestock products include poultry, dairy, beef, hides and skins. Agriculture is practiced through irrigation and greenhouses owing to the arid nature of the county with horticulture
being the major practice. Kajiado has Forestry about 6,866.88 ha of forest cover. Conservation efforts to improve our forest cover being a serious matter in the hearts of the people of Kajiado. Tree farming as an economic activity is being encouraged.

The County is blessed with natural resources such as wildlife, savannah grasslands, woodlands and forests. Tourism contributes immensely to the county’s economy. The county is famous for the Amboseli National Park.

Economic growths and development is majorly depending on the main strengths and future investments in this sectors of agriculture, horticulture, food crop farming, livestock production, dairy, beef production, hides and skins, poultry farming and other commercial exploits.

Machakos County

Agriculture is a main source of livelihood. From available statistics, the main cash crops are coffee, French Beans, pineapples and Sorghum which are mainly grown in Kangundo Matungulu, Kathiani, Yatta and Mwala. The County, through the department responsible for agriculture seeks to increase the crops grown within the County as well as increase the productivity of the arable land. Other major economic activities in the county are: trade, livestock keeping and agroforestry.

During the ESIA site visit, it was noticed that the main land use in the area is agro-pastoralism since the climatic conditions of the area is semi-arid. Thus the users of the project site use it mainly for grazing animals and planting crops especially maize and beans.

4.4.5 Social Infrastructure

4.4.5.1 Water and Sanitation

Kajiado County

Everyone has the right to water. According to SPHERE handbook for minimum standards for WASH, the average water use for drinking, cooking and personal hygiene in any household should be at least 15 liters per person per day. The maximum distance from any household to the nearest water point should be 500 meters. It also gives the maximum queuing time at a water source which should be no more than 15 minutes and it should not take more than three minutes to fill a 20-litre container. Kajiado County which is classified as semi-arid area lacks adequate water supply systems. This can be derived from the fact that Kajiado town being the county headquarter with a projected population of 16,003 in 2013 (KNBS, 2010) has
no functional municipal water supply system. There is no permanent river near the town and the town has a formation with poor aquifer such that even bore holes have low water yields.

In Kajiado County, 66% of residents use improved sources of water, with the rest relying on unimproved sources. An improved drinking-water source is defined as one that, by nature of its construction or through active intervention, is protected from outside contamination, in particular from contamination with faecal matter. Use of improved sources varies by gender with 68% of male headed households and 63% in female headed households using it. Improved sources of water comprise protected spring, protected well, borehole, piped into dwelling, piped and rain water collection while unimproved sources include ponds, dams, lakes, streams/rivers, unprotected springs, unprotected wells, water vendors and others. Kajiado North constituency has the highest share of residents using improved sources of water at 77%. That is 25 percentage points above Kajiado West constituency, which has the lowest share using improved sources of water.

**Machakos County**

Water resources in the County are under pressure from agricultural chemicals and urban and industrial wastes, as well as from use for hydroelectric power. The County has two permanent rivers namely Athi and Tana. There are also several dams that serve as water resources and springs which are found in the hilly areas. Underground water sources supplement surface water sources. In Machakos County, 37% of residents use improved sources of water, with the rest relying on unimproved sources. Use of improved sources is mostly common in male headed households at 39% as compared with female headed households at 33%.

**4.4.5.2 Energy**

**Kajiado County**

The type of fuel used for cooking has implications for development. Lack of access to clean sources of energy is a major impediment to development through health related complications such as increased respiratory infections and air pollution. The type of cooking fuel used by households is related to the socio-economic status of households/individuals. High level energy sources are cleaner but cost more and are used by households with higher levels of income compared with simpler sources of fuel, mainly firewood, which are mainly
used by households with a lower socio-economic profile. The use of high level energy sources in Kajiado is 15.0% which is significantly above the national average of 6.6 percent.

**Machakos County**

Only 3% of residents in Machakos County use liquefied petroleum gas (LPG), and 11% use paraffin. 69% use firewood and 16% use charcoal. Firewood is the most common cooking fuel by either gender with 64% of male headed households and 76% in female headed households.

4.4.5.3 Railways line

Towards the Konza area, the area is traversed by the Standard Gauge Railway (SGR) and the old railway line. The old railway line serves as the boundary between Machakos and Kajiado county. The proposed project crossed over these infrastructure as depicted in Figure 10 below.

![Figure 10: Proposed line crossing over the railway lines](image)
5 PUBLIC AND STAKEHOLDER CONSULTATION

EMCA, Cap 387 calls for effective public and stakeholder participation in the ESIA process. This chapter describes the public and Stakeholder Engagement that was carried out for the proposed Transmission Line and Substation.

5.1 PUBLIC CONSULTATION FRAMEWORK ADOPTED

Stakeholder engagement is a key part of this ESIA process. One of the key aims of the stakeholder engagement exercise is to ensure all relevant stakeholders are provided with the opportunity to express their concerns and opinions, which are incorporated as early as possible in the project development: at planning, implementation and operation phase and in the effect minimize the potential unexpected opposition of the proposed project and potential adverse effects to the environment. It is also very beneficial in incorporating the views of the public into the design process for the adoption of the best workable models and systems. The stakeholder engagement exercise also provides NEMA with the necessary information to assist it in making an informed decision about the Project.

5.2 STANDARDS AND GUIDANCE ON STAKEHOLDER ENGAGEMENT

Under the laws of Kenya several statutes require the participation of stakeholders in projects especially where the projects are likely to affect stakeholder livelihoods directly or indirectly. Pertinent legislation includes:

- The Constitution of Kenya of 2010
- The Environmental Management and Coordination Act (EMCA), Cap 387
- The Environmental (Impact Assessment and Audit) Regulations of 2003
- The Occupational Safety and Health Act of 2007

5.3 PUBLIC/STAKEHOLDER ENGAGEMENT OBJECTIVE

The main objective of the exercise was to inform stakeholders about the project and its likely effects, which in turn would incorporate their inputs, views and concerns, and thus enable their views to be take into account during the decision-making. The specific objectives of the consultations were geared towards:

- Increasing public confidence in the ESIA process
- Improving transparency and accountability of decision making
- Facilitating consideration of alternatives, mitigation measures and trade-offs (if any)
- Ensuring that important impacts are not overlooked and benefits are maximized
Reducing chances of conflict through early identification of contentious issues

Providing an opportunity for stakeholders to influence the Project design and operational plan in a positive manner

Obtaining local and traditional knowledge that may be useful to decision making including Indigenous Knowledge Systems (IKS)

5.4 Stakeholder engagement exercise

The stakeholder engagement exercise was undertaken in the two steps:

1) Stakeholder identification and analysis to establish the level and mode of engagement per stakeholder group.

2) Stakeholder engagement through the use of appropriate tools and methods.

5.4.1 Stakeholder identification and analysis

5.4.1.1 Stakeholder identification

The first step in the process of public participation process was stakeholder identification. The main aim was to determine all organizations and individuals who may be directly or indirectly (positively or negatively) affected by the proposed project. In the end, the stakeholders were grouped into two main categories depending on their various needs, interest, and potential influence to the project. These included:

- Primary Stakeholders-The directly affected by the project. These largely included the residents in four locations where the Transmission line traverses.

- Secondary Stakeholders-The indirectly affected by the project but influence development through project implementation. These included:
  - Relevant National Government Officials in Machakos and Kajiado counties
  - Relevant County government officials in Machakos and Kajiado Counties
  - Any other Interested Party

5.4.1.2 Tools and Methods of Engagement

A structured questionnaire was used to collect views and opinions from key stakeholders and the general public on the project. It contained sections where the interviewee filled her/his opinion on the environmental and socioeconomic aspects on which the project may have an impact on and the measures they may want to see in place to prevent, reduce, avoid or manage the negative impacts.
Key stakeholders were given a brief of the project, the objectives, before they gave their opinions. Public baraza meetings were conducted in four locations (Konza, Ilmamen, Ilpolosat, Isinya) where the line traverses from Tuesday 4th to Friday 7th December, 2018. In all the meetings, members of the public were given a brief of the project, before being issued with questionnaires to give their opinions.

5.5 **Outcome of the consultation exercise**

5.5.1 Consultations with key stakeholders

5.5.1.1 List of key stakeholders consulted

A list of all key stakeholders consulted during the ESIA process is provided in *Table 6* below

*Table 6: List of key stakeholders consulted*

<table>
<thead>
<tr>
<th>S/N</th>
<th>Institution</th>
<th>Name</th>
<th>Designation</th>
<th>Contacts</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Ministry of Interior and Coordination of National Government</td>
<td>Galgalo A.H</td>
<td>County Commissioner, Kajiado County</td>
<td>0722900438</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stanley Too</td>
<td>Deputy County Commissioner, Isinya, Kajiado County</td>
<td>0722607414</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Robert Kiti</td>
<td>Assistant County Commissioner, Isinya, Kajiado County</td>
<td>0726972842</td>
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<tr>
<td></td>
<td></td>
<td>Elijah Omuyo</td>
<td>Assistant County Commissioner, Machakos County</td>
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<td></td>
<td></td>
<td>Pius Mwalavu</td>
<td>Chief, Kimutwa Location, Machakos County</td>
<td>0726534848</td>
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<tr>
<td></td>
<td></td>
<td>Jonathan Kamia</td>
<td>Sub chief, Konza sub-location Kimutwa Location, Machakos County</td>
<td>0722282510</td>
</tr>
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<td>Raphael Kisanei</td>
<td>Chief, Ilmamen Location, Kajiado County</td>
<td>0721286855</td>
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<td>1</td>
<td>Environment Impact Assesmnt</td>
<td>Daniel Sekenoi</td>
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<td></td>
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<td>Ezekiel Sanirei</td>
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<td></td>
<td>Francis Mpaashe</td>
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<td>Victoria Ndaryi</td>
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<td>Newton Muinde</td>
<td>Chief Officer, Department of Energy and Natural Resources, Machakos County</td>
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<td>Fransisca K Mwanzia</td>
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<td>Mutemi winyaini</td>
<td>Warden, Kajiado County</td>
<td>P.O Box 74, Kajiado</td>
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<td>A.W Kisio</td>
<td>Deputy Warden, Machakos county</td>
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5.5.2 Public baraza meetings

Four Public baraza meetings were held as follows:

1. Ilmanen Location, Kajiado County- Tuesday 4th December, 2018
2. Konza Location, Machakos County-Wednesday 5th December, 2018
3. Ilpolosat Location, Kajiado County-Thursday 6th December, 2018
4. Isinya Location, Kajiado County-Friday 7th December, 2018

Photos of public consultation meetings held are shown below
Plate 8: Public Consultation meeting in Ilmanen Location, Kajiado County

Plate 9: Public Consultation Meeting in Isinya Location, Kajiado County
A total of 165 members of the public attended the meetings. 82% of these were men, while 18% were female as represented in Figure 11. Figure 12 shows the comparisons in gender compositions in all public barazas. A comprehensive list of the public who participated in the barazas and the respective minutes are attached at appendix 3 and 4 of this report respectively:

Plate 10: Public Consultation meeting in Konza Location, Machakos County
5.5.3 Summary of issues raised from the consultation exercise

**Positive issues**

1. Increased Power quality leading to low blackouts in the area
2. Employment opportunities to the communities around the project area
3. Increase in land values as a result of development in the area
4. Increased economic activities in target areas
5. Improved road infrastructure thus opening up more development in the area
Negative issues

1. Wayleave issues/conflicts among families making them spend money in courts
2. Diminishing of arable land
3. Loss of vegetation due to clearance for wayleave corridor.
4. Human-wildlife conflict expected in the area
5. Limited loss of use to owners of land as a result of the transmission line
6. Energy losses from transmission line causing EMF
7. Increase in social vices in the community as a result of new people coming to work in the area
8. Noise and air pollution (through dust) during the construction period
9. Displacement of people
10. Loss of aesthetic value/beauty of land under the corridor
11. Soil erosion as a result of the project

Proposed mitigation measures to the negative issues identified

1. More public consultation and awareness throughout the project cycle
2. Liaise with county governments for support in the project
3. Have tree planting programmes to cover for lost vegetation
4. Compensation to land owners as a result of limited loss of use
5. Construction works be carried out during the day only.

5.5.4 Project opinions

All key stakeholders consulted supported the project. Out of the 87 questionnaires administered to the members of the public in barazas only four rejected the proposed project. The figure below depicts project opinions from the stakeholder engagement process.
5.6 HOW THE RESULTS OF THE ENGAGEMENT HAVE BEEN INCORPORATED INTO THE ESIA

In line with the objectives of the public participation and consultation exercise, the results of the engagement have been incorporated into the ESIA in the following ways:

- The socio-economic section of the baseline of the ESIA has been informed by this consultation and engagement process;
- Impact identification has been informed by the outcomes of the consultation and engagement process;
- Development of mitigation measures has been informed by the consultation exercise;
- Analysis of alternatives has been informed by the consultation exercise;
- The identification and mapping of stakeholders has led to the development of a comprehensive database of stakeholders to be consulted in the future;
6 IMPACT ASSESSMENT AND MITIGATION MEASURES

6.1 INTRODUCTION

The anticipated potential impacts discussed in this chapter are from construction, operation and decommissioning phases. A number of positive and negative anticipated impacts to the environmental and social wellbeing have been identified thus far. Among the broad areas of impacts include the following positive and negative impacts:

6.2 CONSTRUCTION PHASE

6.2.1 Positive Impacts

6.2.1.1 Employment Opportunities
Locals will seek employment at construction sites to provide their services e.g. casual work. In addition, there will be opening of businesses to supply food and other goods to construction workers.

6.2.1.2 Enterprise development
Increased local trade and business on local products such as agricultural and dairy products to meet the daily demands of construction workers

6.2.2 Negative Impacts

6.2.2.1 Environmental Impacts

Noise and Vibration
There will be noise and vibrations generated during the construction phase but it will be no different from that on any other typical construction site. The noise impact during construction is expected to be short-term. Major sources of noises and vibration will come from: drilling during construction equipment, blasting to get aggregate; crushing to obtain aggregates and earthmoving machinery, as well as noise from the work force itself.

The major receptors are expected to be the construction workers as well as any immediate neighbouring premises. Excessive vibration forces from blasting of hard granite rocks and the use of vibrators may impair functions of the chest, abdominal organs and musculoskeletal system as well as contribute to fatigue and decrease in concentration. Excessive production of high noise by the blasting of hard granite rocks, rotating turbines, vehicular traffic and machinery operations May result in poor quality of life and potential loss (or reduction) in hearing.

Mitigations Measures:

- The contractor will adhere to the EMCA Noise and Excessive Vibration Pollution Control Regulation, 2009 and will be required to implement noise control measures amongst exposed work force and community. This will include provision of hearing
protective devices such as ear plugs and ear muffs; avoiding construction or
demolition activities during the night, education and awareness programs and
creation of a buffer to propagate against noise pollution among other noise control
measures.

- The contractor should only blast rocks where it is very necessary. Blasting will require
  approvals from Mines and Geology Department
- Ensure that the works are distant from the settlement areas, and vibration is not
  expected to have impacts beyond its site boundaries;
- In order to meet noise level requirements, the works will be equipped with standard
  noise attenuation features. Machines that exceed acceptable noise limits will be
  equipped with silencers or lagging materials or specially designed acoustic

6.2.2.1. Air Quality
The following emissions will be expected to result from construction activities. This would in
turn lead to compromise of air quality in the project area.

- Dust from excavations and earth moving vehicles as well as materials delivery;
- Particulate matter from dry materials, more specifically sand, cement, gravel, marram,
  etc.,
- Emissions such as smoke, hydrocarbons and nitrogenous gases among others from
  machinery exhausts

Mitigation Measures

- Personal protective equipment (PPE) such as dust masks must be worn in the
  immediate vicinity of the operations
- The stockpiles of earth generated during construction works should be suppressed by
  spraying water or water based mixtures. Spraying should also be carried out on
  unpaved road accesses regularly and at handling sites for cement;
- All machinery and equipment should be maintained in good working order to ensure
  minimum emissions including carbon monoxide, oxides of Nitrogen and Sulphur, as
  well as suspended particulate matter;
- Drivers of construction vehicles and delivery trucks should be cautioned to drive
  slowly near the site to avoid creating dusty conditions;
- Construction trucks removing soils from the site, delivering sand and cement to the
  site should be covered to minimize dust blowing into the surrounding neighborhood;
- No burning of any materials whatsoever should be allowed at the site; and
• Drivers of construction vehicles and delivery trucks must be supervised so that they do not leave vehicles idling and limit their speeds so that dust levels are lowered.

6.2.2.1: **Solid and Liquid waste generation**

The anticipated solid waste during construction period will arise from: soil during excavation work, deleterious material from aggregate screening; maintenance and repair of machinery; workers domestic waste; as well as wooden planks. Therefore, the most appropriate options in waste management are: identification of the waste types; segregation into the various categories; and the establishment of suitable mechanisms for collection, storage, transfer, and final disposal.

**Solid waste mitigation**

• Construction solid waste generated by materials which are unsuitable for use should be disposed by NEMA licensed waste handlers.
• Providing waste collection bins at designated points on site for purposes of waste segregation.
• Ensuring that, all remnants of loose gravel and concrete are effectively collected from the tower bases and re-used or disposed of in an environmentally friendly manner. Place in strategic places signs against littering and dumping of wastes;
• Use of building materials that have minimal or no packaging to avoid the generation of excessive packaging waste;
• The excavated soil should be used for backfilling the towers base and the concrete, asphalt and other waste on the site should be handled by the NEMA licensed waste handlers.

**Liquid Waste Mitigation:**

There will be minimal water demand and wastage during construction however the following will be put in place:

• Waste water from concrete batching will be reused;
• Cement trucks will be washed in designated car wash areas away from the construction site;
• Machinery will be maintained and repaired in designated garages away from the construction site;
• All machinery will be fueled at designated fueling stations
6.2.2.1.4 Risk of leaks and spills
Petroleum hydrocarbons present both an environmental and fire risk. The storage of petroleum hydrocarbons on site presents a hazard source and the release of hydrocarbons into the environment could result in significant impacts on a variety of receptors. The pathway for pollution is soil or water, and the primary receptors include the sub-soil and groundwater. Other receptors include air (from fuel vapours) and people (through dermal contact, inhalation or ingestion). It is however worth noting that the risks of a major oil spillages occurring are minimal.

Mitigation Measures:
- Install oil trapping equipment in areas where there is a likelihood of oil spillage;
- Regular maintenance of site equipment and machinery should be carried out to ensure any leakages are detected and controlled. The motor vehicles and heavy equipment should be serviced according to manufacturer’s requirements to limit the exhaust emissions. Install oil trapping equipment in areas where there is a likelihood of oil spillage;
- Collect the used oils and re-use, re-sell, or dispose of appropriately using expertise from licensed waste handlers;
- Consider the possibility of fitting catalytic converters especially for the heavy equipment to convert harmful substance in the exhaust fumes to less harmful substances;
- Safety procedures for fuel storage and re-fueling should be well understood and implemented by site staff; and
- Oil residuals including waste oil, lubricants, used filters, should be carefully collected and stored for safe disposal, in order to prevent migration of contaminant hydrocarbons into storm water or groundwater resources.

6.2.2.1.5 Terrestrial Habitat Alteration and Disruption
Wildlife is one of natural resource that the country has been endowed with, its acts as the country’s foreign earner. The construction (and maintenance) of transmission line rights-of-way, could also result in terrestrial habitat alteration and disruption. Specific impacts include loss of wildlife habitat (including for nesting), establishment of non-native plant species and visual/auditory disturbance due to the presence of machinery, construction workers, transmission towers, and associated equipment.
Mitigation Measures:

- Sitting and designing the TL in way that it avoids sensitive ecosystem and distribution right-of-way, access roads, lines and towers to avoid critical use, through the use of existing utility and transport corridors, as well as existing roads and tracks for access roads, where possible;
- Installation of transmission lines above existing vegetation (vegetation in the area is mostly composed of shrubs) to avoid land clearing;
- Re-vegetation of disturbed areas with native plant species; and
- Removal of invasive plant species during routine vegetation maintenance.

6.2.2.1.6 Aquatic Habitat Alteration

The route of the proposed transmission line crosses small marshy area within the Kajiado County this may require the construction of corridors crossing wetland habitats that may disrupt these and wetlands as well as require the removal of riparian vegetation. In addition, sediment and erosion from construction activities and storm water runoff may increase turbidity of surface water.

Mitigation Measures:

- Minimizing clearing and disruption to riparian vegetation; and
- Management of construction site activities those are around the riparian area.
- Establishment of buffer zones around the riparian area.

6.2.2.1.7 Impact of power transmission lines on migratory fauna

The proposed transmission line May impact bats, birds and terrestrial migratory species as their migration routes could be disrupted due to construction activities. From KWS there exist of many migratory corridors in this area. Hence, the following mitigation measure are recommended:

Mitigation Measures:

- Selection of right of way that avoids sensitive habitats; and
- Use of common corridors to minimize impacts on undisturbed areas

6.2.2.1.8 Soil erosion and sedimentation

Construction activities have the potential to loosen soils, particularly on slopes, which can then be washed down into the lower areas (streams and valleys) and soil quality degradation is also likely to occur during construction as a result of disposal of construction materials on the adjacent lands,
Mitigation Measures:

- Establishment of the buffer zones around the riverine areas, and
- Re-vegetation of exposed areas around the site should be carried out rapidly in order to mitigate erosion of soil through surface water runoff and wind erosion
- Construction of gabions in areas prone to soil erosion,

### 6.2.2.2 Occupational Health and Safety Impacts

#### 6.2.2.2.1 Use of machinery

Potential impacts during construction include: exposure to physical hazards from the use of heavy equipment; trips and fall hazards; and exposure to dust and noise. The uncontrolled proximity to high vehicular traffic during transportation of construction materials and equipment may lead to injuries or fatalities due to traffic accidents. Other injuries or fatalities may result from workers operating equipment without adequate training or with a lack of personal protective equipment or extended exposure to outdoor weather resulting in heat-related lethargy.

**Mitigation Measures:**

- Ensure all equipment is inspected before use for appropriate safeguards and that the machine operators are trained on machine safety; and
- Ensure the working hours are controlled and that employees are not allowed to extend the working hours beyond an acceptable limit for purposes of gaining extra pay.

#### 6.2.2.2.2 Use of Jack Hammers

The use of jack hammers for crushing rocks during the construction site may lead to whole body vibrations of the jack hammer operators which are likely causes of impaired functions of the chest, abdominal organs and the musculoskeletal system.

**Mitigation Measure:**

Avoid the use of jack hammers and employ other form of technology for crushing of rocks.

#### 6.2.2.2.3 Vehicular Accidents

Due to the high vehicular traffic expected during the construction phase, it is likely that traffic accidents may become an important factor especially for children from neighbouring communities crossing the roads leading to the project site.
Mitigation Measures:

- usage of reflective jackets among the other PPEs to avoid accident
- Employ the traffic marshals to control the movement of vehicles.
- Ensure appropriate road safety signage is placed and drivers adhere to the requirements of such signage; and
- Erection of bumps where human and vehicular traffic have high interaction opportunities

6.2.2.4 Manual Tasks

During the construction phase, several manual tasks will be carried out by the project workers. Repetitive tasks have the effect of imparting ergonomic disorders especially when they are carried out over long periods of time.

Mitigation Measures:

- Provide adequate manual labor to suffice the tasks; and
- Eliminate repetitive task by semi-automation where possible

6.2.2.5 Risk of Fires

Uncontrolled burning of wastes during construction or operations may cause risk of fire, especially during the dry season especially as the surrounding area is characterized by bushes, trees and grass.

Mitigation Measures:

- Solid waste burning during construction be completely banned. Any waste be handled by a licensed waste handler.

6.2.2.3 Social Impacts

6.2.2.3.1 Increase in social vices including HIV/AIDS

Today the world has 43 million people living with HIV and the number is rising in every region of the world. The impact has a devastating effect on individuals and families as well as whole communities and the economy at large. Infected People becomes dependent of other family members and a lot of resources is used to take care of infected person.

Also the influx of new people – like construction workers - can affect the number of new cases of HIV, because they often interfere with an otherwise stable situation and at the same time the newcomers themselves are at higher risk. During the construction phase of the project, there May be an increase in the interaction of persons of both genders. This interaction May at times result in sexual relations with potential subsequent increase in HIV/AIDS infection rates.
Mitigation Measures:
The objective of the HIV/AIDS initiatives would be to create awareness; the following measures should be put into place;

- Periodic sensitization forums for employees on ethics, morals; general good behavior and the need for the project to co-exist with the neighbors
- Guidance and counselling on HIV/AIDS and other STDs to employees
- Provision of condoms
- Contractor to have a strong policy on sexual harassment and abuse of office guided by proponent’s policy on the same

6.2.2.3.2 Relocation of Project Affected Persons.
Locating the transmission line by the proponent and has been done in a way such that it avoids extensive relocation of individuals. However, where it is unavoidable, implementation of the project will lead to displacement of persons, relocation of structures including houses and clearance/cutting down of trees and other vegetation. This necessitates compensation and resettlement of the affected persons and property.

Mitigation Measures

- A comprehensive RAP should be carried out to determine the losses.
- All the identified project displaced persons and project affected persons should be compensated

6.2.2.3.3 Impact on Access Roads
Although it is anticipated that the existing accesses are adequate for the transportation of materials, the Contractor must maintain these roads during the construction period, in order to minimize the soil degradation.

Mitigation measures:

- Vehicles should use one access road if possible
- Movement of heavy construction traffic should be planned appropriately.

6.3 Operation Phase
6.3.1 Positive Impacts
6.3.1.1 Increased power capacity
There will be adequate and stable supply of electricity to the upcoming Konza smart city. Konza will be a smart city, with an integrated urban information and communication technology (ICT) network that supports delivery of connected urban services and allows for
efficient management of those services on a large scale. Areas in Kajiado and Machakos will also benefit from the same.

### 6.3.1.2 Employment Opportunities

Maintenance and supervision of power line will require some workforce, particularly skilled labor in the maintenance of the Transmission Line.

### 6.3.2 Negative Impacts

#### 6.3.2.1 Environmental Impacts

**Aesthetic Impacts**

Whether the aesthetic impact of the power line will be negative or positive largely depend on the viewer and his/her perception of the line. As much as others associate existence of power lines with economic development and thus not finding them objectionable, some would see them as disrupting scenic views and objectionable from aesthetic point of view. The proposed development however will have minimal effects on the landscape.

**Mitigation Measure**

- Meeting the co-inhabitance requirements imposed by natural landscape, objects, building and facilities in the neighborhood by accurate framing with limited impact on land.

**Perceived Electro-Magnetic impacts of the line**

It is perceived that Electric power lines emit electromagnetic fields whose strengths depend on the line voltage and its effect on the lateral distance to receptor. It is important to note that the strength of electromagnetic fields reduce drastically with distance. Apart from height consideration by KETRACO on the height of electric lines, studies have never shown any relation between human health and effect of EMF.

**Mitigation Measure**

- The vertical height of pylon structures considerably reduces the electromagnetic fields experienced at the ground level by humans and wildlife.
- The conductor cables do not interfere with communication infrastructure as they contain different frequencies.
- A 60m way leave corridor has also been provided for the transmission line where activities are controlled.

**Avian and Bat Collisions and Electrocutions**

The combination of the height of the transmission towers, distribution poles and electricity carried by transmission and distribution can pose potentially fatal risks to birds (including raptors) and bats through collision and electrocutions. Birds and bats may be electrocuted by
power lines in one of three ways: simultaneously touching an energized wire and a neutral wire; simultaneously touching two live wires; and simultaneously touching an energized wire and any other piece of equipment on a pole or tower that is bonded to earth through a ground wire (IFC, 2007). Avian collisions with power lines can occur in large numbers if located within daily flyways or migration corridors, or if groups are travelling at night or during low light conditions.

**Mitigation Measures:**

- Maintaining a 1.5-meter spacing between energized components and grounded hardware;
- Covering energized parts and hardware; and Installing visibility enhancement objects (marker balls)

**6.3.2.1.4 Aircraft Navigation Safety**

Power transmission lines, if located near an airport or known flight paths can impact air safety directly through collision or indirectly through radar interference.

**Mitigation:**

- Consultation with regulatory air traffic authorities (KCAA) prior to installation; and
- Adherence to air safety regulations;

**6.3.2.1.5 Impact on Flora and Fauna during ROW maintenance**

Regular maintenance of vegetation within the right-of-way must be carried out to avoid disruption to overhead power lines and towers. Regular maintenance May involve the use of mechanical methods (mowing machines) that May disrupt wildlife and their habitats. Excessive vegetation maintenance May remove unnecessary amounts of vegetation resulting in the continual replacement of succession species and an increased likelihood of the establishment of invasive species.

**Mitigation Measures:**

- Scheduling maintenance activities to avoid breeding and nesting sessions;
- Avoiding clearing in riparian areas;
- Avoiding use of machinery in the vicinity of watercourses; and
- Observing manufacturer machinery and equipment guidelines, procedures with regard to noise as well as oil spill prevention and emergency response.
6.3.2.2 Occupation Health and Safety Impacts

6.3.2.2.1 Risk of Fires

During operations, high voltage power may also cause a fire risk in the event of electrical faults with equipment. Bat and bird collisions with power lines may result in power outages and fires. Also, if underlying growth is left unchecked, or slash from routine maintenance is left to accumulate within right of way boundaries, sufficient fuel can accumulate and as such promote bush fires.

*Mitigation Measures*

- Undertake routine clearance of invasive vegetation where applicable within the project areas.

6.4 Decommissioning Phase

Transmission line facilities shall be decommissioned where the useful life of the line is reached. This will lead to demolition of the transmission line parts to enable restoration activities. In such a case, the Machakos and Kajiado County governments and NEMA offices will be notified before the start of the process. The demolition exercise shall involve:

- Removal of the conductor cables
- Demolition and removal of the transmission line tower structure
- Demolition, exaction and removal of the tower structure concrete foundation.

6.4.1 Positive Impacts

6.4.1.1 Employment opportunities

Similar to construction stage, employment will be offered to those willing to offer their services at the decommissioning phase. The procedure will be similar but in the reverse order as in the construction stage.

6.4.2 Negative Impacts

6.4.2.1 Solid Waste generation

Demolition of the project buildings and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, drywall, wood, glass, paints, adhesives, sealants and fasteners. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate and ammonia which may be released
as a result of leaching of demolition waste, are known to lead to degradation of groundwater quality.

**Proposed mitigation measures:**

- **i.** All workers to be provided with the necessary PPEs
- **ii.** Segregation of waste before disposal by a NEMA licensed waste handler.
- **iii.** Preparation of a decommissioning plan will to ensure smooth management of the decommissioning phase.
7 ANALYSIS OF ALTERNATIVES

An environmental assessment study could be done in order to identify and assess alternative development project. It is very important that development projects of such magnitude be assessed in order to identify project alternatives which should be based on less negative impacts and offer a better cost benefit. The “no project” is the most important alternative to be analysed because it helps the proponent to quantify the impacts from the project in alignment with those which would have taken place without the project.

7.1 THE NO-PROJECT OPTION

Baseline information defines the no-action alternative which is crucial in the appraisal of impacts since other alternatives are measured with reference to it. There will be no any significant negative effects on either bio-physical or the socio-culture, an assurance which is outstanding from the qualitative analysis and summary of the proposed site for the project. The Project is crucial to aid in improvement of environmental situations to avoid possible deterioration. The no-project option will limit the occurrence of harmful incidents arising from the project. The no–project option will however have several disadvantages:

- Population growth will increase demand for electricity thus making consumers to continually suffer from shortage and unstable supply.
- Employment opportunities will be limited due to expansion of business activities that would have been spurred by availability of electric power.
- The failure of electric power will affect the functionality of institutions such as the Konza City, schools, Hospitals, Churches, Mosques etc. which rely on electricity.
- Information flow and Public education through electronic media e.g. Television will also be affected.
- The Government will be seen to have reneged to its promise of providing electric energy to more of its citizens through working and achieving vision 2030.
- There will be loss of Productivity and reduced ability to create wealth.

Generally, the long term positive impacts of the proposed project outweigh the negative effects which can be easily mitigated.

7.2 ALTERNATIVE PROJECT SITE

In choosing the sites for power lines, preference is given to electrical power requirements and existing land uses. The best possible locations for the power lines are the road reserves while sometimes open fields are used.
The proposed Transmission line largely avoids built up areas, thus minimising the need for resettlement. The transmission Line route in itself has been chosen to avoid settlements, social amenities, heritage and forest areas, thus minimising any adverse impacts. For the substation land, the chosen site is considered suitable if the proposed mitigation measures are implemented. In addition, alternative land would imply cost implications on the part of the proponent and financial loss in respect to the current development. Therefore, the option of seeking alternative land, whereas the anticipated impacts are manageable presents a high risk of financial failure. It is against this backdrop that giving an option to the proponent to identify alternative location to implement the project may be difficult since the identification of such lands is limited.

7.3 ALTERNATIVE DESIGNS
The cost of building a high voltage electricity step down substation and Backup Centre and NSCC backup centre is substantial. Detailed research and development of the design and components form an important part of the process of the substation and Backup Centre construction. The current design for the proposed 400/220/66kV substation and Backup Centre and NSCC backup system at Malaa is regarded as the most cost effective whilst operationally sound for such a project.

7.4 ALTERNATIVE PROCESSES AND MATERIALS
Highly refined mineral insulating oils are used to cool transformers and provide electrical insulation between live components. Sulfur hexafluoride (SF6) may also be used as a gas insulator for electrical switching equipment and in cables, tubular transmission lines and transformers. Polychlorinated Biphenyls (PCB) can be used as a dielectric fluid to provide electrical insulation. SF6 is a greenhouse gas with a significantly higher Global Warming Potential (GWP) than carbon-dioxide. PCB is a highly toxic substance that is no longer commonly used for electrical insulation. For this project the proponent is advised to use mineral insulating oil for cooling and insulation and to minimize or completely stop the use of SF6 and PCB.
7.5 PROPOSED DEVELOPMENT JUSTIFICATION

After assessing and studying the proposed development by KETRACO for both positive and negative impacts and comparing it to possible alternatives as discussed above it has been found to be the most suitable development with all factors considered. There were no foreseeable adverse effects that would justify the non-execution of the project, thus the long term benefits of the project warrant its commission. These benefits include increased supply of electricity to the broader population, the resultant effects of this for domestic and commercial use of electricity and the consequential enhancement of wellbeing of Kenyan
8 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

This section comprises the Environmental and Social Management Plan (ESMP) for the ESIA for this project as evidenced by the tables below. The tables summarize the organizational requirements and action plans to ensure that the necessary measures are taken by the responsible parties to avoid potentially adverse effects-and maximise potential benefits-of the Project with respect to Environmental, Health and Safety (EHS) and social aspects. Additively to ensure that the project operate in conformance with applicable laws and regulations within Kenya, as well as the policies of International Financial Organizations.

The specific ESMP items are based on the Baseline Conditions and the Impact Assessment described in previous sections of this ESIA, plus the results of discussions with the different stakeholders identified and consulted.

The primary objective of the mitigation measures outlined previously and this ESMP is to avoid negative impacts of the Project where possible, or otherwise to minimise the residual impacts to an acceptable level. The ESMP is applicable throughout the project life-cycle and will continue to evolve in scope and depth within the different stages of the project implementation that curtail:

- Construction Phase;
- Operation Phase; and
- Decommissioning Phase.
8.1 **Construction Phase ESMP**

Table 7: Construction phase ESMP

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<thead>
<tr>
<th>POTENTIAL NEGATIVE IMPACTS</th>
<th>RECOMMENDED MITIGATION MEASURES</th>
<th>RESPONSIBLE PARTY</th>
<th>TIME FRAME</th>
<th>COST (KSHS)</th>
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<td>ENVIRONMENTAL IMPACTS</td>
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<td>1. Minimization of Noise and Vibration</td>
<td>1. Sensitize construction vehicle drivers and machinery operators to switch off engines of vehicles or machinery not being used.</td>
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<td>2. Sensitize construction drivers to avoid running of vehicle engines or hooting</td>
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<td>3. Regular servicing of engines and machine parts to reduce noise generation</td>
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<td>4. Ensure that all generators and heavy duty equipment are insulated or placed in enclosures (containers) to minimize ambient noise levels.</td>
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<tr>
<td></td>
<td>5. The noisy construction works will entirely be planned to be during day time when most of the neighbours will be at work.</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>6. Provide necessary PPE to workers who may be exposed to high levels of noise and ensure proper and constant use</td>
<td></td>
<td></td>
<td>Ear plugs and ear muff @500 each</td>
</tr>
<tr>
<td></td>
<td>7. All construction equipment and machinery to be used must be tested to verify if they are compliant with Kenya and the internationally acceptable standards of noise.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Potential Negative Impacts

<table>
<thead>
<tr>
<th>Potential Negative Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2. Air Quality</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dust Emission</strong></td>
<td>a) Ensure strict enforcement of on-site speed limit regulations</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b) Avoid excavation works in extremely dry weather</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>c) Sprinkle water on graded access routes when necessary to reduce dust generation by construction and vehicles</td>
<td></td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>d) Stockpiles of earth should be enclosed / covered / watered during dry or windy conditions to reduce dust emissions</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>e) PPE to be provided to employees and ensure proper and constant use</td>
<td></td>
<td></td>
<td>Dust coats and dust masks@3000 per employee</td>
</tr>
<tr>
<td><strong>Exhaust Emission</strong></td>
<td>a) Sensitize truck drivers and machine operators to switch off engines when not in use</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b) Regular servicing of engines and machine parts to reduce exhaust emission generation</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>c) Alternative non-fuel construction equipment shall be used where feasible</td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

3. **Minimize solid and liquid waste generation and ensure efficient waste management during construction**
### Increased solid waste generation

<table>
<thead>
<tr>
<th>POTENTIAL NEGATIVE IMPACTS</th>
<th>RECOMMENDED MITIGATION MEASURES</th>
<th>RESPONSIBLE PARTY</th>
<th>TIME FRAME</th>
<th>COST (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use of an integrated solid waste management system i.e. the 5 R’s: Reduce, Reuse, Recycle, Recover, Residuals</td>
<td>1. Use of an integrated solid waste management system i.e. the 5 R’s: Reduce, Reuse, Recycle, Recover, Residuals</td>
<td>KETRACO and Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td>2. Accurate estimation of the dimensions and quantities of materials required.</td>
<td>2. Accurate estimation of the dimensions and quantities of materials required.</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>3. Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time</td>
<td>3. Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>4. Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage</td>
<td>4. Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage</td>
<td></td>
<td></td>
<td>Design cost</td>
</tr>
<tr>
<td>5. Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste</td>
<td>5. Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>6. Reuse packaging materials such as cartons, cement bags, empty metal and plastic containers to reduce waste at site</td>
<td>6. Reuse packaging materials such as cartons, cement bags, empty metal and plastic containers to reduce waste at site</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>7. Waste collection bins to be provided at designated points on site</td>
<td>7. Waste collection bins to be provided at designated points on site</td>
<td></td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td>8. Dispose waste more responsibly by contracting a registered waste handler who will dispose the waste at designated sites or landfills only and in accordance with the existing laws.</td>
<td>8. Dispose waste more responsibly by contracting a registered waste handler who will dispose the waste at designated sites or landfills only and in accordance with the existing laws.</td>
<td></td>
<td></td>
<td>10,000/month</td>
</tr>
</tbody>
</table>

4. Minimize leaks and spills
### Potential Negative Impacts

<table>
<thead>
<tr>
<th>POTENTIAL NEGATIVE IMPACTS</th>
<th>RECOMMENDED MITIGATION MEASURES</th>
<th>RESPONSIBLE PARTY</th>
<th>TIME FRAME</th>
<th>COST (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Oil spills Hazards</strong></td>
<td>a. Install oil trapping equipment in areas where there is a likelihood of oil spillage e.g. during maintenance of vehicles.</td>
<td>KETRACO and Contractor</td>
<td>Continuous</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b. In case of an oil spill, immediate clean up measures will be instituted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Storage and liquid impoundment areas for fuels, raw and in-process materials, solvents, wastes and finished products should be designed with secondary containment to prevent spills and the contamination of soil, ground and surface water.</td>
<td>KETRACO and Contractor</td>
<td>One-off</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>d. Collected used oils should be re-used, disposed of appropriately by licensed waste handlers, or be sold for reuse to licensed firms</td>
<td></td>
<td>Continuous</td>
<td>5,000 per month</td>
</tr>
</tbody>
</table>

### 5. Impact of the proposed project to Flora and Fauna

**Terrestrial habitat alteration through Destruction of existing vegetation**

- a) Sitting and designing the TL in a way that it avoids sensitive ecosystem and distribution right-of-way, access roads, lines and towers to avoid critical use, through the use of existing utility and transport corridors, as well as existing roads and tracks for access roads, where possible;
- b) Installation of transmission lines above existing vegetation (vegetation in the area is mostly composed of shrubs) to avoid land clearing;
### Potential Negative Impacts

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aquatic Habitat Alteration</strong></td>
<td>c) Re-vegetation of disturbed areas with native plant species; and</td>
<td>KETRACO and community</td>
<td>Entire project period</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td>a) Minimizing clearing and disruption to riparian vegetation; and management of construction site activities those are around the riparian area.</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b) Establishment of buffer zones around the riparian area.</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td><strong>Impact on Migratory Fauna</strong></td>
<td>a) Selection of right of way that avoids sensitive habitats; and Use of common corridors to minimize impacts on undisturbed areas</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
</tbody>
</table>

6. **Reduce Soil Erosion**

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Soil Erosion and Sedimentation</strong></td>
<td>a) Establishment of the buffer zones around the riverine areas</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b) Re-vegetation of exposed areas around the site should be carried out rapidly in order to mitigate erosion of soil through surface water runoff and wind erosion</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>c) Construction of gabions in areas prone to soil erosion</td>
<td>KETRACO &amp; Contractor</td>
<td>Entire construction period</td>
<td>50,000</td>
</tr>
</tbody>
</table>

### Occupation Health and Safety Impacts

7. Minimize occupational health and safety risks
<table>
<thead>
<tr>
<th>POTENTIAL NEGATIVE IMPACTS</th>
<th>RECOMMENDED MITIGATION MEASURES</th>
<th>RESPONSIBLE PARTY</th>
<th>TIME FRAME</th>
<th>COST (KSH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Machinery</td>
<td>a) Ensure all equipment is inspected before use for appropriate safe guards and that the machine operators are trained on machine safety</td>
<td>KETRACO, DOHSS and Contractor</td>
<td>Entire construction period</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td>b) Ensure the working hours are controlled and that employees are not allowed to extend the working hours beyond an acceptable limit for purposes of gaining extra pay.</td>
<td>KETRACO, DOHSS and Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>c) Avoid the use of jack hammers and employ other form of technology for crushing of rocks</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Vehicular accidents</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. usage of reflective jackets among the other PPEs to avoid accident</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td>2. Employ the traffic marshals to control the movement of vehicles.</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td>3. Ensure appropriate road safety signage is placed and drivers adhere to the requirements of such signage; and</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>4. Erection of bumps where human and vehicular traffic have high interaction opportunities</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>30,000</td>
</tr>
<tr>
<td>Manual Tasks</td>
<td>a) Provide adequate manual labor to suffice the tasks; and</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td>b) Eliminate repetitive task by semi-automation where possible</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>200,000</td>
</tr>
<tr>
<td>POTENTIAL NEGATIVE IMPACTS</td>
<td>RECOMMENDED MITIGATION MEASURES</td>
<td>RESPONSIBLE PARTY</td>
<td>TIME FRAME</td>
<td>COST (KSHS)</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-------------------------</td>
<td>---------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Risk of fire</td>
<td>a) Solid waste burning during construction be completely banned. Any waste be handled by a licensed waste handler.</td>
<td>KETRACO and Contractor</td>
<td>Entire Construction Period</td>
<td>10,000 per month</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIAL IMPACTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Increase in social vices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a. Periodic sensitization forums for employees on ethics, morals; general good behavior and the need for the project to co-exist with the neighbors</td>
<td>Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b. Guidance and counselling on HIV/AIDS and other STDs to employees</td>
<td>KETRACO and contractor</td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>c. Provision of condoms</td>
<td></td>
<td></td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td>d. Contractor to have a strong policy on sexual harassment and abuse of office guided by proponent’s policy on the same</td>
<td>Contractor</td>
<td>Quarter one</td>
<td>0</td>
</tr>
<tr>
<td>Relocation of Project Affected Persons</td>
<td>a) A comprehensive RAP should be carried out to determine all affected persons. All the identified project displaced persons and project affected persons should be compensated</td>
<td>KETRACO</td>
<td>Before construction of the project</td>
<td>500,000</td>
</tr>
<tr>
<td>Impact on access road</td>
<td>a) Vehicles should use one access road if possible</td>
<td>KETRACO and Contractor</td>
<td>Entire construction period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b) Movement of heavy construction traffic should be planned appropriately.</td>
<td></td>
<td></td>
<td>10,000</td>
</tr>
</tbody>
</table>
### 8.2 Operation Phase ESMP

**Table 8: Operation Phase ESMP**

<table>
<thead>
<tr>
<th>POTENTIAL NEGATIVE IMPACTS</th>
<th>RECOMMENDED MITIGATION MEASURES</th>
<th>RESPONSIBLE PARTY</th>
<th>TIME FRAME</th>
<th>COST (KSHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVIRONMENTAL IMPACTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Aesthetic Impact</td>
<td>8. Meeting the co-inhabitance requirements imposed by natural landscape, objects, building and facilities in the neighborhood by accurate framing with limited impact on land.</td>
<td>KETRACO</td>
<td>Entire Operation Period</td>
<td>0</td>
</tr>
<tr>
<td>2. Perceived Impacts of EMF</td>
<td>a) Maintain the 60m wayleave corridor to avoid encroachment by the communities adjacent to the Transmission Line</td>
<td>KETRACO</td>
<td>Entire operation period</td>
<td>100,000 per year</td>
</tr>
<tr>
<td>3. Avian and Bat Collisions and Electrocutons</td>
<td>f) Maintaining a 1.5-meter spacing between energized components and grounded hardware;</td>
<td>KETRACO</td>
<td>Entire Operation period</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>g) Covering energized parts and hardware; and Installing visibility enhancement objects (marker balls)</td>
<td></td>
<td></td>
<td>100,000</td>
</tr>
<tr>
<td>POTENTIAL NEGATIVE IMPACTS</td>
<td>RECOMMENDED MITIGATION MEASURES</td>
<td>RESPONSIBLE PARTY</td>
<td>TIME FRAME</td>
<td>COST (KSHS)</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------</td>
<td>-------------------</td>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>4. Aircraft Navigation Safety</td>
<td>a) Consultation with regulatory air traffic authorities (KCAA) prior to installation; b) Adherence to air safety regulations;</td>
<td>KETRACO</td>
<td>Before construction period</td>
<td>0</td>
</tr>
<tr>
<td>5. Impact on Flora and Fauna during ROW maintenance</td>
<td>a) Scheduling maintenance activities to avoid breeding and nesting sessions; b) Avoiding clearing in riparian areas; c) Avoiding use of machinery in the vicinity of watercourses; and d) Observing manufacturer machinery and equipment guidelines, procedures with regard to noise as well as oil spill prevention and emergency response.</td>
<td>KETRACO</td>
<td>Entire operation phase</td>
<td>100,000</td>
</tr>
<tr>
<td>OCCUPATION HEALTH AND SAFETY IMPACTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Risk of fires</td>
<td>a) Undertake routine clearance of invasive vegetation where applicable within the project areas.</td>
<td>KETRACO</td>
<td>Entire operation phase</td>
<td>100,000</td>
</tr>
</tbody>
</table>
### 8.3 Decommissioning Phase ESMP

**Table 9: Decommissioning Phase ESMP**

<table>
<thead>
<tr>
<th>Expected Negative Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENVIRONMENTAL IMPACTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Reduction of Noise and vibrations</td>
<td>a. Demolish mainly during the day. The time that most of the neighbours are out working.</td>
<td>KETRACO and Contractor</td>
<td>Entire decommissioning period</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>b. Provide appropriate PPE to workers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Co-ordinate with relevant agencies and neighbouring communities regarding all demolition activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Abatement of air pollution</td>
<td>a. Watering all active demolition areas as and when necessary to lay dust.</td>
<td></td>
<td>Continuous</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b. Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Pave, apply water when necessary, or apply (non-toxic) soil stabilizers on all unpaved areas, parking areas and staging areas at demolition sites.</td>
<td></td>
<td>One-off</td>
<td>10,000</td>
</tr>
</tbody>
</table>
### Expected Negative Impacts

<table>
<thead>
<tr>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KETRACO and Contractor</td>
<td>Continuous</td>
<td>Dust coats and dust masks@3000 per employee</td>
</tr>
</tbody>
</table>

**Generating of exhaust emission**

<table>
<thead>
<tr>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>d. Provide appropriate PPE to all workers</td>
<td>KETRACO and Contractor</td>
<td>Continuous</td>
<td></td>
</tr>
</tbody>
</table>

**Waste management**

3. Waste management

<table>
<thead>
<tr>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Use of an integrated solid waste management system i.e. the 5 R’s: 1. Reduce 2. Reuse 3. Recycle 4. Recover 5. Residuals</td>
<td>KETRACO and Contractor</td>
<td>Continuous</td>
<td>0</td>
</tr>
<tr>
<td>b. All machinery, equipment, structures and partitions that will not be used for other purposes must be removed and recycled/reused as far as possible or they be taken to a licensed waste disposal site</td>
<td>KETRACO and Contractor</td>
<td>One-off</td>
<td>0</td>
</tr>
<tr>
<td>c. Dispose waste more responsibly by contracting a registered waste handler who will dispose the waste at designated sites or landfills only and in accordance with the existing laws.</td>
<td>KETRACO and Contractor</td>
<td>Continuous</td>
<td>Cost borne by the contractor</td>
</tr>
</tbody>
</table>

**Occupation Health and Safety Impacts**
## Expected Negative Impacts

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Recommended Mitigation Measures</th>
<th>Responsible Party</th>
<th>Time Frame</th>
<th>Cost (Kshs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4. Oil Spill Hazards</strong></td>
<td>a. Install oil trapping equipment in areas where there is a likelihood of oil spillage.</td>
<td>KETRACO and Contractor</td>
<td>Continuous</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>b. In case of an oil spill, immediate clean up measures will be instituted</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>5. Impacts on workers’ and community health and safety</strong></td>
<td>a. Ensure strict compliance with the Occupational Safety and Health Act (OSHA) 2007</td>
<td>KETRACO DOHSS and Contractor</td>
<td>Continuous</td>
<td>To be determined</td>
</tr>
<tr>
<td></td>
<td>b. Prohibit access by unauthorized personnel into the demolition site</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c. Place warning signs where necessary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>6. Rehabilitation of project site</strong></td>
<td>a. Implement an appropriate re-vegetation programme to restore the site to its original status</td>
<td>KETRACO and community</td>
<td>One-off</td>
<td>100,000</td>
</tr>
<tr>
<td></td>
<td>b. Consider use of indigenous plant species in re-vegetation</td>
<td></td>
<td></td>
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<tr>
<td>Expected Negative Impacts</td>
<td>Recommended Mitigation Measures</td>
<td>Responsible Party</td>
<td>Time Frame</td>
<td>Cost (Kshs)</td>
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<tr>
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</table>
| Community grievances     | a. Quarterly Environmental Management Planning Monitoring will be done where views of the local community will be sort through public consultation meetings  
b. The community will also be encouraged to forward their complaints through KETRACO wayleave assistant who is usually recruited from the local community | KETRACO           |            |             |
9 ENVIRONMENTAL MONITORING PLAN (EMoP)

This section of the ESIA sets out the environmental, health & safety and community-related monitoring control and measures that the proponent KETRACO and its’ contractors will implement to avoid, minimize and manage potentially adverse environmental, health & safety and community-related risks and impacts identified as part of this ESIA. Similarly, the EMoP is geared towards ensuring that the project operates in conformance with applicable laws and regulations within Kenya and internationally.

**Table 10: Environmental Monitoring Plan for the proposed project**

<table>
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<tr>
<th>MONITORING SCOPE</th>
<th>RELEVANT LEGISLATION</th>
<th>FREQUENCY</th>
<th>METHODOLOGY</th>
<th>RESPONSIBILITY</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Noise and vibration impacts</td>
<td>Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009</td>
<td>Daily observation; monthly noise level analysis</td>
<td>Noise level analysis; quarterly reports on log of vehicle and machine servicing; trees planted; number of (noise) licences given; PPE provided; and sensitization meetings held; Measured levels by a hand held noise meter at identified receptor points.</td>
<td>KETRACO and Contractor</td>
<td>Quarterly reports</td>
</tr>
<tr>
<td>2. Impacts on air pollution</td>
<td>Occupational Safety &amp; Health Act (OSHA), 2007</td>
<td>Daily dust observation; monthly air quality analysis</td>
<td>Daily dust observation; quarterly air sampling and lab analysis; quarterly reports on PPE provided; log of vehicle and machine servicing; sensitization meetings held; frequency of sprinkling water</td>
<td>KETRACO and Contractor</td>
<td>Quarterly reports</td>
</tr>
<tr>
<td>MONITORING SCOPE</td>
<td>RELEVANT LEGISLATION</td>
<td>FREQUENCY</td>
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<tr>
<td>3. Solid and liquid waste generation</td>
<td>Environmental Management and Coordination (Waste Management) Regulations, 2006</td>
<td>Monthly</td>
<td>Reports on waste management plans developed; amounts of waste generated; facility provided for handling and storage of waste; methods employed for waste disposal; training meetings held; number of inspections held to identify leaking or blocked pipes</td>
<td>KETRACO and Contractor</td>
<td>Quarterly &amp; annual reports</td>
</tr>
<tr>
<td>4. Oil spills</td>
<td>Occupational Safety &amp; Health Act (OSHA), 2007</td>
<td>Daily</td>
<td>Reports of oil trapping equipment installed; number of oil spill incidents and corrective measures taken</td>
<td>KETRACO and Contractor</td>
<td>Daily Incident register; Annual reports</td>
</tr>
<tr>
<td>5. Destruction of existing vegetation and habitats</td>
<td>EMCA, CAP 387</td>
<td>Daily</td>
<td>Reports on site zoning program; community initiatives held on tree planting; landscaping programme on re-vegetation implemented</td>
<td>KETRACO and Contractor</td>
<td>Annual reports</td>
</tr>
<tr>
<td>6. Health and Safety issues</td>
<td>Occupational Safety &amp; Health Act (OSHA), 2007</td>
<td>Daily</td>
<td>Quarterly reports on health and safety plans; SHE training programs; records of any incident, accident; investigation and corrective actions; PPE provided; warnings posted; Registration of workplace</td>
<td>KETRACO and Contractor</td>
<td>Quarterly and annual reports</td>
</tr>
<tr>
<td>7. Soil erosion</td>
<td>EMCA Cap 387</td>
<td>Daily</td>
<td>Reports on storm water management and soil erosion control plans developed</td>
<td>KETRACO and Contractor</td>
<td>Annual reports</td>
</tr>
<tr>
<td>MONITORING SCOPE</td>
<td>RELEVANT LEGISLATION</td>
<td>FREQUENCY</td>
<td>METHODOLOGY</td>
<td>RESPONSIBILITY</td>
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<tr>
<td>8. Fire outbreaks</td>
<td>Occupational Safety &amp; Health Act (OSHA), 2007</td>
<td>Monthly</td>
<td>Reports on fire risk assessment held; compliance with OSHA 2007; trainings held;</td>
<td>KETRACO and Contractor</td>
<td>Daily incident register; Annual reports</td>
</tr>
<tr>
<td>9. Visual and aesthetic impacts</td>
<td>EMCA Cap 387</td>
<td>Quarterly</td>
<td>Reports on public consultation held; landscaping programme designed and implemented</td>
<td>KETRACO and Contractor</td>
<td>Annual reports</td>
</tr>
<tr>
<td>10. Electrocution incidences</td>
<td></td>
<td>Daily</td>
<td>Reports on maintenance system developed; electrocution accidents occurrence and corrective measures taken; warning signs posted; sensitization workshops held</td>
<td>KETRACO and Contractor</td>
<td>Daily incident register; Quarterly reports</td>
</tr>
<tr>
<td>11. Perceived danger of Electrostatic and Magnetic force</td>
<td>Occupational Safety &amp; Health Act (OSHA), 2007</td>
<td>Annually</td>
<td>Reports on education and awareness campaigns held</td>
<td>KETRACO</td>
<td>Annual reports</td>
</tr>
<tr>
<td>MONITORING SCOPE</td>
<td>RELEVANT LEGISLATION</td>
<td>FREQUENCY</td>
<td>METHODOLOGY</td>
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<tr>
<td>12. Increase in social vices</td>
<td>HIV and AIDS Prevention and Control Act (Cap 14 of 2006)</td>
<td>Monthly</td>
<td>Reports on sensitization forums held; sessions held on guidance and counselling on HIV/AIDS and other STDs; number of condoms issued</td>
<td>KETRACO and Contractor</td>
<td>Annual reports</td>
</tr>
<tr>
<td>13. Rehabilitation of project site</td>
<td>EMCA, CAP 387</td>
<td>Quarterly</td>
<td>Reports on re-vegetation programme developed and implemented; number and species of trees planted</td>
<td>KETRACO and Contractor</td>
<td>Quarterly reports</td>
</tr>
</tbody>
</table>
10 CONCLUSION AND RECOMMENDATION

An ESMP outline has been developed to ensure sustainability of the site activities from construction through operation to decommissioning. The plan provides a general outlay of the activities, associated impacts, and mitigation action plans. Implementation time frames and responsibilities are defined, and where practicable, the cost estimates for recommended measures are also provided.

A monitoring plan has also been developed and highlights some of the environmental performance indicators that should be monitored. Monitoring creates possibilities to call to attention changes and problems in environmental quality. It involves the continuous or periodic review of operational and maintenance activities to determine the effectiveness of recommended mitigation measures. Consequently, trends in environmental degradation or improvement can be established, and previously unforeseen impacts can be identified or pre-empted.

It is quite evident from this study that the construction and operation of the proposed project will bring positive effects including food security, improved supply of electricity, creation of employment opportunities both skilled and unskilled (safety officer, welders, masons, drivers etc.), gains in the local and national economy, provision of market for supply of building materials, Informal sectors benefits, Increase in revenue, Improvement in the quality of life for the workers and community members, and Improved security.

Considering the proposed location, construction, management, mitigation and monitoring plan that will be put in place, the project is considered important, strategic and beneficial and given that no immitigable negative impacts were encountered and that no community objection was received, the project may be allowed to proceed.
10.1 **Recommendations**

Following the impact analysis presented in Chapter 6, the following recommendations were made:

- The proposed project to be implemented in compliance with the relevant legislation and planning requirements
- The proponent to ensure implementation of the mitigation measures provided in the ESMP
- The proponent to monitor implementation of the ESMP using the developed EMoP
- The proponent to conduct Annual Environmental Audits and submit to NEMA
- NEMA to consider, approve and grant an Environmental Impact Assessment License Variation to the proponent

10.2 **Conclusion**

From the foregoing, it is noted that:

- no immitigable negative impacts were encountered
- No objection from the community was received
- Identified potential negative impacts can be mitigated
- Benefits to the community, region, and the country at large are immense

The ESIA team, therefore, recommends to NEMA to consider, approve and grant an Environmental Impact Assessment License to the proponent and the proponent to implement the project with strict adherence to the proposed ESMP
REFERENCES


4. Environmental and Social Management Framework, KETRACO


15. Kenya gazette supplement, Special Issue 51, Legal Notice number 19; Environmental Management and Coordination (Wetlands, River Banks, Lake Shores and Sea Shore Management) Regulations, 2009 Government printer, Nairobi


17. The World Bank Safeguard Policies
APPENDICES

APPENDIX 1: CONSULTATION WITH KEY INFORMANTS
Ref. KJD/CC/CON/ADM 36/VOL IV (38)  

30TH NOVEMBER, 2018

TO
DCC ISINYA AND MASHUURU SUBCOUNTY

RE: PUBLIC CONSULTATIONS ON THE PROPOSED 40KM 400kV ISINYA-KONZA TRANSMISSION LINE
The above subject matter refers

Kenya Electricity Transmission Company Limited (KETRACO) Proposes to construct a 40KM 400KV double circuit Transmission line from Isinya to Konza to boost power supply and reliability in Kajiado County and its environs. The proposed transmission transverse 32km within Isinya, Ilpolosat and Ilmunkush Locations.

The purpose of the letter therefore is to request your office to facilitate public baraza for the purpose of the above exercise. They are proposing the barazas as follows:

1. Ilmunkush location- Tuesday 4th December, 2018
2. Ilpolosat location- Wednesday 5th December, 2018

CHERONO RORIAN
FOR: COUNTY COMMISSIONER
KAJIADO COUNTY

Cc: Ketraco
30th November, 2018

County Secretary,
Kajiado County
P.O Box 11
Kajiado

Dear Sir,

RE: PUBLIC CONSULTATIONS ON THE PROPOSED 40KM, 400kV ISINYA-KONZA TRANSMISSION LINE

The above subject refers

Kenya Electricity Transmission Company Limited (KETRACO) is a 100% Government owned state corporation mandated to plan, design, construct, own, operate and maintain high voltage electricity transmission lines and regional power interconnectors that forms the backbone of the National Transmission Grid, in line with Kenya Vision 2030.

The company proposes to construct a 40Km 400kV double circuit Transmission Line from Isinya to Konza to boost power supply and reliability in Kajiado County and its environs. The proposed transmission line transverses 32 km within Isinya, Ilpolosat and Ilmunkush Locations in Kajiado County

To ensure that the project is implemented in an environmentally and socially sound manner, KETRACO is conducting an Environmental and Social Impact Assessment (ESIA) for the proposed project. Stakeholder and public participation in the ESIA process is a requirement of the Environmental Management and Co-ordination Act, Cap 387.

This letter therefore is to inform your office on the proposed project and request for a consultative meeting with the relevant officers to seek their views and opinions on the same.

We thank you for your continued support

Kind Regards,

Ramat Godana

Senior Environmental Expert

[Stamp: Received 30 Nov 2018]
KEY INFORMANT QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

Kenya Electricity Transmission Company Limited (KETRACO) is a 100% Government owned state corporation that was incorporated on 2nd December 2008 and registered under the Companies Act, Cap 486 pursuant to Sessional Paper No. 4 of 2004 on Energy. Its mandate is to plan, design, construct, own, operate and maintain high voltage electricity transmission lines and regional power interconnectors that forms the backbone of the National Transmission Grid, in line with Kenya Vision 2030. The voltage rating of the transmission lines and its associated substation include 132kV, 220kV, 400kV and 500kV (HVDC).

The company proposes to construct a 40Km 400kV double circuit Transmission Line from Isinya to Konza to boost power supply and reliability in Kajiado County and its environs.

To ensure that the project is implemented in an environmentally and socially sound manner, the Proponent (KETRACO) is conducting an Environmental and Social Impact Assessment (ESIA) for the proposed project. This will help us obtain information that will be used to identify potential environmental and socioeconomic impacts of the proposed project and hence propose adequate mitigation measures to be adhered to during project implementation.

Participation of interested and affected parties in the ESIA is a requirement of the Environmental Management and Co-ordination Act, Cap 387. As an identified stakeholder, you are requested to document your views, opinions and concerns regarding the proposed project.

This questionnaire acts as a guide for the respondent to provide relevant information on the proposed project. All the information obtained shall be used entirely for the proposed study and shall be treated confidentially. We appreciate your cooperation and thanks for your willingness to participate in this exercise.

COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Improved supply of power to the residents,
   b) Employment creation opportunities, improving livelihoods and incomes,
   c) At national level, contribute to government revenue,
   d) Increased economic activities in the target area and nationwide,
   e) Social inclusion - Both gender (M/F) youth, middle aged and elderly,
   f) Improved social infrastructure, housing, opening up more job opportunities,
   g) There could be an element at giving birth to the community library,
   h) …………………………………………………………………………………………………………………………………………………………………………………………………………………

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?

   a) ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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b) Restrictions on land use due to transmission line
   - There will be change in nature, biodiversity, etc.
   - There will be disruptive effects of wildlife.

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Relocation of sensitive areas, e.g., buildings, roads, etc.
   b) Relocation is recommended. Otherwise, expansion may have indirect impact
   c) Impacts on nature, e.g., forests, game reserves, and wildlife
   d) Causes deforestation, degradation, and also affect movement of satellite
   e) City corridor may be affected.
   f) On social issues - The community/public shall be sensitized to

4. In your opinion, should the project be implemented? Yes [V] No [ ]

   If YES/NO, why?
   It will ensure steady supply of power
   that is more reliable terms of voltage
   and distribution. This opens up more economic
   benefits that improves the social welfare of people.

5. Do you have any other comments regarding this project?

   Speed implementation once the required reports
   (EIA and other required reports) are completed.

6. Please provide your contact details for purposes of authentication.

   Name: FRANCISCA K. MWANZIA
   Sector/Organisation: MIN OF AGRICULTURE
   Telephone & Address: 0722665466
   BOX 40-90100
   MAHAUOS
   Signature: [Signature]
   Stamp: [Stamp]

Thank you for your participation
KEY INFORMANT QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Security - Minimising risk of insecurity
   b) Creation of employment - New jobs, income;
   c) Food Security - Open up of processing plants;
   d) Electrification to pump water for Irrigation;
   e) Improved Health - Power required to run Medical facilities of theatres & hospitals;

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
b) Displacement of residents

c) Environmental pollution, noise & dust during construction

d) Destruction of fauna & flora along the lines

e) 

f) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?

a) Reasonable compensation for residents

b) Construction works during the day

c) Plumbing of borehole facilities (water supply)

d) Engage in Corporate Social Responsibility

e) Building social amenities like schools & hospitals

f) Engage local leaders & stakeholders

4. In your opinion, should the project be implemented? Yes [V] No [ ]

If YES/NO, why?

After completion of the project, the area will open up to development in terms of industries, financial institutions, communication, and will improve to attract local and international investors.

5. Do you have any other comments regarding this project?

Project will go along way in opening up the Machakos County & the neighbouring areas to both local & international investors, will promote livelihood of the local residents

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name:</th>
<th>JOSEPH MURUNGI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector/Organisation:</td>
<td>DEPARTMENT OF AGRIC. MACHAKOS</td>
</tr>
<tr>
<td>Telephone &amp; Address:</td>
<td>0723926716</td>
</tr>
<tr>
<td></td>
<td>BOX 40-90100 MACHAKOS</td>
</tr>
<tr>
<td>Signature</td>
<td></td>
</tr>
</tbody>
</table>

Thank you for your participation
KEY INFORMANT QUESTIONNAIRE
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COMMENTS (please use separate sheets if you wish)

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   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................
b) People living near the power line will be 

c) Make people’s land unusable.

d) 

e) 

f) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?

a) Establish a way leave and

b) Compensate people living near it.

c) Align the way leave with the existing road reserve.

d) 

e) 

f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]

If YES/NO, why?

5. Do you have any other comments regarding this project?

Ensure it is along the road reserve to reduce the disturbance and displacement.

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name</th>
<th>Sector/Organisation</th>
<th>Telephone &amp; Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas Kariya</td>
<td>EO Housing &amp; Urban Delimit</td>
<td>0714 013 337</td>
</tr>
</tbody>
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Thank you for your participation.
KEY INFORMANT QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................

4. In your opinion, should the project be implemented? Yes [X]  No [ ]
   If YES/NO, why?
   .................................................................
   .................................................................
   .................................................................
   .................................................................

5. Do you have any other comments regarding this project?
   .................................................................
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6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Mabel Wangari</th>
<th>Sector/Organisation:</th>
<th>KEWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone &amp;</td>
<td>Nj. Kajiado</td>
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<tr>
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</tbody>
</table>

   Stamp: Kajiado Station Warden, 0 DEC 2018
   P.O. Box 74-01100 KAJIADO COUNTY

Thank you for your participation
3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) **Compensate for loss of use of land**
   b) ..........................................................
   c) ..........................................................
   d) ..........................................................
   e) ..........................................................
   f) ..........................................................

4. In your opinion, should the project be implemented? Yes [V]  No [ ]
   If YES/NO, why?
   ..........................................................
   ..........................................................
   ..........................................................
   ..........................................................

5. Do you have any other comments regarding this project?
   **None**
   ..........................................................
   ..........................................................
   ..........................................................
   ..........................................................

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Patrick Waweru</th>
<th>Sector/Organisation:</th>
<th>NLC</th>
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<tbody>
<tr>
<td>Telephone &amp; Address:</td>
<td>P.O. Box 1996 - 900100 90100</td>
<td>Machakos</td>
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Thank you for your participation
KEY INFORMANT QUESTIONNAIRE
PROPOSED 40Km ISINYA–KONZA 400kV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Employment Creation to the local community
   b) Increased access of electricity to the local community
   c) Increased Value of land within the environment
   d) The community stands to benefit social amenities e.g. schools, health centers
   e) Stable supply of electricity to towns, market centres & individuals within the area
   f) 
   g) 
   h) 

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) livelihood in extreme community to social ill e.g. soil erosion due to irresponsible land use
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h) 

b) Loss of aesthetic value/ beauty of the land under the corridor
c) Erosion of culture of the indigenous people/community.

d)
e)
f)

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Capacity building of the community
   b)
   c)
   d)
   e)
   f)

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   The benefits override the negative impacts

5. Do you have any other comments regarding this project?
   Kindly involve all relevant stakeholders including government departments during community sensitization exercise.

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Sector/Organisation:</th>
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<tr>
<td>Victoria Ndiri</td>
<td>Agriculture Dept</td>
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<td>0735 946596</td>
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<th>Stamp</th>
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<tr>
<td>[Stamp: Sub County Agricultural Office, Kajiado Central, P.O. Box 54, Kajiado]</td>
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</table>

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COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) The project will bring power
   b) Stability within the region
   c) 
   d) The project will also improve security
   e) 
   f) The project will also increase employment
   g) Opportunities to locals
   h) 

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
b) Loss of natural habitat for wildlife

c) Clearing of vegetation may cause flooding

d) Death of soil erosion and other properties

e) Chronic impact

3. Please give suggestions to mitigate negative impacts identified in question 2 above?

a) Increase the loss of trees by planting
b) Support the creation of special areas for planting

c) Support the creation of special areas for planting

d) 

e) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]

If YES/NO, why?

YES — The positive impact outweighs the negative impacts. Further, most of the negative impacts can be mitigated.

5. Do you have any other comments regarding this project?

The project is likely to work with other stakeholders to mitigate the negative impacts.

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name:</th>
<th>JOSEPH M. MACHARA</th>
<th>Sector/Organisation:</th>
<th>KENYA FOREST SERVICE</th>
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<tbody>
<tr>
<td>Telephone &amp; Address:</td>
<td>0710 443 993 229 - KATI RD</td>
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FOR: ECO SYSTEM CONSERVATION
NANGAPO COUNTY

Thank you for your participation
KEY INFORMANT QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Uninterrupted power supply to households.
   b) Will promote land use, which will improve the livelihood of the livestock owners and cattle farmers.
   c)
   d) It will improve agricultural productivity and sustainable livelihoods.
   e) Pastoral community can move to a more settled way of life.
   f) Increased income for the community.

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Decrease of households and livestock.
3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Compensation to the affected households
   b) 
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   It will boost the general well-being of the community in general in addition to enhancing the livestock value chain.

5. Do you have any other comments regarding this project?
   In as far as corporate social responsibility is concerned, the company should, in collaboration with the county department of livestock, initiate activities for the pastoral community geared towards improving livestock value chain through provision of starters up capital and capacity building of livestock groups.

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name: (COUNTY RANGE DEVELOPMENT OFFICER - KAJIADO)</th>
<th>Sector/Organization: LIVESTOCK PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERIK J.O. ATUENYA</td>
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<tr>
<td>0722 401554</td>
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<tr>
<td>P.O. Box 130 KAJIADO</td>
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COUNTY GOVERNMENT OF KAJIADO
COUNTY DIRECTOR
LIVESTOCK PRODUCTION

Thank you for your participation
KEY INFORMANT QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS (please use separate sheets if you wish)

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) __________________________________________________________________________
   b) __________________________________________________________________________
   c) __________________________________________________________________________
   d) __________________________________________________________________________
   e) __________________________________________________________________________
   f) __________________________________________________________________________
   g) __________________________________________________________________________
   h) __________________________________________________________________________

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
   __________________________________________________________________________
b) Effects on birdlife in regard to powerline design and compatibility with birds.

c)...

d)...

e)...

f)...

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Engage landowners in alignment of the powerline for example on Lisa Ranch we request a realignment to avoid proximity to our homestead.
   b)...
   c)...

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   Yes, it is a key national infrastructure project that will spur development in this area.

5. Do you have any other comments regarding this project?
   We appreciate the engagement to participate in the planning for this project and to give our views. Please make the questions more direct and less abstract.

6. Please provide your contact details for purposes of authentication.

<table>
<thead>
<tr>
<th>Name:</th>
<th>MICHAEL MBITHI</th>
<th>Sector/Organisation:</th>
<th>LISA RANCH &amp; GAME SANCTUARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone &amp; Address:</td>
<td>0724 220 244</td>
<td><a href="mailto:010543@hotmail.com">010543@hotmail.com</a></td>
<td></td>
</tr>
<tr>
<td>Signature</td>
<td>[Signature]</td>
<td>Stamp</td>
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Thank you for your participation
APPENDIX 2: SAMPLE FILLED QUESTIONNAIRES- COMMUNITY MEMBERS
COMMUNITY QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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<table>
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<tr>
<th>NAME</th>
<th>LOCATION</th>
<th>SUBLOCATION</th>
<th>TEL NO</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARLES NGUTI</td>
<td>KATHUZA - KALAMA</td>
<td>KONZA</td>
<td>0729019510</td>
<td></td>
</tr>
</tbody>
</table>

COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Economic benefit #1: Open up Konza to industry hence
   b) Increased opportunities for jobs
   c) Increase reliability of current power supply ie reduced power outages
   d) Increase our land valuations
   e) Help the proposed Konza city in its growth
   f) What has stagnated against all our expectations
   g) 
   h) 

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Impact negatively to our Health to those near the bylow
   b) due to Radiation
   c) How fair will the Compensation be? the city will be harmed
   d) Konza is just about to become a planned city.
   e) What measures are in place to ensure quick payment to affected landowners?
   f) Affected landowners are aggrieved.
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) KEFRA to create a detailed map of the path of the power lines.
   b) to send off
   c) from the lateral
   d) KEFRA to prepare adequate funds to compensate affected landowners
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   YES; so long as KEFRA as the government agency is above board in its dealings with the people of Konza, i.e. fair compensation, keeping out speculators.

5. Do you have any other comments regarding this project?
   a) The government must ensure the people of Konza have tangible benefits, not mere conduits of power to the new city, i.e. mini substations to supply the old Konza Town.
   b) KEFRA must, in reality, engage the people of Konza economically in the project, i.e. employ local labour in the project

Thank you for your participation.
COMMUNITY QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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<table>
<thead>
<tr>
<th>NAME</th>
<th>REGINA KANYA JOHN</th>
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<td>SUBLOCATION</td>
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<td>0727077049</td>
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<tr>
<td>ID NO.</td>
<td>1559675</td>
<td>SIGNATURE</td>
<td>Regina</td>
</tr>
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</table>

COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Kupunguza Upendwa wa Sanga
   b) Kupatikana Kwa ajili ya Zaidi
   c) Ongesa Leo la Halkaji
   d) ..............................................................
   e) ...................................................................
   f) ...................................................................
   g) ...................................................................
   h) .....................................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) ..........................................................
   b) ..........................................................
   c) ..........................................................
   d) ..........................................................
   e) ..........................................................
   f) ..........................................................
   g) ..........................................................
   h) ..........................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) ..........................................................
   b) ..........................................................
   c) ..........................................................
   d) ..........................................................
   e) ..........................................................
   f) ..........................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ..........................................................
   ..........................................................
   ..........................................................
   ..........................................................
   ..........................................................

5. Do you have any other comments regarding this project?
   ..........................................................
   ..........................................................
   ..........................................................
   ..........................................................

Thank you for your participation
COMMUNITY QUESTIONNAIRE

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<table>
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<tr>
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) It makes more jobs
   b) Community will be more developed
   c) More social activities
   d) Money makes life better
   e) New markets
   f) New opportunities
   g) None
   h) .....................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   
   a) [ ] Young ones may lose jobs
   b) [ ] Social life disrupted
   c) [ ] Loss of habitat
   d) [ ] Loss of farmland
   e) [ ] Noise pollution
   f) [ ] Loss of wildlife
   g) [ ] Loss of income
   h) [ ] Others...

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   
   a) [ ] Plant trees to replace habitat
   b) [ ] Provide alternative livelihoods
   c) [ ] Implement noise reduction measures
   d) [ ] Set up wildlife corridors
   e) [ ] Pay compensation
   f) [ ] Others...

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   [ ] Yes
   [ ] Yes

5. Do you have any other comments regarding this project?
   [ ] No

   -----------------------------------------

   Thank you for your participation
COMMUNITY QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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<td>Kimuywa</td>
<td>LONZA</td>
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Kupitia kwa Stima, kwa kesho, kwa kazi, kwa shughuli, kwa kazi, kwa shughuli
   b) ...
   c) ...
   d) Hospital, Ziara na Twawe na Vikwai, ni shughuli
   e) ...
   f) ...
   g) ...
   h) ...

2. Do you have any concerns or suggestions regarding the proposed project?
   a) ...
   b) ...
   c) ...
   d) ...

3. Are you aware of any potential environmental impacts that could arise from the project?
   a) ...
   b) ...

4. What measures do you think should be taken to address these concerns?
   a) ...
   b) ...

5. Have you been consulted or informed about this project before?
   a) ...
   b) ...

6. Are there any specific issues you would like to raise?
   a) ...
   b) ...

7. Would you be willing to participate in any further consultations or studies?
   a) ...
   b) ...

8. Do you have any other comments or suggestions regarding the project?
   a) ...
   b) ...
   c) ...
   d) ...

9. Would you be willing to provide your contact details for further communication?
   a) Yes
   b) No
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) ...
   b) ...
   c) ...
   d) ...
   e) ...
   f) ...
   g) ...
   h) ...

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) ...
   b) ...
   c) ...
   d) ...
   e) ...
   f) ...

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ...

5. Do you have any other comments regarding this project?
   ...

Thank you for your participation
COMMUNITY QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) ..........................
   b) ..........................
   c) ..........................
   d) ..........................
   e) ..........................
   f) ..........................
   g) ..........................
   h) ..........................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   yes - 
   
5. Do you have any other comments regarding this project?
   
Thank you for your participation
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?

5. Do you have any other comments regarding this project?

I think it is good to cooperate with the community fully.

Thank you for your participation.
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Development of the area
   b) Creation of jobs e.g. self employment
   c) It will make the area be industrial
   d) ..........................................................
   e) ..........................................................
   f) ..........................................................
   g) ..........................................................
   h) ..........................................................

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) The affected person might be forced to suffer without proper arrangement.
   b) ......................................................................................................................
   c) ......................................................................................................................
   d) ......................................................................................................................
   e) ......................................................................................................................
   f) ......................................................................................................................
   g) ......................................................................................................................
   h) ......................................................................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) The affected person is to be given enough time to arrange himself.
   b) ......................................................................................................................
   c) ......................................................................................................................
   d) ......................................................................................................................
   e) ......................................................................................................................
   f) ......................................................................................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why? For area development.

5. Do you have any other comments regarding this project?

......................................................................................................................
......................................................................................................................
......................................................................................................................
......................................................................................................................
......................................................................................................................
......................................................................................................................
......................................................................................................................

Thank you for your participation
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<td>Kimuwa</td>
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<td>Konza</td>
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Reduction of Power Outages
   b) Creation of Jobs
   c) People will migrate to the area
   d) More industries may be established

f) 
g) 
h) 


2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Displacement of people
   b) Cutting down of trees
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Compensation to be done promptly
   b) Alternative measures to replace cut down trees
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   Yes: Electricity is essential in everyday life. Its beneficial to us, when it is near our community.

5. Do you have any other comments regarding this project?
   .................................................................
   .................................................................
   ............................

Thank you for your participation
COMMUNITY QUESTIONNAIRE
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h)
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why? .................................................................
   ........................................................................
   ........................................................................
   ........................................................................
   ........................................................................
   ........................................................................

5. Do you have any other comments regarding this project?
   ........................................................................
   ........................................................................
   ........................................................................
   ........................................................................
   ........................................................................

Thank you for your participation.
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<tr>
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) More people will get electricity lighting due to additional kilowatt hours
   b) More people, companies, and businesses will benefit
   c) More people, companies, and businesses will benefit
   d) More people, companies, and businesses will benefit
   e) More people, companies, and businesses will benefit
   f) More people, companies, and businesses will benefit
   g) More people, companies, and businesses will benefit
   h) More people, companies, and businesses will benefit

   Of the country,
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Some members of the community may be displaced
   b) Some people with small plots of land
   c) May be disadvantage
   d) After any compensation some people may tend to misuse the money compared to the diminution of the rest of the family members of school going children mothers or father depending
   h) ..........................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Compensation should be monitored to balance the families
   b) Land valuation should be done to determine the correct compensation
   e) Lack of labor due to displacement of people

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   It has more benefits to the community if properly carried out

5. Do you have any other comments regarding this project?
   Please implement and let it go a time work.
   ..........................................................

Thank you for your participation
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) ..............................................................
   b) ..............................................................
   c) ..............................................................
   d) ..............................................................
   e) ..............................................................
   f) ..............................................................
   g) ..............................................................
   h) ..............................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) ..............................................................
   b) ..............................................................
   c) ..............................................................
   d) ..............................................................
   e) ..............................................................
   f) ..............................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ..............................................................
   ..............................................................
   ..............................................................

5. Do you have any other comments regarding this project?
   ..............................................................
   ..............................................................
   ..............................................................

Thank you for your participation
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<td>Kimutai</td>
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<td>Jaunts</td>
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COMMENTS

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Kuta Kwa S. N. Shida, N. R. Kwa Msh. Kwa R. Aga
   b) Kuta Kwa K. Juma, N. R. Kikunga, M. Aga
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................

4. In your opinion, should the project be implemented? Yes [    ] No [    ]
   If YES/NO, why?
   .................................................................
   .................................................................
   .................................................................
   .................................................................
   .................................................................

5. Do you have any other comments regarding this project?
   .................................................................
   .................................................................
   .................................................................
   .................................................................

Thank you for your participation
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<td>TEL NO</td>
<td>0713699119</td>
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**COMMENTS**

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Tulapata stima kwa wingi
   b) Vilana wetu watapa moka2
   c) Biashara wetu pia vitapana kwa stima
   d) Takwa kwa wingi
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) ......................................................................................................................
   b) ......................................................................................................................
   c) ......................................................................................................................
   d) ......................................................................................................................
   e) ......................................................................................................................
   f) ......................................................................................................................
   g) ......................................................................................................................
   h) ......................................................................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) ......................................................................................................................
   b) ......................................................................................................................
   c) ......................................................................................................................
   d) ......................................................................................................................
   e) ......................................................................................................................
   f) ......................................................................................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ......................................................................................................................
   ......................................................................................................................
   ......................................................................................................................
   ......................................................................................................................

5. Do you have any other comments regarding this project?
   ......................................................................................................................
   ......................................................................................................................
   ......................................................................................................................

Thank you for your participation
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) ____________________________
   b) ____________________________
   c) ____________________________
   d) ____________________________
   e) ____________________________
   f) ____________________________
   g) ____________________________
   h) ____________________________
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) ..................................................
   b) ..................................................
   c) ..................................................
   d) ..................................................
   e) ..................................................
   f) ..................................................
   g) ..................................................
   h) ..................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) ..................................................
   b) ..................................................
   c) ..................................................
   d) ..................................................
   e) ..................................................
   f) ..................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ..................................................................................................................
   ..................................................................................................................

5. Do you have any other comments regarding this project?
   ..................................................................................................................
   ..................................................................................................................
   ..................................................................................................................

Thank you for your participation
COMMUNITY QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Increased job opportunities
   b) Enhanced investment
   c) Allowing development
   d) Enhancing business
   e)...........................................
   f)...........................................
   g)...........................................
   h)...........................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) ............................................................................................................................
   b) ............................................................................................................................
   c) ............................................................................................................................
   d) ............................................................................................................................
   e) ............................................................................................................................
   f) ............................................................................................................................
   g) ............................................................................................................................
   h) ............................................................................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) ............................................................................................................................
   b) ............................................................................................................................
   c) ............................................................................................................................
   d) ............................................................................................................................
   e) ............................................................................................................................
   f) ............................................................................................................................

4. In your opinion, should the project be implemented? Yes [X]  No [ ]
   If YES/NO, why?
   [Handwritten: because Electricity is the Only gain development of industries.]

5. Do you have any other comments regarding this project?
   [Handwritten: I don't have any other comment.]

Thank you for your participation.
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ..............................................................
   ..............................................................
   ..............................................................

5. Do you have any other comments regarding this project?
   ..............................................................
   ..............................................................
   ..............................................................

Thank you for your participation
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) .................................................
   b) .................................................
   c) .................................................
   d) .................................................
   e) .................................................
   f) .................................................
   g) .................................................
   h) .................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) .................................................
   b) .................................................
   c) .................................................
   d) .................................................
   e) .................................................
   f) .................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why? .................................................

5. Do you have any other comments regarding this project?
   .................................................
   .................................................
   .................................................

Thank you for your participation
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) We really need this power
   b) This will reduce power outages
   c) The price of electricity to Konza City
   d) Enough supply of electricity to Konza City
   e) Enough supply to cut schools and phases
   f) Connect small to the power
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Replacement of Person
   b) Cutting tree within the line
   c) Cutting bushes around the line
   d) 
   e) 
   f) 
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Dust become of machine working
   b) Free within the people being displaced
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [X] No [ ]
   If YES/NO, why?
   because it will make our area grow in industrial, domestic use
   or low postage

5. Do you have any other comments regarding this project?
   [Comments written here]

Thank you for your participation
COMMUNITY QUESTIONNAIRE
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) ..................................................
   b) ..................................................
   c) ..................................................
   d) ..................................................
   e) ..................................................
   f) ..................................................
   g) ..................................................
   h) ..................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) .................................................................
   b) .................................................................
   c) Accident impact line failures
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) .................................................................
   b) .................................................................
   c) Installation of protective measures
   d) .................................................................
   e) .................................................................
   f) .................................................................

4. In your opinion, should the project be implemented? Yes [ ]  No [ ]
   If YES/NO, why?
   Yes

5. Do you have any other comments regarding this project?
   Creation of job opportunities

Thank you for your participation
COMMUNITY QUESTIONNAIRE
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Maasai people Konza
   b) Boost power supply...minimizing blackouts
   c) __________________________
   d) __________________________
   e) __________________________
   f) __________________________
   g) __________________________
   h) __________________________
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) 
   b) Accidents from electrocution
   c) 
   d) Delay of compensation payments
   e) 
   f) 
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) 
   b) None
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [x] No [ ]
   If YES/NO, why?
   

5. Do you have any other comments regarding this project?
   - Development of industries in the area
   - More development in terms of hospitals
   

Thank you for your participation
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) .................................................................
   b) .................................................................
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   .................................................................
   .................................................................
   .................................................................
   .................................................................

5. Do you have any other comments regarding this project?
   .................................................................
   .................................................................
   .................................................................
   .................................................................

Thank you for your participation
COMMUNITY QUESTIONNAIRE  
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Njuki, Kuyu, Kisiiri
   b) Suswa, Situng, Kauke, Mawya
   c) .................................................................
   d) .................................................................
   e) .................................................................
   f) .................................................................
   g) .................................................................
   h) .................................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h) 

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?

5. Do you have any other comments regarding this project?

Thank you for your participation.
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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) House Consumption for Electricity will improve
   b) Job employment to the local community
   c) Scale and large scale businesses...
   d) ..............................................................
   e) ..............................................................
   f) ..............................................................
   g) ..............................................................
   h) ..............................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Land compensation may be not well done
   b) Infrastructure may not be maintained
   c) Displacement of people may lead to
   d) Family separations
   e)...
   f)...
   g)...
   h)...

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a)...
   b) The government to oversee the construction
   c)...
   d)...
   e)...
   f)...

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   More people will benefit
   ...
   ...
   ...
   ...

5. Do you have any other comments regarding this project?
   All is well if done well
   ...
   ...
   ...
   ...

Thank you for your participation
COMMUNITY QUESTIONNAIRE
PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

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COMMENTS

1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) Development of Industries
   b) Job Creation
   c) Reduced Power Blackouts
   d) ....................................................
   e) ....................................................
   f) ....................................................
   g) ....................................................
   h) ....................................................
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) MAY BE DISPLACEMENT OF SOME PEOPLE
   b) ..........................................................
   c) ..........................................................
   d) ..........................................................
   e) ..........................................................
   f) ..........................................................
   g) ..........................................................
   h) ..........................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) COMPENSATION TO THE AFFECTED PERSONS
   b) ..........................................................
   c) ..........................................................
   d) ..........................................................
   e) ..........................................................
   f) ..........................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   YES
   FOR REASON SHOWN IN 9

5. Do you have any other comments regarding this project?
   I WOULD LIKE THE COMPANY TO ASSIST THE PEOPLE OF KONZA BY
   1. DRILLING BOREHOLES
   2. IMPROVEMENT OF THE ROADS

Thank you for your participation
COMMUNITY QUESTIONNAIRE
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<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joyce Mullen</td>
<td>Kimutsin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUBLOCATION</th>
<th>TEL NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Konza</td>
<td>0715559768</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ID NO.</th>
<th>SIGNATURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4955427</td>
<td>Joyce</td>
</tr>
</tbody>
</table>

COMMENTS
1. In your opinion, what Environmental, Social and Economic benefits do you think will arise from the proposed project?
   a) 
   b) 
   c) 
   d) 
   e) 
   f) 
   g) 
   h)
2. In your opinion, what Environmental, Social and Economic negative impacts do you think will result from the proposed project?
   a) Destruction of trees which were felled.
   b) The displacement of people.
   c) ...........................................................................................................
   d) ...........................................................................................................
   e) ...........................................................................................................
   f) ...........................................................................................................
   g) ...........................................................................................................
   h) ...........................................................................................................

3. Please give suggestions to mitigate negative impacts identified in question 2 above?
   a) Proper environment of care.
   b) ...........................................................................................................
   c) ...........................................................................................................
   d) Administration of the area.
   e) ...........................................................................................................
   f) ...........................................................................................................

4. In your opinion, should the project be implemented? Yes [ ] No [ ]
   If YES/NO, why?
   ...........................................................................................................
   ...........................................................................................................
   ...........................................................................................................
   ...........................................................................................................
   ...........................................................................................................

5. Do you have any other comments regarding this project?
   ...........................................................................................................
   ...........................................................................................................
   ...........................................................................................................
   ...........................................................................................................

Thank you for your participation.
APPENDIX 3: PUBLIC MEETING MINUTES
Public Meetings Minutes

Ilmanen Location, Kajiado County

<table>
<thead>
<tr>
<th>Subject:</th>
<th>COMMUNITY CONSULTATION MEETING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Meeting:</td>
<td>4th December, 2018</td>
</tr>
<tr>
<td>Location</td>
<td>Ilmanen Location, Kajiado County</td>
</tr>
<tr>
<td>Time</td>
<td>11:00am – 2:00pm</td>
</tr>
</tbody>
</table>

1. Purpose of Meeting

COMMUNITY CONSULTATION FOR THE PROPOSED ISINYA-KONZA 400KV TRANSMISSION LINE

2. Attendance at Meeting

See attached attendance list

3. Agenda

Community consultation at the project site.

Household administration of questionnaires to the community members.

4. Meeting Notes, Decisions and Key Action Items

<table>
<thead>
<tr>
<th>Min No.</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min 1/2018</td>
<td>Preliminaries</td>
</tr>
<tr>
<td>The meeting was called to order by the area chief Mr. Raphael Kisanei. A community member volunteered to give a word of prayer,</td>
<td></td>
</tr>
<tr>
<td>Min 2/2018</td>
<td>Community induction on the project’s objective and environmental impacts of the project.</td>
</tr>
<tr>
<td>The community members were taken through an induction process by Mr Ramat Godana to bring them known to the project, its purpose and the impacts arising with</td>
<td></td>
</tr>
</tbody>
</table>
Min 3/2018: **Community issues and Concerns**

The table below provides a summary of issues raised by the community and the answers provided by the KETRACO team.

<table>
<thead>
<tr>
<th>Name of Community Member</th>
<th>Question/Concern Raised</th>
<th>Response from KETRACO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephen Matipei</td>
<td>Where exactly does the line pass?</td>
<td>The surveyor gave a general orientation of the line to the community from Isinya Substation to Konza</td>
</tr>
<tr>
<td>Stephen Matipei</td>
<td>How will land compensation be handled? We have had problems with KETRACO on previous projects</td>
<td>Land compensation will be carried out as per the company policies and laws of the land. Affected land owners will be engaged further after a RAP is done.</td>
</tr>
<tr>
<td>Pr. Jonathan</td>
<td>Has KETRACO done cadastral survey for the line?</td>
<td>The cadastral survey will be carried out later on. ESIA is the first step of the project.</td>
</tr>
<tr>
<td>Mary Mbelesi</td>
<td>What will be the employment criteria to get opportunities when the line starts?</td>
<td>According to company policies, unskilled labour is sought locally when works begin. Skilled labour follows the employment criteria according to Kenyan laws.</td>
</tr>
<tr>
<td>Daniel Matei</td>
<td>Will the project employ unskilled labour only or consider skilled labour? We have learned people from this area</td>
<td>According to company policies, unskilled labour is sought locally when works begin. Skilled labour</td>
</tr>
<tr>
<td>Name</td>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>---------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Paul Parsaut</td>
<td>KETRACO already passed through our land sometimes back and showed us where lines would pass. Is this a different line?</td>
<td>KETRACO had earlier planned for Machakos-Konza-Isinya-Namanga 132kV line. This is a different line from Isinya-Konza 400kV</td>
</tr>
<tr>
<td>William Parsaut</td>
<td>Is the line insulated? Fear of EMF that can cause cancer that is a safety hazard in the area</td>
<td>EMF emissions from transmission line is negligible given the ground clearance of the line.</td>
</tr>
<tr>
<td>Pr. Jonathan</td>
<td>What does compensation entail?</td>
<td>KETRACO compensates for crops, houses and land which is guided by the RAP that identifies all affected persons.</td>
</tr>
</tbody>
</table>

**Acceptability of the project**

The community members were positive about the project and emphasised on the following benefits:
- Reliable power supply in the area
- Employment opportunities in the area
- Good compensation rates for those who will be affected by the project
- Proper mitigation measures to be put in place when the project begins

**Household Administration of questionnaires**

The community members were issued with questionnaires to fill in giving their views towards the proposed project’s impacts.

**AOB**

The meeting came to an end at 2:00pm with a word of prayer from a community member.
konza sublocation, Kimutwa Location, Machakos County

<table>
<thead>
<tr>
<th>Subject:</th>
<th>COMMUNITY CONSULTATION MEETING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Meeting:</td>
<td>5th December, 2018</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>10.2.1 konza sublocation, Kimutwa Location, Machakos County</td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>10:00am – 1:00pm</td>
</tr>
</tbody>
</table>

1. Purpose of Meeting

COMMUNITY CONSULTATION FOR THE PROPOSED ISINYA-KONZA 400KV TRANSMISSION LINE

2. Attendance at Meeting

See attached attendance list

3. Agenda

Community consultation at the project site.
Household administration of questionnaires to the community members.

4. Meeting Notes, Decisions and Key Action Items

<table>
<thead>
<tr>
<th>Min No.</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min 1/2018</td>
<td><em>Preliminaries</em></td>
</tr>
<tr>
<td></td>
<td>The meeting was called to order by the area sub chief Mr. Jonathan kamia. A community member volunteered to give a word of prayer,</td>
</tr>
<tr>
<td>Min 2/2018</td>
<td><em>Community induction on the project’s objective and environmental impacts of the project.</em></td>
</tr>
<tr>
<td></td>
<td>The community members were taken through an induction process by Mr Ramat Godana to bring them known to the project, its purpose and the impacts arising with the project. This involved community acknowledgement of the project and question and answer session.</td>
</tr>
</tbody>
</table>
**Min 3/2018: Community issues and Concerns**

The table below provides a summary of issues raised by the community and the answers provided by the KETRACO team.

<table>
<thead>
<tr>
<th><strong>NAME Of Community Member</strong></th>
<th><strong>Question/Concern Raised</strong></th>
<th><strong>Response from KETRACO</strong></th>
</tr>
</thead>
</table>
| Charles Nguti                | What are the benefits of the project to the community? | - Reliable power supply in the area.  
- Employment opportunities especially unskilled labour during the construction of the project |
| Jackson Mutua                | What will be the criteria for Job allocation to youths? | According to company policies, unskilled labour is sought locally when works begin. Skilled labour follows the employment criteria according to Kenyan laws. |
| Charles Mbithi               | Does KETRACO compensate in case a structure is affected by the Transmission line? | KETRACO compensates for crops, houses and land affected by the project which is guided by the RAP that identifies all affected persons. |
| Charles Mbithi               | What is the timeframe for this project? | The project is expected to start soonest possible depending on issuance of all licences required before the start of the project |

**Min 4/2018: Acceptability of the project**

The community members were all positive about the project and emphasised on the following benefits:
- Employment opportunities in the area
- Good compensation rates for those who will be affected by the project
- Proper mitigation measures to be put in place when the project begins
<table>
<thead>
<tr>
<th>Min 5/2017</th>
<th><strong>Household Administration of questionnaires</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The community members were issued with questionnaires to fill in giving their views towards the proposed project’s impacts.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min 5/2017</th>
<th><strong>AOB</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The meeting came to an end at 1:00pm with a word of prayer from a community member.</td>
</tr>
</tbody>
</table>
Ilpolosat Location, Kajiado County

<table>
<thead>
<tr>
<th>Subject:</th>
<th>COMMUNITY CONSULTATION MEETING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Meeting:</td>
<td>6th December, 2018</td>
</tr>
<tr>
<td>Location</td>
<td>10.2.2 Ilpolosat Location, Kajiado County</td>
</tr>
<tr>
<td>Time</td>
<td>10:00am – 1:00pm</td>
</tr>
</tbody>
</table>

1. Purpose of Meeting

COMMUNITY CONSULTATION FOR THE PROPOSED ISINYA-KONZA 400KV TRANSMISSION LINE

2. Attendance at Meeting

See attached attendance list

3. Agenda

Community consultation at the project site.
Household administration of questionnaires to the community members.

4. Meeting Notes, Decisions and Key Action Items

<table>
<thead>
<tr>
<th>Min No.</th>
<th>Discussion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min 1/2018</td>
<td>Preliminaries</td>
</tr>
<tr>
<td></td>
<td>The meeting was called to order by the area chief Mr. Daniel Sekenoi and Sub chief Ezekiel Sanirei. A community member volunteered to give a word of prayer,</td>
</tr>
<tr>
<td>Min 2/2018</td>
<td>Community induction on the project’s objective and environmental impacts of the project.</td>
</tr>
<tr>
<td></td>
<td>The community members were taken through an induction process by Mr Ramat Godana to bring them known to the project, its purpose and the impacts arising with the project. This involved community acknowledgement of the project and question and answer session.</td>
</tr>
</tbody>
</table>
Min 3/2018: *Community issues and Concerns*

The table below provides a summary of issues raised by the community and the answers provided by the KETRACO team.

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<tr>
<th>NAME Of Community Member</th>
<th>Question/Concern Raised</th>
<th>Response from KETRACO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gideon Parsaut - village elder</td>
<td>What is the furthest distance that the community should stay away from the line?</td>
<td>The proposed TL will have a wayleave corridor of 60m ie 30m from either side of the center line. No structures are allowed within the wayleave corridor.</td>
</tr>
<tr>
<td>Daniel Kaposhi</td>
<td>Does the project entail construction of a new substation at Isinya or the line will commence from the existing one?</td>
<td>There is no new substation at Isinya. The line commences from the existing substation in Isinya.</td>
</tr>
<tr>
<td>David Leiyo</td>
<td>KETRACO to consider a CSR apart from individual compensation from the affected PAPs</td>
<td>This will be reported though the team is not promising a CSR at this stage</td>
</tr>
</tbody>
</table>
| Dan Kitunga              | What are the negative impacts of the project to the people near the project          | - Environmental impacts like noise and dust are expected  
                           |                                                                                       | - Social impacts like displacement is also expected  
<pre><code>                       |                                                                                       | - However, the report will come up with appropriate measures to mitigate these impacts |
</code></pre>
<p>| Dan Kitunga              | What does compensation entail?                                                       | KETRACO compensates for crops, houses and land which is guided by the RAP that identifies all affected persons. |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dan Kitunga</td>
<td>How many transmission lines are passing through this area?</td>
<td>Currently, there is the completed Mombasa-Nairobi 400kV TL. Then there is the proposed Isinya-Konza 400kV TL as at now.</td>
</tr>
<tr>
<td>Lewis Kitila</td>
<td>Where exactly does the line pass?</td>
<td>The surveyor gave a general orientation of the line to the community from Isinya Substation to Konza</td>
</tr>
<tr>
<td>Gideon Parsaut</td>
<td>What happens when a line passes through a wetland?</td>
<td>The line is assessed and route alternatives proposed. Wetlands are sensitive environmental areas that need to be preserved.</td>
</tr>
<tr>
<td>Solomon Meria</td>
<td>Will KETRACO engage affected persons before construction of the line? Or</td>
<td>Public consultation and engagement is a continuous project from the design phase of the project to completion of the project. Therefore, the ESIA is the first point of engagement. Affected persons will be engaged throughout the project cycle.</td>
</tr>
<tr>
<td></td>
<td>engagement will be after completion of the line</td>
<td></td>
</tr>
<tr>
<td>Solomon Meria</td>
<td>When a project passes through a road reserve, who benefits?</td>
<td>Most KETRACO project pass through private and community lands. However, in case a project passes through a road reserve, the relevant road authorities are consulted on the same.</td>
</tr>
<tr>
<td>Amos Sopon</td>
<td>What are the health impacts of high voltage lines to human beings, plants and other animals? And what is the</td>
<td>There are no documented health impacts of transmission lines to animals, human beings and plants.</td>
</tr>
</tbody>
</table>
distance expected that human being should live from a transmission line | The Transmission lines are safe. It is expected that the community respects the wayleave corridor which is 60m for the line and resist from having structures along the corridor.

<table>
<thead>
<tr>
<th>Min 4/2018</th>
<th><strong>Acceptability of the project</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The community members were all positive about the project and emphasised on the following benefits:</td>
</tr>
<tr>
<td></td>
<td>- Employment opportunities in the area</td>
</tr>
<tr>
<td></td>
<td>- Good compensation rates for those who will be affected by the project</td>
</tr>
<tr>
<td></td>
<td>- Proper mitigation measures to be put in place when the project begins</td>
</tr>
</tbody>
</table>

<table>
<thead>
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<th>Min 5/2017</th>
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<tr>
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</table>

<table>
<thead>
<tr>
<th>Min 5/2017</th>
<th><strong>AOB</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The meeting came to an end at 1:00pm with a word of prayer from a community member.</td>
</tr>
</tbody>
</table>
Isinya Location, Kajiado County

<table>
<thead>
<tr>
<th>Subject:</th>
<th>COMMUNITY CONSULTATION MEETING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Meeting:</td>
<td>7th December, 2018</td>
</tr>
<tr>
<td>Location</td>
<td>10.2.3 Isinya Location, Kajiado County</td>
</tr>
<tr>
<td>Time</td>
<td>10:00am – 2:00pm</td>
</tr>
</tbody>
</table>

1. Purpose of Meeting

**COMMUNITY CONSULTATION FOR THE PROPOSED ISINYA-KONZA 400KV TRANSMISSION LINE**

2. Attendance at Meeting

See attached attendance list

3. Agenda

Community consultation at the project site.
Household administration of questionnaires to the community members.

4. Meeting Notes, Decisions and Key Action Items

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</thead>
<tbody>
<tr>
<td>Min 1/2018</td>
<td>Preliminaries</td>
</tr>
<tr>
<td></td>
<td>The meeting was called to order by the area chief Francis Mpaashe and Sub chief Maera Ntuser. A community member volunteered to give a word of prayer,</td>
</tr>
<tr>
<td>Min 2/2018</td>
<td>Community induction on the project’s objective and environmental impacts of the project.</td>
</tr>
<tr>
<td></td>
<td>The community members were taken through an induction process by Mr Ramat Godana to bring them known to the project, its purpose and the impacts arising with the project. This involved community acknowledgement of the project and question and answer session.</td>
</tr>
</tbody>
</table>

Min 3/2018: Community issues and Concerns
The table below provides a summary of issues raised by the community and the answers provided by the KETRACO team:

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<thead>
<tr>
<th>NAME Of Community Member</th>
<th>Question/Concern Raised</th>
<th>Response from KETRACO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Samuel Mwenget</td>
<td>KETRACO has not undertaken formal employment to members of the community from this area from their last project</td>
<td>According to company policies, unskilled labour during project construction is sought locally when works begin. Skilled labour follows the employment criteria according to Kenyan laws.</td>
</tr>
<tr>
<td>Samuel Mwenget</td>
<td>There was a court case from the previous Mombasa- Nairobi TL that consumed a lot of Money. KETRACO should compensate us that money before start of another project. If not, the community will organise for a demonstration against a new project in the area</td>
<td>KETRACO never promised to compensate the money that was used in the court case. The community through elected leaders should follow up on the same not involving KETRACO.</td>
</tr>
<tr>
<td>Stephen Patiet</td>
<td>The community have no objection to the new proposed project. However, KETRACO needs to be faithful in telling exactly when compensation is expected</td>
<td>Noted</td>
</tr>
<tr>
<td>Maera Ntuser -Assistant Chief</td>
<td>Land compensation was properly done in the previous project. What the community was not happy with is legal fees used in court and casuals</td>
<td>KETRACO never promised to compensate the money that was used in the court case. In the new project, proper monitoring will be done to ensure</td>
</tr>
</tbody>
</table>
that undertook bush clearing not being paid | that contractors pay casuals as expected.
---|---
Francis Mpaashe - Chief | What is the main objective of this transmission Line? Will locals gain from having power connected to their homes? | KETRACO only deals with transmission of high voltage power. Distribution is done by Kenya Power. The proposed line will evacuate power from Isinya to the proposed Konza Techno-city.

| Min 4/2018 | **Acceptability of the project** | The community members were not welcoming to the project. They however emphasised that if the project has to continue, more consultations need to be done before start of the project. |
| Min 5/2017 | **Household Administration of questionnaires** | The community members were issued with questionnaires to fill in giving their views towards the proposed project’s impacts. |
| Min 5/2017 | **AOB** | The meeting came to an end at 2:00pm with a word of prayer from a community member. |
APPENDIX 4: PUBLIC MEETINGS
ATTENDANCE SHEETS
# ATTENDANCE SHEET FOR PUBLIC CONSULTATION MEETING FOR A PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

## LIST OF MEMBERS PRESENT

<table>
<thead>
<tr>
<th>Name</th>
<th>Designation</th>
<th>Telephone</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stephen Potel</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
<tr>
<td>Rev David N. Matumo</td>
<td></td>
<td>0733086767</td>
<td></td>
</tr>
<tr>
<td>Manager Materials</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
<tr>
<td>Rev Nahashon</td>
<td></td>
<td>0721696666</td>
<td></td>
</tr>
<tr>
<td>Samuel Manager</td>
<td></td>
<td>0728217547</td>
<td></td>
</tr>
<tr>
<td>Samuel Kileu</td>
<td></td>
<td>0721696666</td>
<td></td>
</tr>
<tr>
<td>Francis T. Mwaghi</td>
<td></td>
<td>0721696666</td>
<td></td>
</tr>
<tr>
<td>Stephen L. Bakinya</td>
<td></td>
<td>0733086767</td>
<td></td>
</tr>
<tr>
<td>Richard Nsai</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
<tr>
<td>Joseph Nsai</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
<tr>
<td>Joel Kiria</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
<tr>
<td>Moses Mungai</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
<tr>
<td>Florence Kileu</td>
<td></td>
<td>0725831333</td>
<td></td>
</tr>
</tbody>
</table>
## ATTENDANCE SHEET FOR PUBLIC CONSULTATION MEETING FOR A PROPOSED 40KM ISINYA-KONZA 400KV DOUBLE CIRCUIT TRANSMISSION LINE

**LIST OF MEMBERS PRESENT**

**VENUE:** Nakuru Sub-location  
**DATE:** 12.12.2018

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Designation</th>
<th>Telephone</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Rincovu</td>
<td>Tcetepi</td>
<td>0710 845801</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Julius</td>
<td>Asacco</td>
<td>0713 905153</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Paul</td>
<td>Pansaati</td>
<td>0724 202578</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Steven</td>
<td>Napiro</td>
<td>0721 319571</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Ole Sokoi</td>
<td></td>
<td>0712 109801</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>James</td>
<td>Kanje</td>
<td>0720 983518</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Daniel</td>
<td>Tokoi</td>
<td>0720 928345</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Bernard</td>
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APPENDIX 5: EXPERT PRACTICING LICENSE
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/Ea) PRACTICING LICENSE

License No: NEMA/EIA/EPRL/10541
Application Reference No: NEMA/EIA/EPRL/114117

M/S Richard Ramat Godeam
(individual or firm) of address
P.O. Box 54942-00100, Nairobi

is licensed to practice in the capacity of Lead Expert/Associate Expert/ Firm of Experts
Lead Expert
registration number 1747
in accordance with the provision of the Environmental Management and Coordination Act Cap 387

Issued Date: 5/7/2019
Expiry Date: 12/31/2019

Signature:...

(Seal)
Director General
The National Environment Management Authority

P.T.O.
NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY (NEMA)
The Environmental Management and Co-ordination Act
ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE
License No: NEMA/EIA/EA/187
Application Reference No: NEMA/EA/187

M/S Caleb Mathews Okoth Mango
(Individual or Firm) of address
P.O. Box 15189-00300, Nairobi

is licensed to practice in the

capacity of an Expert/Associate Expert/Chief of Experts - Lead Expert
registration number 260

in accordance with the provisions of the Environmental Management and Coordination Act Cap. 347.

Issued Date: 2/27/2019

Expire Date: 12/31/2018

Director General
The National Environment Management Authority