




Ministry of Energy and Petroleum

Kenya Electricity Transmission Company (KETRACO)

UPDATED ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT for 95 KM Kabarnet - Rumuruti 132/133kV double circuit Transmission Line

Final Report

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ABBREVIATIONS

AAAC	- All Aluminum Alloy Conductor
AEWA	- African-Eurasian Water-bird Agreement
AfDB	-African Development Bank
AIDS	- Acquired Immunodeficiency Syndrome
AoI	- Area of Influence
BFD	- Bird Flight Diverter
BOD	- Biochemical Oxygen Demand
C-ESMP	- Construction Environment and Social Management Plan
CBD	- Convention on Biological Diversity
CBOs	- Community Based Organizations
CCVT	- Coupling Capacitor Voltage Transformers
CDF	- Constituency Development Fund
CEC	- County Executive Committee
CEDAW	-Convention on the Elimination of All Forms of Discrimination Against Women
CIA	- Cumulative Impact Assessment
CIDP	- County Integrated Development Plan
CLOs	- Community Liaison Officers
CMS	- Convention on Migratory Species
COD	- Chemical Oxygen Demand
EBA	- Endemic Bird Area
ECD	- Early Childhood Development
EE	- Energy Efficiency
EHS	- Environmental Health and Safety
EMCA	- Environmental Management and Coordination Act
EMF	- Electro Magnetic Field
ENSO	- El Nino/ Southern Oscillation
EPRP	- Emergency Prevention and Response Plan
ESIA	- Environmental and Social Impact Assessment
ESMP	- Environmental and Social Management Plan
FGDs	- Focus Group Discussions
FPE	- Free Primary Education
GBV	- Gender-Based Violence
GDC	- Geothermal Development Company
GDP	- Gross Domestic Product
GHG	- Greenhouse Gas
GIIP	- Good International Industry Practice
GoK	- Government of Kenya
GWP	- Global Warming Potential
HIV	- Human Immuno Virus
HR	- Human Resources
HVDC	- High-Voltage Direct Current
IBA	- Important Bird Area

ICTZ	- Intertropical Convergence Zone
IFC	- International Finance Corporation
ILO	- International Labor Organization
KALRO	- Kenya Agricultural Research Organization
KCC	- Kenya Cooperative Creameries
KeNHA	- Kenya National Highways Authority
KETRACO	- Kenya Electricity Transmission Company
KEXIM	- Korean Eximbank
KFS	- Kenya Forest Service
KNBS	- Kenya National Bureau of Statistics
KPLC	- Kenya Power and Lighting Company
KTBH	- Kenya Top Bar Hive
KWFT	- Kenya Women Finance Trust
LCPDP	- Least Cost Power Development Plan
LDV	- Light Duty Vehicles
LPG	- Liquid Petroleum Gas
MIR	- Minimum Internal Requirements
MOEP	- Ministry of Energy and Petroleum
MVA	- Mega Volt Amp
MW	- Megawatts
NBSAP	- National Biodiversity Strategy and Action Plan
NEC	- National Environmental Council
NEMA	- National Environment Management Authority
NG-CDF	- National Government Constituency Development Fund
NGOs	- Non-Governmental Organizations
NOX	- Oxides of Nitrogen
OHTL	- Overhead Transmission Line
OPGW	- Optical Ground Wire
OS	-Operational Safeguards
OSRP	- Oil Spill Response Plan
PAHs	- Project Affected Households
PAPs	- Project Affected Persons
PCB	- Printed Circuit Board
PCB	- Polychlorinated Biphenyls
PDO	- Project Development Objective
PM	- Particulate Matter
PPE	- Personal Protective Equipment
RAP	- Resettlement Action Plan
RoW	- Right of Way
RPF	- Resettlement Policy Framework
RPM	- Respirable Particulate Matter
RTI	- Respiratory Tract Infections
RVWSB	- Rift Valley Water Services Board
SEA	- Sexual Exploitation and Abuse
SEP	- Stakeholder Engagement Plan

SF6	- Sulfur Hexafluoride
SGR	- Standard Gauge Railway
SMEP	- Small and Micro Enterprise Program
SOX	- Sulphur Oxides
STDs	- Sexually Transmitted Diseases
TL	- Transmission Line
TVETA	- Technical Vocational Education and Training Authority
VAC	- Violence against Children
VEC	- Valued Environmental and Social Components
VMGF	- Vulnerable and Marginalized Groups Framework
WHO	- World Health Organization

EXECUTIVE SUMMARY

Introduction

This Environmental and Social Impact Assessment (ESIA) Study Report presents an assessment of the potential environmental and social impacts associated with the proposed construction of the High Voltage (HV) Kabarnet- Rumuruti 132kV double circuit transmission line ('the Project') to ensure that environmental and social aspects are diligently considered and managed during the Project lifecycle. This Environmental and Social Impact Assessment (ESIA) Study report has been prepared by **EMC Consultants Limited** for Kenya Electricity Transmission Company Limited (KETRACO) (Proponent) which is to put up an approximately 95km long, 30-meter-wide, 132kV double circuit transmission line that will be energized upon completion to the national grid.

To achieve this target, the Government of Kenya is seeking the financial support of African Development Bank (AfDB) and Korea Eximbank to finance three electricity transmission infrastructure projects under the Kenya Transmission Network Improvement project (KTRNIP). The proposed Kabarnet – Rumuruti 132/33kV transmission line forms part of this project, which is driven by the imperative to provide reliable and secure power supply within Baringo and Laikipia counties. Electricity service interruptions in recent years have been due to a number of factors that include: inadequate generation capacity (especially during dry periods when hydropower availability is reduced); congestion in the transmission infrastructure that constrains power transfers from where there is surplus generation capacity to regions where there is a deficit; scheduled interruptions for line work and unscheduled interruptions due to a weak network; inadequate preventive maintenance; vandalism; inadequate automation, extreme weather (high winds, lightning, rain, flooding), fallen trees, animals like monkeys, vehicle accidents etc.

The project is designed to address the transmission and distribution aspects of electricity to ensure reliable power supply by building resiliency into the network so as to enable it to react to unexpected events by isolating problematic elements while the rest of the system is restored to normal operation. This will also be achieved through minimizing the impact of scheduled network maintenance on the fewest number of customers possible. Ultimately, the proposed transmission line project will provide reliability, expand transmission capacity necessary to enhance electrification initiatives, and reduce technical losses in areas currently served by long medium voltage lines.

Kenya is seeing large scale expansion in many infrastructure sectors including energy. In year 2007, the Government of Kenya unveiled "Vision 2030". Vision 2030 is the country's economic blueprint that aspires to transform the country from a low income, agrarian economy into a newly industrialized middle-income country, providing a high quality of life to all its citizens by the year 2030. The vision identifies energy as one of the enablers for sustained economic growth and a key foundation of Kenya's envisaged national transformation. Expansion of Energy Sector was seen as critical in order to achieve the GDP growth target of 10% which was targeted for 2015.

Accordingly, the Government of Kenya has formulated Least Cost Power Development Plan (LCPDP) in 2011 and updated further in 2013. As per LCPDP updated in 2013, transmission development plan indicates the need to develop approximately 21000 km of new high voltage transmission lines. This Plan encapsulates three key areas viz. Load Forecasting, Generation Planning, Transmission Planning. As per LCPDP, the peak load demand is projected to rise to 21075 MW by Year 2033 from existing 1606 MW during 2013. For this, addition in generation capacity to the tune of 22000 MW has been planned. In the present scenario of power supply arrangement in Kenya, the electrification has been achieved up to approximately 30% of its population.

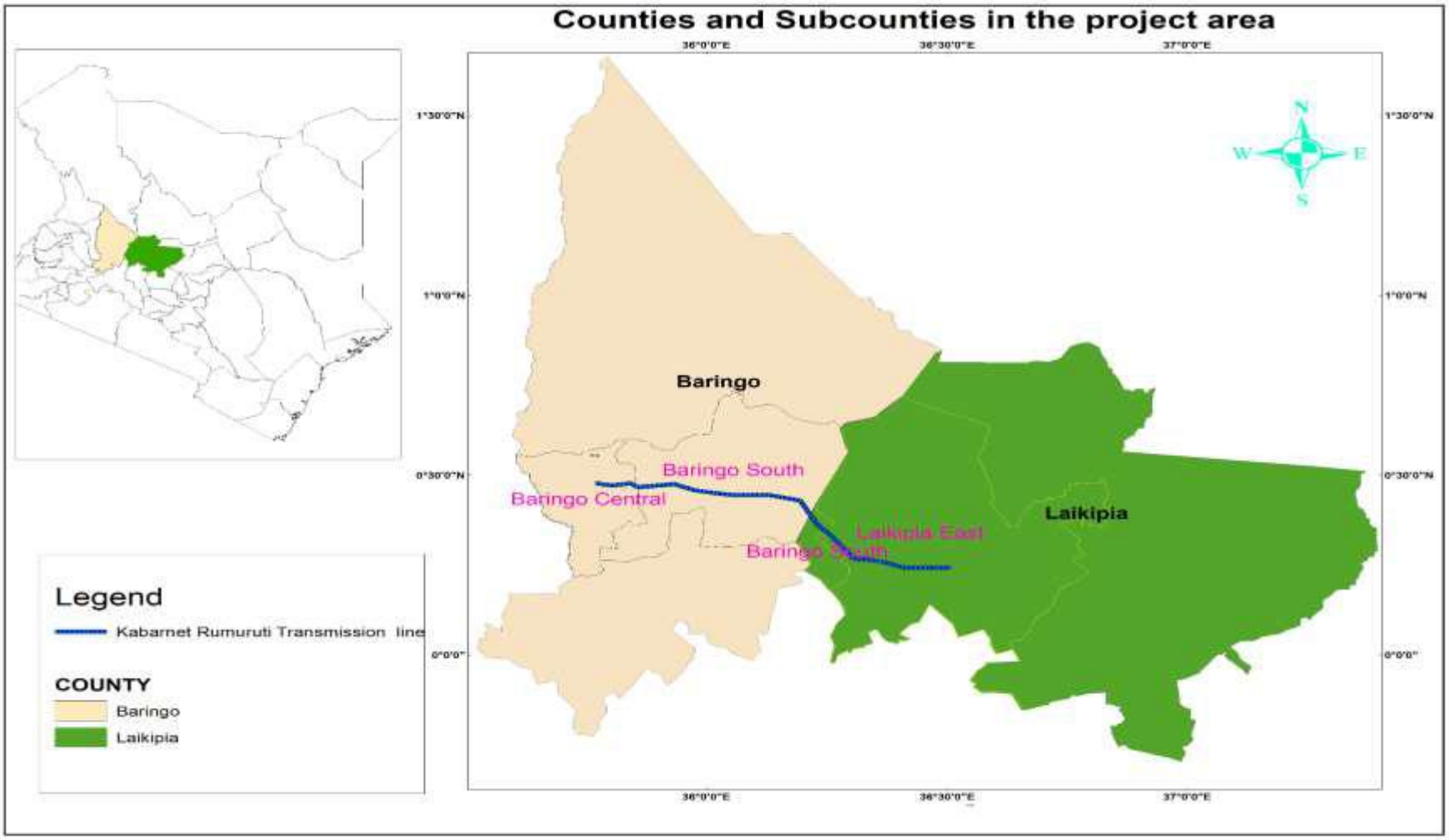
Project Proponent

Kenya Electricity Transmission Company Limited (KETRACO) was incorporated on 2nd December 2008 and registered under the Companies Act, Cap 486 pursuant to Sessional paper No. 4 of 2004 on Energy. KETRACO is 100% Government owned and being a state corporation, it is regulated under the State Corporations Act, Cap 446. KETRACO was established to develop new high voltage electricity transmission infrastructure that will form the backbone of the national transmission grid, in line with Kenya Vision 2030. Its core business is to plan, design, build and maintain electricity transmission lines and associated substations. The voltage rating of the transmission lines includes 132kV, 220kV, 400kV and 500kV. KETRACO's mandate is to plan, design, construct and own, operate and maintain high voltage electricity transmission grid and regional power interconnectors that will form the backbone of the national transmission grid.

Project Location

The proposed high voltage transmission line ('the Project') traverses two counties i.e., Baringo County starting at the existing Kabarnet sub-station with geographic coordinates **53056.476N; 140026.686E** (Arc 1960 UTM zone 37°N) and terminating in Laikipia County at Rumuruti at an existing sub-station at geographic coordinates **27478.607N; 222363.497E (**Arc 1960 UTM zone 37°N**).** It is expected that upon completion, the 132kV Transmission Line of approximately 95Km will be energized and become part of the national grid. Figure 0-1 below highlights the transmission line route including the project Area of Influence (AoI) which is a corridor of 2 km on both sides of the transmission line.

The proposed Right of Way (RoW) for the transmission line will be a 30 metres wide corridor with a total length of 95km running from Kabarnet sub-station in Baringo County and terminating at the existing Rumuruti substation in Laikipia County. As a result of the 30metre wide corridor, physical and economic displacement of Project Affected Households (PAHs) in this ESIA study has been identified as an impact likely to occur along the transmission route. The approximate acreage of land to be affected is 695 acres based on the Resettlement Action Plan (RAP) report prepared for this line and informed and recommended during the ESIA scoping phase. The RAP has been prepared in accordance with the AfDB's OS 2 on involuntary resettlement and KETRACO Resettlement Policy Framework (RPF) which is the overall framework document that guides preparation of RAP for KETRACO projects.



0**Map of Project Transmission Line Routing Area**

ESIA Study Objectives

The purpose of this study was to undertake an Environmental and Social Impact Assessment study for the 132kV dual-county transmission line. The ESIA study has been developed in compliance with the Environmental Impact Assessment/Audit Regulation, 2003, AfDB Environmental & Social Assessment Procedures and other relevant international best practices. The purpose of an ESIA is to provide information to regulators, the public and other stakeholders to aid the decision-making process. The objectives of an ESIA are to:

- Define the scope of the project and the potential interactions of project activities with the environment (bio-physical and socio-economic).
- Identify relevant national and international legislation, standards, and guidelines and to ensure that they are considered at all stages of project development.
- Provide a description of the proposed project activities and the existing environmental and social conditions that the project activities may interact with.
- Predict, describe, and assess impacts that may result from project activities and identify mitigation measures and management actions to avoid, reduce, remedy, or compensate for significant adverse effects and, where practicable, to maximize potential positive impacts and opportunities.
- Provide a plan for implementation of mitigation measures and management of residual impacts as well as methods for monitoring the effectiveness of the plan.

ESIA Methodology and Approach

The approach taken in this study is guided by the principles of integrated environmental management. The approach is therefore guided by the principles of transparency which is aimed at encouraging decision making. The underpinning principles of integrated environmental management are:

- Informed decision making;
- Accountability for information on which decisions are made;
- Consultation with stakeholders;
- Due consideration of feasible alternatives;
- An attempt to mitigate negative impacts and enhance positive impacts associated with the proposed project;
- An attempt to ensure that social costs of the development proposals are outweighed by the social benefits;
- Regard to individual rights and obligations;
- Compliance with these principles during all stages of planning, implementation and decommissioning of the proposed development; and
- Opportunities for public and specialist input in the decision-making process.

The study has also been guided by the requirements of the EIA Regulations set out in terms of the Environment Management and Coordination Act Cap 387.

a) Literature Review

A number of relevant documents were reviewed including: -

- Relevant legal statutes, policies, and regulations
- Relevant project area baseline bio-physical and socio-economic documents
- AfDB Environmental & Social Assessment Procedures
- Detailed design documents

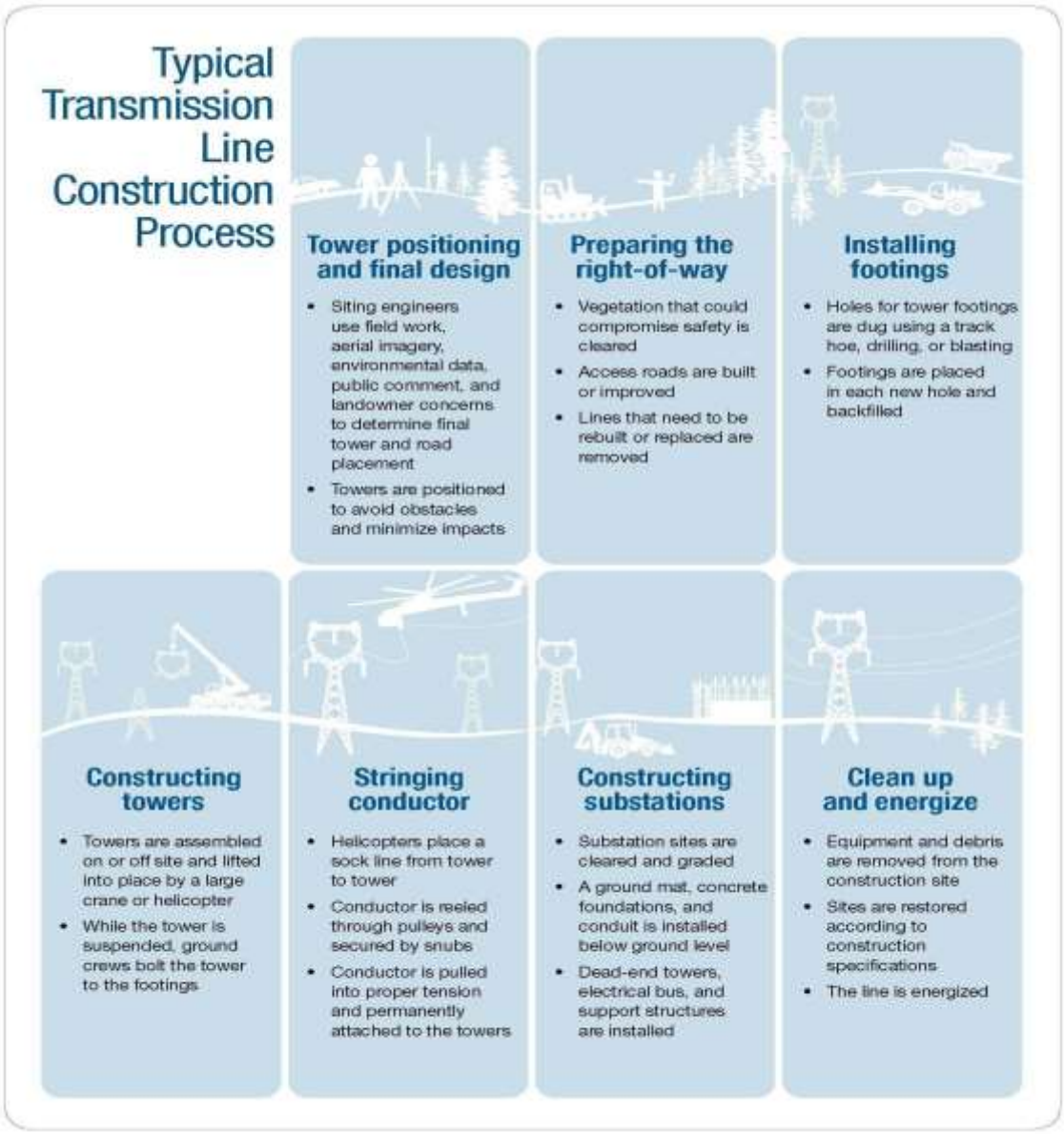
b) Field Site Surveys and Stakeholder Consultations

Field site surveys formed part of the preparation of the ESIA report. The main objective of this activity was to carry out on-site field assessments of the expected effects of the project on the physical, biological, and socio-economic environment. During these site surveys, consultations with key informants and the project affected persons and other interested stakeholders were conducted using a variety of appropriate tools. Direct observation was also used as a technique.

Project Activities

The proposed works associated with the construction of the transmission line will include the following activities:

1. Site preparation
2. Excavation works
3. Assembling of towers
4. Raising of towers
5. Unreeling and installing the conductors
6. Installing the counterpoise wires
7. Stringing
8. Restoring the site



Summary of Transmission Line Construction.

Project Area Environmental and Social Baseline

Bio-Physical Environment

Baringo County is situated in the Rift Valley region and borders Turkana and Samburu counties to the north, Laikipia to the east, Nakuru and Kericho to the south, Uasin-Gishu to the southwest, Elgeyo-Marakwet and West Pokot to the west. It is located between longitudes 35 30' and 36 30' East and between latitudes 0 10' South and 1 40' and occupies an area of 11,015.3 km². **Laikipia County** borders Samburu County to the North, Isiolo County to the North East, Meru County to the East, Nyeri County to the South East, Nyandarua County to the South, Nakuru County to the South West and Baringo County to

the West. The County lies between latitudes 0° 18" South and 0° 51" North and between longitude 36° 11" and 37° 24' East and covers an area of 9,462 km2.

Baringo County comprises of six administrative sub-counties namely Baringo Central, East Pokot, Koibatek, Marigat, Mogotio and Tiaty East. The county has six constituencies: Baringo Central, Baringo South, Baringo North, Eldama Ravine, Mogotio, and Tiaty. The proposed transmission line traverses Baringo Central and Baringo South sub-counties. In **Laikipia County** there are five administrative sub-counties namely Laikipia East, Laikipia North, Laikipia West. Laikipia Central and Nyahururu (the sub county units are geographically equivalent to the constituencies). The proposed transmission line traverses Nyahururu and Laikipia West sub counties.

Baringo County has varied altitudes which result to different levels of rainfall of 1000–1500mm per annum in the Highlands to 600mm per annum in the Lowlands. Temperatures range from a minimum of 10°C to a maximum of 35°C and climate varies from humid Highlands to arid Lowlands whereas in **Laikipia County,** rainfall pattern is bimodal, with long rains being received in March to June while the short rains are experienced in October to December. The county experiences a relief type of rainfall due to its altitude and location. The annual mean temperature of the county ranges between 16°C and 26° C.

The major part of **Baringo County** is occupied by the Rift Valley floor, highlighted by the lakes Bogoria and Baringo, and to the west by the Kerio River. Most prominent are the mountainous slopes of the Tugen hills and the escarpment of the Eastern Rift Valley flanks towards the Lherogi/Laikipia plateau (unit MV). The landscape in **Laikipia County** has red volcanic soils, clay loam, black cotton soil, sandy soils, and sandy loam soils. The most widespread soil type on the plains of Laikipia is 'black cotton'. The altitude of Laikipia County varies between 1,500 m above sea level and consists mainly of a plateau bordered by the Great Rift Valley to the West, the Aberdares to the South and Mt. Kenya massifs to the South East. Lake Bogoria in **Baringo County** is unique because it is one of the few hot, saltwater lakes in the world and is a breeding ground for flamingoes while Lake Baringo also in Baringo County is a freshwater lake which hosts crocodiles and hippopotamus and has no visible outlet and home to more than 470 species of birds. There is Lake 94 just on the western side of Lake Baringo. Lake Kamnarok located in the larger Rimoi game reserve in Baringo and Elgeyo-Marakwet counties is an ox-bow lake covering 1 Sq. Km and home to elephants and crocodiles. The main drainage feature in **Laikipia County** is Ewaso Nyiro North basin and is the lifeline of the county to the North. The flow of these rivers matches the county's topography, which slopes gently from the highlands in the South to the lowlands in the North. The proposed transmission line is located within the catchment basin of the Ewaso Nyiro Basin. The transmission line is expected to traverse water bodies in Baringo, and Liakipia County and these hydrological systems include Ol Arabel, Perkerra, Molo, Chemeron and Ngusero all located in Baringo County.

Baringo County is generally classified as arid and semi-arid since most of Baringo East (Tiaty), Baringo Central, Baringo South, Baringo North, Mogotio sub-counties are arid and

semi-arid except for Koibatek sub-county, which is in a highland zone. **Laikipia County** is endowed with several natural resources. These include pasture rangeland, forest, wildlife, undulating landscapes, and rivers among others. The major soils in the county are mainly loam, sand and clay. Laikipia is in a transition zone for three major vegetation types; 'Somalia-Masai Semi-desert Grassland and Shrubland' and is recognised as one of the most important areas for conservation in East Africa for numerous reasons including the diversity of its wildlife, the number of endangered species it holds (including wild dogs, Grevy zebras and half of the population of Kenya's black rhinoceros) and having one of the largest contiguous areas under conservation. Majority of the birds found in the county are distributed within the various ecosystems around. **Baringo County** has 25 gazetted forests where majority are indigenous and are found in Kabarnet, Kabartonjo, Tenges, Lembus, Saimo, Sacho and Ol' Arabel and Eldama Ravine. The main exotic species include: Grevellea Rabusta, Cuppressus lusitanic, Eucalyptus saligna and Prosopis juliflora. Laikipia County has a network of 10 main forests and has gazetted forest area totaling to 580km^2 comprising of both the indigenous and plantation forests. Forests provides essential services to people, livestock, and wildlife in the county.

The transmission line will traverse Kinyo Conservancy Forest, Kapkechir forest and Lariak forest. Even though in Laikipia and Baringo County, there are Important Bird Areas (IBA[1]), the transmission line does not traverse any of these sites. However, the line crosses 2 Endemic Bird Areas[2] in the 2 counties namely, Kenyan Mountains and Serengeti Plains. Within Lariak Forest, where the line traverses, there are bird species which are likely to be affected by the transmission line (bird strikes), however, these species are categorized as species of Least Concern (LC) under the IUCN Red List. The transmission line project will be designed to mitigate against any adverse impacts on avifauna life. Some of the mitigation measures will include reasonable distance between conductors and installation of warning spheres/yellow marker balls on the conductors within this stretch the enhance visibility and protect the birds from possible bird strikes.

Laikipia County has five main livelihood zones namely; mixed farming, marginal mixed farming, pastoral, formal employment and ranching. According to the 2019 KNBS Housing and Population Census, the total population for the county stood at 599,227 people of which 259,440 were males and 259,102 were females whereas **Baringo County's** population according to the 2019 National Population and Housing Census was approximately 666,763 million with 336,322 males and 330,428 females. The county's population structure is heavy bottom and very youthful according 2019 population census

[1] Important Bird Areas are distinct areas that provide essential habitat for one or more species of birds in breeding, wintering, or migration. Important Bird Areas are identified for their value to species that are: Threatened or endangered; Restricted to a particular biome or region; Restricted to one habitat type; Occurring at high densities during some portion of the year.

[2] An area which encompasses the overlapping breeding ranges of restricted-range species, such that the complete ranges of two or more restricted-range species are entirely included within the boundary of the EBA. This does not necessarily mean that the complete ranges of all of an EBA's restricted-range species are entirely included within the boundary of that single EBA, as some species may be shared between EBAs. The natural habitat in most EBAs (83%) is forest, especially tropical lowland forest and moist montane forest.

report, where 0-14-year-olds constitute 49%, 15-64-year-olds 48.2% and above 65 years 3%.

Socio-Economic Profile

Laikipia County is cosmopolitan with about 23 communities comprising of Maasai, Samburu, Rendille, Somali, Pokot, Kalenjin, Meru, Kikuyu, and Turkana among others and is largely rural in settlement. The pockets of high population density include Nanyuki and Nyahururu towns, which are the commercial, administrative, and transportation hubs of the county. The main ethnic communities inhabiting **Baringo County** are the Tugen, Pokot and Ilchamus with minority groups such as the Endorois, Nubians, Ogiek, Kikuyu and Turkana.

During the ESIA scoping, screening of the communities where the line traverses was undertaken to determine indigenous peoples/Vulnerable and Marginalized Groups. The screening identified some communities in Baringo County who met these requirements. These communities are located in Baringo County and include the Endorois, and Ilchamus. Based on this identification during the ESIA preparation (scoping), a Social Assessment and Indigenous Peoples Plan (IPP) has been prepared (See separate report) in line with the provisions of the VMGF (prepared in accordance with AfDB's Strategy (2013-2022), the bank's OS1, Section C5) and Kenyan laws), as well as following recommendations of this ESIA.

Baringo County. The largest portion of land in Baringo County is under community land tenure system, held in trust by the County Government. Community land is protected under Article 63 of the Kenyan Constitution and is governed as outlined by the Community Land Act 2016. Community land ownership in the county is predominant in Baringo East (Tiaty), North and South Baringo sub-counties. Conservancies are one form of community land management, and the benefits range from improved security, better land management, income, employment, and support to community projects.

Unregistered Community Land (Eldume, Il'ngarua, Logumgum, Arabal, and Kasiela) In Baringo, the project will affect unregistered community land found in Eldume, Il'ngarua, Logumgum, Arabal, and Kasiela in Baringo South Sub County. These unregistered community land residents will be compensated in accordance with the provisions of the Community Land Act 2016 which vests community land in the hands of the communities (if registered) or under the trustee of County Governments on behalf of the affected unregistered community land residents and any monies payable as compensation for compulsory acquisition of any such unregistered community land.

Kimalel Community Group Ranch

Part of the land affected by the project is owned communally as a registered group ranch (Kimalel) with a single title under the name of the group ranch and will also be compensated in accordance with the Community Land Act 2016 unless the group ranch agrees to dissolve the group ranch and subdivide into individual parcels. In 2019, the group ranch members preferred dissolution of the ranch in order to be compensated individually

for loss of land and were sensitized (refer to executive summary section of RAP report) on the implication of their preferred form of compensation. By 2021, land subdivisions were already ongoing and the locals were working towards obtaining title deeds.
Communities in Eldume, Il'ngarua, Arabal, Kasiela, Marigat Group Ranch and Kimalel Group Ranch were sensitized on the provisions of the Community Land Act, and particularly on cash compensation whereby, compensation monies are to be deposited in a special interest earning account held by the County Government and shall be released (including interest accrued) to the community upon registration of the community land and the community. The County Government is prohibited from selling, disposing, transferring, and converting for private purposes or in any other way disposing of any unregistered community land that it is holding in trust on behalf of a community. Upon registration of community land and the community, the trusteeship of the county government to manage and administer the community land ceases to exit.

Of the total landmass in **Laikipia County**, arable land constitutes of 1,984 square kilometers. Non-arable land constitutes of 7,456 square kilometers. There are 6 distinct land use patterns heavily influenced by the climatic conditions and the ecological zones. These include among others; pastoralism, mixed farming, ranching, agro-pastoral, marginal mixed farming, and formal employment/trade/business. The three main types of land categories in Laikipia are private, community and public.

The total size of land to be acquired by the project to include area for erecting the transmission line as well as RoW is approximately **695** acres in size based on the Resettlement Action Plan report (see separate report_2021) which was prepared based on the ESIA scoping that determined the likelihood of involuntary resettlement and recommended development of RAP report. Land losses in terms of severity will be experienced in the following locations namely Melwa, Muhotetu, Kimalel, Kipkaech, Koriema, Kituro, Thigio, Logumgum, Rumuruti and Yatoi where the number of PAHs losing land is significant. The number of PAHs losing over 90 % of their land is only 5 % of the number of PAHs. The loss by the PAHs is mostly economic in terms of displacement accounting for over 90 %, with physical displacement accounting for only 10 %. (See RAP report for detailed information).

As of 2019, the project was expected to adversely affect 490 households consisting of 1,449 individuals (PAPs) and 2 public institutions. The project was projected to affect a total of 490 PAHs along the proposed project route including those PAHs with formal rights to land and those who do not have formal rights (applicable to Baringo County) to the land but either own structures or trees and crops and beehives. The number of PAHs who were expected to be affected due to restrictions on use of land was 390 and a total of 40 PAHs will lose both land and structures. The total of PAHs who were expected to lose main residential structures and have no claim to land ownership only were 61.

During the ESIA/RAP update in 2021, the total number of structures captured was 248. The total Total number of homesteads affected by the line was 84. The approximate

valuation of structures is estimated at Kshs.38,869,270.00, crops and trees compensation are estimated at Kshs. 26, 272, 558.00. The estimate for land based on the total affected area of 695 Acres and at 30% compensation rate is Kshs.312, 750,000.00.

The exercise is however not complete as a 7km stretch of the proposed ROW still remains and these numbers are expected to change significantly.
The proposed transmission line route has been designed by KETRACO to minimize the displacement of physical structures as much as possible. The proposed route has reduced the number of sensitive receptors at risk of removal inside the 30m OHTL footprint corridor from the RAP approximately 325 structures will be affected. These structures include a mix of residential and non-residential structures, farms, animal shelters, and commercial buildings.

The main crops grown in **Laikipia County** include wheat, maize, beans, potatoes and vegetables. Maize takes about 51per cent of the total planted area. Over 60 per cent of households derive their livelihood from agricultural activities. Bee keeping is one of enterprise undertaken by pastoralists and farmers practicing mixed farming. Agriculture is the mainstay of **Baringo County** and a key source of livelihood. Horticultural and cereal crops are mainly grown crops in the county. Coffee is also another cash crop grown in some parts of Baringo North and Baringo Central. Even though the transmission line traverses agricultural areas, the line is mostly crossing sections where agriculture (crop) production is undertaken at small scale with no expansive farm fields crossed by the line.

Settlement patterns in **Baringo County** can be classified into rural and urban. Urban settlements are characterized by linear settlements. Urban centres with administrative function include Kabarnet, Mogotio, Eldama Ravine, Chemolingot, Marigat and Kabartonjo. Baringo County is 80% rural. The proposed transmission line has avoided these urban centres. **Laikipia County** settlements can also be classified as urban and rural.

The health infrastructure in **Laikipia County** consists of four sub county hospitals at Doldol, Rumuruti, Nanyuki and Nyahururu. The county has eight public health centres and 34 public dispensaries. The average distance to health facilities is 6 Km. The five most prevalent diseases for under 5 years in the county include Respiratory Tract Infections (RTI), diarrhoea, clinical malaria, eye infections and pneumonia. **Baringo County** has health facilities distributed across the sub-counties as follows; one level 5 facility the Baringo County Referral Hospital located in Kabarnet, 4 level four facilities located in Eldama Ravine, Marigat, Kabartonjo and Chemolingot towns.

Electricity connections in **Baringo County** are just above 9.6% of the County Population. The County is still below the national averages in the renewable improved energy sources. In **Laikipia County** households using electricity for lighting constitute 17.7 percent of the total households largely due to the Last Mile Connectivity Program for the rural households.

The main source of water in **Laikipia County** include boreholes, pans, dams, shallow wells, springs, and sub surface dams are also a common feature in the county for domestic and irrigation purposes. On human waste disposal 72.8% of households use pit latrines. The main sources of water in **Baringo County** include dams, lake, water pans, streams, wells, springs, and boreholes; others include piped water or point sources.

The major tourist attractions in **Laikipia County** are the wildlife, the unique Maasai cultural practices and the Thomson Falls and the main commodity markets in the county are in Nanyuki and Nyahururu whereas main livestock markets are at Rumuruti, Doldol and Kimanjo. Lake Bogoria and Kapedo hot springs are some of the major sources of tourism in **Baringo County.**

Laikipia County has a road network that covers 1,038.1km out of which over 80 per cent are feeder roads. It also has an old railway network covering 23 kilometers serving Nanyuki Town and a small stretch of about 2 kilometers in Nyahururu Town and 1 airstrip near Nanyuki Town. Road transport is the main mode of transport in **Baringo County** with fairly good roads. The current road coverage is estimated at 1,588 Kms of which 330 Kms are of bitumen standards, 720 Kms gravel and 538 Kms surface roads.

Public Consultations

Stakeholders were identified, mapped, and consulted as part of the ESIA study in accordance with the NEMA's EIA/EA regulations (2003) which require public consultations during ESIA preparation.

The consultations targeted communities who were in the project Area of Influence (AoI) and hence likely to be directly or indirectly affected adversely by the project. Consultations also targeted key institutions in the national and county governments as well as civil society organizations who were identified to have a stake or interest in the project. Tables 02-05 below shows the dates, venues and number of stakeholders consulted by county.

Baringo County Stakeholder Consultations Venues, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS
19th June 2019	Kabarnet Deputy County Commissioner's Office	5
20th June 2019	Marigat Deputy County Commissioner's Office	3
	Chief Officer Land's Office	3
	Kituro Location Chief's Office	6
	Kapropita Location Chief's Office	5
	Land Adjudication Officer's Office	3
21st June 2019	Kimalel Location Chief's Office	3
24th June 2019	KFS Office-Kabarnet	3

	NEMA Office-Kabarnet	4
25th June 2019	Logumgum Location Chief's Office	4
	Ilngarua Location Chief's Office	4
	Eldume Location's Chief's Office	4
Total		50

Baringo County Stakeholder Consultations Venues, Dates and Number of Participants_2021

Date	Venue	Participants
30th November, 2021	PA to Baringo County Commissioner, Baringo County	6
30th November, 2021	County Environmental Officer, NEMA	6
1st December, 2021	Baringo DCC's Office	6
1st December, 2021	Kenya Forest Service (KFS)	6
1st December, 2021	Kenya Wildlife Service (KWS)	6
14th December, 2021	CECM - Lands, Housing, Physical Planning and Urban Development	4
14th December, 2021	CECM- Water, Energy, Forestry and Natural Resources	4
Total		38

Baringo County Public Consultations, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS
14th August 2019	Arabal Location, Chemorongon Center	29
16th August 2019	Kapkechir Location, Lomoiwe Dispensary Grounds	27
16th August 2019	Karandi Locations, Ol Ngarua Primary School	34
7th August 2019	Kasoiyo Location, Kasoiyo Dispensary	19
9th August 2019	Kituro Location, Chief's Office/Dispensary	25
5th August 2019	Marigat Location, Rabai Primary School	45
8th August 2019	Logumgum Location, Logumgum Primary School	33
Total		212

Baringo County Public Consultations, Dates and Number of Participants_2021

Date	Venue	Participants
7th December, 2021	Arabal Location, Chief's office	41
10th December, 2021	Kiserian Location, Area church	37
10th December, 2021	Ilngarua & Elchamis locations, Chief"s office- Ilngarua	37
11th December, 2021	Marigat Location, Chief's office	23
11th December, 2021	Kimalel Location, Chief's office	44
13th December, 2021	Kituro Location, Chief's office	42
14th December, 2021	Kapropita Location, Kasoyo Dispensary	20
15th December, 2021	Chebininy Location, Chief's office	40
Total		**284**

Laikipia County Stakeholder Consultations Venues, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS
26th June 2019	County Commissioner's Office – Laikipia County	03
26th June 2019	Deputy County Commissioner's Office-Nyahururu	03
25th June 2019	Deputy County Commissioner's Office-Rumuruti	03
20th June 2019	Deputy County Commissioner's Office–Laikipia West Sub County	03
Total		**12**

Laikipia County Stakeholder Consultations Venues, Dates and Number of Participants_2021

Date	Venue	Participants
1st December, 2021	Deputy County Commissioner- Laikipia County	5

Laikipia County Public Consultations Venues, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS
15th August 2019	Public Consultation – Melwa Chiefs Camp –Melwa Location	32

15th August 2019	Public Consultation–Mohotetu Chiefs Camp–Mohotetu Location	34
Total		**66**

Laikipia County Public Consultations Venues, Dates and Number of Participants_2021

Date	Venue	Participants
7th December, 2021	Kiambogo location, Chief's office	12
8th December, 2021	Gituamba Location, Chief's office	23
8th December, 2021	Rumuruti Location, Chief's Office	20
9th December, 2021	Melwa location, Chief's office	41
9th December, 2021	Muhotetu Location, Chief's office	38
Total		**134**

The key issues and concerns emanating from the consultations are highlighted below and were incorporated in the ESIA in relation to mitigation measures.

- Waste management during construction
- Community health and safety during construction and operation
- Impacts of the transmission line on avifauna
- Noise pollution during construction
- Air pollutants emission impacts during construction
- Land acquisition impacts
- Influx of workers and associated impacts

Potential Beneficial Impacts

The major beneficial long-term impact of the project will be during the operational phase from: -

Summary of beneficial impacts

Beneficial Impacts	
Expected Impact on Poverty Alleviation	With the implementation of the project across the 2 Counties, the power supply will be stable and reliable hence more customers will be connected to the system. The communities under power supply will engage in income generating activities in order to improve their economic status. Under the discretion of the contractor, manual jobs will be availed to the locals and income earned will provide economic sustenance to the locals.

Local Material Supplies	It is expected that the project will generate new income revenues for the local population across the two Counties in harvesting and transportation of sand, ballast, stones, concrete/wooden poles and gravel. The new income revenues received will create demand for other goods and services causing a trickledown effect to the entire economy.
Up Scaling Electricity Access to the Poor	According to Kenya Power's annual report of 2012/2013, electricity access stood at 4.8milliom customers as at June 2016. This translates to about 60% of the total population accessing electricity. In the project area, over 70% of the communities do not have access to electricity.
Health benefits of the project	The project will result in many households replacing kerosene lamps for lighting with electricity there-by reducing disease burden at the family level and on the government. Kerosene emits PM which do not disperse, so burning a lamp for four hours can result in concentrations several times the World Health Organization standard. The health risks posed by indoor air pollution mainly include acute lower respiratory infections, but also low birth weight, infant mortality, and pulmonary tuberculosis. According to the socio-economic survey, households in the project areas used lantern lamps and tin lamps for lighting.
Benefits to education	Access to constant and reliable electricity supply at the household level and schools will create opportunities for children to study.
Improved standard of living	Access to stable and reliable electricity will change the standard of living of the people as they can use domestic appliances like iron boxes, fridges, television sets, washing machines etc.
Security	There will be enhanced security arising from well-lit social, commercial, individual premises and use of electrical surveillance gadgets that use broadband data services. With the implementation of the project, the level of security will improve.
Communications	Access to reliable electricity will lead to improved communication. This will be enabled by the fact that charging of mobile phones will be easier and cheaper. Access also to mass media like radio and T.V will provide opportunity for people to access a wide range of information which is useful for decision making.

Gender Considerations	Access to modern electricity will go a long way towards alleviating the daily household burdens of women, giving them more time, improving their health and enhancing their livelihoods. Lighting and television will improve access to information, the ability to study, and extend the effective working day.

Potential Negative Impacts and Mitigation Measures

The potential negative impacts during construction, operation and decommissioning are generally short-term, reversible impacts. These impacts can be reduced or eliminated by appropriate construction mitigation measures and application of best practice in construction and operation of transmission lines. Many of the adverse impacts will only occur within the construction site footprint (along the transmission line route) and therefore move with the works such that many locations will only be impacted for a few days at a time rather than the entire duration of the project. A summary of the results of the impact assessment (key adverse impacts) is provided in **Table below**. The table illustrates the potential adverse impacts along with the predicted significance of the impact both before and after the proposed mitigation measures. Mitigation measures that are included in this report are commitments that will be implemented by KETRACO (including contractor and sub-contractors).

The Environmental and Social Management Plan (ESMP) details roles and responsibilities that will be assumed by all the responsible agencies during project implementation phase. KETRACO has already acknowledged its commitments in this regard and have indicated that they also understand their responsibilities in this regard given their prior involvement with AfDB funded projects.

Summary of the results of the Impact Assessment

Environmental /social variable	Project activities/impacts	Phase	Predicted significance	
			Before mitigation	With mitigation
Air Quality	Road traffic exhaust emissions	Construction/Operation/Decommissioning	Negligible	Negligible
	Dust and PM_{10} from unpaved roads during construction activities.	Construction/Operation/Decommissioning	Major	Negligible
Noise emissions	Noise from construction activities affecting nearby dwellings including fauna.	Construction/Operation/Decommissioning	Negligible	Negligible
Soil erosion and contamination	Loss of soil resources due to erosion and contamination from accidental spills	Construction/Operation/Decommissioning	Minor	Negligible to minor
Surface and subsurface water sources	Degradation of water quality resources crossed by the line due to contamination or spills	Construction/Operation/Decommissioning	Minor	Negligible to minor
Flora/vegetation	Disturbance to flora/vegetation during construction works as well as during maintenance phase (operation)	Construction/Operation/Decommissioning	Minor	Negligible
Fauna	Disturbance to fauna species and degradation to environment during construction as well as during maintenance phase (operation)	Construction/ Decommissioning	Minor	Negligible
Avi-fauna	Loss of habitat as a result of RoW, bird	Operation	Minor	Minor

	strikes, electrocutions during operation.			
Solid and liquid waste	Release to environment	Construction/Operation/Decommissioning	Moderate	Minor
Access to infrastructure	Disruption to traffic and transportation	Construction/Decommissioning	Moderate	Minor
Landscape and visual amenity	Deterioration of visual amenity	Construction/Operation/Decommissioning	Negligible	Negligible
Worker's health and safety including child labour	Effects of workers health and safety and labour rights; and child labour impacts	Construction/Decommissioning	Moderate	Minor
Community health and safety	Community safety (road accidents, trespass)	Construction/Operation/Decommissioning	Moderate	Minor
	Environmental health (noise and air)	Construction/Operation/Decommissioning	Moderate	Minor
Gender Based Violence	An influx of in-migrants may lead to Gender-Based Violence (Sexual Exploitation and Abuse of community members by project workers (SEA) and Sexual Harassment amongst workers (SH).	Pre-Construction/Construction/Operation/Decommissioning	Minor	Minor
Labour Influx	An influx of in-migrants may lead to Gender-Based Violence (GBV); Sexual Exploitation and Abuse (SEA): Sexual Harassment (SH), child labor etc.	Construction/ Operation/Decommissioning	Minor	Minor

Unplanned events	Reduction in local soil/ground water quality	Construction/Operation/Decommissioning	Minor	Negligible
Economy and employment	Local employment opportunities, capacity building and economic development	Construction/Operation/Decommissioning	Negligible	Minor
Land Acquisition and Involuntary Displacement	The loss of access to land associated with the 30m OHTL footprint corridor, temporary tower sites working areas, and maintenance corridor will result in the loss of land used for seasonal crops, removal of trees, and restrictions to animal grazing. There will also be loss of structures as a result of the project.	Pre-Construction	MODERATE	Minor
Archaeology and Cultural Heritage	Disturbance to grave sites during vegetation removal and construction activities	Construction /Decommissioning	Minor	Negligible to minor
Violence against Children	Recruitment of children under the age of 18 during the construction of the transmission line (child labour).	Construction/Decommissioning	Major	Minor
Air Navigation and Safety	Compromise on aircraft operation safety, directly	Operation	Minor	Minor

	through collision, or indirectly through radar and radio interference			
Employment and Job Creation	The construction of the transmission lines including operation and maintenance activities will provide employment opportunities–directly and indirectly–to skilled as well as unskilled manpower primarily to local manpower.	Construction/Operation/Decommissioning	Positive	Positive
Compensation Benefits	PAHs will receive cash compensation	Pre-Construction	Positive	Positive
Knowledge/Skills Transfer	Local workers will benefit in terms of knowledge transfer especially from external skilled workers who when paired with the local workers will transfer on-the job skills to them. Further, local workers may undergo certain training as part of skill enhancement prior to employment	Construction/Decommissioning	Positive	Positive
Increased Electricity Access	The project will increase electricity access in the country and improve	Operation	Positive	Positive

	standards of living, enhance security, increase education uptake and reduce gender inequality.			
Health Benefits	The health risks posed by this indoor air pollution mainly include acute lower respiratory infections (due to the use of kerosene of firewood) but also low birth weight, infant mortality, and pulmonary tuberculosis.	Operation	Positive	Positive
Environmental Benefits	The proposed project may contribute to reduction in Green House Gaseous (GHGs) emissions due to the fact that beneficiaries may not continue to rely on biomass as a main source of energy at the domestic level which leads to felling of trees and hence contributing to the green-house effect.	Operation	Positive	Positive

Environmental and Social Management Plan

This ESIA includes an ESMP which details the mitigation measures, environmental monitoring activities, institutional responsibilities, and environmental management capacity building. The relevant ESMP provisions are included in bid documents for contractors. During construction, the project management team will closely monitor the works contractors' environmental performance and overall ESMP implementation.

Construction Environment and Social Management Plan

For an effective integration of environmental and social safeguards into the project implementation the Contractor will need to adopt this ESMP and prepare a comprehensive Construction Environment and Social Management Plan (C-ESMP) that will provide the key reference point for compliance. The environmental supervision will also adopt the C-ESMP. The C-ESMP is an upgraded ESMP illustrating realities of the project works to be prepared by the Contractor.

The Contractor is expected to finalize the Work Plan and upon approval, list the works items and for each item present practical actions that will be undertaken to realize achievement of the ESMP. The actions on works items should address environmental and social aspects associated with the works and in line with guidelines from the ESMP. Based on these ESMP outline, the Contractor will be instructed to develop a Construction Environment and Social Management Plan (C-ESMP) for each component of the project and submit these plans to KETRACO.

KETRACO Project Management Team

The project implementation arrangements have been established and the proponent has appointed the KETRACO project implementation team including;

- Project Manager
- Environmentalist
- Socio-Economist /Social Specialist/ Community Liaison Officer (CLO)
- Land Surveyor
- Land Economist
- Civil Engineer
- Electrical Engineer
- Project Accountant

Project Supervision Engineer

The Project Supervision Engineer will be required to recruit a qualified Environmental and Social Expert who will be charged with the responsibilities of supervision, review of site reports, preparation of monthly progress reports, prepare and issue appropriate instructions to the Contractor and monitor ESMP implementation.

Contractor

The Contractor will ensure that the established mitigation measures are integrated and implemented throughout the project works as per the C-ESMP. The Contractor will

internalize the C-ESMP, prepare monthly progress reports and implement instructions issued by the Supervision Consultant. The Contractor, therefore, will engage qualified Environmentalist and Social Specialist to ensure compliance with the C-ESMP and Community Liaison Officer (link between contactor and community) on full time basis to interpret the C-ESMP and advice on the implementation of the same, as well to the counterpart personnel for the supervision expert.

National Environment Management Authority

The National Environment Management Authority (NEMA) is responsible for ensuring environmental compliance in the country and has offices in Baringo and Laikipia with staffing who will further ensure that the ESMP is implemented as part of their mandate, functions, and responsibilities. NEMA will undertake surveillance on the project implementation and review compliance performance based on the supervision monitoring reports.

Grievance Redress and Management

African Development Bank safeguards policies and procedures require establishment of grievance redress mechanisms to provide a structured way of receiving and resolving grievances during project implementation. Complaints should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities and is at no cost and without retribution. The mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both the company and stakeholders. The mechanism must not impede access to other judicial or administrative remedies.

ESMP Operationalization Budget Estimate

Table 12presents budget estimate proposed to operationalize the ESMP. The supervising engineer who has a key role in ensuring compliance to the ESMP by the contractor will during the bidding stage present the actual budget for ESMP supervision. Similarly, at the bidding stage for the works contractor, bidders will be required to submit a detailed budget for ESMP implementation.

0-1Approximate ESMP Budget

Activity	Budget Estimate (USD)
ESMP Implementation	300,000

Conclusion

The anticipated benefits of the construction and operation of the Project are immense. The project will provide a reliable supply electricity to the region and national grid, which will go along with many benefits including bringing stability in the national grid. All negative impacts can be mitigated following the ESMP. Based on the immense project benefits of the transmission line project, which have been stated above, and the identified negative impacts which can be mitigated in the proposed ESMP, we strongly contend that NEMA will find this ESIA study satisfactory and the project environmentally and socially viable to be permitted to take off.

1 INTRODUCTION

1.1 1.1 Background of the Project

The proposed construction of the Kabarnet-Rumuruti 132kV double circuit transmission line (the "Project") is to be jointly financed by AfDB and Korea Exim bank. The project aims to improve the power systems and electricity access and reliability, in line with the Kenya Growth and Development Strategy. The Project Development Objectives (PDO) are to: (i) increase the capacity, of transmission system; and (ii) increase access to electricity in Kenya.

This Environmental and Social Impact Assessment (ESIA) report has been prepared for the construction and operation of the Kabarnet-Rumuruti 132kV transmission line (the "Project"). The project involves the construction of a power transmission line traversing through two counties i.e., Baringo and Laikipia in Kenya. The Project will be energized upon completion as part of the national grid. The 95Km transmission Line (TL) will traverse land and structures belonging to private landowners, land owned communally as community land and group ranch and a section of forest land such as Kinyo Conservancy Forest, Kapkechir forest and Lariak Forest. The proposed Right of Way (RoW) for the transmission Line will be 30 metres wide. The project consists of the following component:

Construction of a 95km, 132/33kV double circuit overhead transmission line.

1.2 1.2 Project Proponent

Kenya Electricity Transmission Company Limited (KETRACO) was incorporated on 2nd December 2008 and registered under the Companies Act, Cap 486 pursuant to Sessional Paper No. 4 of 2004 on Energy. KETRACO is 100% Government owned and being a state corporation, it is regulated under the State Corporations Act, Cap 446.

The Company was established to develop new high voltage electricity transmission infrastructure that will form the backbone of the National Transmission Grid, in line with Kenya Vision 2030. Its core business is to plan, design, construct, own, operate and maintain high voltage electricity transmission lines and associated substations. The voltage rating of the transmission lines includes 132kV, 220kV, 400kV and 500kV (HVDC). Arising from KETRACO's mandate, the company's core functions include:

- Planning the national electricity transmission grid.
- Financial resource mobilization for operations and financial sustainability;
- Design of power transmission infrastructure;
- Construction of power transmission infrastructure;
- Operation of the transmission system;
- Maintenance of high voltage power transmission infrastructure;
- Maintenance of power transmission infrastructure;
- Power management and trade.

KETRACO's mandate is to plan, design, construct, own, operate and maintain high voltage electricity transmission grid and regional power interconnectors that will form the backbone of the national transmission grid. In carrying out this mandate, the Company is expected to develop a new and robust grid system in order to:

1. Improve quality and reliability of electricity supply throughout the country
2. Transmit electricity to areas that are currently not supplied from the national grid
3. Evacuate power from planned generation plants
4. Provide a link with the neighbouring countries in order to facilitate power exchange and develop electricity trade in the region
5. Reduce transmission losses that currently cost the country heavily every year and
6. Reduce the cost of electricity to the consumer by absorbing the capital cost of transmission infrastructure.

1.3 1.3 Project Justification

Access to electricity has a wide range of social and economic benefits. For example, access to electricity can increase quality of life as well as spur economic development. The proposed project is in line with Vision 2030, which identifies energy and electricity as a key element of Kenya's sustained economic growth and transformation. The country aims at enhancing and diversifying national power generation and supply by improving and expanding the transmission network to match up the rising demand hence the development of the proposed transmission line.

The country is seeing large scale expansion in many infrastructure sectors including energy. In year 2007, the Government of Kenya unveiled "Vision 2030". Vision 2030 is the country's economic blueprint that aspires to transform the country from a low income, agrarian economy into a newly industrialized middle-income country, providing a high quality of life to all its citizens by the year 2030. The vision identifies energy as one of the enablers for sustained economic growth and a key foundation of Kenya's envisaged national transformation. Expansion of Energy Sector is critical in order to achieve the Gross Domestic Product (GDP) growth target of 10% by year 2015.

Accordingly, the Government of Kenya formulated Least Cost Power Development Plan (LCPDP) in 2011 and updated further in year 2013. As per LCPDP updated in 2013, transmission development plan indicates the need to develop approximately 21000 km of new high voltage transmission lines. This Plan encapsulates three key areas viz. load forecasting, generation planning and transmission planning.

As per LCPDP, the peak load demand is projected to rise to 21075 MW by 2033 from existing 1606 MW during 2013. For this, addition in generation capacity to the tune of 22000 MW has been planned. In the present scenario of power supply arrangement in Kenya, the electrification has been achieved up to approximately 30% of its population. The Government of Kenya is aiming to achieve electrification on rural area up to 40% by 2020. Some of the components of this program include establishment of 400kV, 220kV and 132kV lines and construction of associated substations which will be implemented by KETRACO. KETRACO, responsible for implementing and maintaining the high voltage transmission system in the country, endeavors to support the country's objectives and is

aggressively working towards implementing various grid expansion and reinforcement projects. KETRACO has deliberated efforts towards the said objectives and has prioritized the transmission line and substation projects to be undertaken in the country.

The growth in electricity demand in Kenya increased from 3.2% in 2009/10 to 8.9% in 2010/11 and then decreased to 3.6%. It is observed that the electricity demand closely follows the economic growth patterns. The unusual growth rate in 2010/2011 could be linked to the high GDP growth for that particular year along with other contributing factors viz. An accelerated customer connection program, improved hydrology translating to low tariffs and increased rural electrification through Rural Electrification Program (REP). The Peak load forecast of 2013 is projected to be 1,606 MW while the projection for 2033 is forecast close to 21,075 MW.

1.4 1.4 Legal Framework and Applicable African Development Bank Policies

The African Development Bank is a recognized international leader in the sphere of development and implementation of environmental and social sustainability policies. In accordance with its safeguards policies and procedures, AfDB uses a set of 5 operational safeguards policies to assess proposed projects. Operational safeguard policy 1 (OS1) sets out the Bank's overarching requirements for borrowers or clients to identify, assess, and manage the potential environmental and social risks and impacts of a project, including climate change issues. OSs 2-5 support the implementation of OS1 and set out specific requirements relating to different environmental and social issues, including gender and vulnerability issues, that are triggered if the assessment process reveals that the project may present certain risks. These OSs are:

- Operational safeguard 1 – Environmental and social assessment.
- OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation
- OS 3: Biodiversity and Ecosystem Services
- OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency
- OS 5: Labour Conditions, Health and Safety

1.4.1 Kenyan Legal Framework

The principal National legislation governing issues of environmental concern in Kenya is the Environmental Management and Coordination (Amended) Act Cap 387 typically referred to as EMCA. EMCA calls for Environmental Impact assessment (EIA) (under Section 58) to guide the implementation of environmentally sound decisions and empowers stakeholders to participate in sustainable management of the natural resources. Projects listed in the second schedule of EMCA require that an environmental impact assessment study to be carried out. It is under this provision that the current study has been undertaken. Other legislation adhered to during this study are the Environmental Impact Assessment and Audit Regulations 2003; Waste Management Regulations 2006; Water Quality Regulations 2006; Noise and Excessive Vibration Pollution Control Regulations 2009 (Legal Notice 61), Air quality Regulations 2009, Water Act (2016), Constitution of Kenya

(2010), Public Health Act (CAP. 242), Employment Act (2007), Children's Act (2012), Sexual Offences Act (2006), Traffic Act (Chapter 403) among others.

1.5 1.5 Objective and Scope of ESIA

The purpose of this study was to undertake an Environmental and Social Impact Assessment study for the 132kV double circuit transmission line. The ESIA study has been developed in compliance with the Environmental Impact Assessment/Audit Regulation, 2003 and relevant African Development Bank (AfDB) environmental and social assessment procedures. The purpose of an EIA is to provide information to regulators, the public and other stakeholders to aid the decision-making process. The objectives of an EIA are to:

- Define the scope of the project and the potential interactions of project activities with the environment (natural and social).
- Identify relevant national and international legislation, standards, and guidelines and to ensure that they are considered at all stages of project development.
- Provide a description of the proposed project activities and the existing environmental and social conditions that the project activities may interact with.
- Predict, describe, and assess impacts that may result from project activities and identify mitigation measures and management actions to avoid, reduce, remedy or compensate for significant adverse effects and, where practicable, to maximize potential positive impacts and opportunities.
- Provide a plan for implementation of mitigation measures and management of residual impacts as well as methods for monitoring the effectiveness of the plan.

1.6 1.6 Report Structure

In order to provide clear presentation of the ESIA procedures including their results, conclusions and recommendations, this report is structured as follows:

1. **Chapter 1. Project Overview** (this chapter). The chapter introduces the Project by providing details of its location, scope, owner, and developer.
2. **Chapter 2. ESIA Methodology**. This chapter provides an overview of the overall process of environmental and social impact assessment and applicability of the international methodology for the ESIA procedure. The chapter further addresses definitions of key terms; identification of potential environmental and social impacts (through consultation and scoping process); description of the criteria used to determine the significance of impacts for various environmental and social topics; and how mitigation measures are considered within the assessment process.
3. **Chapter 3. Project Description.** This chapter describes the background and phasing of the Project, including descriptions of the main and auxiliary facilities, infrastructure, associated facilities, as well as definition of the Project boundaries in the form of the Project area of influence.
4. **Chapter 4. Policy Legal and Institutional Framework.** This chapter provides an overview of the national and international legal framework, within which the Project is to be developed and implemented. Environmental and social legal requirements of the Republic of Kenya is considered together with the applicable African Development Bank Environmental and Social Assessment procedures.

5. **Chapter 5. Baseline Environmental and Socio-Economic Conditions.** The existing environmental and socio-economic baseline is described and characterized in this chapter.
6. **Chapter 6. Stakeholder Engagement**. This chapter describes the stakeholder engagement process adopted by the Project. It describes the results of consultation activities undertaken earlier and as part of the ESIA process. It also provides stakeholder identification.
7. **Chapter 7. Analysis of Project Alternatives.** The key process solutions are presented as they are seen at the current stage of planning, alongside with considered alternatives and justification of the preferred alternative.
8. **Chapter 8. Assessment of Potential Risks and Impacts**. This chapter presents the assessment of potential environmental and socio-economic impacts, including identification of mitigation measures and monitoring requirements. Impacts of the Project are assessed for each component of the environment. Impacts during the Project implementation are assessed on a topic-by-topic basis. This chapter addresses potential cumulative impacts of the Project.
9. **Chapter 9. Environmental and Social Management.** This chapter describes the approaches to environmental and social management across all Project activities and recommends the management procedures and plans to be adopted to ensure compliance with the applicable international requirements throughout the life of the Project.
10. **Chapter 10. Grievance Redress**
11. **Chapter 11. Conclusion** provides summary of the key significant impacts, mitigations and monitoring, as well as recommendations for further studies to remove uncertainties.

2 ESIA APPROACH AND METHODOLOGY

2.1 ESIA Approach

This ESIA is intended to provide an accurate and comprehensive assessment of possible adverse impacts, benefits, and potential risks of the planned operations, and develop prevention, mitigation and remediation measures for the identified environmental and social impacts, as well as the approaches to monitor and control them. This chapter provides a structured description of the ESIA methodology including:

- Main stages of ESIA process;
- ESIA scoping;
- Baseline studies;
- Impact identification and evaluation of significance; and
- Mitigation measures.

This ESIA study is informed by the relevant survey reports, environmental impact assessments, design and other documentation which have been prepared so far for the Project components and associated activities, as well as scientific publications, statutory reports, etc. listed in more detail in the reference chapter of this report. Specific recommendations are to be prepared as part of the ESIA process for implementation of management, mitigation and remediation measures, additional studies, as well as approaches to monitoring and control, in order to make sure that Project activities are fully compliant with the applicable requirements (refer to Chapter 3) at all stages of its life cycle.

2.2 ESIA Process

To ensure a robust and comprehensive impact assessment, the ESIA process is structured around a series of progressive and iterative stages (Figure 2-1). Stakeholders, entities and individuals responsible for development/implementation of the Project design, the ESIA team provide inputs to these stages. Public engagement is maintained at all stages of the ESIA process. This ESIA shall cover all required stages: from scoping, stakeholder identification and consultations, review of alternatives, identification and assessment of benefits and adverse impacts of the Project, to development of mitigation and remediation measures, and proposals for the control and monitoring to be undertaken.

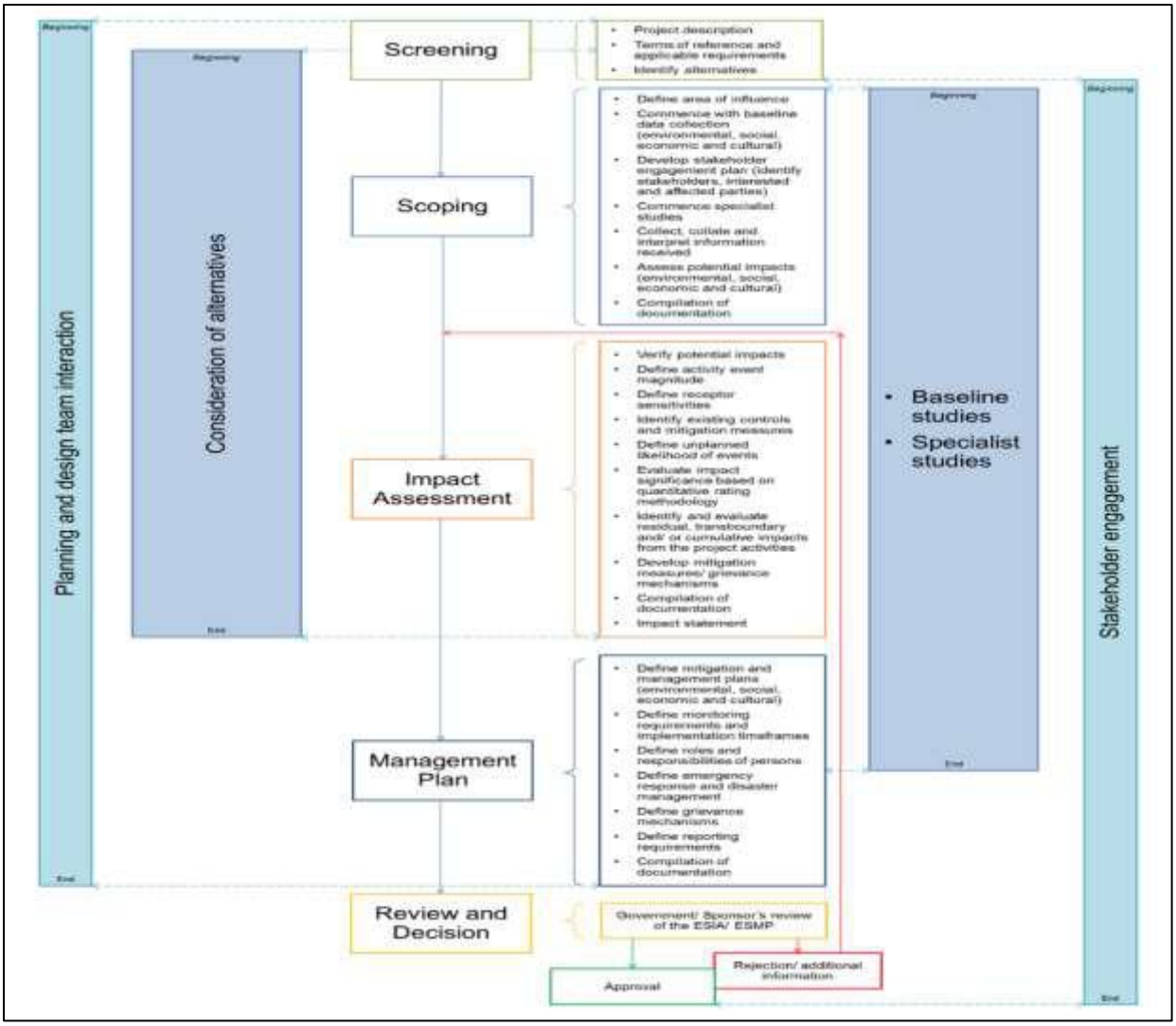


Figure 2-1: 2ESIA Process

2.3 ESIA Scoping

Scoping of studies to be conducted for assessment of the Project impacts is a vital element of ESIA preparation. Scoping is the process of determining the content and extent of the matters that should be covered in the ESIA and associated documentation as well as identifies methods for assessment of impacts. The scoping process is intended to identify the types of the environmental and social impacts to be examined and documented by the ESIA, considering the most significant potential aspects and risks. The main objectives at the scoping stage are:

- Preliminary review (screening) of documents provided by the client regarding proposed operations and potential alternatives;
- Collection and high-level analysis of the available information of the environmental and social conditions at the Project site and wider area, and identification of the most sensitive (vulnerable) receptors;
- Identification of the applicable local and international requirements and standards;

- Identification of similar projects for benchmarking of the proposed operations;
- Preliminary identification of stakeholders and initial consultations with them; and
- Initial identification of the Project impacts.

2.4 Baseline Studies

Baseline studies are primarily undertaken at two key stages, i.e., scoping and impact assessment. However, as shown in figure 2-1, they are an ongoing activity throughout the ESIA Process. During scoping work, relatively 'high-level' baseline data are required to assist identification of likely gaps and key impacts to be considered in more detail at later stages. Where gaps are identified between available baseline data and data required for the ESIA at the scoping stage, then additional surveys or studies are undertaken to collect the required data. The work included desk-based studies and the site visit conducted by environmental and social teams of **EMC Consultants.** It is important to ensure that receptors are identified and analyzed, and their sensitivity is determined during scoping and baseline studies. Receptors are environmental and social components that may be affected, adversely or beneficially by the proposed operations.

Three high-level categories of receptors can be identified:

- Environmental (such as air quality, water bodies, landscapes, terrestrial soils, marine sediments, etc.)
- Biodiversity and biological resources (such as habitats, species, and ecosystem services, for example, flood protection provided by nearby wetlands); and
- Social (such as residents of local communities, businesses, land and other resource users, cultural heritage resources).

Details of receptor categorization and the approach to assessment of their sensitivity to identified impacts are provided in section 2.5.6.

2.5 Impact Identification and Evaluation of Significance

2.5.1 Identification of Impacts

The following approach supports identification of environmental, social, and cumulative impacts:

- Review of previous studies, surveys, impact assessments, environmental monitoring data in the proposed location area (transmission route) and associated facilities within the scope of the Project;
- Review of the design documentation, including potential alternatives, as well as characteristics of the proposed operations (separately for construction, operation, decommissioning) and associated activities which may cause environmental, social and human health impacts;
- Consideration of the local area development plans and strategic development programmes for the region;
- Review of applicable national and international requirements and standards, and requirements of the African Development Bank;

- Stakeholder consultation, including their input to identification, mitigation and control of Project impacts. Stakeholder engagement should be initiated early in the Project, to ensure open access to all relevant information;
- "Source-Path-Receptor" Analysis. Potentially significant social and environmental impacts are also identified by structured analysis of potential sources of impacts, ways they can impact the environment and human health (e.g., direct impact or transport of pollution emissions/discharges in the environment), and sensitivity of potentially affected receptors.

Potential impacts on individual components of the environment are identified for all phases of the planned operations, and their magnitude is assessed.

2.5.2 Project Implementation Phases

A phase of any project is a period of time when certain activities are implemented that collectively shape a stage in the Project life cycle. The following phases are considered by the ESIA Report:

- Pre-construction
- Construction and commissioning
- Operation; and
- Decommissioning (including demolition/dismantling).

The above Project phases may be combined (integrated) for assessment, or they may be separated for a more detailed review, as appropriate.

2.5.3 General Approach to Impact Assessment

An impact is any change to an environmental or social (including community health and safety) receptor, whether direct or indirect, expected to result from the construction, operation and decommissioning of a proposed Project. Impacts on individual receptors may be negative (adverse) or positive (beneficial).

The actions undertaken to determine and evaluate the significance of potential project impacts is illustrated in figure 2-2 and involves four key steps:

- **Prediction:** What will happen to the status of specific receptors as a consequence of this Project (direction, extent, duration, reversibility)?
- **Evaluation of significance:** How significant is the impact? What is its relative significance when compared to other impacts?
- **Mitigation:** If there are impacts of concern (adverse), can anything be done to avoid, minimise, or offset the impacts? or to enhance potential beneficial impacts? and;
- **Residual impact assessment:** After mitigation, are the impacts still of concern?

If yes, the process needs to be repeated at least once before the 'final' determination of residual impact significance occurs. A residual impact is the impact that remains following the application of mitigation measures. Once mitigation and enhancement measures are declared, the next step in the impact assessment process is to assign residual impact

significance. This is essentially a repeat of the impact assessment steps discussed above, considering the assumed implementation of the additional declared mitigation and enhancement measures

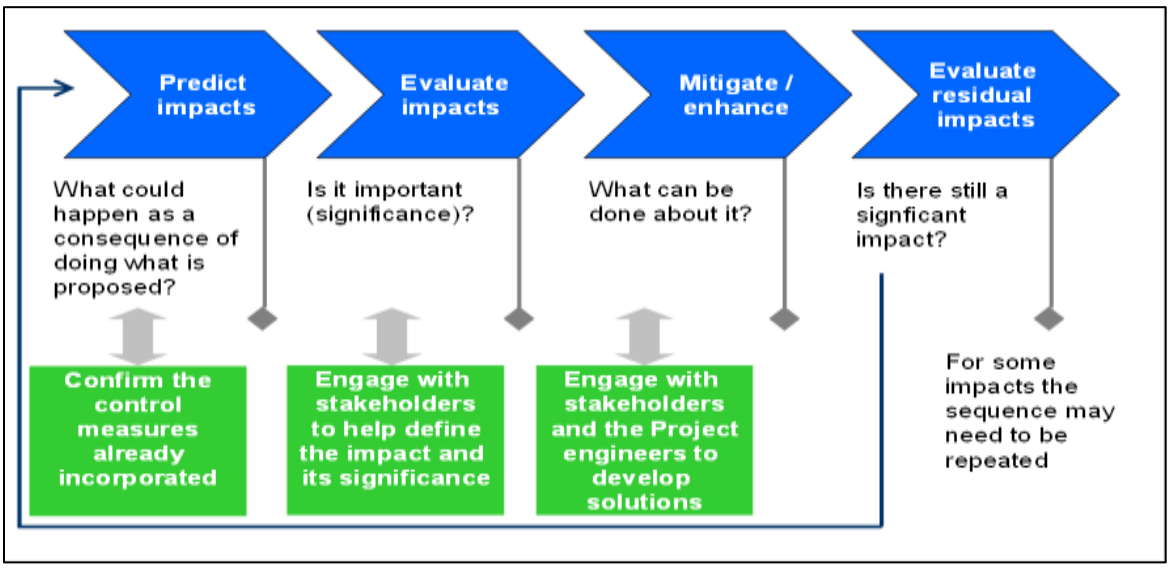


Figure 2-2: Impact Evaluation Process

2.5.4 Prediction

Impact prediction involves determining the magnitude or extent of a change or changes in the status of a receptor or linked receptors resulting from the planned operations, through application of forecast models, analysis of experience of similar operations, or environmental science. Impact prediction provides valuable information to determine the broader characteristics of impacts.

2.5.5 Impact Types

Impacts can be divided into types, and also exhibit a number of characteristics. The degree to which an impact may be managed or modified by the mitigation measures is dependent upon the impact type and its characteristics. Table 2.1 provides definitions of key impact types. All of these impact types exhibit certain characteristics in terms of:

- Reversibility;
- Extent;
- Duration; and
- Frequency.

Table 2-1: Classification of Project Impacts

Classification of Impacts	Definition	Characteristics
By overall effect	Beneficial	Impacts expected to result in positive changes at the identified receptors

	Adverse	Impacts expected to result in negative changes at the identified receptors
By origin	Direct	An impact that results from a direct interaction between a planned activity and the receiving environment (receptors)
	Indirect	An impact that follows on from the primary interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., increased demand for resource as a result of workforce drift to the area of planned activities from other regions, or feedback effects in ecosystems affected by direct impacts)
By the nature of secondary effects	Cumulative	Project impacts which may be amplified if combined with impacts caused by third party operations (projects) on the same resources and/or receptors

Cumulative impacts include impacts on the receptors identified for the Project, as well as other existing, planned or reasonably defined projects (in the studied area) and activities which are not directly related to the Project and its associated facilities. The approach to assessment of cumulative impacts is provided in section 2.7.

2.5.6 Evaluation of Significance: Planned Events

Impacts significance is assessed in this Report using the qualitative, and where possible quantitative methods applicable for major project ESIAs. The quantitative methods provide an outlook of the measurable changes induced by the Project, based on available design documentation or experience of similar facilities. Quantitative assessment of the Project impacts on receptors can be also provided using the official Kenyan methodologies for estimation of potential damage which may be caused by specific impacts.

The qualitative methods are based on expert estimations, experience of other projects of similar nature and scale, and follow a structured format to produce consistent and logical projections. It should be noted that environmental impacts are sometimes difficult to evaluate in quantitative terms, due to their intangible nature (e.g., emotional impacts or sensitivity), or due to interrelation of the change and specific local situation (e.g., scale of migrant inflow compared to the baseline population).

The impacts are assessed in a structured and coordinated manner throughout the ESIA process. The approach adopted enables attribution of potential impacts to specific environmental and social aspects. For adverse impacts, significance is assigned based on determining impact magnitude and receptor sensitivity, after which mitigation is identified depending on impact characteristics.

Beneficial impacts are identified, assessed, and evaluated, making use of impact magnitude (as per the guidance below), but not receptor sensitivity. Instead, beneficial impacts are described and evaluated based on available data, alignment with government

policies/targets, stakeholder inputs and professional expert judgement. Measures to enhance them will be identified to try to maximize the expected benefits.

The magnitude of an impact is a measure of the scale of a change from baseline conditions for a receptor. This measure of change can be described by considering the following criteria in combination:

- **Reversibility:** Restoration of the pre-impact status of a receptor.
- **Extent:** Spatial extent (e.g., pollution dispersion or habitat impacted) or population/ community extent; and
- **Duration:** Period of time over which an impact will interact with a receptor. This factor may also cover the frequency and regularity criteria, or they can be considered separately.

The magnitude of each impact is assessed using the above criteria and the characteristics provided in **Table 2-2.**

Table 2-2: Description of impact criteria

Criterion	Description	Definition
Reversibility	Irreversible	Impacts that cause a permanent change in the affected receptor
	Reversible	Restoration of the pre-impact status of a receptor due to mitigation/reinstatement measures and/or natural recovery. Duration of an impact and a subsequent recovery period should be considered
Extent (spatial)	Site	Within the boundaries of land and water area allocated for the Project and associated use-restricted zones (sanitary protection, security, etc.)
	Local	Within the boundaries of local municipality
	Regional	Within the boundaries of a region, territory, republic
	National	Impacts that affect more than one region or constituent entities of Kenya's water flows/bodies of national significance.
	Transboundary	Impacts that affect receptors beyond the boundaries of the country in which the project is located and producing transboundary/ global effects (e.g., impacts of greenhouse gas emissions).
Duration	Short-term irregular or occasional	Impacts caused by short-term single or recurrent events

	Mid-term regular or associated with a phase of activities	Impacts with duration equal or nearly equal to that of certain activity or a phase of the planned operations
	Long-term	Impacts with duration equal or comparable to the Project lifetime. Impacts of this category may cease after completion of Project activities

Assessment of duration of an impact also considers its frequency (e.g., single, rare, periodic, and constant) for a more detailed characterization of duration of time when impact is felt. All characteristics listed above are factored into the assessment of impact magnitude. **Table 2-3** provides generic criteria to be used to determine the impact magnitude. Taking the results derived from the previous step a decision can be made on impact magnitude (negligible, low, moderate, high).

Table 2-3: Impact Magnitude

Impact	Criteria
Negligible	No persistent discernible impact. The change is essentially indistinguishable from natural background variation.
Minor	Limited impacts that can be identified by the available means of monitoring, with no effect on functions of ecosystems and communities **Extent:** Local **Duration:** Short / medium term **Reversibility:** Reversible
Moderate	Noticeable impacts which may result in quantitative changes in ecosystems, however without their quality transformation, and without loss (partial or complete) of their natural functions. **Extent:** Local/regional **Duration**: Medium/long term **Reversibility:** Reversible/irreversible
Major	Prominent impacts that may result in temporary or permanent transformation of ecosystems, with loss of their functions, and transformation of communities' lifestyle and quality. **Extent**: Regional /national/transboundary **Duration:** Medium/long term **Reversibility**: Reversible/irreversible

Once the respective magnitudes of each impact have been allocated the next step is to determine receptor sensitivity. Receptor sensitivity is based on two components: the degree to which a receptor is resilient to a change and the value attributed to the receptor by stakeholders or applicable regulations/policies.

Receptor resilience takes into consideration not only activity - receptor- impact pathways, but also the characteristics of a receptor that might make it more or less resilient to change. As such, a receptor can be considered as existing within a spectrum of 'vulnerable' to

'resilient'. Receptor value considers importance represented by conservation status, socio-cultural importance and/or economic value. Certain receptors are deemed to be of greater importance than other receptors.

The final step is to combine the impact magnitude and receptor sensitivity results to determine impact significance in relation to its receptors. For known (planned) impacts, significance is determined by their intensity, based on the impact magnitude and sensitivity of the receptor. For example, an impact of low magnitude affecting a receptor of moderate sensitivity is an impact of low/moderate significance (the actual significance determination -low or moderate-in this case can be made by the ESIA team) or an impact of high magnitude affecting a receptor of moderate sensitivity results in an impact of high significance. **Table 2-4** provides an account of the key features (definitions) of each of the impact significance classifications (from Not Significant to High); specifically linking them to need for mitigation measures.

Table 2-4: Impact Significance Matrix

		Receptor Sensitivity			
		Negligible	**Low**	**Moderate**	**High**
Impact Magnitude	Negligible	Not Significant	Not Significant	Not Significant	Not Significant / Low35
	Minor	Not Significant	Low	Low / Moderate	Moderate
	Moderate	Not Significant	Low / Moderate	Moderate	High
	Major	Low	Moderate	High	High

Definitions of the above significance ranks adopted in international ESIA practice are provided in **Table 2-5.**

Table 2-5: Project impacts ranking by significance

Impact Significance	**Description**
Negligible	Impacts are expected to be indistinguishable from the baseline or within the natural level of variation. These impacts do not require mitigation and are not a concern of the decision-making process.
Low	Impacts with a "Low" significance are expected to be noticeable changes to baseline conditions, beyond natural variation, however well below the applicable standards (e.g., environmental quality standards, and are not expected to cause hardship, degradation, or impair the function and value of receptor. These impacts warrant the attention of decision-makers and should be avoided or mitigated where practicable.

Moderate	Impacts with a "Moderate" significance are likely to be noticeable and result in lasting changes to baseline conditions, which may cause hardship to or degradation of a receptor, although the overall function and value of a receptor is not disrupted. These impacts must be mitigated to avoid or reduce the impact.
High	Impacts with a "High" significance are likely to disrupt the function and value of a receptor and may have broader systemic consequences (e.g., ecosystem or social well-being). They may also result in a failure to maintain adverse effects within the permissible regulatory levels. These impacts are a priority for mandatory mitigation to avoid or reduce the significance of the impact.

This method is applied at least twice: to both pre- and post-mitigation scenarios for all impacts identified. In general, residual impacts classed as "Not Significant" or "Low Significance" are not considered to be of concern for the assessment. For adverse impacts of "Moderate" and "High" significance, an iterative process is undertaken to further investigate opportunities for mitigation, according to the hierarchy above.

Where the significance cannot be further reduced, an explanation is provided of why further reduction is not practicable. Monitoring may be required to confirm the measures used to mitigate adverse impacts are working properly and that the impact is not worse than predicted.

2.5.7 Risks and Unplanned Events

Where there is uncertainty about occurrence of an event (e.g., intrinsically occasional event during normal operation and/or where impacts are caused by unplanned/emergency situations), the magnitude of risk associated with such event is determined as a function of its occurrence probability and intensity of potential impact. Probability criteria applicable to this ESIA are described below **(Table 2-6).** They are set for the whole ESIA process and are equally applicable to all types of impact.

Table 2-6: Risk Occurrence Criteria

Likelihood	Qualitative assessment of impact / event probability
High	Impacts/events which are observed in the sector (studied operations or region) and reoccur more than once a week
Moderate	Impacts/events regularly observed in the sector and region, including seasonal cycling, which can be considered as very likely for the design lifetime of the planned operations
Low	Impacts/events which are rarely observed in the sector and region, or regularly observed in other sectors. These would generally occur 1 to 2 times per year

Not significant	Impacts/events that have never been observed in a wider range of sectors or in the region. Impact/event which can be considered as unlikely for the design lifetime of the proposed operations

The criteria of general risk / impact (change) occurrence risk are shown in **Table 2.7.**

Table 2-7: General Risk / Event Occurrence Risk Criteria

	Impact intensity			
	Not significant	**Low**	**Moderate**	**High**
High	Insignificant	Medium / Minor	Medium / high	Critical
Moderate	Insignificant	Minor	Medium	High
Low	Insignificant	Minor	Medium / minor	Medium / high
Not significant	Insignificant	Insignificant	Minor	Medium

Unplanned events will often result in a high impact significance, even with mitigation/remedial measures in place e.g., oil spills. In such cases, not only the specific measures must be in place to manage an unplanned event, but the probability has to be minimized to levels seen to represent good industry practice. In this table, unplanned events with high residual impact significance would need to be minimized to extremely unlikely ("Improbable") events. Sometimes, if such events can be assessed quantitatively, a special analysis of risks is required to define numeric value of the event probability. In this case the probability value should be less than $1x10^{6}$.

2.6 Impact Mitigation

Mitigation measures are developed as necessary or appropriate to minimize the risk intensity and/or impact probability, and therefore make the impact or risk less significant. Assessment of significance of potential impact/risk has been assessed during the ESIA process based on potential and residual impacts, using the criteria mentioned in Section 2.5.6. As part of the ESIA process, when adverse impacts are identified, measures for mitigation, minimization and control of risks, and monitoring of residual impacts are developed (as necessary or appropriate). A residual impact is the impact that remains following the application of mitigation measures. The process of identifying design controls and mitigation measures must follow the sequence of the mitigation hierarchy (Figure 2-3) which is widely regarded as the best practice approach to managing impacts.

First, efforts are made to avoid or prevent, then minimize or reduce adverse impacts. If the impact cannot be fully avoided by application of design controls, they are supplemented by further engineering measures for minimization and mitigation of the adverse impacts. These measures are supplemented by additional mitigation measures to be applied through the effective management of project-related activities during construction, operation, and de-commissioning. Any remaining residual impacts are then addressed via mitigation measures such as restoration and remediation (e.g., at the end of construction) and/or

offsetting and compensation. The measures are developed and implemented in the same order as they are listed above.

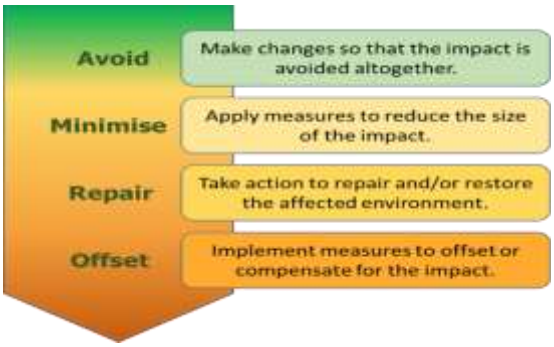


Figure 2-3: Mitigation Hierarchy

Development of mitigation measures will be primarily focused on minimization of the impacts of "High" significance. However, where possible and appropriate, mitigations are also proposed for the impacts of "Moderate" and "Low" significance, in order to reduce environmental and social effects/risks to the lowest level.

2.7 Cumulative Impacts

2.7.1 Definition and Applicable Guidelines

Cumulative impact assessment (CIA) is one of the requirements set for a comprehensive ESIA. Area of Influence is defined as the encompassing "cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned, or reasonably defined developments at the time the risks and impact identification process is conducted." The CIA methodology is mainly based on the six steps approach outlined in the Good Practice Handbook on Cumulative Impact Assessment and Management Guidance for the Private Sector in Emerging Markets (2013). This document is a supplement to the IFC Performance Standards and Guidance Notes and provides recommendations relating to practical assessment of cumulative impacts recognizing some of the uncertainties and constraints faced by private sector proponents. It also introduces the concept of valued environmental and social components (VEC) in the assessment of cumulative impacts.

2.7.2 CIA goals

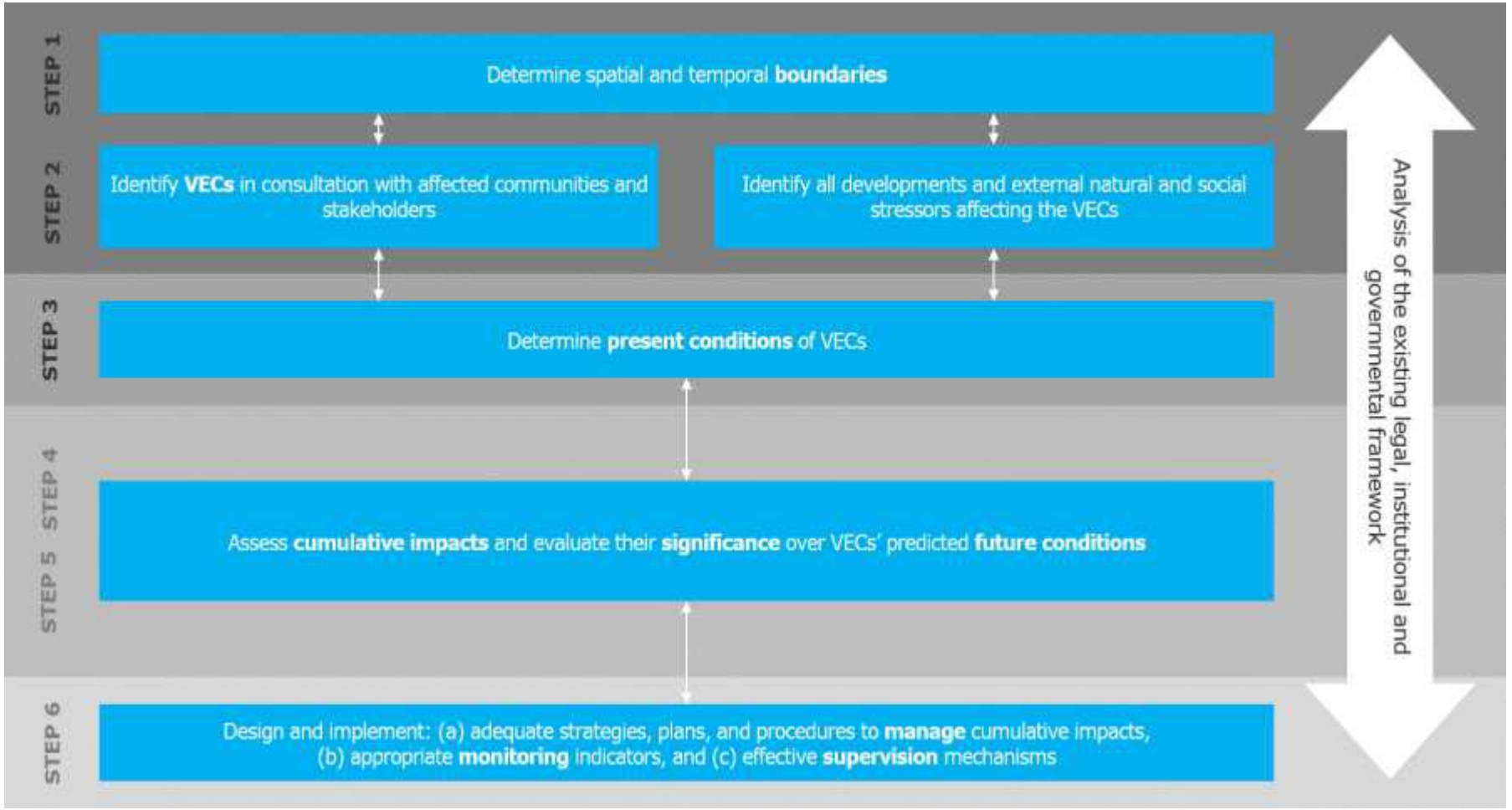
The CIA analysis has two goals:

- To determine if the combined impacts of: the project, other projects and activities, future developments and natural environmental drivers will result in VEC condition that may put the sustainability of a VEC at risk (i.e., exceed a threshold for VEC condition which is an unacceptable outcome); and
- To determine what management measures could be implemented to prevent unacceptable VEC condition, this may include additional mitigation of the project being assessed, additional mitigation of other existing or predictable future projects, or other regional management strategies that could maintain VEC condition within acceptable limits.

2.7.3 CIA Methodology

A six-step process described in the IFC's Good Practice Handbook that should be used in conducting a CIA for the project includes the following steps:

- Scoping phase I – VECs, spatial and temporal boundaries
- Scoping phase II – other activities and environmental drivers
- Establish information on baseline status of VECs
- Assess cumulative impacts on VECs
- Assess significance of predicted cumulative impact
- Management of cumulative impacts – design and implementation.



Source: Good Practice Handbook – Cumulative Impact Assessment and Management

Figure 2-4: IFC Six Steps Rapid Cumulative Impact Assessment Approach

Step 1. Scoping Phase I – VEC's, Spatial and Temporal Boundaries
The first stage of the CIA is aimed at identifying potential VECs and defining the spatial and temporal boundaries.

VECs
VECs are those receptors that are considered to be important when assessing the risks posed from cumulative impacts. VECs have been identified throughout the ESIA process, including consultations undertaken with stakeholders and reviews and assessments undertaken as part of the ESIA.

Consistent with the above-mentioned guidance, the assessment is limited to impacts generally recognized as important on the basis of scientific/expert concerns and concerns from Affected Communities and excludes any potential impacts that would occur without the Project or independently of the Project. In addition, only those environmental and social receptors on which the Project itself is assessed to have potentially significant effects are included in the CIA. In practical terms, this means that:

- If the impact of the Project on a receptor has been assessed negligible then it is not considered as a VEC in the CIA (i.e., scoped out in all cases);
- Receptors on which the assessed Project impact is low are considered on a case-by-case basis for inclusion as a VEC in the CIA.

Spatial Boundaries
The CIA considers a larger spatial area outside of the Project AoI. The precise spatial boundaries are defined on the basis of the geographic range of specific VECs as well as the spatial distribution of other third-party activities, future developments or influences that might impact the VECs.

Temporal Boundaries
The temporal boundary is therefore defined based on the availability and quality of information about existing and reasonably foreseeable projects or projects with a conceptual plan. The overall Phase I scoping is undertaken through consideration of the VECs, spatial and temporal boundaries, in a systematic manner, taking the assessed Project impacts to each social and environmental receptor identified in the course of ESIA and taking into account the following aspects:

1. All the different types of Project impacts on those receptors and the assessed significance of the residual Project impact;
2. Spatial extent of a receptor in this particular region;
3. Consideration of how the spatial extent of the receptor may overlap with the influence of other industrial activities and future developments identified through the Phase II Scoping process;
4. Consideration of the relative temporal boundaries of the different stressors (e.g whether or not such stressors are concurrent, consecutive etc.) and the duration of such impacts;
5. Other non-industrial influences that may affect a receptor (within the determined spatial and temporal boundaries).

The above aspects are determined, and the potentially affected receptors identified in the CIA process are taken into consideration for the above factors, which are then considered as VECs. In the "'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions" (1999), it is indicated that normally most of project proposals are associated with too many uncertainties outside of a period of 5 years. It is recommended, therefore, to assume a time limit of maximum 5 years.

Step 2. Scoping Phase II – Other Activities and Environmental Drivers

This part of the scoping exercise identifies historical, existing, and planned future activities and the presence of natural influences and stressors that have the potential to affect the VECs identified in Step 1 that will require further assessment within the CIA. Natural influences and stressors that are unrelated to the Project activities are also considered, for example, the potential impact of climate change in terms of the climatic extremes and impacts on migratory and predatory animals. Given the inherent uncertainty and variability associated with climate change projections, these factors are only considered in terms of a high-level and qualitative assessment.

Step 3. Baseline Conditions

Baseline data for the Project AoI is based on detailed studies and survey works undertaken by the Project and as described in baseline chapters of ESIA (Chapters 5 and 6). These Project-specific studies are supplemented by readily available information at the regional scale beyond the Project AoI. Project and as described in Chapters 5 and 6. These Project-specific studies are supplemented by readily available information at the regional scale beyond the Project AoI.

Step 4. Assessment of Cumulative Impacts

The Project CIA has adopted a VEC centric approach, i.e., VECs and their resilience have been identified/determined then the impacts from various activities on these VECs were assessed. The assessment presented in this Chapter considers only the residual impacts associated with the Project, i.e., the impacts that will persist after implementation of the planned mitigation measures. The VECs, potentially affected according to the assessment to an insignificant degree, should not necessarily be included in the cumulative impact assessment **(Table 2-8).**

Table 2-8: Criteria for including valued Environmental and Social Components

Residual Impact			
Insignificant	Low	Moderate	High
Not included in CIA	Considered for assessing the potential cumulative impact	Included in CIA	Included in CIA

Predicted future conditions for VECs are analyzed taking into consideration all impact factors, including the contribution of this Project to the overall cumulative impacts. Due to the inherent uncertainties in the nature of cumulative impacts, the CIA has by necessity

been performed in a qualitative manner, but nevertheless provides useful context for determining the significance of the Project's contribution to the overall impacts.

Step 5. Significance of Cumulative Impacts
The methodology described in Section 2.4 was developed primarily for assessing Project-specific impacts, although can be broadly applied to cumulative impacts.

Step 6. Management of Cumulative Impacts
Many of the mitigation measures defined during the assessment of Project impacts will also be applicable to the mitigation of cumulative impacts. However, it is also recognized that the cumulative impact assessment may generate additional mitigation measures and strategic or long-term actions, for example, the need to share findings of assessments and cooperate with third parties such as future developers and regional authorities or local government bodies. Consistent with the approach taken elsewhere in the ESIA and described in Section 2.5, the mitigation hierarchy, which broadly requires that consideration be given to avoidance, minimization, mitigation, and offsetting in that order of preference, has been applied.

Step 7. Management of Cumulative Impacts
Many of the mitigation measures defined during the assessment of Project impacts will also be applicable to the mitigation of cumulative impacts. However, it is also recognized that the cumulative impact assessment may generate additional mitigation measures and strategic or long-term actions, for example, the need to share findings of assessments and cooperate with third parties such as future developers and regional authorities or local government bodies. Consistent with the approach taken elsewhere in the ESIA and described in Section 2.5, the mitigation hierarchy, which broadly requires that consideration be given to avoidance, minimization, mitigation, and offsetting in that order of preference, has been applied.

2.7.4 Presentation of ESIA Results

The table below contains a form of a summary table which is designed to provide a visual presentation of the environmental and social impact assessment, including types of activities, impacts and their receptors, description of mitigations and assessment of the residual impact. A key to the alphabetical symbols of stages of the Plant Project, receptors sensitivity, impact significance and risk category is provided under the summary table form.

Table 2-9: Evaluation of Impact Significance: A Form of a Summary Table

Impact	Direction	Receptor	Receptor [illegible]	Stage	Impact	Risk Significance	Mitigation measures	Residual significance		
								Likelihood	Impact Rating	Risk Rating

Table 2-10: Impact Parameter

Parameter	Abbreviation	Description	Parameter	Abbreviation
Stage	C	Construction	Risk	Cr Critical
	O	Operation		H High
	Cm	Commissioning		M Medium
	DCm	Decommissioning		Mr Minor
Recipient Sensitivity	H	High		I Insignificant
	M	Moderate	Impact Significance	H High
	L	Low		M Moderate
	N	Negligible		L Low
Sign	P	Positive		N Insignificant
	N	Negative		

3 PROJECT DESCRIPTION

3.1 Project Location

The proposed high voltage transmission line ('the Project') traverses two counties i.e., Baringo County starting Kabarnet sub-station, is located at coordinates 53056.476N; 140026.686E and terminating in Laikipia County at Rumuruti sub-station geographic coordinates 27478.607N; 222363.497E (line coordinates CRS: Arc 1960 UTM zone 37°N) Laikipia County borders Samburu County to the North, Isiolo County to the Northeast, Meru County to the East, Nyeri County to the Southeast, Nyandarua County to the South, Nakuru County to the Southwest and Baringo County to the West. The County lies between latitudes 0° 18" South and 0° 51° north and between longitude 36° 11" and 37° 24° East. It covers an area of 9,462 km^2 and ranks as the 15th largest county in the country by land size.

It is expected that upon completion, the 132kV double circuit Transmission Line of approximately 95Km will be energized and become part of the national grid. The proposed Right of Way (RoW) for the transmission line will be 30 metres wide. Upon completion, it will connect to the two existing sub-stations in Rumuruti and Kabarnet which are owned and operated by KETRACO.

3.2 Project Area of Influence

For the purposes of this impact assessment, the definition of the Area of Influence (AoI) given in IFC Performance Standard 1 is used. The AoI encompasses[3]:

1. The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated, or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
2. Associated facilities are facilities that would not have been constructed or expanded if the project did not exist and without which the project would not be viable.
3. Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.'

For the Project, the **direct** AoI is the spatial extent of the Project footprint and related facilities as well as on the associated effects on the receiving environment (*Figure 3-1*). This encompasses the transmission line RoW as follows:

1. 1000 m either side of line for the 132 kV (i.e., 2000 m in width).

[3] IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts, January 1, 2012.

Note that some direct impacts may not affect receptors within the entire AoI and will instead be confined to within the Project footprint, but this 1000 m zone is considered to be the composite AoI for direct impacts from the project. The **indirect** AoI encompasses areas potentially affected by cumulative impacts as well as areas that could be impacted indirectly by Project activities. The indirect AoI will differ between various resources and receptors.

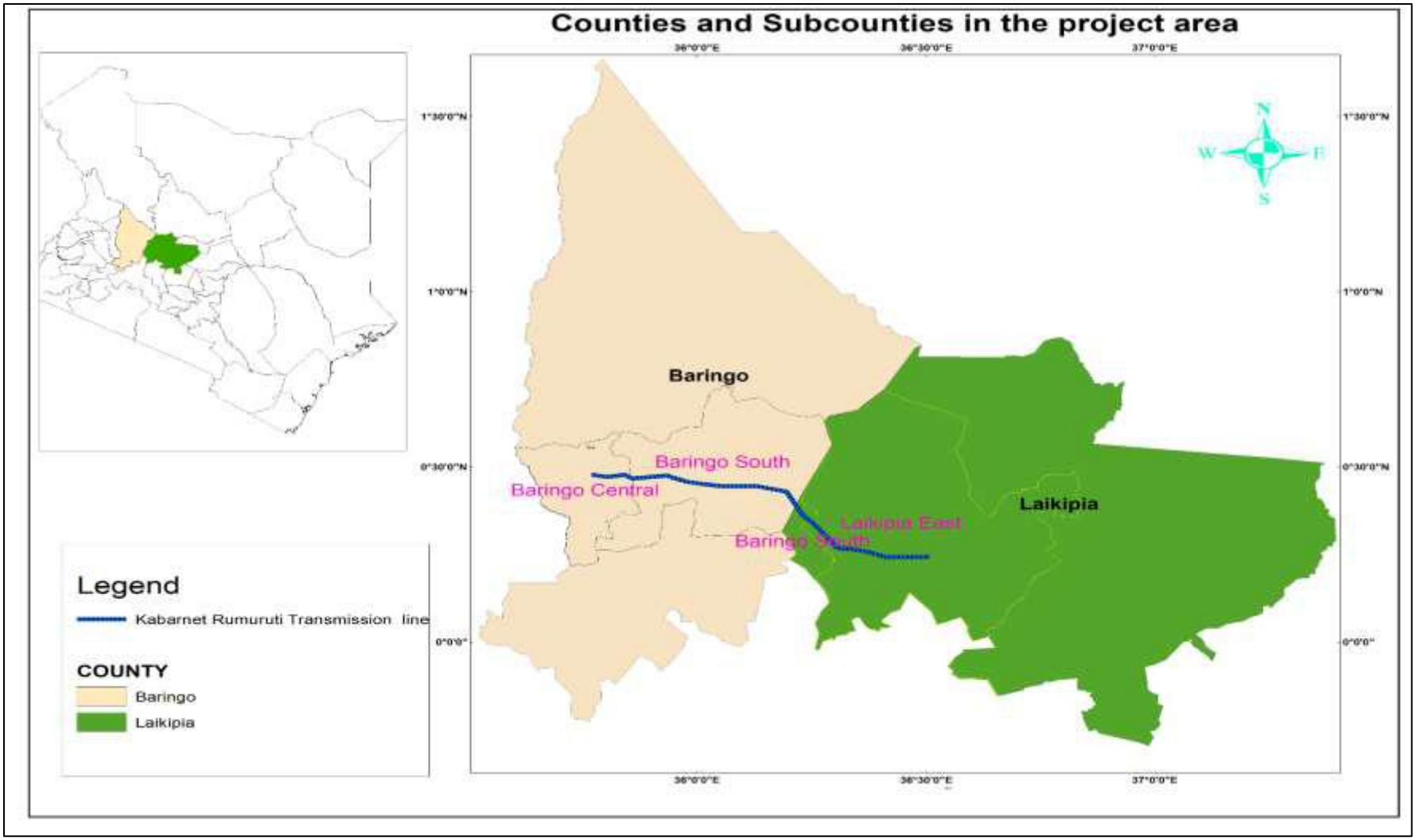


Figure 3-1: Transmission Line Route and Counties Traversed

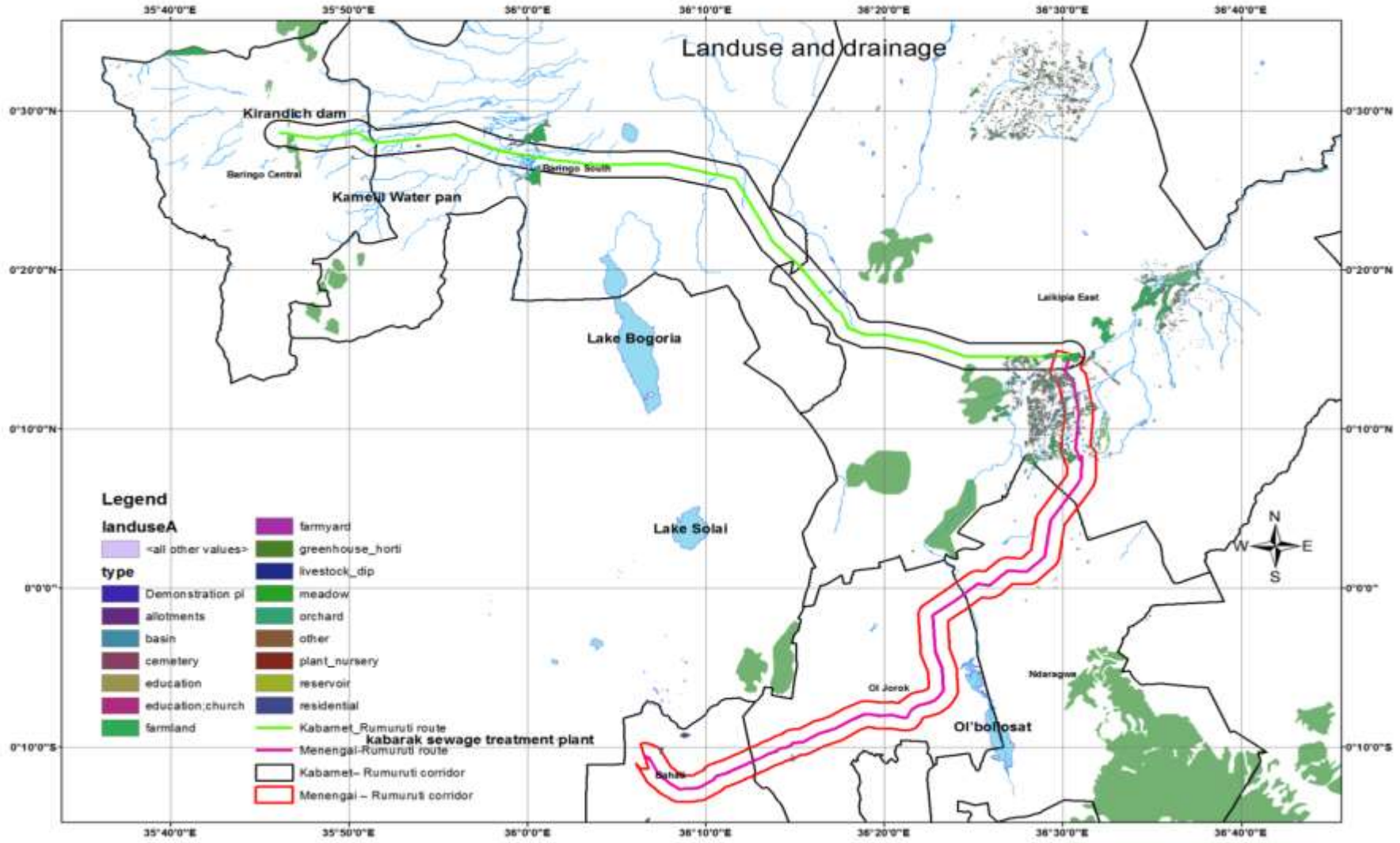


Figure 3-3: Transmission Line Route Area of Influence along 2 Counties

3.3 Project Components

The project components include the following:

- Construction of 95 km 132kV Transmission Line from Kabarnet in Baringo County to Rumuruti Town in Laikipia County.

3.3.1 Component 1. High Voltage Transmission Line

The main purpose of this project will be to evacuate 132kV (high voltage) power from Kabarnet to connect to the Rumuruti from where it will be energized into the national grid. This is typically referred to as electricity transmission. Transmission is the process by which large amounts of electricity produced at power plants or sub-stations (such as in this case), is transported over long distances for eventual use by consumers. Due to the large amount of power involved, and the properties of electricity, transmission normally takes place at high voltage (132-kilovolt or above) to reduce losses that occur over long distances.

Transmission Towers

Transmission towers are the most visible component of the electricity transmission system. Towers support high-voltage conductors (cables that transmit the electricity, otherwise known as lines) above the ground and separate them from other lines, buildings, and people. Towers vary in design and dimensions. The proposed transmission towers for this project are lattice steel between 33.5 and 46 meters tall. Thirty (30) metre right-of-way is needed for the area around the towers and the spans between the towers. Spans between individual towers are typically about 1,150 feet, with about five towers needed for each mile of line. Towers would be made of galvanized steel and may appear shiny for 2 to 4 years before they dull from weathering. The actual number of towers would depend on the length of the action alternative selected and the actual span length between towers. A transmission line tower could be purpose designed for a particular project. However, prototypes would need to be manufactured and expensive type testing (usually destructive) would need to be carried out before it used. The configuration shown below is a barrel type tower in commonly used in Kenya and considered suitable for this application.

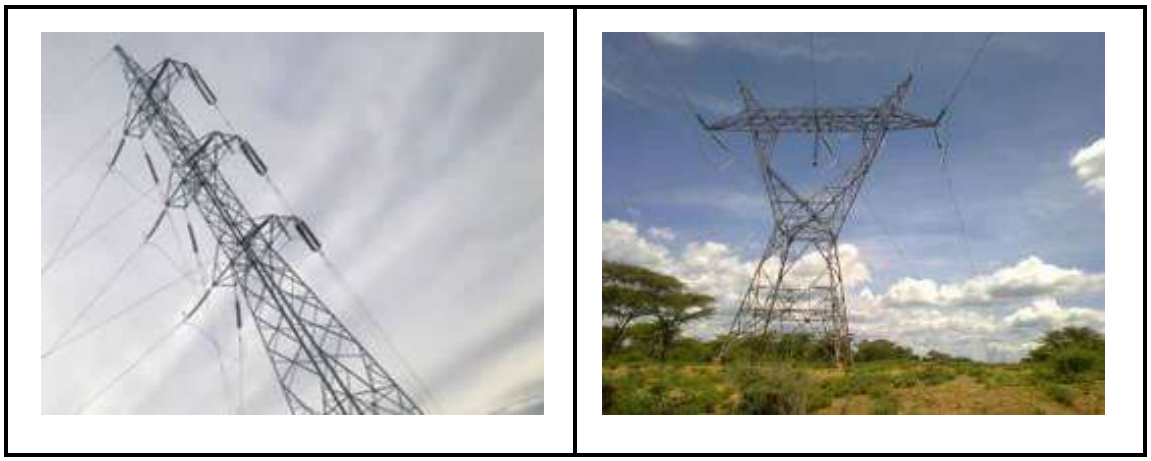


Figure 3-4: Typical designs of transmission towers

Two types of towers would be used for both single- and double-circuit towers: suspension towers and dead-end towers **(see Figure 3-5).** Suspension towers would be used to hold the conductors along a straight path. Dead-end towers would be used where the line takes a turn or enters a substation. Dead-end towers are stronger and heavier than suspension towers, and more expensive. Most towers proposed for this project would be suspension towers. The expected tower height be in the region of 40m. The base width and weight is expected to range from about 4.5m and 3 metric tons for a line (tangent) tower to about 9m and 6.5 metric tons for the heavy angle tower. Possible dimensions of a typical tower are shown below: -

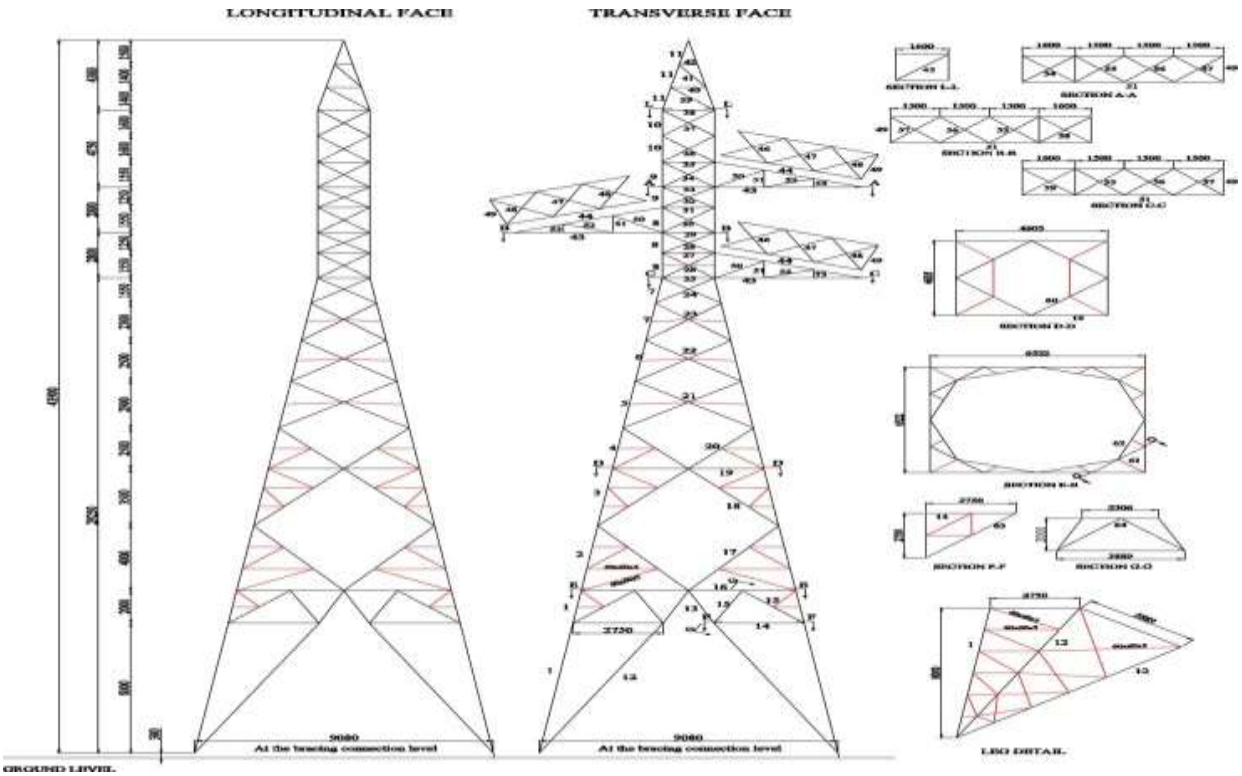


Figure 3-5: Typical 132kV Tower Dimensions

3.3.1.1 Electrical Transmission Lines

The wires that carry the electrical current on the transmission line are called conductors. Conductors are the cables on the transmission pylons that carry the electricity to substations. Conductors are constructed primarily of twisted metal strands, but newer conductors may incorporate ceramic fibers in a matrix of aluminum for added strength with lighter weight. Most high-voltage conductors are made of aluminum with a steel core that gives the cable its required strength. Conductors are often modified to reduce their reflectivity and brightness. The conductors are attached to the towers using insulators (see Figure 3-6). Insulators are bell- shaped devices that prevent the electricity from jumping from the conductors to the tower and down to the ground. The insulators are made of porcelain or fiberglass and are non-reflective. The conductor would need to be fitted together where one reel of conductor ends and a new reel begins. Conductor fittings would be made using hydraulic compression. Hydraulic compression uses a press that compresses the fittings on the conductor. Nine conductors (three bundles each with three conductors) would need to be fitted once about every 1.5 to 2 miles, depending on the length of conductor on the reel.

Figure 3-6: Aluminum Conductor with a steel core

The design criteria as adopted for the conceptual design are based on KETRACO's current practices, based on studies of recently composed specifications and in-situ inspections of existing transmission lines. The main criteria when concluding on the adopted conceptual design has been to ensure that the various line components are designed in a safe, cost effective and reliable manner. Project design includes the following elements:

- **Lightning Arrestors:** for the lightning arrestor there are two ground wires, on top of the power line, for the entire length of the 95 km line and over the conductors, to produce an umbrella effect to protect conductors. The lightning current will be grounded using the ground cables connected to every tower steel structure. The structure is connected to the ground by specific ground connection cables and network in order to meet KETRACO specifications.
- **Aircraft Signaling Beacons:** The project includes beacons for aircraft signaling as per the regulations of the country.
- **Bird Flight Diverters:** Devices for avifauna "BFD" (Bird Flight Diverter), consisting of spirals 30cm in diameter, will be attached to the guard cables at regular intervals of suitable length in each situation. BFD devices are helically shaped, constructed of plastic, white or orange, and fit to the guard cable by winding. At one end these devices have a larger diameter ring protruding from the cable profile. This ring

combined with the colour of the device significantly increases the visibility of the cables by the birds, without giving it a bulky appearance and not introducing any significant increase in relation to the area exposed to the wind.

- **Dampers:** Vibration's dampers are considered in the project, averaging one every 200m in every cable (conductors, OPGW and Ground cable).

3.3.1.2 Right-of-Way

The right-of-way for a transmission corridor includes the land set aside for the transmission line and associated facilities, and land set aside for a safety margin between the line and nearby structures and vegetation. Having the safety margin helps avoid the risk of fire and other accidents. The right-of-way width for the proposed 132kVtransmission line will be 30 metres, which is within the recommended range of 30 to 65 metres. The right-of-way will also be used for access roads where there is none. On the right-of-way, low-growing vegetation (vegetation which cannot grow more than 12feet/4 metres tall) is allowed to grow after construction and subsequently maintained at an optimum level.

3.3.1.3 Temporary Tower Laydown and Assembly Areas

An area of approximately 40 by 50 meters on each site tower site will be demarcated as a temporary tower lay down and assembly area, in order to allow for towers to be installed. The total area could include disturbance from vehicles, construction equipment, crane pads, etc. Compacted soils in most of this disturbance area would be broken up and reseeded after project construction to reestablish close to original conditions. The areas directly below the tower though impacted more, is also reseeded, and short crops like maize, beans and vegetation can be planted there.

3.3.1.4 Tower Footings

Transmission towers would be securely attached to the ground with footings. Footings are assemblies of metal in the ground at each of the four tower corners. There are different types of footings that could be used to secure the towers: plate, grillage, rock anchor, concrete shaft, and pile footings. Most towers on this project would use either plate or grillage footings. Plate footings are used for suspension towers. They consist of a 4-foot by 4-foot steel plate buried about 11 feet deep for each tower foot. Grillage footings are used for dead-end towers. They consist of a 15-foot by 15-foot assembly of steel I-beams that have been welded together and buried 14 to 16 feet deep for each tower foot. Spread footings with rock anchors are required when suspension towers are built on solid bedrock located less than 2 feet below the surface. Six-inch-diameter holes are drilled into the bedrock about 11 feet deep and steel anchor rods are secured within the hole with concrete. Concrete shaft footings are used at river crossings or in areas where towers must sustain a higher load and require additional support.

Concrete shaft footings can be built on solid bedrock or in soils unfavorable for grillage footings. Concrete shaft footings are engineered columns of concrete reinforced by steel rods about 4 to 10 feet in diameter. Footing depth depends on site-specific engineering requirements. Micropile footings are used in rare situations where the typically larger excavation for plate and grillage footings is not appropriate. Four to five 4-to12-inch-diameter

holes are augured for each footing so that steel rods can reinforce the base. Those rods are then grouped together and capped with a reinforced concrete pile cap. The tower can then be placed atop the concrete piles. For plate and grillage footings, a track hoe would be used to excavate an area for the footings.

The excavated area would be at least 2 feet larger than the plate or grillage footings to be installed (if the soil is loose or sandy, then a wider hole may be necessary). If the soil and rock removed for plate or grillage footings is suitable, it would be used to backfill the excavated area once the footings are installed. Otherwise, suitable soil would be brought in from another location for backfill. For spread footings or concrete shaft footings, a drill would be used to make appropriately sized vertical shafts for the footings. Soil and rock removed for rock anchor or concrete shaft footings would either be spread out onto an approved location or removed from the project area. Once foundations are set and cured, each tower would be assembled in multiple sections off-site. The tower sections would be flown in and installed via helicopter or by a large crane.

3.3.1.5 Access Roads

The contractor will use public roads and ROW as much as possible and if necessary, make agreements with private land owners to use their land as access roads. The road system used to access the transmission towers would be a mix of public and private. KETRACO will typically compensate and register 30m-wide easements for the right-of-way. Access will be needed to the transmission tower sites for both line construction and maintenance. Grading and clearing vegetation may be required in some sections of the project for access road construction. Vegetation removal could be required if roads have become overgrown or need to be widened. Improved roads typically require up to a 20-foot-wide disturbance area (including drainage ditches). Dirt roads often become slippery and impassible when wet. Depending on the season, roads would be graveled where needed for load bearing, stability, and dust abatement.

Currently, there are no details on access roads to be used during the construction phase as this will be determined by the contractor and thus this ESIA does not include the adverse impacts associated with access roads. It is assumed that any new roads will be located within the direct AoI and the inherent construction impacts should be similar to the impacts from general construction phase activities.

In this regard, among the specific mitigations and enhancement measures to implement through the project life cycle included in the ESMP is the requirement for the development and implementation of a separate ESIA and **Traffic and Transportation Management Plan**. This will include controls over prescribed routes, driver training, vehicle maintenance, speed restrictions, appropriate road safety signage, and vehicle loading and maintenance measures and vetting procedures. It also includes specification for community awareness and safety programs that will be respected and once the works are finished the access may/will be closed and restoration to the original condition will be undertaken.

3.3.1.6 Contractor's Operational Site/Staging Areas and Workers' Camp

There is a likelihood that construction camps may be required for use by the contractors around the project site (s) for workers as well as serving as warehouse for materials and office space. Several temporary staging areas would be needed along or near the transmission line for construction crews to store materials and construction vehicles, and to assemble tower segments for helicopter erection. Staging areas can be from 5 to 15 acres depending on the amount of materials and number of locations needed. The contractors hired to construct the transmission line would be responsible for determining appropriate staging area locations. This is yet to be confirmed by KETRACO and contractor (not yet recruited) and therefore associated impacts are not included in this ESIA report since the potential sites are undetermined. However, this ESIA recommends that when a determination is made by KETRACO and contractor (s) to establish workers accommodation camp (s), ESIA for these establishments will be prepared in accordance with NEMA EIA regulations and African Development Bank Environmental & Social Assessment Procedures, submitted to NEMA for approval and AfDB for clearance before commencement of construction.

3.4 Project Phase Activities

3.4.1 Planning (Pre-Construction Phase)

Activities during the planning (pre-construction) phase will include:

- Design of towers type
- Design of foundations
- Plant and line profile
- Design of access routes
- Operational design
- Land acquisition (compensation and resettlement)

3.4.1.1 Construction Phase Activities

There will be several activities during the construction of the transmission line as outlined below Site Preparation Activities

KETRACO will set a number of method statements in order to safely construct and install the overhead transmission lines. The construction phase involves a number of activities, which will be undertaken sequentially by simultaneous different construction crews. During this preliminary phase, path vertices and singular path points, identification and ground staking and clearance will be undertaken within a 30m corridor. The site preparation phase will include a number of activities as described below.

3.4.1.2 Setting Out

The construction teams will position the intermediate towers based on the approved profile. Where required, basic access tracks will be established to each structure position by moving obstacles such as rocks, levelling high points and filling in holes. Existing tracks will be used where possible and new tracks will be made to pole positions where existing access is not available.

3.4.1.3 Pulling and Tensioning Sites

Pulling and tensioning sites are those areas from which the conductor and fiber optic cable are pulled and tightened to the correct tension once they are mounted on the transmission towers. Conductor is packaged and transported on reels that can hold up to 9,500 feet of conductor. Depending on the size of the reel, pulling and tensioning sites (or reel sites or conductor tensioning sites) can be from 1.75 to 3.5 miles apart. These sites are also dependent on the topography and typically disturb about 0.7 acre each (about 300 feet long by 100 feet wide). A flat area is needed at each pulling site for the large flatbed trailer with the reels of conductor and tensioning machine. Pulling sites are generally placed within the right-of-way; however, where the line takes a turn (at angle points), sites are often outside of the right-of-way. Depending on conditions, the site could be graded, graveled with crushed rock, reseeded, or a combination of these activities.

3.4.1.4 Transmission Corridor Clearing

Construction crews will begin clearing or trimming the transmission corridor where necessary. This includes clearing trees and structures to provide construction crews and their equipment safe access to the work site and enough clearance for the reliable operation of the line. Where tree felling is required, all activities will be supervised by a trained member of staff in line with (Method Statement for Vegetation Clearance-to be developed by contractor prior to construction activities commencement). Tree clearing will be minimized and only removed as necessary. Where structures and crops are required to be removed, the Project Affected Households (PAHs) as identified in the Resettlement Action Plan (RAP) report, will first and foremost be compensated in accordance with the document before clearing commences.

Placement of transmission line structures will be undertaken on every tower site defined plot which is an area of 30 meters on average. Within the plot, the tower structure would be assembled before erection. To meet electric industry vegetation clearance standards, species of trees deemed non-compatible for transmission corridors must be permanently removed. These are trees that could become tall enough to grow or fall into the high-voltage transmission lines (the maximum height is 1.8m). Any tree (stable or unstable) outside of the acquired transmission line right-of-way deemed a present or future hazard to the transmission line is considered a danger tree and is removed prior to construction of the line. A tree would be identified as a danger tree if it could fall into, bend into, or grow into the conductor or be close enough to the conductor as it swings to cause a flashover of current from the conductor. When construction is complete, disturbed areas will be restored. Native shrubs and ground cover will be allowed to regrow.

For safe and uninterrupted operation of a transmission line, vegetation within a right-of-way is not allowed to grow above a certain height. If vegetation grows or falls close to a transmission line it can cause an electrical arc, which can start a fire, cause an outage of the line, and or injure or kill someone. Management of right-of-way vegetation varies depending on many factors, including vegetation species, height, and growth rates; ground slope and topography; conductor elevation above ground and conductor swing; clearance distance required between the conductors and other objects; and electrical loading on the line.

3.4.1.5 Excavations

Foundation sizes are dependent on the soil conditions, tower type and height; with the biggest foundation footprint for steel lattice towers being 15.4 x 15.4 m. In this project, only steel lattice towers will be considered. Typical foundations for this project will be "Pila foundation type" using drillers. The drilling is the best solution to reduce the amount of ground as it consists of the extraction of a cylinder of 1meter diameter and 6 meters high, on average per leg. Excavations using drillers will be made for the foundations as well as to install the anchors of the towers. In some cases, the foundation is to be "Pad Chimney". It needs excavators to open the ground to prepare the foundation solution. Typical excavation depths for lattice towers is six meters. Excess soil will be spoiled around the structure and excess dump rock will be uplifted and removed as required. Each excavation will be inspected and tested to confirm its suitability. The foundations are ultimately filled with concrete.

Contractors are required to safeguard excavations; this may include erecting a temporary fence or warning solution around the excavation to protect the safety of people and animals. Concrete will be sourced from a 'ready-mix' truck which will access the site, or concrete will be mixed on site. Once the excavations have been filled, the concrete requires 28 days for total curing. Meanwhile, after eight days, 80% of the final concrete mechanical resistance is achieved and tower erection could begin after this 8-day period if needed. Typical vehicles on site at all transmission lines include trucks for material and tools transportation, pick-ups for the crews, driller machine and retro excavators as well as light duty vehicles (LDV). The crews will be different depending on the activity to be performed, e.g., for foundations, tower erection or cable stringing.

3.4.1.6 Structure Foundation Installation

The next step in the construction process is to drill foundations for the new transmission structures. The workers will carefully set aside the topsoil, which will be reused. This involves drilling holes, which are then typically filled with concrete for structure foundations. Drilling operations occur for a few days at each new structure location. Once drilling is complete, a steel rebar cage is placed in each hole and concrete is poured to create a secure foundation for the new steel or lattice structure. Concrete trucks are used to deliver the concrete mix for the foundations. During excavation for the foundations that will stabilize the tower, pumping may be required to remove the water and dry the site (if done during rainy season). The size of the excavation site depend will depend on the type of soil and the type of tower and anchors will depend on the type of towers installed.

3.4.1.7 Structure Installation

Once the foundation is cured, transmission structure installation will begin. Steel poles often come in sections that are assembled on or near the foundation. Cranes and/or bucket trucks will be used to lift the poles and set them into position on the foundations. Construction crews will assemble or "lace" lattice structures at the site. The structure components will be delivered to the transmission corridor well in advance of this installation process. Generally, it takes one to three days to assemble and erect each new structure. After installation, the structure is grounded for safety purposes.

3.4.1.8 Cable Stringing and Levelling

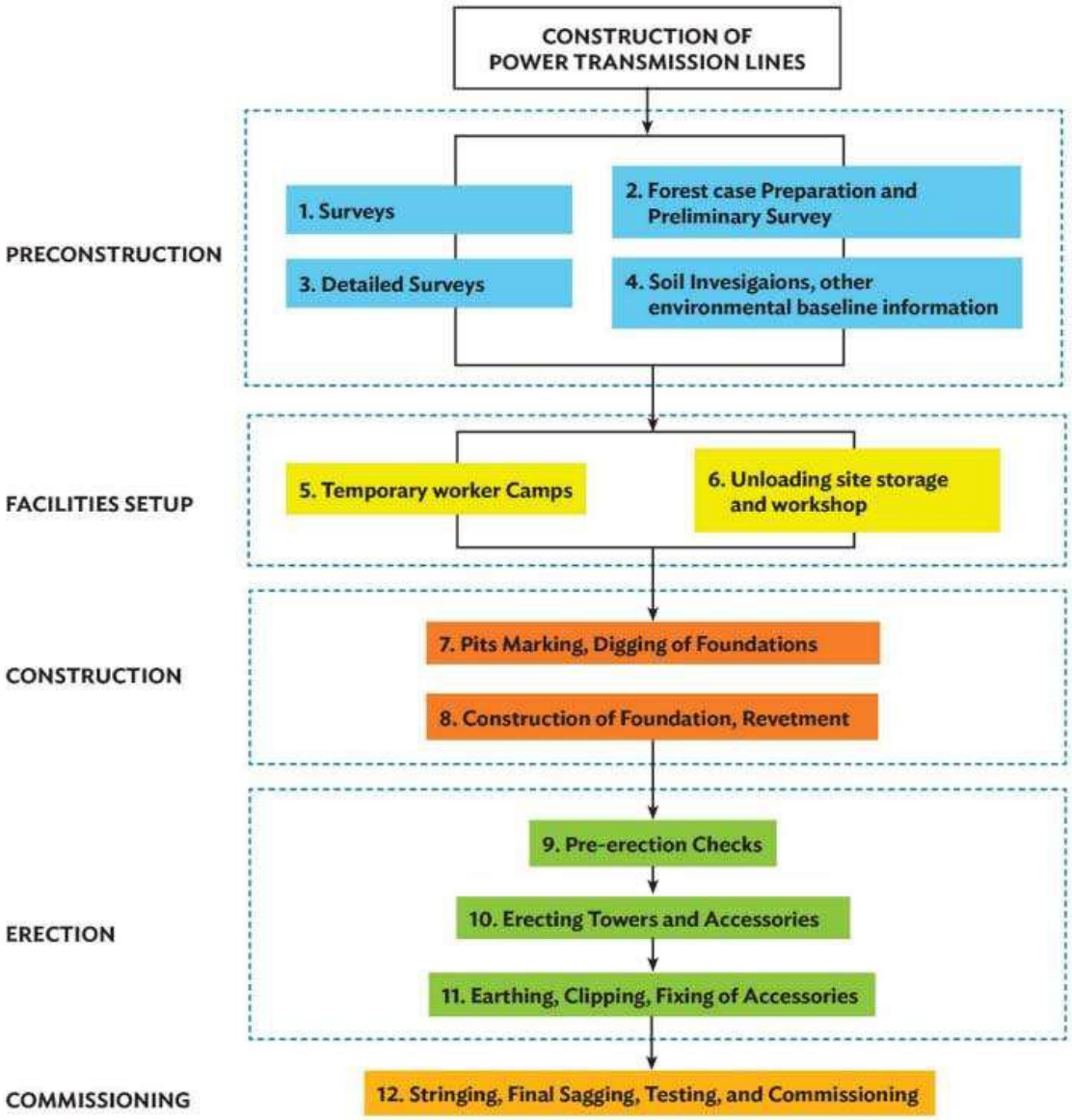
Conventional stringing will be used throughout using custom built equipment. There are three kinds of cable: conductors, ground wire and OPGW. Cable drums carrying approximately 2000 to 4000 m of cable will be delivered to site. The conductors are made of full aluminium alloy (AAAC) or aluminium with a steel core for strength (ACSR). Power transfer is determined by the line voltage and the current. The area of aluminium in the conductors will define the conductivity. Conductors are used singularly, in pairs or in bundles of three, four or six per phase dependent on factors such as audible noise, corona and EMF mitigation. Large diameter running out blocks (pullers and brakes) will be fitted to all the conductor attachment points of the section to be strung and a pilot wire passed through the running out blocks.

The pilot wire will be walked out from pole to pole and will then be used to pull the conductor into place. Conductor tension will be monitored throughout by a dynamometer. The puller and brake hydraulic machines apply tension to the cables to elevate them and finally adjust the tension to the design levels. The levelling process consists of elevating the cable's lowest point to the design height through topographic methods, using the leveling plan in the detailed engineering phase. Once the cables are levelled, the last process consists of connecting the different isolated systems between anchorage towers. Jumpers are applied to connect the tranches between anchored towers. These jumpers are simple cables cut in a curve with the shape to avoid possible short-circuits between the phases in the operational period. Once jumpers are applied, electrical test can begin.

3.4.1.9 Restoration and Site Rehabilitation

Site reinstatement and rehabilitation are undertaken for each component of the construction phase, which include the following activities:

- Removal of excess building material, spoil material and waste;
- Repairing any damage caused as part of the construction activities;
- Reinstating existing access roads (where applicable);
- Replacing topsoil and planting indigenous grass (where necessary);
- Levelling the ground;
- Dismantling the temporary accesses; and
- Repairing any infrastructure that was damaged during the work (roads, fences, etc.).


CONSTRUCTION OF
POWER TRANSMISSION LINES
PRECONSTRUCTION
1. Surveys
2. Forest case Preparation and
Preliminary Survey
3. Detailed Surveys
4. Soil Invesigaions, other
environmental baseline information
FACILITIES SETUP
5. Temporary worker Camps
6. Unloading site storage
and workshop
CONSTRUCTION
7. Pits Marking, Digging of Foundations
8. Construction of Foundation, Revetment
ERECTION
9. Pre-erection Checks
10. Erecting Towers and Accessories
11. Earthing, Clipping, Fixing of Accessories
COMMISSIONING
12. Stringing, Final Sagging, Testing, and Commissioning

3.5 Materials and Construction Equipment

The following equipment and materials will be required for use during the construction phase of the transmission line. It is expected that construction materials like cement, concrete, gravel, water, aggregate etc. will be sourced from local suppliers and will not require the need for opening material sites (quarries, borrow pits etc.). Other equipment including machinery, electrical wires etc. will be sourced locally or internationally.

Table 3-1: Material and Equipment

Equipment	Source
Trucks	Local and international suppliers
Excavators	Local and international suppliers
Pulleys	Local and international suppliers
Cable drum	Local and international suppliers
Reel and tensioner	Local and international suppliers
Materials	Local and international suppliers
Cement	Local suppliers
Sand	Local suppliers
Concrete	Local suppliers
Aggregate	Local suppliers
Counterpoise wires	Local and international suppliers
Cables	Local and international suppliers
Steel bars	Local and international suppliers
Surge arresters	Local and international suppliers
Breaks	Local and international suppliers
Switches	Local and international suppliers
BED buses	Local and international suppliers
Conductors	Local and international suppliers
Insulators	Local and international suppliers
Isolators	Local and international suppliers
Lightning arrestors	Local and international suppliers
Circuit breakers	Local and international suppliers
Relays	Local and international suppliers
Capacitor banks	Local and international suppliers
Sequences	Local and international suppliers
Wave trapper	Local and international suppliers

3.5.1 Material Transportation

As some construction equipment and materials will be probably sourced outside Kenya, sea shipping or air shipping will be used to transport the equipment to the country. Once construction equipment and materials are present in Kenya, terrestrial shipping (road transport) will be used to convey the equipment to site from Mombasa to the project site. A

Traffic Management Plan will be developed by contractor to manage impacts associated with transportation of equipment from the port to project sites.

3.6 Operation and Maintenance Phase

During the life of the project, KETRACO would perform routine, periodic maintenance, and emergency repairs to the transmission line. For lattice-steel towers, maintenance usually involves replacing insulators. Once constructed, the transmission line will be operated year-round, transmitting electricity to the targeted areas. KETRACO will have responsibility to operate the line and will ensure that available paths allow for access to the towers for maintenance. Access will be directly from the main roads, along existing access roads or from the corridor of the transmission line. During normal operation, transmission lines require very little intervention. The only exception is periodic inspections and vegetation management, which are discussed below. Inspections are periodically done using tracked or other ground vehicles.

KETRACO typically conducts routine inspection patrols of its transmission lines. Patrols are essential to determine where line maintenance is needed and ensure the continued reliability of the transmission system. Patrol teams look for damaged insulators, damaged support members, washed-out roads, hazardous vegetation, encroachments, and problems indicating that a repair may be needed. Maintenance vehicles would use access roads where established and maintenance workers may walk through agricultural fields to avoid damage to crops. In emergencies and some other situations, vehicles and equipment would need to be driven through fields and could cause damage to crops, vegetation and other property. KETRACO determines the damages and, if appropriate, compensates landowners for these damages.

3.6.1 Wayleave Management

Wayleave maintenance is used to assure safe clearance between conductors and vegetation and to allow passage for inspections on foot or by vehicles. Vegetation also would be maintained along the line for safe operation and to allow access to the line. The project area would need continual vegetation maintenance. Vegetation management is a critical function; failure to manage vegetation can potentially lead to black-outs resulting from a combination of heavy electrical loads, high ambient temperature and low wind speed allowing a critical line to sag close enough to a tree which can cause a ground fault to occur. The servitude will need to be cleared occasionally to ensure that vegetation does not interfere with the operation of the lines. KETRACO will ensure on-going maintenance from time to time, in conformance with transmission line maintenance processes. Although normal operation requires minimal intrusion into the wayleave, line or tower failures can result in the reintroduction of heavy equipment, work crews, excavation, and materials transport. The maintenance will include: -

Maintenance Aspects

- Routine RoW maintenance through clearing of vegetation
- Structure maintenance and repairs (pylons, electrical wires)
- Environmental maintenance
- Emergency works
- Network and assets management

3.7 Decommissioning Phase Activities

The decommissioning procedure will be provided as part of the maintenance manual during handover of the completed Project. KETRACO, as per its policies will comply with the decommissioning process as per EMCA Act and International best practices. The decommissioning procedure will include site specific rehabilitation plans for the footprint of the project and will be executed by the KETRACO. The decommissioning activities will include: -

3.7.1 Decommissioning Activities

- Dismantling the pylons
- Dismantling the foundations
- Dismantling of electrical lines
- Rehabilitation of the disturbed areas

3.8 Resources required during Construction and Operation

3.8.1 Land Requirements

The approximately 95Km transmission line will traverse properties belonging to private and communal landowners and a section of a gazette forest i.e., Lariak Forest which is in Laikipia County and under the management of Kenya Forest Service (KFS). The land required for the wayleave will be approximately 695acres based on the findings of the Resettlement Action Plan (RAP) which has been prepared separately based on the recommendation of this ESIA study which determined during the scoping and impact identification phase, displacement impacts, and which (RAP) report has been prepared in line with the AfDB's OS 2 on involuntary resettlement.

3.8.2 Construction Staff

It is typical for this kind of construction to have a mix of skilled, semi-skilled and unskilled workers as part of the workforce. Whereas the contractor will be at liberty to hire workers as per skills required, he/she will be encouraged to source for workers from the local community as much as possible. This will reduce instances of negative impacts related to labour influx, Gender Based Violence (GBV) as well as provide jobs and income to the local community. The contractor (s) will be required to develop in a consultative manner **Local Recruitment Plan** (s) consistent with KETRACO's Human Resources Policy (HRP) to guide recruitment of construction workers.

3.8.3 Water

During the construction stage, contractor teams will require water for use during construction works (concrete mixing, slab, washing vehicles) as well as for drinking by the construction workers. As at now, no water sources for construction purposes have been identified in terms of location. The contractor (s) once procured will identify reliable sources of water to be utilized for construction. These sources may include use of piped water supply via water service providers (where applicable), from existing boreholes, drilling of boreholes, or abstracting streams and or rivers. The abstraction of water for construction by the contractor will be expected to follow national regulations and guidelines and permitting requirements as provided by the Water Resources Authority (WRA). Contractor will be required to submit a

Water Use Plan prior to commencement of construction activities. During operation phase, the water use requirements will be low and required by the staff managing the line and periodically if required in maintenance works e.g., repairs on foundations that may need concrete mixing etc.

3.8.4 Material Sites/Borrow Pit

Borrow pits and/or quarries will be identified during the detailed engineering design stage of the project. Borrow pits may be required for extraction of suitable material for the access road construction to the transmission line wayleave. In general, borrow pits are usually worked in strips to ensure that only enough material for the project is obtained, and to limit the impacts of the borrow pit to as small an area as possible. A borrow pit design and restoration plan should be produced prior to commencement of the work. Any topsoil and sub-soil will be separated and progressively stored in a temporary storage area. The storage mound should also be terraced, where possible, to ensure stability. All temporarily stored materials shall be utilized in the restoration of the borrow pit.

3.8.5 Electricity

Electricity will be needed during for construction and also for lighting at night during construction and in the workers camp during the construction etc. Electricity may be supplied using diesel generators or temporary electricity connections during the construction phase.

3.8.6 Reinstatement

A detailed **Reinstatement Plan** will be agreed upon with the selected main contractor. For the purposes of this ESIA Study, the broad restoration measures proposed for the transmission line project are described below. General restoration will be required along the wayleave, construction camps and material laydown areas. Specific restoration will also be required around water crossings and borrow pits. As detailed in the various construction activities, the wayleave will be carefully cleared such that the excavated topsoil is neatly stored in windrows. Once the towers have been erected, construction camps have been demobilized and material laydown areas have been cleared, the stockpiled topsoil will be used for reinstatement. The stockpiles will be located away from surface water flows and their surfaces smoothed or covered to prevent erosion through rainfall. Excess sub-soils will be transported for use at other areas on site, i.e., reinstatement of borrows pits. The areas will be restored with the materials previously set aside as soon as reasonably practical.

Access roads will be dressed off once the ROW reinstatement is complete. Soils and vegetation will generally be kept within their natural habitat and any excess used to cover areas where available soils are minimal. The site compound will be removed to the original formation level with all imported rock, geogrids and geotextile removed. All slabs and drainage facilities will be removed and backfilled. Previously set-aside materials will be used to backfill the area. The reinstated areas will be protected so as to prevent any erosion while vegetation re-establishes.

3.8.7 Wastes and Emissions

3.8.7.1 Effluent Waste

Construction effluent waste will emanate from construction camp (s) (if established) and from mobile toilet facilities that will be used by workers along the transmission line while at work and away from their area of residence. Wastewater will also emanate from activities related to washing/cleaning of equipment and vehicles. During operation, effluent waste is going to be minimal and will emanate from the cleaning activities.

3.8.7.2 Solid Waste

Construction waste will comprise general domestic waste from construction camp (s) (if established) including sanitary and food waste, office waste, organic material, small volumes of wastes arising from mobile plant, chiefly waste lubricating oil and packing materials (e.g., crates). Human waste will also emanate from the construction camp (s) if established and workers on site will also generate human wastes and will require mobile toilets. Construction wastes will include among others:

- Used electrical wires
- Cement waste
- Construction packaging materials (cement bags, packaging wastes,)

No significant solid waste streams are expected during operations apart from sub-station where domestic wastes will be generated by staff at the sub-station (how many staff in sub). Operation waste will comprise general domestic waste from sub-station including sanitary and food waste, office waste, small volumes of wastes arising from chiefly waste lubricating oil and packing materials (e.g., crates). Wastes from repairs and maintenance activities will include among others:

- Used electrical wires
- Cement waste
- Packaging materials

During the decommissioning phase, the primary waste will be the scrap metal from the steel lattice towers, insulators and cables. Several trucks will be required to transport wastes generated through the decommissioning phase to appropriate waste disposal sites. These vehicles will consume diesel and produce air emissions as a waste.

Contractors will be required to provide a **Site Waste Management Plan** which will include details on waste minimization, recycling, and disposal of the waste streams. The requirements of this plan will be implemented on site as required. With respect to the control of 'litter' on site, all such waste will be collected and stored within sealed containers within the site compound and serviced by a NEMA licensed waste carrier. No disposal of litter will be permitted at other locations. All forms of wastes generated during the construction, operation and decommissioning phases will be disposed of in compliance with waste regulations in Kenya (Legal Notice 121: Environment Management and Coordination (Waste Management) Regulations, 2006).

3.8.7.3 Fuels and Oils

All construction plant will be in good condition with no excessive emissions of exhaust, oil, fuel or coolants. Plant operators will check machines daily for oil/fuel leaks and take appropriate remedial action. All re-fuelling will be by an approved mobile fuel bowser using a suitable pump and hose. Absorbent material (spill kits) will be available on site and will be deployed to contain drips and small spillages. All other fuels, oils and potential contaminants will be stored within the site compound in secure, fit for purpose containers within bunded containment as appropriate.

Used oil from the transformers will also generate hazardous wastes during operation. Highly refined mineral insulting 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. SF6 is a greenhouse gas with a significantly higher Global Warming Potential (GWP) than carbon-dioxide. 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. PCBs will not be used in this project.

3.8.7.4 Gaseous Emissions

The use of motorised equipment during construction will generate gaseous emissions in the project area of influence. Motorised vehicles and equipment including trucks, excavators etc will generate among others SO_X, NO_X and PM10. Dust will also be generated by movement of motorised vehicles. The gaseous emissions during the operation phase are not significant but will also include SO_X, NO_X and PM10 that will be generated by operation and maintenance vehicular teams.

During the decommissioning phase, the primary waste will be the scrap metal from the steel lattice towers, insulators and cables. Several trucks will be required to transport wastes generated through the decommissioning phase to appropriate waste disposal sites. These vehicles will consume diesel and produce air emissions as a waste. Secondly, through servicing of these trucks, used oils will be generated which are hazardous wastes. Potentially there may be tires that will be replaced and old tires that come out of the trucks during the decommissioning of the transmission line may also be wastes.

3.8.7.5 Noise Emissions

The use of motorised equipment during construction will generate noise emissions in the project area of influence. Motorised vehicles and equipment including trucks, excavators etc will generate noise during construction, operation, and decommissioning phases of the project. Construction phase noise levels will be generated by construction plant and equipment such as excavators, lifting equipment, dumper trucks, compressors, generators, etc. Construction plant and equipment will be maintained in accordance with the preventive maintenance schedules indicated in the manufacturer's instructions to ensure that such equipment does not produce excessive noise and vibration.

3.9 Schedule for Implementation and Workforce

The timeframe needed for construction of the project is about 18-24 months. Under the current schedule, if a decision is made to proceed with the project after completion of the NEMA process, construction could begin as early as 2021. Line construction generally would occur after road construction. Construction work would be staged with one type of activity taking place in one area (such as construction of access roads) and another activity taking place in another area where roads exist (such as vegetation removal and tower construction).

A typical crew can usually construct about 10 miles of transmission line in 4 months. In areas where terrain is steep, progress may be slower. Construction of roads and tower pads (if required) usually takes about 3 to 5 months including close-out repairs of any roads damaged during construction. The transmission line would be constructed by two or more construction contractors. A typical transmission line construction crew and equipment for a 132-kV line would include the following:

- 20 to 30 construction workers (70-100 at the peak of construction; actual workforce numbers would vary over time).
- 45 vehicles (pickups, vans, trucks)
- Bucket trucks
- 1 conductor reel machine
- 3 large excavators (bulldozers, backhoes) 1line tensioner, 1 puller, 1reel trailer
- Helicopters (small helicopter and skycrane; size dependent on lifting required) 1 to 2 large (210-ton) and mid-sized (50-ton) cranes
- Road construction equipment (dump trucks, rollers, graders, dozers, excavators, water truck)

4 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

This chapter sets out the standards to which the legal, policy and administrative framework within which the Project will be developed. It identifies the applicable lender requirements and national standards. The proponent through this ESIA will conform to the Kenyan legislative and regulatory framework and the AfDB Environmental & Social Assessment Procedures (ESAPs). Where there is a difference between national Kenyan standards and AfDB's ESAPs, the latter will prevail.

4.2 National Policies and Legislation

Table 4-1: Summary of National Policies

Policy	Description
National Environment Policy, 2013	The goal of the policy is to ensure a better quality of life for present and future generations through sustainable management and use of the environment and natural resources. The objectives of the Policy are inter alia to: • Provide a framework for an integrated approach to planning and sustainable management of Kenya's environment and natural resources; • Strengthen the legal and institutional framework for good governance, effective coordination and management of the environment and natural resources; and • Ensure sustainable management of the environment and natural resources, such as unique terrestrial and aquatic ecosystems, for national economic growth and improved livelihoods. Some of the guiding principles in the implementation of the policy include: • Environmental Right: Every person in Kenya has a right to a clean and healthy environment and a duty to safeguard and enhance the environment; • Right to Development: The right to development will be exercised taking into consideration sustainability, resource efficiency and economic, social and environmental needs; • Sustainable Resource Use: Environmental resources will be utilized in a manner that does not compromise the quality and value of the resource or decrease the carrying capacity of supporting ecosystems; and • Public Participation: A coordinated and participatory approach to environmental protection and management will

	be enhanced to ensure that the relevant government agencies, county governments, private sector, civil society and communities are involved in planning, implementation and decision-making processes.
Wetlands Policy of 2013	The wetlands policy is intended to promote protection of wetlands in Kenya. The policy sets out strategic measures for the protection of existing wetlands in Kenya.
Economic Recovery for Wealth and Employment Creation Strategy, 2006	The overall goal of the strategy is to ensure clear improvement in the social and economic wellbeing of all Kenyans; thereby giving Kenyans a better deal in their lives, and in their struggle to build a modern and prosperous nation. The key areas covered in the strategy are: • Expanding and improving infrastructure; • Reforms in trade and industry; • Reforms in forestry; • Affordable shelter and housing; • Developing arid and semi-arid lands; and • Safeguarding environment and natural resources.
Gender Policy, 2011	The overall goal of this Policy is to mainstream gender concerns in the national development process in order to improve the social, legal/civic, economic and cultural conditions of women, men, girls and boys in Kenya.
HIV/AIDS Policy, 2009	In summary, the policy provides a mechanism for: • Setting Minimum Internal Requirements (MIR) for managing HIV and AIDS; • Establishing and promoting programs to ensure non-discrimination and non- stigmatization of the infected; • Contributing to national efforts to minimize the spread and mitigate against the impact of HIV and AIDS; • Ensuring adequate allocation of resources to HIV and AIDS interventions; and • Guiding human resource managers and employees on their rights and obligations regarding HIV and AIDS.
The National Land Policy (Sessional Paper No. 3 of 2009)	The overall objective of the national land policy is to secure land rights and provide for sustainable growth, investment, and the reduction of poverty in line with the governments overall development objectives
National Forest Policy 2014	The policy aims to ensure there is a sustainable conservation of forests and increase tree cover to 10%.
Energy Policy	The Energy Policy seeks to ensure an adequate, quality, cost effective and affordable supply of energy to meet development needs, while protecting and conserving the environment, with a bias towards the exploitation of green energy.

National policy on gender and development 2000	The policy framework is geared towards ensuring gender equality and women empowerment in the social, economic, political and cultural spheres as envisaged in the Constitution.
Kenya National Youth Policy 2016	This Policy aims at ensuring that the youth play their role alongside adults in the development of the Country. The National Youth Policy visualizes a society where youth have an equal opportunity as other citizens to realize their fullest potential. Proposed transmission line will provide direct employment to the youth as required by the Policy.
Environment and Sustainable Development Policy, Sessional Paper No. 6 of 1999	This Policy aims to harmonize environmental and developmental goals for sustainability. It also provides comprehensive guidelines and strategies for government action on the environment and development.
The National Biodiversity Strategy of 2000	The National Biodiversity Strategy and Action Plan (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.
Wildlife Policy, Sessional Paper No. 3 of 1975	This Policy governs wildlife management in Kenya and its goal is "to optimize returns from this resource, taking account of returns from other land use". The policy not only recognizes economic benefits from tourism and consumptive uses but also the intangible benefits that include the aesthetic, cultural and scientific gains that accrue from conservation of habitats and the fauna within them.
The Kenya National Climate Change Response Strategy	The vision of the Strategy is for a prosperous and climate change resilient Kenya. The mission is to strengthen and focus nationwide actions towards climate change adaption and greenhouse gas (GHG) emission mitigation. The following measures are proposed to counter potential threats to the energy sector in Kenya: -Accelerate the development of geothermal energy; -Accelerate the development of green energy including wind, solar and renewable biomass; and -Energy efficiency.
The National Water Policy 2012	The Policy is built on the achievements of the sector reform commenced with the Water Act and based on the sector principles lined out in the National Water Policy 1999. On water resources management, the policy seeks the management of water resources along natural catchment/basin boundaries following the Integrated Water Resource Management approach. It aims to ensure a comprehensive framework for promoting optimal, sustainable, and

	equitable development and use of water resources for livelihoods of Kenyans.
Big 4 Agenda.	The Big 4 Agenda includes ensuring food security, affordable housing, manufacturing and affordable healthcare and prioritizes public investments towards their realization in the current budget and aligned to the MTP III of the Vision 2030.
Vision 2030	Long-term development blueprint for the country. It aims to transform Kenya into "a newly industrialized, middle-income country providing a high quality of life to all its citizens.
Least Cost Power Development Plan 2011- 2031	The policy aims at ensuring that the national electric power supply exceeds 3,000MW by 2018, to 15,026MW in 2030 and 16,905MW in 2031
Laikipia County Integrated development plan 2018 – 2022	The CIDP is the development blueprint made by each county in Kenya for the period between 2018–2022
Baringo County Integrated development plan 2018 – 2022	The CIDP is the development blueprint made by each county in Kenya for the period between 2018–2022

Table 4-2: Summary of National Legislations

Legislation	Provisions	Relevance to the Project
The Constitution of Kenya (2010)	Article 69 provides for protection and conservation of the environment and ensuring ecologically sustainable development and use of natural resources; Mandates the State to: -Establish systems of environmental impact assessment, environmental audit and monitoring of the environment; - eliminate processes and activities that are likely to endanger the environment;	Constitutional requirements on right to a clean and healthy environment, protection of the environment, consultation, public participation and access to information will be adhered to by KETRACO and its contractors during the project phases (construction, operation and decommissioning).

	- Encourage public participation in the management, protection, and conservation of the environment; and Article 42 accords every person the right to a clean and healthy environment and where this is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.	
Environmental Management and Coordination Act Cap 387.	Part V, VI and VII provide for protection and conservation of the environment, environmental impact assessment, and environmental auditing and monitoring.	KETRACO in complying with this statute has prepared ESIA study report.
Environmental (Impact Assessment and Audit) Regulations, 2003	Part II, III and IV provide for the procedure for carrying out Environmental Impact Assessment (EIA) and Environmental Audit (EA). Part V provides for the carrying out of an environmental audit study following commencement of project operations.	KETRACO in complying with this statute has prepared ESIA study report in accordance with this regulation. An initial environmental audit should also be carried out in the first year of operation of the transmission line.
Environmental Management and Co-ordination (Water Quality) Regulations, 2006	Part II-V provide for the protection of ground and surface water resources. Part II provides the water quality standards for sources of domestic water.	During construction and operation, KETRACO and its contractors are required to comply with the water quality regulations in terms of effluent discharge and will obtain effluent discharge licenses/permits as necessary and guided by regulation.
Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution)	Section 3 (1) prohibits the generation of unreasonable, unnecessary, or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment.	During construction and operation, KETRACO and its contractors are required to comply with this regulation in terms of noise and excessive vibration control and will obtain licenses as necessary and guided by regulation.

(Control) Regulations, 2009	The First Schedule provides for the maximum noise levels permissible in various environmental set ups such as residential areas, places of worship, commercial areas and mixed residential.	Sound level limits as per the regulations to be observed during construction and operations.
Environmental Management and Co-ordination (Waste Management) Regulations, 2006	Part III-VII provide standards for handling, transportation, and disposal of various types of wastes including hazardous wastes. Sections 4, 5 and 6 provide for waste minimization or cleaner production, waste segregation, recycling, or composting. Section 7 provides for licensing of vehicle transporting waste. Section 10 provides for the licensing of waste disposal facilities.	During construction and operation, KETRACO and its contractors are required to comply with this regulation in terms of waste management and will obtain or engaged licensed entities to manage wastes from its activities as necessary and guided by regulation.
Environmental Management and Coordination (Air Quality) Regulations, 2014	The First Schedule provides for ambient air quality tolerance limits. Section 5 prohibits air pollution in a manner that exceed specified levels. Section 16 provides for installation of air pollution control systems where pollutants emitted exceed specified limits. Section 22 provides for the control of fugitive emissions within property boundary. Section 25 provides for the control of vehicular emissions. Section 29 provides for prevention of dispersion of visible particulate matter or dust from any material being transported. Part IX provides for acquisition of an emission license.	During construction and operation, KETRACO and its contractors are required to comply with this regulation in terms of air quality and will obtain licenses as necessary and guided by regulation.

Environmental Management and Coordination (Conservation of Biological Diversity and Resources, Access to Genetic Resources, and Benefit Sharing) Regulations, 2006.	Section 4 (1) provides that; 1. A person shall not engage in any activity that may- a. have an adverse impact on any ecosystem; b. lead to the introduction of any exotic species; c. lead to unsustainable use of natural resources, Without an Environmental Impact Assessment License issued by NEMA.	KETRACO has prepared ESIA to determine the impacts of the project on biological diversity in accordance with this regulation and mitigation measures to conserve biological diversity are outlined in the ESIA.
Physical planning and land use Act 2019	Under Section 3 of the Act, the law provides for norms and principles in physical planning and land use which include the requirement that planning takes into account new approaches such as transit-oriented development, mixed land-uses, planning for public transport and non-motorized transport among others to achieve sustainable development and more efficient use of natural resources, be inclusive and take into consideration the culture and heritage of people concerned; and that development activities be planned in a manner that integrates economic, social and environmental needs of present and future generations	- The proponent will take into account these norms and principles in particular new approaches such as transit-oriented development, mixed land-uses, planning for public transport and non-motorized transport among others to achieve sustainable development and more efficient use of natural resources.
The Water Act No. 43 of 2016 revised 2017	Section 3 outlines the objectives of the Act as to provide for the regulation, management and development of water resources and water and sewerage services	The implementation of the project should conform to sound integrated water resource management practices
County Government Act	The County Government Act is intended to provide powers, functions, and responsibilities to	The proposed project will traverse Baringo and Laikipia counties

No. 17 of 2012 Revised 2017	deliver services to the Counties under the devolved government as spelt out under Section 3 of the Act.	
The Public Health Act (Cap 242)	Section 115 provides for the prevention of the occurrence of nuisance or conditions dangerous/injurious to humans. Section 126 provides that the relevant local authority shall 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 jurisdiction has a right to use and does use for drinking or domestic purposes (whether such supply is derived from sources within or beyond its jurisdiction); and - for purifying any such supply which has become so polluted, and to take measures (including, if necessary, proceedings at law) against any person so polluting any such supply or polluting any stream so as to be a nuisance or danger to health.	Project activities during construction could lead to public health impacts and project must comply with the requirements of the Public Health Act.
Civil Aviation Act, 2013	-This is an Act of Parliament to provide for the control, regulation and orderly development of civil aviation in Kenya; and for connected purposes and Safety of aircraft and persons on board. Under Part V of this Act, the Kenya Civil Aviation Authority (KCAA) has to authorize and approve the height of the mast for the purpose of ensuring the safety of flying aircraft over the proposed project area.	- The height of transmission line and towers has may interfere with flight paths and aviation safety in general. The Proponent shall comply with the provisions of the Act in seeking authorization from KCAA for the installation of the lattice steel self-supporting towers along the transmission line route.

Protection of Traditional Knowledge and Cultural Expressions Act, 2016;	The Act of parliament provides a guideline for the protection and promotion of traditional knowledge and cultural expressions. Section 3 requires every person dealing with matters relating to traditional knowledge or cultural expressions to be guided by the national values and principles of governance set out in Article 10 of the Constitution.	The project is to be implemented away from areas of cultural importance
Occupational Safety and Health Act (OSHA), 2007	-Section 6 provides for the safety, health and welfare of workers and all persons lawfully present at workplaces. Part V provides for the registration of workplaces. Part VII outlines safety requirements in use of machinery to prevent accidents and injuries.	Construction sites require registration as a workplace;
The Work Injury Benefits Act, 2007	Part V provides for compensation to employees for work related injuries and disease contracted in the course of their employment and for connected purposes. Key sections of the Act include the obligations of employers; right to compensation; reporting of accidents; compensation; occupational diseases; medical aid etc.	Construction of the proposed transmission line will have potential to cause injuries/ health hazards to construction workers.
The Energy Act, 2019	The Energy Act, 2019 has made several amendments to the repealed Energy Act, 2006. Its objective is to consolidate the laws relating to energy, to properly delineate the functions of the national and devolved levels of government in relation to energy, to provide for the exploitation of renewable energy sources, to regulate midstream and downstream petroleum and	The project will be implemented in accordance with the regulatory requirements of the Act, including acquiring a generation license from the Energy and Petroleum Regulatory Authority. The project will comply with the Energy Regulatory commission requirements.

	coal activity and for the supply and use of electricity and other forms of electricity.	
The Land Act, 2012	Section 4 (2) obligates the Land Commission and other public officers to use the following guiding principles and values: -equitable access to land; security of land rights; - security of land rights; -sustainable and productive management of land resources; - Regulates the change of use for substation land from agricultural to industrial	Project will lead to land acquisition and hence will have to follow the procedure for acquisition. Land will be acquired in accordance with the Land Act.
National Land Commission Act, 2012	Section 3 of the Act outlines its objectives to include among other things; to provide a linkage between the Commission, county governments and other institutions dealing with land and land related resources; to provide for the operations, powers, responsibilities and additional functions of the Commission and for the management and administration of land;	The proposed transmission line will require RoW and the NLC will be key in wayleave acquisition as the mandate body to acquire land for public projects.
Land Registration Act No. 3 of 2012	This is an Act of Parliament to revise, consolidate and rationalize the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes According to section 3, the Act applies to (a) registration of interests in all public land as declared by Article 62 of the Constitution (b) registration of	The proposed transmission line will traverse private land. People whose land is traversed by the project will need to be verified, compensated, and an easement registered in their title deeds.

	interests in all private land as declared by Article 64 of the Constitution; and (c) registration and recording of community interests in land.	
Forest Conservation and Management Act No. 34 of 2016	This is an Act of Parliament to give effect to Article 69 of the Constitution with regard to forest resources; to provide for the development and sustainable management, including conservation and rational utilization of all forest resources for the socioeconomic development of the country and for connected purposes. According to Section 3, the Act shall apply to all forests on public, community and private lands.	The proposed transmission line will traverse a section of Lariak forest.
HIV/AIDS Prevention and Control Act No. 14 Of 2006 Revised in 2012	The Act provides for measures for the prevention, management and control of HIV and AIDS. Part III-V of the Act are dedicated the protection and promotion of public health and for the appropriate treatment, counseling, support and care of persons infected or at risk of HIV and AIDS infection	The Contractor shall prepare a project implementation plan that contains a comprehensive Program for: □ Regular sensitization of all workers on HIV Aids and other Sexually Transmitted Diseases □ Providing workers with condoms
Sexual Offences Act, 2006	-This Act of Parliament makes provision about sexual offences and aims at prevention and the protection of all persons from harm from unlawful sexual acts. Section 15, 17 and 18 focuses mainly on sexual offenses on minors (children).	The contractor is obligated to put in place mechanisms which are necessary or expedient in order to achieve or promote the objects of this Act, including for instance, a sexual harassment policy.
Children Act, 2001	-This Act of Parliament provides safeguards for the rights and welfare of the child including the right to parental care, non-discrimination, education,	The contractor under this Project will be required to comply with provisions of the Act during Project implementation by ensuring that measures are in place

	religion, health care and protection from child labour and armed conflict, among others. Under Section 4 (2) the Act requires that in all actions concerning children, the best interests of the child shall be a primary consideration.	to prevent violation of children's rights particularly protection from child labour. No child will be employed in the project as per the act.
Climate change Act 2016	Under Section 3 of the Act, the objectives of the Act include to provide for a regulatory framework for enhanced response to climate change; to provide for mechanism and measures to achieve low carbon climate development, and for connected purposes.	The contractor under this Project will be required to comply with provisions of the Act during Project implementation.
National Gender and Equality Commission Act, 2011	As per Section 8, the over-arching goal for NGEC is to contribute to the reduction of gender inequalities and the discrimination against all women, men, persons with disabilities, the youth, children, the elderly, minorities and marginalized communities.	The provisions of the Act become relevant during hiring of workforce on site in a fair and non-discriminative manner. It may also apply in grievance redress if an aggrieved person escalates a complaint to the commission. The project, through the contractor is expected to consider and hire both male and female gender during the duration of the project.
Employment Act, 2007	-This Act of Parliament prohibits discrimination in labour relations under section 5, sexual harassment under section 6, forced labour under section 4 and child labour in section 52. Section 6 (2) obligates all employers with twenty or more employees to issue a policy statement on sexual harassment.	The contractor will be guided by the provisions of this Act on matters touching on equality of opportunities in employment, terms of service, age limit and prevention of sexual harassment in the workplace.
Kenya Roads Act No. 2 of 2007	Part II provides for the establishment of the Roads Authorities.	Permits will be sought from the relevant road's authorities in cases where the line crosses the roads infrastructure.

Valuers Act Cap 532	This Act provides for the registration of valuers and the regulation of the valuation profession and practice in Kenya. Section 21 of Cap 532 prohibits any person who is not a registered Valuer and whose name does not appear in the register to prepare and submit a valuation report.	KETRACO will require land for the project and must engage a registered valuation expert during the RAP preparation.
Community Land Act, 2016	This is an Act of Parliament to give effect to Article 63 (5) of the Constitution. Part II of the Act provides for the recognition, protection, and registration of community land rights. Part III provides for the management and administration of community land. Section 6 provides for the role of county governments in relation to unregistered community land.	All affected community land (registredregistered or un-registered), will be compensated in accordance with the provisions of the Community Land Act.
Public Roads and Roads of Access Act (Cap. 399)	Sections 8 and 9 of the Act provides for the dedication, conversion or alignment of public travel lines including construction of access roads adjacent lands from the nearest part of a public road. Section 10 and 11 allows for notices to be served on the adjacent landowners seeking permission to construct the respective roads.	During the construction phase of the project, access to the site areas will be required for the construction vehicles. Where existing roads do not exist, the Proponent shall seek permission from the appropriate authorities to create such access during the construction phase.
Occupiers Liability Act (Cap. 34)	Rules of Common Law regulates the duty which an occupier of premises owes to his visitors in respect of danger and risk due to the state of the premises or to things omitted or attributes an affliction on his/her health to a toxic material in the premises.	The Proponent shall acquire Way leave along the transmission line corridor. The Proponent shall endeavor to ensure that the management of health and safety issues is of high priority during the operational phase of the project.
Building Code	This law recognizes the county governments as the leading planning agencies mandating the potential developers to submit	In the construction of the transmission lines, KETRACO will adhere to the Building Code.

	development applications for approval. The county governments will approve or reject plans if they do or don't comply with the law, respectively.	
Land Value Amendment Act 2019	The Land Value (Amendment) Act, 2019 (the Act) came into force on 16 August 2019 and has amended various sections of the Land Act, the Land Registration Act as well as the Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act. The Act aims at standardising the value of land in Kenya for the primary purpose of enhancing efficiency and expediting the compulsory land acquisition process.	Compensation for lost assest will be in accordance with this Act.

4.2.1 National Air Quality Emission Standards

In undertaking the construction activities described above, the Contractor will comply with the following national regulatory air quality standards and WHO Air Emission and Ambient Air Quality guidelines, whichever is stringent. Regular monitoring to determine compliance will be done by the Supervision Consultant and corrective/mitigation measures applied where necessary.

Table 4-3: Ambient Air Quality Tolerance Limits

Pollutant	**Time Weighted Average**			
		Industrial Area	**Residential, Rural & Other Area**	**Controlled Areas**
Sulphur oxides (SOX);	Annual Average	80 ug/m^3	60 ug/m^3	15 ug/m^3
	24 hours	125 ug/m^3	80 ug/m^3	30 ug/m^3
	Annual Average		0.019 ppm/50ug/m^3	
	Month Average			
	24 Hours		0.048ppm /125ug/m^3	
	Instant Peak		500 ug/m^3	

Pollutant	Time Weighted Average			
		Industrial Area	Residential, Rural & Other Area	Controlled Areas
	Instant Peak (10 min)		0.191 ppm	
Oxides of Nitrogen (NOX);	Annual Average	80 ug/m^3	60 ug/m^3	15 ug/m^3
	24 hours	150 ug/m^3	80 ug/m^3	30 ug/m^3
	Annual Average		0.2 ppm	
	Month Average		0.3 ppm	
	24 Hours		0.4 ppm	
	One Hour		0.8 ppm	
	Instant Peak		1.4 ppm	
Nitrogen Dioxide	Annual Average	150 ug/m^3	0.05 ppm	
	Month Average		0.08 ppm	
	24 Hours	100 ug/m^3	0.1 ppm	
	One Hour		0.2 ppm	
	Instant Peak		0.5 ppm	
Suspended Particulate Matter	Annual Average	360 ug/m^3	140 ug/m^3	70 ug/m^3
	24 hours	500 ug/m^3	200 ug/m^3	100 ug/m^3
	Annual Average		100 ug/m^3	
	24 hours		180 ug/m^3	
Respirable Particulate Matter (<10□m) (RPM)	Annual Average	70 ug/m^3	50 ug/m^3	50 ug/m^3
	24 hours	150 ug/Nm^3	100 ug/Nm^3	75 ug/Nm^3
PM2.5	Annual Average	35 ug/m^3		
	24 hours	75 ug/m^3		
Lead (Pb)	Annual Average	1.0 ug/Nm^3	0.75 ug/Nm^3	0.50 ug/m^3
	24 hours	1.5 ug/m^3	1.00 ug/m^3	0.75 ug/m^3
	Month Average		2.5	
Carbon monoxide (CO)/ carbon dioxide (CO_2)	8 hours	5.0 mg/m^3	2.0 mg/m^3	1.0 mg/m^3
	1 hour	10.0 mg/m^3	4.0 mg/m^3	2.0 mg/m^3
Hydrogen sulphide	24 hours	150ug/m^3		
	instant Peak	700ppb		
Total VOC	24 hours	600 ug/m^3		

Source - NEMA

Table 4-4: National Air Quality Standards for General Pollutants

Pollutant	Time Weighted Average	Property Boundary
Particulate matter (PM)	Annual Average	50 ug/m^3
	24 hours	70 ug/m^3
Oxides of Nitrogen (NOX);	Annual Average	80 ug/m^3
	24 hours	150 ug/m^3
Sulphur oxides (SOX);	Annual Average	50 ug/m^3
	24 hours	125 ug/m^3
Hydrogen Sulphide	24 hours	50 ug/m3
Lead (Pb)	Annual/24 hours	0.5 – 2.0ug/m^3
Ammonia	24 hours	100 ug/m^3

Source-NEMA

4.2.2 National Noise Emission Guidelines

In undertaking the construction activities described above, the Contractor will comply with the following national regulatory air quality standards and permissible noise levels.

Table 4-5: National Noise Guidelines

Zone	Maximum Noise level limits dB (A)		Time Frame
	Day	Night	
Places of worship	30	25	Day time: 6.01a.m – 8.00p.m Night time: 8.01p.m – 6. 00p.m
Residential: 1. Indoors 2. Outdoors	35 40	25 25	
Mixed Residential (inclusive of Entertainment and commercial places)	55	45	
Commercial	70	70	
Silent arena	30	25	

Source - NEMA

Table 4-6: Noise Levels for different areas and facilities

Facility	Maximum Noise level limits dB (A)		Time Frame
	Day	Night	
Health facilities, Educational Centres and homes of disabled	60	35	Day time: 6.01am-10.00pm
Residential	60	35	

Industrial	85	65	Night time: 10.01pm – 6.00am
Commercial	75	50	

Source - NEMA

Table 4-7: Noise levels from a factory or a workshop (Continuous or intermittent noise)

dB(A)	Daily	Weekly
85	8 hours	40 hours
88	4 hours	20 hours
91	2 hours	10 hours
94	1 minute	5 hours
97	30 minutes	2.5 hours
100	15 minutes	1.25 hours
103	7.5	37.5 minutes
106	3.75	18.75 minutes
109	1.875 minutes	9.375 minutes

Source – NEMA

N/B: Noise levels should not exceed a level of

- **I.** Factory/Workshops 85 dB (A)
- **II.** Offices 50 dB (A)
- **III.** Factory/Workshop Compound 75 dB (A)

Table 4-8: Maximum Permissible Noise level for Impact or Impulsive Noise

Sound Level dB(A) Max	Permitted impulses per day
140	100
130	1,000
120	10,000

Source-NEMA

4.3 National Water Quality Standards

The contractor will comply with the following national regulatory wastewater and effluent discharge standards. Regular monitoring to determine compliance will be done by the contractor and corrective/mitigation measures applied where necessary.

Table 4-9: National Wastewater Discharge Standards

Parameters	Maximum levels permissible
Suspended solids (mg/L)	250
Total dissolved solids (mg/L)	2000
Temperature ^{0}C	20 -35
pH	6-9
Oil and Grease (mg/L)	

Parameters	Maximum levels permissible
Oil and Grease (mg/L)	where conventional treatment shall be used - 10
Ammonia Nitrogen (mg/L)	
Substances with an obnoxious smell	where ponds is a final treatment method - 5
Biological Oxygen Demand BOD_5 days at 20°C (mg/L)	20
Chemical Oxygen Demand COD (mg/L)	Shall not be discharged into the sewers
Arsenic (mg/L)	500
Mercury (mg/L)	1000
Lead (mg/L)	0.02
Cadmium (mg/L)	0.05
Chromium VI (mg/L)	1.0
Chromium (Total) (mg/L)	0.5
Copper (mg/L)	0.05
Zinc (mg/L)	2.0
Selenium (mg/L)	1.0
Nickel (mg/L)	5.0
Nitrates (mg/L)	0.2
Phosphates (mg/L)	3.0
Cyanide Total (mg/L)	20
Sulphide (mg/L)	30
Phenols (mg/L)	2
Detergents (mg/L)	2
Colour Less than	10
Alkyl Mercury Not Detectable	15
Free and saline Ammonia as N (mg/L)	40 Hazen units
Calcium Carbide	(nd)
Chloroform	4.0
Inflammable solvents	Nil
Radioactive residues	Nil
Degreasing solvents of mono-di-trichloroethylene type	Nil
	Nil

Source-NEMA

4.4 AfDB Environmental and Social Assessment Procedures for 2015

The African Development Bank's existing Environmental and Social AssessmentProcedures (approved in 2001) have been revised to reflect the updated information, upgraded processes and cutting-edge knowledge embodied in the Integrated Safeguards System (ISS). It also addresses the limitations of the existing ESAP and provides a strong procedural basis for the operationalization of the Integrated Safeguards Systems. It details the specific procedures that the Bank and its borrowers or clients should follow to ensure that Bank operations meet the requirements of the operational safeguards (OSs) at each stage of the Bank's project cycle.

Its adoption and implementation enhance the environmental and social performance of the Bank's operations and improve project outcomes. The ESAP will help to improve decision-making and project results by ensuring that Bank-financed operations conform to the requirements laid out in the operational safeguards (OS) and are thus sustainable. Effective implementation of the ESAP will help to avoid incurring costs and implementation delays as a result of unanticipated problems. It will also reduce the need for project conditionality as remedial measures can be taken in advance and incorporated into project design or project alternatives can be considered.

The ESAP describes how the Bank and its borrowers should work together to ensure that environmental, climate change and social considerations are integrated into the project cycle from country programming to post completion. It represents a coordination mechanism between the Bank, relevant government agencies and private sector entities and plays an important role in building the environmental, social and climate change management capacity of the project's executing agency.

The Environmental and Social Assessment procedures apply during the entire project cycle, with differentiated tasks to be performed, roles and responsibilities for the Bank and its borrowers and clients:

- During country programming, the key task is to develop and update baseline data on RMCs' environmental and social components, policies, programs and capacities to better integrate environmental and social dimensions into lending priorities

- At the project identification phase, the screening exercise focuses on the environmental and social dimensions of a project to categorize it in one out of four categories based on the potential adverse environmental and social impacts of the project.

- During project preparation, the scoping exercise helps to define the scope of the Environmental and Social Assessments (ESA) to be completed by the Borrower based on the project category, with the assistance of staff from the operational departments. The preparation of these assessments requires consultations with primary and secondary stakeholders. Once ESAs are finalised, the review process allows operational departments to ensure that Bank's vision, policies and guidelines were adequately taken into account in project design and implementation.

- During the appraisal phase, ESIA Summaries shall be reviewed and cleared by the Safeguards and Compliance Division. Finally, the procedures require the public disclosure of summaries in accordance with specified deadlines. For Category 1 projects, these shall be disclosed for 120 days for public sector projects and at least for 60 days for private sector operations. All category 2 operations shall be disclosed for 30 days before Board deliberations.

- At the project implementation phase, the Borrowers shall ensure the implementation of Environmental and Social management Plans developed to address adverse impacts, while monitoring the project impacts and results. Operational staff shall supervise the Borrowers' work and verify compliance through supervision missions and/or environmental and social audits, whenever necessary. Audits undertaken during the completion phase and post-evaluations shall also aim to assess the environmental and social sustainability of the results.

Throughout the project cycle, the joint participation of environmental and social expertise in project screening, scoping, field missions and audits is invaluable. Their involvement is considered particularly important for Category 1 and 4 projects:

- The Borrowers are responsible for integrating environmental and social considerations into sponsored projects;

- The Bank's Operations Complexes assist the Borrowers in meeting Bank's requirements;

- The Compliance and Safeguards Division verifies compliance to the procedures, essentially at the entry and approval points, and provides peer-level advice and support for missions, audits and document review upon request.

4.5 International Conventions

Relevant international agreements, treaties and conventions that have a social and/or environmental aspect, to which Kenya is a signatory or has acceded to/ratified and which will guide project implementation, are detailed in **Table 4-10** below:

Table 4-10: International Conventions

Convention	Objective
African Convention for the Conservation of Nature and Natural Resources (2003)	The objectives of the ACCNNR have been considered in this ESIA.
Convention on Biological Diversity (1992)	The objectives of the CBD have been considered in this ESIA.
Convention on the Conservation of Migratory Species of Wild Animals	This ESIA has taken into account any potential impacts on migratory species.
Convention on Wetlands of International Importance especially Waterfowl Habitat (Ramsar Convention, 1971)	This ESIA has taken into account any potential impacts on wetlands.

Convention	Objective
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998)	The objectives of the Rotterdam Convention should be considered when developing plans and programs for the management of relevant hazardous chemicals and pesticides.
Convention concerning the Protection of the World Cultural and Natural Heritage (1972)	By applying international standards such as World Bank O.P 4.11 regarding Physical Cultural Resources to any identification and management of cultural heritage aspects during project development, the developer will comply with the objectives of the convention.
Abolition of Forced Labour Convention, 1957 (No. 105)	Ensure that forced labour is prohibited and that human resource (HR) policies and procedures are developed and Implemented to ensure this.
Minimum Age Convention, 1973 (No. 138)	Ensure that employment policies include prohibitions on the employment of children and that such polices are adhered to.
Worst Forms of Child Labour Convention, 1999(No. 182)	Ensure that employment policies include prohibitions on the employment of children and that such polices are adhered to.
Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)	Ensure that the Project recognised workers freedom of association and protection of the right to organise.
Discrimination (Employment and Occupation) Convention, 1958 (No. 95)	Discrimination in the field of employment and occupation should be expressly forbidden.
International Convention on the Elimination of All Forms of Racial Discrimination: 1969.	All workplace racial discrimination should be expressly forbidden.
Convention on the Elimination of All Forms of Discrimination against Women :1981 (CEDAW)	Ensure that non-discrimination against women is enshrined in HR policies and practices for the proposed Project.
Convention on the Rights of the Child, 1990	Ensure that employment policies include prohibitions on the employment of children.
Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment:1987	Torture in all workplaces should be expressly forbidden.
International Covenant on Economic, Social and Cultural Rights, 1976	Ensure that economic, social, and cultural rights are respected in the proposed Project.
International Covenant on Civil and Political Rights,1976	Ensure civil and political rights are observed in the proposed Project.

Convention	Objective
Convention on the Rights of Persons with Disabilities	All workplace discrimination should be expressly forbidden.
The African Charter on Human and Peoples‟ Rights (African Charter)	Ensure civil and political rights are observed in the proposed Project.
The African Charter on the Rights and Welfare of the Child	Ensure that employment policies include prohibitions on the employment of children.
The Protocol to the African Charter on the Rights of Women in Africa (Maputo Protocol)	Ensure civil and political rights are observed in the proposed Project.

4.6 Institutional Frameworks

4.6.1 Ministry of Energy and Petroleum

Ministry of Energy and Petroleum (MOE&P) is in charge of making and articulating energy policies to create an enabling environment for efficient operation and growth of the sector.

4.6.2 The National Environment Council

The National Environmental Council (the Council) is responsible for policy formulation and directions for the purposes of the Act. The Council also sets national goals and objectives and determines policies and priorities for the protection of the environment.

4.6.3 The National Environment Management Authority

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

4.6.4 The Standards and Enforcement Review Committee

In addition to NEMA, EMCA provides for the establishment and enforcement of environmental quality standards to be set by a technical committee of NEMA known as the Standards and Enforcement Review Committee (SERC).

4.6.5 The National Environmental Complaints Committee

The Act (EMCA) has also established a Public 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

4.6.6 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.

4.6.7 Directorate of Occupational Health and Safety Services

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

4.6.8 National Land Commission

The National Land Commission (NLC) 2012 will undertake compensation. NLC is an independent government commission whose establishment was provided for by the Constitution of Kenya, 2010 to, amongst other things, manage public land on behalf of the national and county governments, initiate investigations into present or historical land injustices and recommend appropriate redress, and monitor and have oversight responsibilities over land use planning throughout the country.

5 ENVIRONMENTAL AND SOCIAL BASELINE

5.1 Introduction

This chapter provides a description of the current baseline conditions in the Project Area of Influence (AoI). The baseline characteristics of the biophysical and socio-economic conditions are used as the basis of prediction of possible effects and to monitor changes during construction and operation.

5.2 Overview of Field Surveys

Surveys were undertaken by a combined physical, biological, and social study team which collected and categorized both primary and secondary data. To plan the survey, maps of the Project AoI were created, and the key environmental and social resources were located and analysed. This analysis was used to develop the survey plan and target locations. The following surveys were performed during field work activities:

- Flora and habitats (primary data collection, including vegetation mapping ground-truthing);
- Fauna (primary data collection);
- Noise (primary data collection);
- Water resources, soils, land use and landscape (screening); and
- Ground-truthing on 1000 m either side of line for the 132kV line (i.e., 2000 m in width).
- Stakeholder identification.
- Social demographics and other characteristics (secondary and primary data collection).

During the surveys, a number of engagements were held with stakeholders at the community level (Project disclosure meetings, village profiles, focus group discussions) and government level.

5.2.1 Bio-physical Baseline Studies

Under the scope of the biophysical components, field visits to several pre-identified locations were undertaken in order to survey the baseline conditions and identify the main potential impacts of the mentioned project from the start to the end of the transmission line. In order to better systematize the data collection and subsequent analysis, in view of the description of the ecosystems to be crossed and vulnerability and accessibility, all possible routes within the 1,000 m corridor were assessed.

Before the survey, a literature review was undertaken on the vegetation cover of the area under assessment, and together with analyses of satellite images, this information was used as a basis for the fieldwork. After the desktop analysis, field visits were held in order to collect data for ground-truthing. The different vegetation/habitat types as well as the flora component were analyzed. The occurrences of the main plant and animal species (mammals, birds, reptiles, and amphibians) were recorded with the assistance of field guides, scientific references, satellite material and other bibliographic resources available.

5.2.2 Social Baseline Studies

The geographical focus of this baseline is a socio-economic Study Area which was defined as:

1. All the settlements totally or partially within a 500 m corridor (250 m either side of the centre line) running the entire length of the transmission line.
2. As most surveyed settlements are located close to the lands they cultivate, it is expected that most of the impacts, including land-based impacts, will occur within this corridor. Some settlements may be located further away from the 500 m corridor and still have cultivated land within the corridor. Affected settlements located outside the 500 m corridor, if any, will be identified during the household surveys as part of the implementation of stand-alone Resettlement and Action Plan (RAP) for specific sections of the line as part of the resettlement and compensation process.
3. Information at a national, county and sub county level has been gathered from secondary sources using publicly available information. Data presented for the socio-economic Study Area has been gathered from publically available secondary sources along with primary data gathered during a field visit to the Study Area.
4. The fieldwork undertaken included a high-level settlement survey, key informant interviews, focus group meetings and ground truthing of points of interest encompassing settlements within the 500m corridor.
5. The field work focused on high level socioeconomic information including demographic estimates (e.g., population size, age, and gender distribution estimates, etc.), main livelihood activities and land uses, land tenure, health and education and access to basic infrastructure and services. The list of engagement activities undertaken, and number of people interviewed/consulted in each of these settlements is presented in the engagement log **Annex A** to the ESIA.

As such, the socioeconomic information presented in the baseline focuses to the extent possible on the Study Area (i.e., the 2000 m corridor) based on a combination of data collected during the field visits and additional secondary sources. Information is provided at a higher level (county and national) as applicable when local level information is not available or when the general information applies at the local level. It should be noted that specific information relative to land affected households (land ownership status, asset inventories, etc.) was not included in the scope of the ESIA fieldwork. This information has been collected as part of the RAP preparation process. The baseline bio-physical and socio-economic information has been presented by County traversed by the transmission line. The line crosses 2 Counties namely Baringo and Laikipia.

5.3 Baringo County Bio-Physical Environment

5.3.1 Location and Size

Baringo is one of the 47 counties in Kenya and is situated in the Rift Valley region. The county borders Turkana and Samburu counties to the north, Laikipia to the east, Nakuru and Kericho to the south, Uasin-Gishu to the southwest, Elgeyo-Marakwet and West Pokot to the west. It is located between longitudes 35 30' and 36 30' East and between latitudes 0 10' South and 1 40'. The equator cuts across the county at the southern part. Baringo County occupies an area of 11,015.3 km² of which 165 km² is covered by surface water from Lake Baringo, Lake Bogoria, and Lake Kamnarok. The total length of the transmission line in Baringo County is **69.95** km. **Figure 5-1** below is a map of Baringo County with the length of the transmission line and **5.2** showing the AOI.

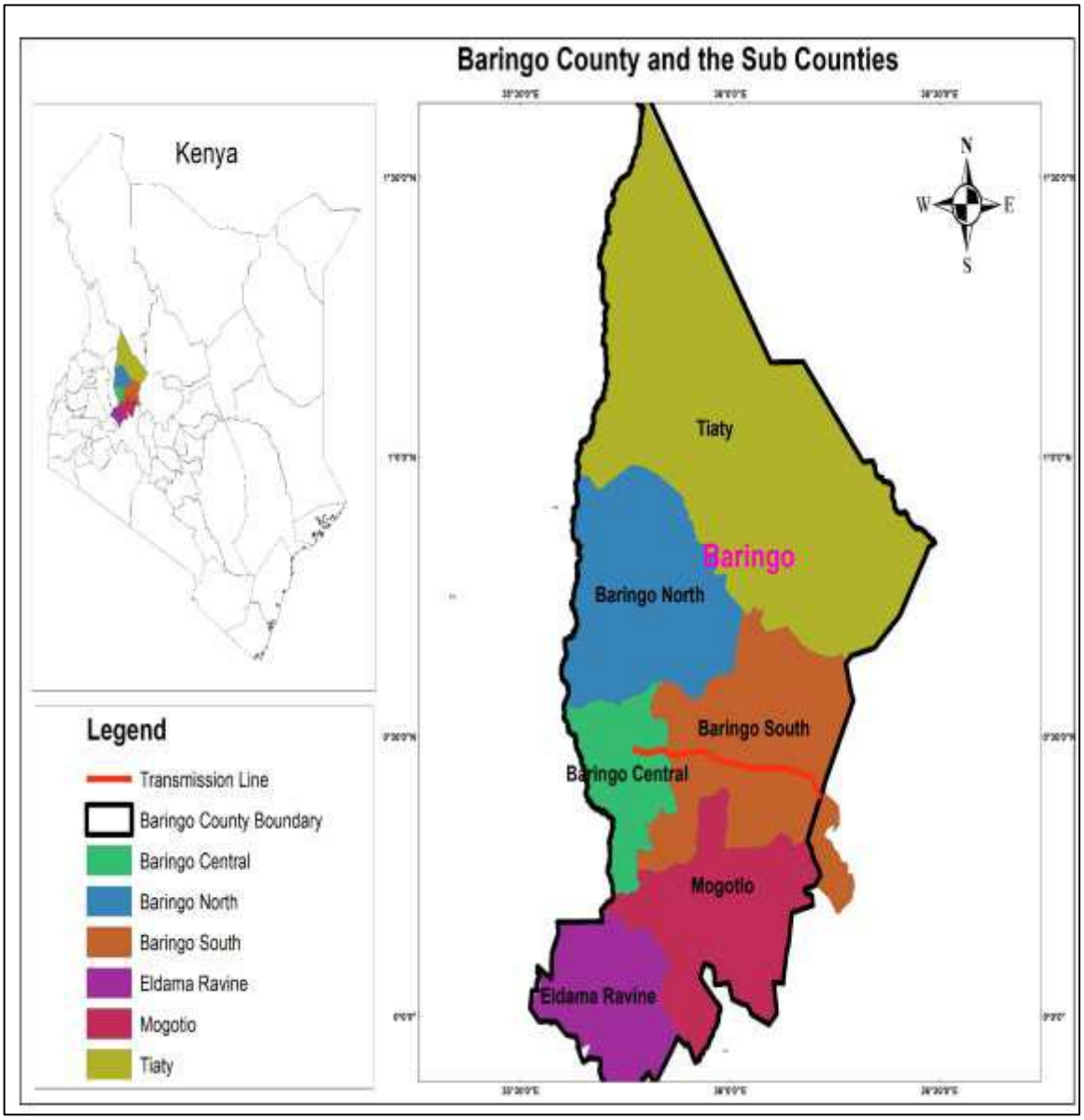


Figure 5-1: Transmission Route in Baringo County

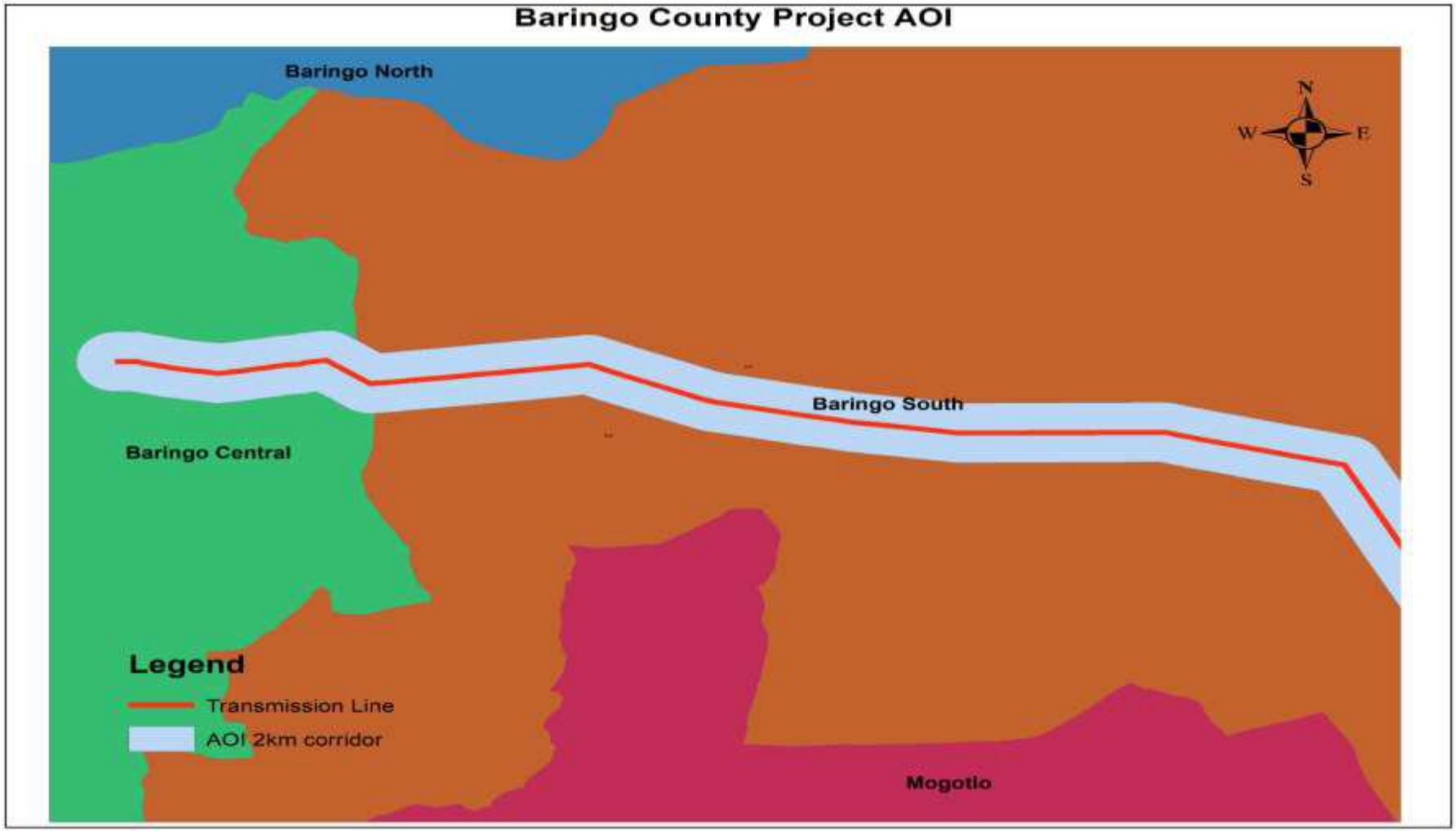


Figure 5-2. Transmission Line Route (AOI) in Baringo County

5.3.2 Administrative and Political Units

Baringo County comprises of six administrative sub-counties namely Baringo Central, East Pokot, Koibatek, Marigat, Mogotio and Tiaty East. The county has six constituencies: Baringo Central, Baringo South, Baringo North, Eldama Ravine, Mogotio, and Tiaty.

Table 5-1: Baringo County's Electoral Wards by Constituency

Constituency	Wards
Tiaty	Tirioko, Kolowa, Ribkwo, Silale, Loiyamorock, Tangulbei/Korossi, Churo/Amaya
Baringo North	Barwessa, Kabartonjo, Saimo/Kipsara Man, Saimo/Soi, Bartabwa
Baringo Central	Kabarnet, Sacho, Tenges, Ewalel/Chapcha, Kapropita
Baringo South	Marigat, Ilchamus, Mochongoi, Mukutani
Mogotio	Mogotio, Emining, Kisanana
Eldama Ravine	Lembus, Lembus Kwen, Ravine, Mumberes/Maji Mazuri, Lembus /Pekerra

Source: IEBC, 2017

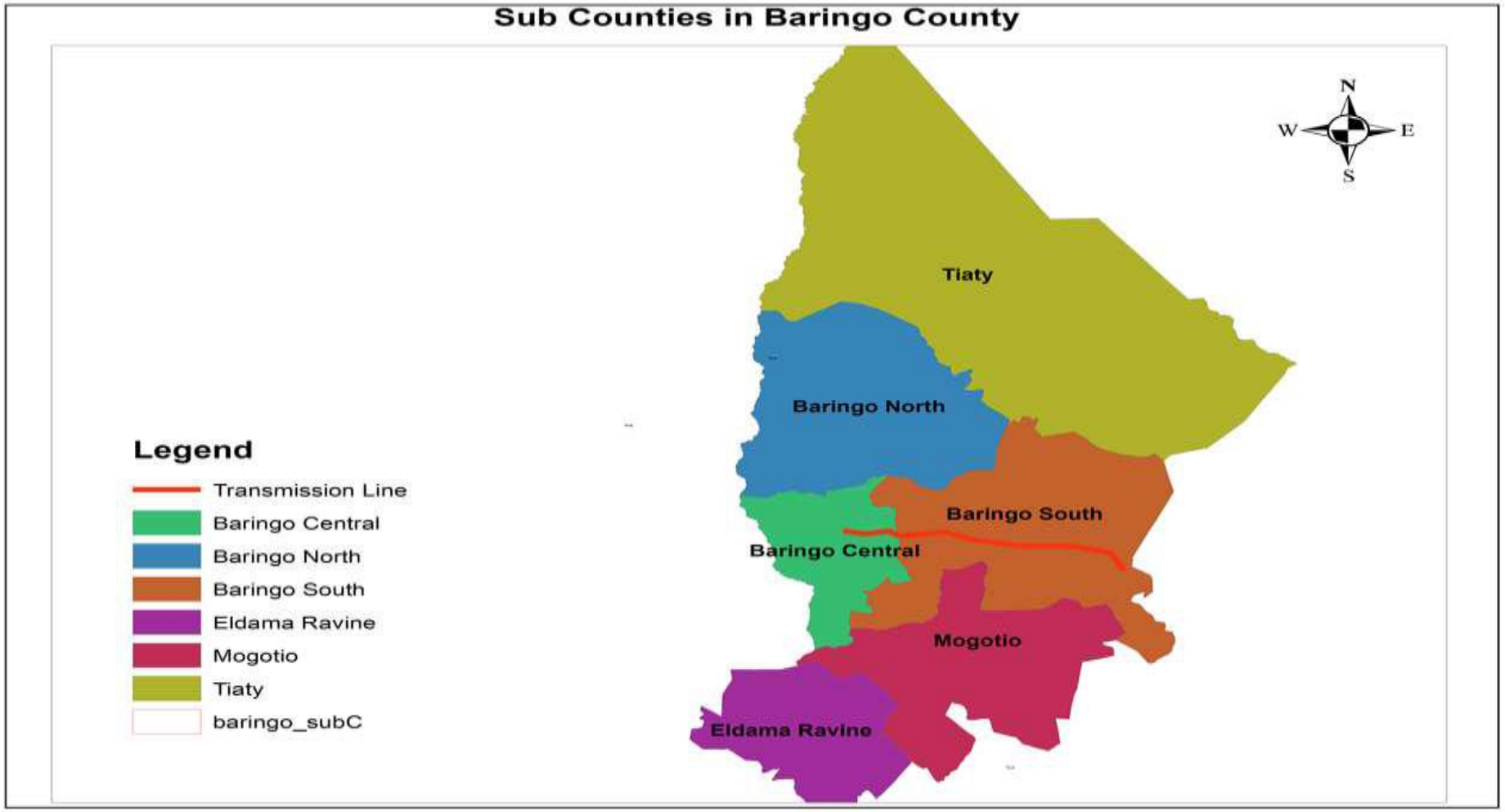


Figure 5-3: Sub-Counties affected by the transmission line in Baringo County

5.3.3 Climatic Condition

Baringo County has two distinct weather patterns with temperatures in the southern part ranging between 25°C during the cold months (June and July) and 30°C during the hot months (January and February) while in the northern parts, temperatures range between 30°C to 35°C. The county receives between 1000mm and 1500mm of rainfall annually in the highlands and 600mm in the lowlands. Baringo experiences two rainy seasons; March to June (long rains) and November (short rains).

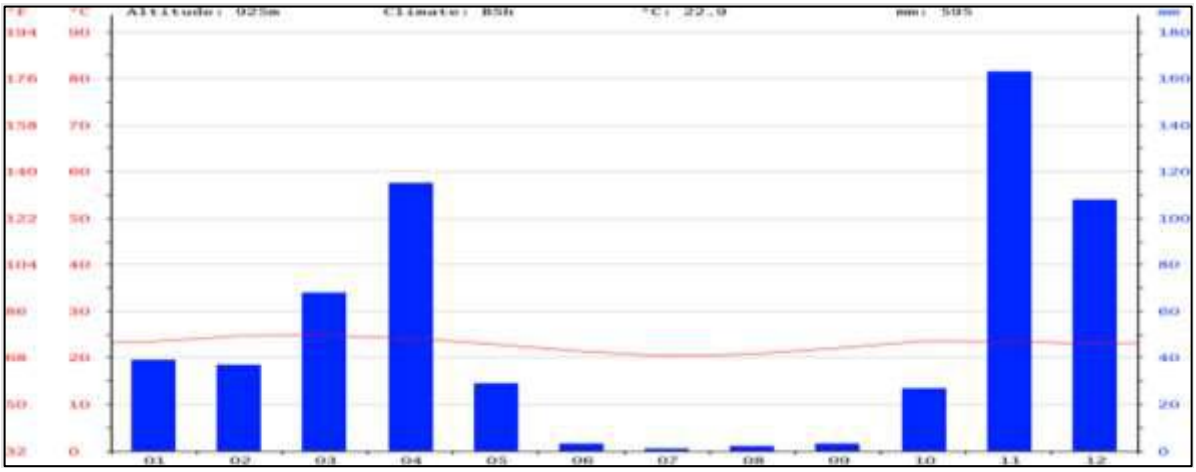


Figure 5-4: Rainfall distribution in the project area
Source: Kenya Meteorological Department

5.3.4 Baseline Ambient Environmental Measurements

Tables **5-2** to **5-10** below are the results of ambient air and noise measurements and soil sampling conducted to understand the baseline situation of the project area specifically in areas with sensitive receptors that may be affected by the project construction activities. **Figure 5-5** shows the locations of the baseline environmental measurements.

5.3.4.1 Ambient Air Emission Measurements

Table 5-2: Ambient Air Emission: Air Quality Data – PM10

Location	**Proxy**	**PM10** ($\mu g/m^3$)	**WHO** AQG	**EMCA** (Air Qual. Reg. 2014)
Cheplogoi Siri Medical Clinic	MP1	21	50 $\mu g/m^3$ 24hrs	50 $\mu g/m^3$ 24hrs
Kimalel Day and Boarding School	MP2	39		
Patakwanin Primary School	MP3	26		
Ol'ngarua Village	MP4	53		

Gatundia Village	MP5	28		

Source: Field Data

Table 5-3: Weather Conditions

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30°C
Cloud Cover	Sparse
Date	28th August 2019
Duration of Measurements	1hour

Source: Field Data

Table 5-4: Ambient Air Emission: Air Quality Data – Sulphur Dioxide, SO2

Location	**Proxy**	**SO_2** ($\mu g/m^3$)	**WHO** AQG	**EMCA** (Air Qual. Reg. 2014)
Cheplogoi Siri Medical Clinic	MP1	<8.1	20 $\mu g/m^3$ 24hrs	80 $\mu g/m^3$ 24hrs
Kimalel Day and Boarding School	MP2	<8.1		
Patakwanin Primary School	MP3	<8.1		
Ol'ngarua Village	MP4	<8.1		
Gatundia Village	MP5	<8.1		

Table 5-5: Weather Conditions

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30°C
Cloud Cover	Sparse
Date	28th August 2019
Duration of Measurements	1hour

Source: Field Data

Table 5-6: Ambient Air Emission: Air Quality Data – Nitrogen Dioxide

Location	**Proxy**	**NO_2** ($\mu g/m^3$)	**WHO** AQG	**EMCA** (Air Qual. Reg. 2014)

Cheplogoi Siri Medical Clinic	MP1	16	40 µg/m^3 Annual 200 µg/m^3 1hr average	80 µg/m^3 24hrs
Kimalel Day and Boarding School	MP2	20		
Patakwanin Primary School	MP3	23		
Ol'ngarua Village	MP4	20		
Gatundia Village	MP5	22		

Table 5-7: Weather Conditions

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30 Degrees Celcius
Date	28TH August 2018
Duration of Measurements	1hour

Source: Field Data

5.3.4.2 Ambient Noise Emission Measurements

Table 5-8: Ambient Noise Level

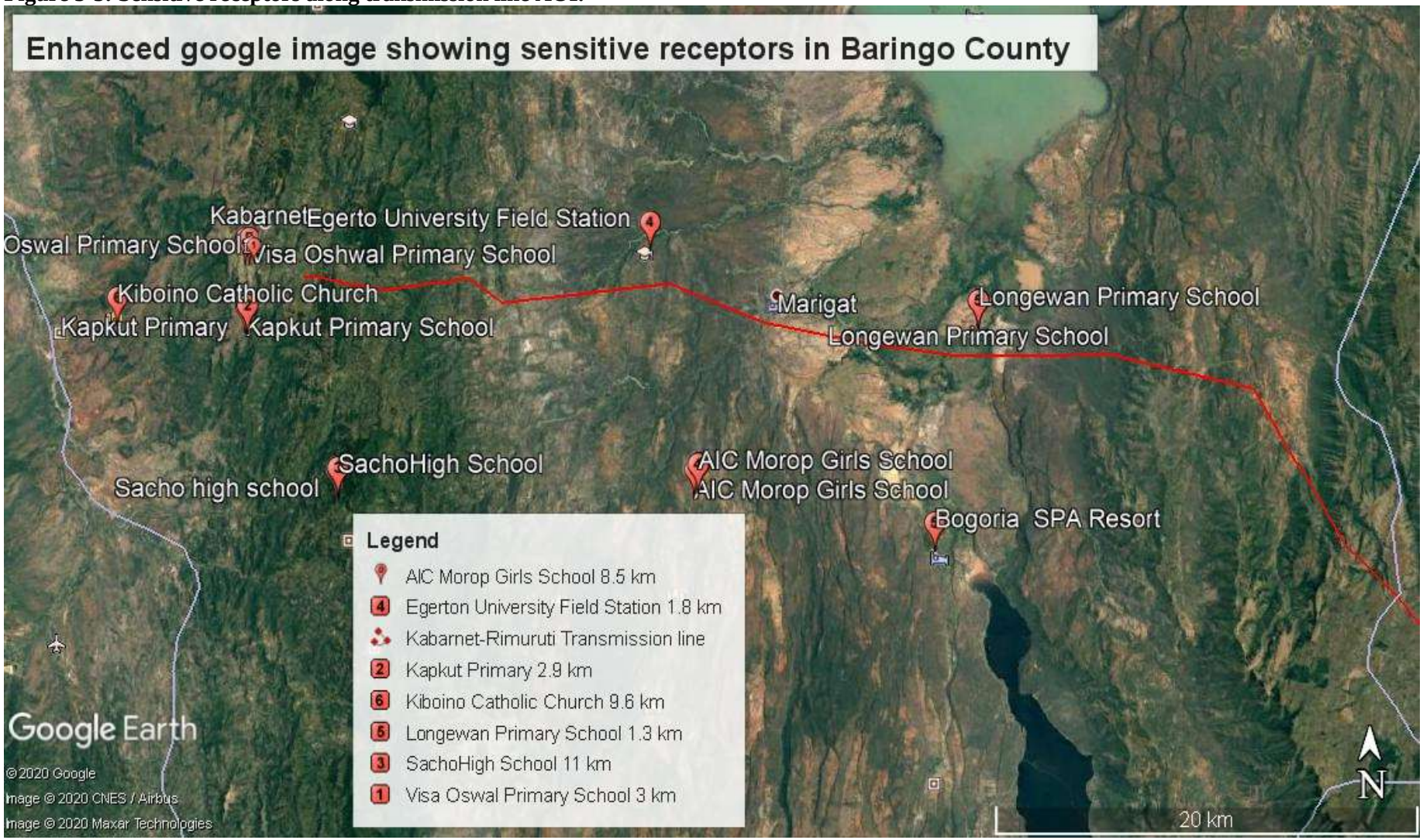
Location	**Proxy**	**LA Eq**	**LA Max**	**LA Min**
Cheplogoi Siri Medical Clinic	**MP1**	**42.1**	**48.1**	**40.8**
Kimalel Day and Boarding School	**MP2**	**36.4**	**41.7**	**40.3**
Patakwanin Primary School	**MP3**	**31.0**	**35.0**	**30.2**
Ol'ngarua Village	**MP4**	**35.1**	**42.0**	**34.5**
Gatundia Village	**MP5**	**47.2**	**52.1**	**50.3**

Table 5-9: Ambient Noise Level

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30 ^{0} C

Source: Field Data

Figure 5-5: Sensitive receptors along transmission line AOI.



5.3.5 Soils and Geology

Baringo County offers good examples of landforms, typical of the Eastern Rift Valley. The rift faulting has resulted in large altitude differences of the land, accompanied by often mountainous escarpments. A wide range in climate, soil and vegetation types goes along with these height differences; hence contrasting potential and use of the land is a result of landform distribution. Most prominent are the mountainous slopes of the Tugen hills and the escarpment of the Eastern Rift Valley flanks towards the Lherogi/Laikipia plateau (unit MV). Soils are formed on mostly older (Pliocene) volcanic rocks and due to the prevailing very steep and long slopes, are shallow and very stony. Above and outside these rift valley flanks the more humid and cooler highlands of the Tugen hills, Eldama Ravine area (unit UhV) at altitudes over 2200 m) and the Lherogi/Laikipia Plateau (unit HsV at an altitude of 1800 m) are found. Also, here older volcanic rocks prevail, that mostly bear a combination of shallow soils over rock and deeper red clays (Tugen hills, Eldama Ravine area) or shallow gravelly clay loams and some deeper grey clays at the Laikipia side.

The major part of the county is occupied by the Rift Valley floor, highlighted by the lakes Bogoria and Baringo, and to the west by the Kerio River. The deepest central part of both valleys descends gradually to well under the 900 m, 3000 ft) contours in the North, near to the county boundary with Turkana. At the base of the Tugen hills, a zone of badly eroded Uplands and minor Hills are found, developed on largely unconsolidated and highly erodible material (HV and UV). Apart from these, the majority of the arid lowlands is occupied by basalt Plateaus that are broken and tilted by faulting in more recent geological times. Numerous rocky cliffs alternate with gently undulating, but mostly very shallow and stony clay loam soils of the step faulted basalt Plateaus (unit LsB). The latter and lower parts of the step faulted rift valley floor are the areas where sedimentation takes place.

The geological erosion that has been active since the beginning of the crustal movements has detached large quantities of materials from both flanks of the Rift valley. These sediments have settled in Piedmont Plain-like low slopes (e.g., the Njemps flats; the Mukutan area), often with promising irrigation potential (unit YV). Soils are mostly well drained deep friable silty loams, or heavy cracking clays. These predominant plains are (partly) due to recent crustal movements, partly due to overutilization themselves subject to erosion, especially towards the north, and as a result, bear a dense gravel layer at the surface, are transformed into badland topography due to gully erosion. In the center of the Rift Valley, north of Lake Baringo, relatively vulcanicity produced some Hills (HP) and the more recent basalt flows that are partly covered by a blanket of ash and fine gravel (LaP).

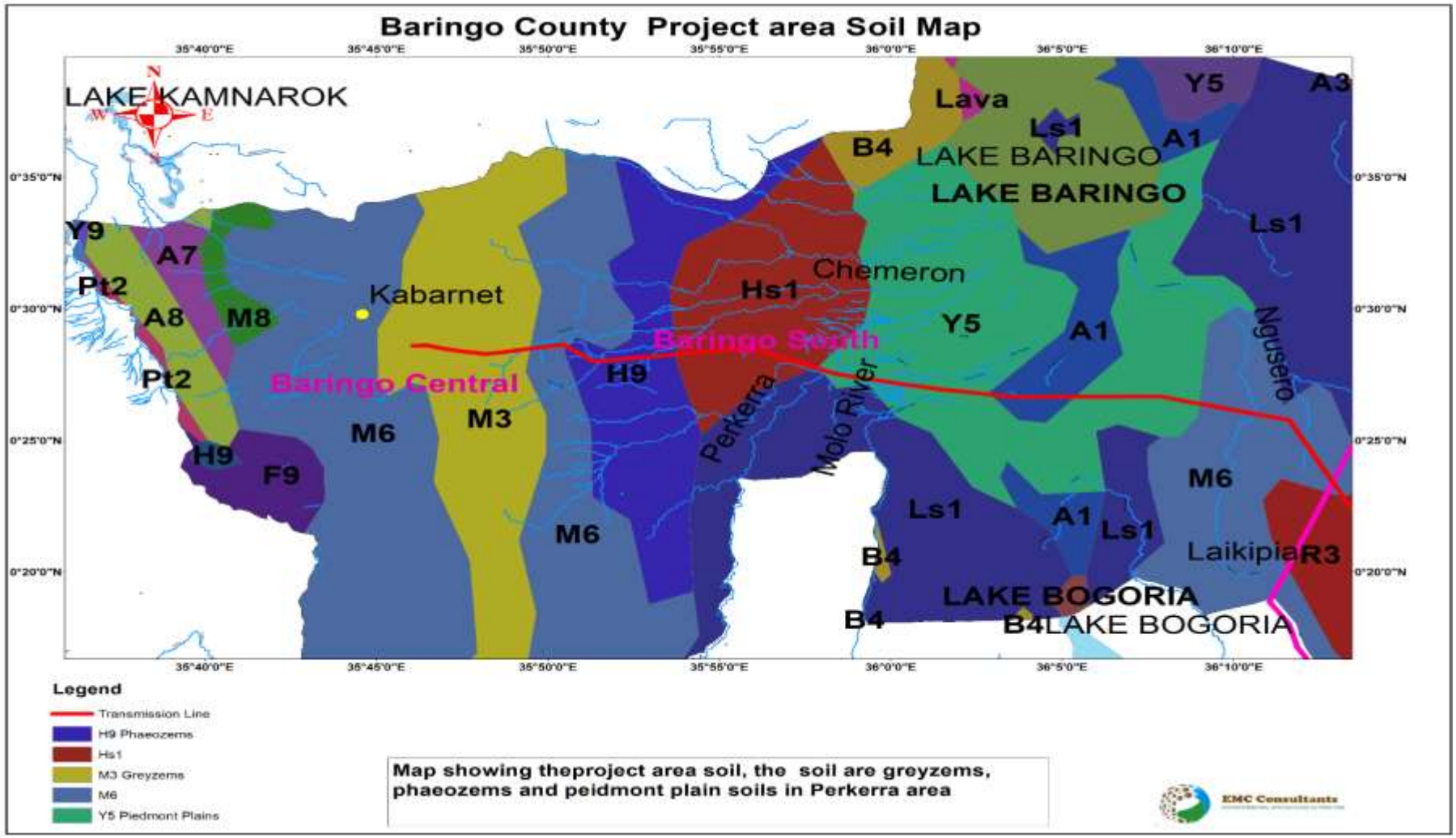


Figure 5-6: Soil map for Baringo County

Agricultural Potential of Dominant Soil Types along the Transmission line Route

The current land use along the route of the proposed transmission line also provides an indication of the agricultural potential. The current land use was determined using a combination of field observations and the interpretation of publicly available high-resolution satellite imagery. Agricultural activities observed include the cultivation of crops including potatoes, maize, wheat, sorghum, beans, peas, cassava, tomatoes, onions, coffee, tea, and livestock farming of cows, goats, sheep, donkey, poultry, and pigs. Based on these data and observations, the dominant land use along the route of the proposed transmission line is interpreted to be small-scale subsistence farming, which is of medium to high agricultural potential.

Figure 5-7: Cultivation along the Transmission Line Route

5.3.6 Topography

The county can be divided into four; the eastern edge of the Basin Uasin Gishu Plateau in the west followed eastwards by the Kerio Valley, the Kamasian Hills and the floor of the Rift Valley. The high ground of the south-west quadrant is a continuation of both the Uasin Gishu Plateau and the Kamasian Hills around the head of the Kerio Valley. One of the prominent features in Baringo is the Kerio Valley, which is situated on the western part of the county; other features include the Loboi Plain covered mainly by the latchstring salt silts deposits situated in the eastern part of the county near Lake Baringo and Bogoria. The Tugen Hills in the north-south which mainly consist of volcanic rocks, form a conspicuous topographic feature in the county. The hills have steep slopes with prominent gullies and rivers that flow into very deep gorges while on the eastern and western parts are escarpments. The prevailing conditions make the area prone to soil erosion or earth movement. Some part of the county is in the floor of the Rift Valley which owes its origin to the tectonic plate movement and volcanic activities resulting to dislocated surfaces and formation of separate ridges. The troughs of the rift that have a north-south alignment occupied by Lakes Baringo and Bogoria, which cover 164 KM^2. The elevation profile of the transmission line route, the highest elevation is 2205m ASL and the lowest is 982 m ASL. The high points (elevation) where towers are to be sited and hence prone to erosion are highlighted in **figures 5-10 and 5-11**.

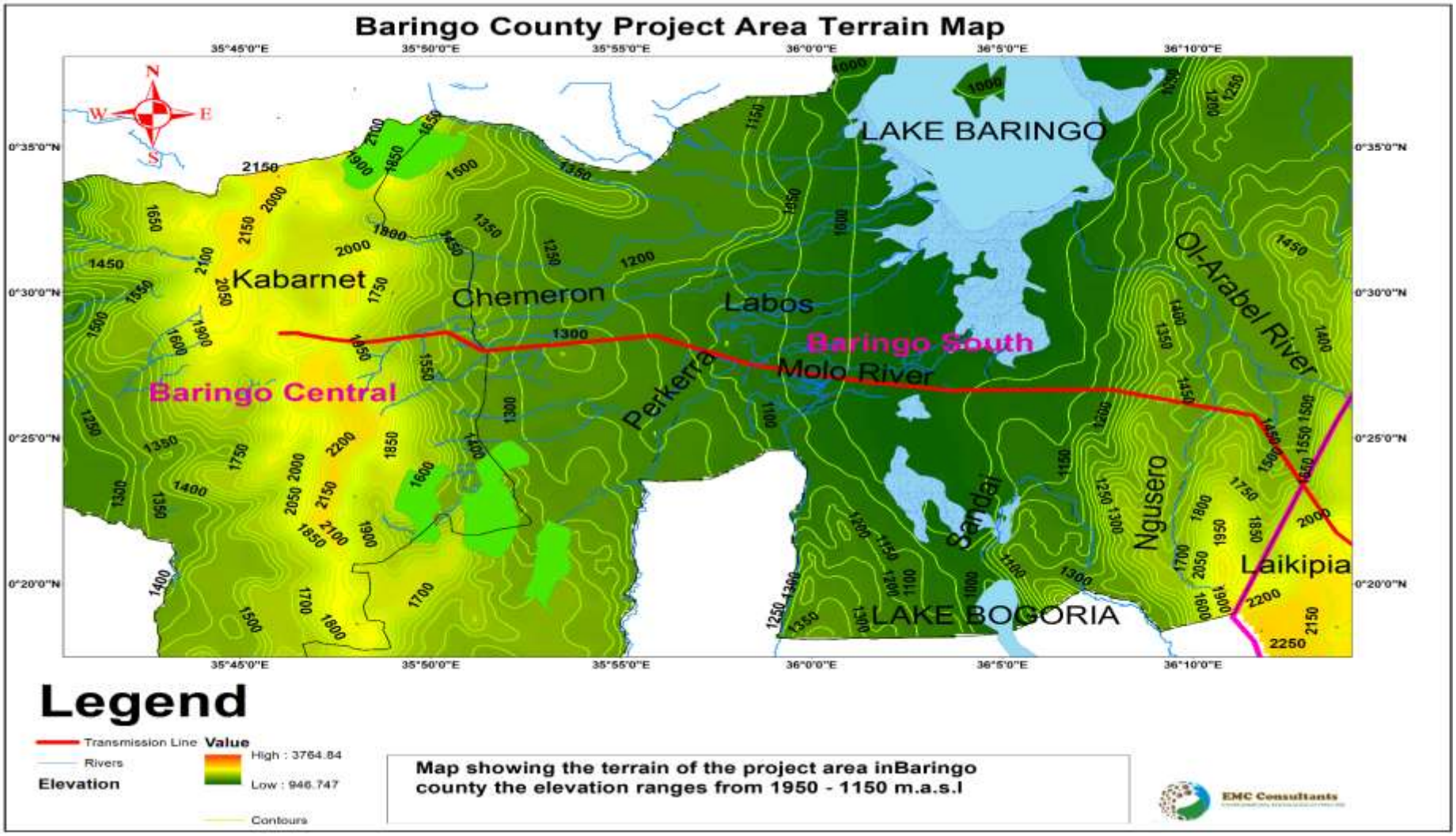


Figure 5-8: Transmisison Route Elevation Map

Figure 5-9. Elevation profile of the transmission line route

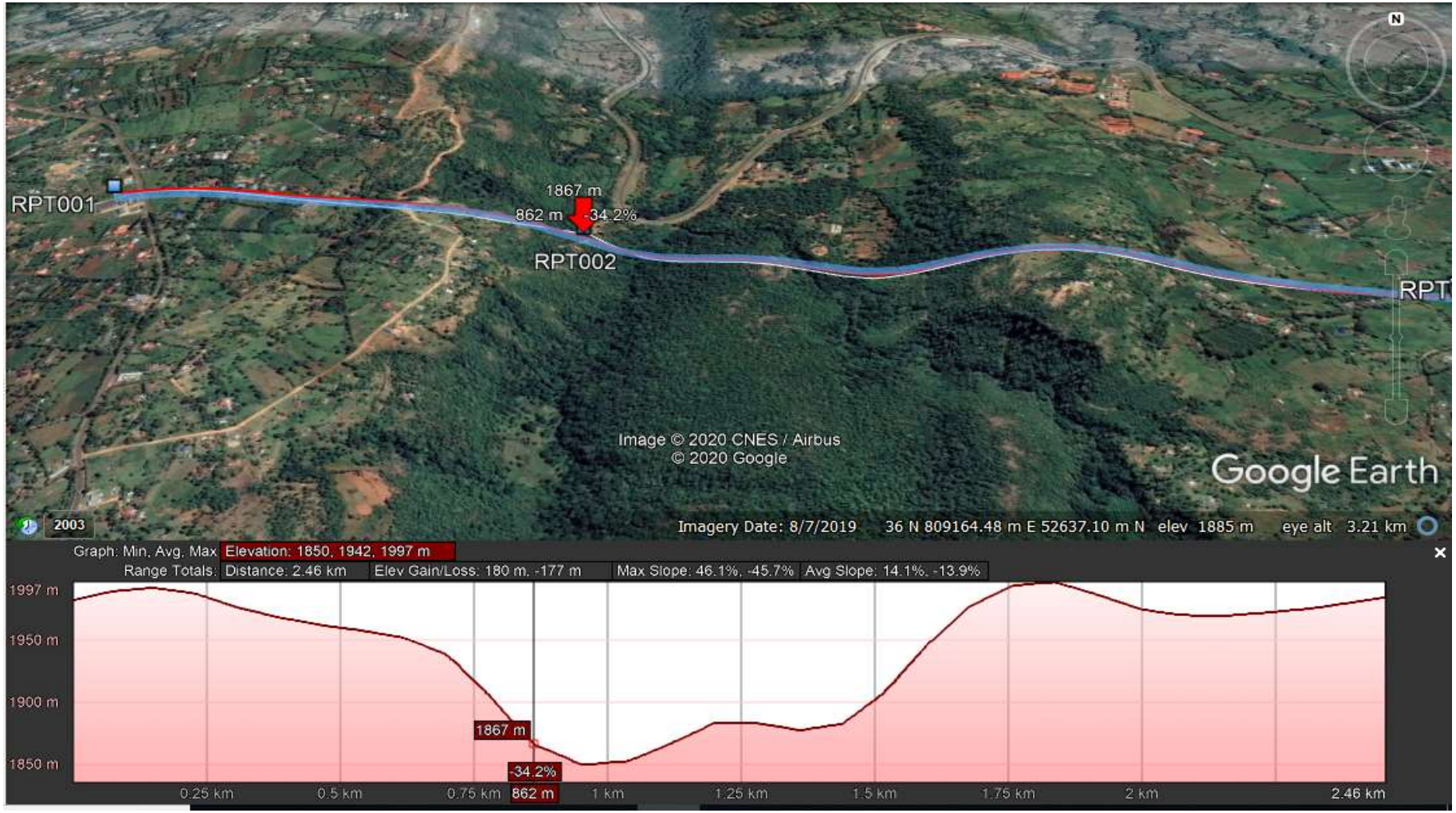
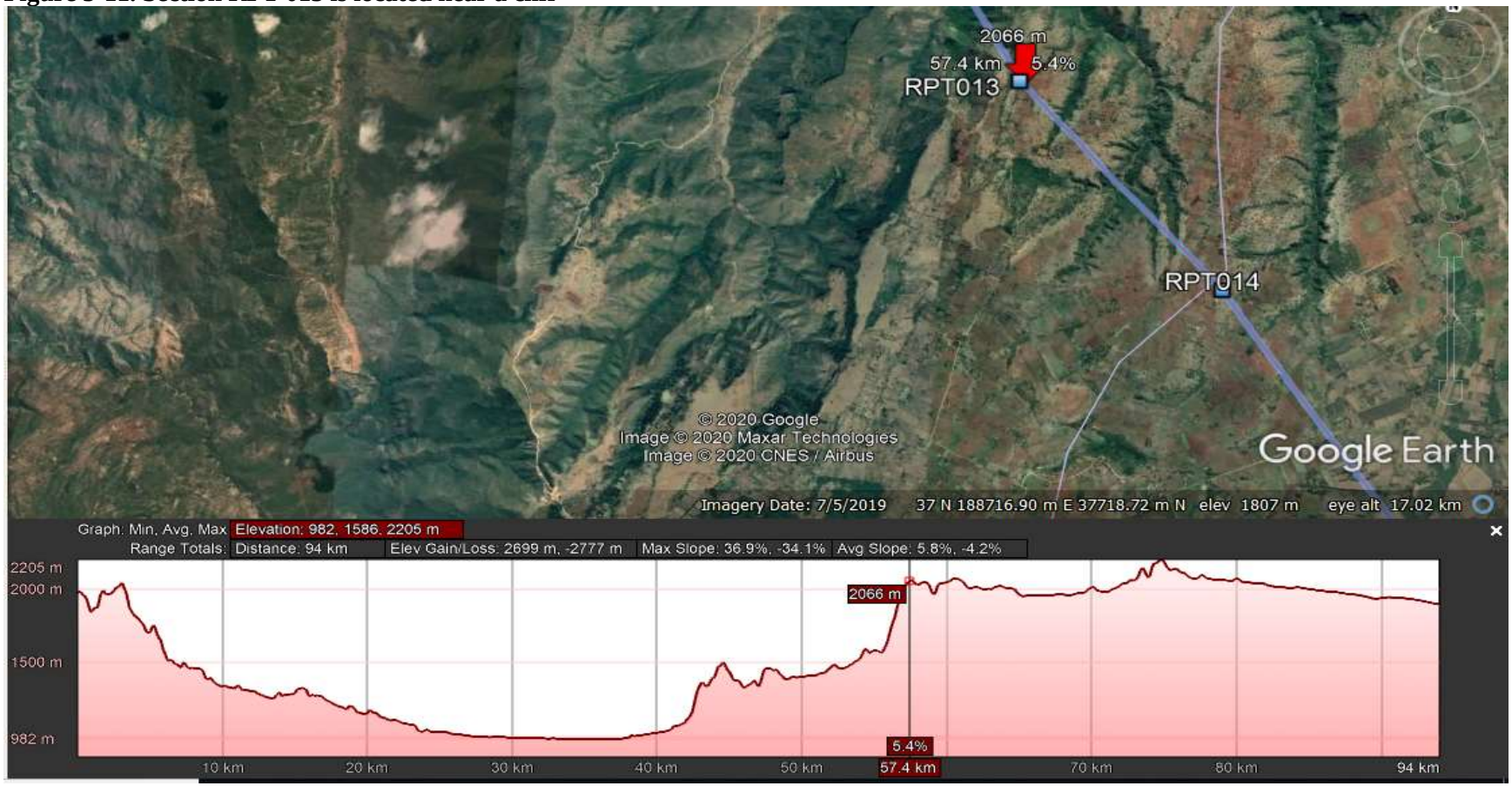


Figure 5-10. Erosion risk areas based on elevation and slope are at RPT002

Figure 5-11. Section RPT 013 is located near a cliff



5.3.7 Hydrology

On the higher ground most of the streams and rivers are perennial, but from 5,000 ft. downwards only the largest rivers, notably the Molo, Perkerra and Kerio and their main tributaries, have water throughout the year. Lake Baringo, a fresh-water lake, lies a few miles north-east of Marigat, and Lake Hannington, a soda lake, a few miles south-east of that place. Lake Narasha in the south-west of the area is little more than a marshy pond and is exceeded in size by many of the bodies of water impounded by dams nearby. Lelen Swamp, in the east, is a lake during the wetter months of the year.

5.3.7.1 Molo River

The upper catchment in the Molo and Kuresoi areas, functions as the primary source of the Molo River. Several streams that begin in the Mau Complex flow into the Molo River and are depended upon all the way down to Lake Baringo. Flowing down from the Mau Complex, the Molo River has served citizens of the Rift Valley for several years. Over the approximately 100 km length that the river covers from the Mau Forest to Lake Baringo, this waterway is a primary source of livelihood amongst the communities it flows through. The constituencies that the Molo River serves along its coverage include: Kuresoi, Molo, Rongai, Mogotio, and Baringo Central. Up to 1985, the water in Molo River remained clean, safe, and sufficient for communities in the region and for fisheries. The transmission line will cross a section of this river at Lon: 36° 0'31.90"E, Lat: 0°27'4.70"N.

5.3.7.2 Perkerra River

The Perkerra River is a river in the Great Rift Valley in Kenya that feeds the freshwater Lake Baringo. It is the only perennial river in the arid and semi-arid lands of the Baringo County. The Perkerra river supplies water to the Perkerra Irrigation Scheme in the Jemps flats near Marigat Township, just south of the lake. The river has a catchment area of 1,207 square kilometres. It rises in the Mau Forest on the western wall of the Rift valley at 2,400 m, dropping down to 980 m at its mouth on the lake. The catchment area has steep slopes on the hillsides, flattening out lower down. Most of the water comes from the hill slopes, where annual rainfall is from 1,100 millimetres to 2,700 millimetres. The region around the lake is semi-arid, with annual rainfall of 450 millimetres and annual evaporation rates of 1,650 millimetres to 2,300 millimetres. The transmission line will cross a section of this river at intersection point Lon 35°51'35.58"E, Lat 0°28'1.39"N.

5.3.7.3 Chemeron River

Chemeron River flows seasonally. The ground has a gentle slope in some areas but is generally rough towards the river. Vegetation is mainly dense-bushed grassland dominated by *Acacia reficiens, A. mellifera, tortilis, Boscia angustifolia* and *A. coriaceae.* The sandy river valleys and banks are characterized by *Balanites aegyptiaca, Grewia bicolou*r and *Tamarindus indica.* The main grasses are *Cenchrus ciliaris, Enteropogon macrostachyus, Chloris* roxburghiana and *Eragrostis superba.* It only reaches the lake only when there are heavy floods during the rainy season. The transmission line will cross a section of this river at intersection point Lon 35°49'24.68"E, Lat 0°28'28.88"N.

5.3.7.4 Ngusero and Arabel Rivers

The Ngusero and Ol Arabel rivers drain the northern end of the Aberdare Range. The river forms a delta where it enters the southeast of Lake Baringo at 0.531113°N 36.115837°E, and this forms a dense marsh during periods when the lake level is relatively high. The river is seasonal and in the dry period of the early 2000s no longer reached the lake. Ol Arabel (or Olarabel) is a river in the Great Rift Valley of Kenya that feeds Lake Baringo. It gives its name to a forest covering its headwaters and to a region. The transmission line will cross a section of this river at intersection point Lon 35°49'47.86"E, Lat 0°28'31.88"N for Ngusero River.

5.3.7.5 Lake Baringo

Lake Baringo is one of only two freshwater Rift Valley lakes, together with Lake Naivasha, in Kenya. The lake is fed by a number of rivers but has no visible outlet. It is assumed that the water seeps away into the faults in the bedrock. The water level of the lake dropped to some of the lowest levels recorded due to drought and agricultural irrigation but the floods in Northern Kenya in recent years pushed the level up alarmingly. This has caused the water levels to rise to up as much as four meters, putting locals at risk and damaging the limited tourism structure. The highwater levels are presumed to be a result of the large deposits of sediment brought in by the flooding. Most of the tourist structures were damaged by the rising waters.

The lake has several islands such as Ol Kokwe Island which has hot springs and fumaroles, some of which have precipitated sulphur deposits. The area is also important for its archaeological and palaeontological sites, where important hominid fossil discoveries have been made. Many of the Kenyan Rift Valley lakes are known for their birdlife, and in particular the concentrations of flamingoes, but because of Baringo's freshwater properties flamingoes tend to stay away. The lake is home to more than 470 species of birds however-many of which breed on and around the lake It is an important stop for migratory birds-both inter-Africa and globally.

The lake has seven fish species with the Nile Tilapia being endemic. Fishing is an important part of the socioeconomics of the region. The numbers of Nile Perch have declined markedly in Lake Baringo over the years, but this may have to do with the proliferation of the African Lungfish which was introduced into the lake in the 1970's. The Lungfish is now the most important food source from the lake. Moreover, the area is also home to a number of species such as Hippo, Crocodile, Zebra, Klipspringer, Grant's gazelle, Chandler's Mountain Reedbuck, and the rare Greater Kudu. The Lake is approximately 8.9 Kms from the proposed transmission line.

Annex **E** contains the birdlife in Lake Baringo which is an Important Bird Area (IBA) but transmission line will not cross a section of this habitat which is 8.9 kms from the transmission line. Figure 5-18 shows the Endemic Bird Areas sections in the County traversed by the line with no Important Bird Area traversed by the line.

Figure 5-12: (a) Hippo in Lake Baringo, (b) fisherman in Lake Baringo (c) Scenery of the lake, (d) river Perkerra draining in the lake.

5.3.7.6 Lake Bogoria

Lake Bogoria was declared a national reserve due to its rich in biodiversity, scenery and hydrological features in 1970 and was made a Ramsar site of international importance in 2001. It has an altitude between 970 m at the lake to 1650 meters on Siracho escarpment. The Reserve lies close to the eastern wall of the Great Rift Valley and has its headquarters at Loboi Gate. The Lake Bogoria catchment basin covers an area of about 1,200 km^2, occupying the Eastern wall of the central part of Kenya's Great Rift Valley. The lake has a depth of about 10 meters and is approximately 34 km long by 3.5 km wide.

The lake is a saline, alkaline lake and lies just south of Lake Baringo. With its ideal conditions it is home to one of the world's largest populations of lesser flamingos. Due to the lake's alkalinity, blue green algae grow well, this in turn feeds the flamingos. At times the number of flamingos feeding in the lake may be as many as two million-creating a wonderful undulating blaze of pink as the flamingos go about their feeding.

Lake Bogoria National Reserve (LBNR) that lies in the catchment area covers an area of 107 km2 and supports many regionally and nationally endangered species including the migratory Lesser flamingos (*Phoeniconaias minor*) as well as Greater flamingos (Phoenicopterus

rubber) and Black-necked grebe (*Podiceps nigricollis*). Populations of up to two million birds can occur at any time and can reside in the reserve for months. Aside from the flamingos there are many other birds and animals to see at Lake Bogoria such as buffalo, zebra, baboon, warthog, caracal, spotted hyena, impala and dikdik.

Since the ground in the lake area was formed geologically from recent volcanic rocks from the miocene-pleistocene era, the region around Bogoria has about 200 hot springs with water temperatures from 39 to 98.50 C. Nearly all these springs are close to the lake or are inside the lake. The hot springs in general have a high content of carbon dioxide, which causes the wild boiling of the springs. There are also many geysers found spouting within, formed by the vents in the earth's surface by the volcanic activity. Over the past decade, there have been some major hydrothermal changes which have occurred by frequent fluctuations of water level of Lake Bogoria. Even slight changes of water level in this shallow lake can impact geyser behaviour. Some geysers that were active during 2001 and 2005 have become weak hot springs or steam vents by 2006 with the fall in water level due to drought, whereas activity on other springs increased. The transmission line will not cross the closet section of this habitat which is 12 kms from the transmission line.

Figure 5-13: (a) Flamingoes in Lake Bogoria, (b). Hot springs in Lake Bogoria (c) Northern part of Lake Bogoria and Geyser at the central part of the lake

Table 5-10: Bird life in Lake Bogoria

Common Name	Scientific Name	Common Name	Scientific Name
Common Ostrich	*Struthio camelus*	Jackson's Francolin	*Francolinus jacksoni*
Little Grebe	*Tachibuptus ruficollis*	Crested Francolin	*Francolinus saphaena*
Black necked Grebe	*Podiceps nigricollis*	Black Crake	*Amaurornis flavirostris*
Great-white pelican	*Pelecanus onocrotalus*	Grey Crown Crane	*Balearica regulorum*
Cattle Egret	*bubulcus ibis*	Black-winged Stilt	*Himantopujsn himantopus*
Striaed/Green-backed Heron	*butorides striatu*	Pied Avocet	*Recurviurosta avosetta*
Little Egret	*Egretta garzeta*	Spur winged Lapwing	*Vanellus spinosus*
Gredy Heron	*Ardea cinerea*	Crowned Lapwing	*Vanellus coronatus*
Black-headed Heron	*Ardea malanocephala*	Black-headed lapwing	*Vanellus tectus*
Hamerkop	*scopus umbrette*	Kittlitz's plover	*Charadrius pecuarius*
Yellow-billed stork	*Mycteria ibis*	Three-banded plover	*Charadrius tricollaris*
Wooly-necked Stork	*Ciconia episcopus*	Common ringed plover	*Charadrius hiaticula*
Marabou stork	*Leptoptilos crumeniferus*	Lesser sandpiper	*Chandarius mongolus*
Sacred ibis	*Threskiornis aethiopicus*	Little Bee-eater	*Merops pasillius*
Hadada ibis	*Bostrychia hagedash*	Cinammon-chested Bee-eater	*Meros oreobates*
Glossy ibis	*Bostrychia falcinellus*	European Bee-eater	*Merops apiaster*
Greater flamingo	*Phoenicopterus rubber*	Madagascar Bee-eater	*Merops superiliosus*
Lesser flamingo	*Phoenicopterus minor*	Lilac breasted Roller	*Coraciass caudate*
Egyptian Goose	*Alopochen aegyptiacus*	Green Wood Hoopoe	*Phoeniculus purpureus*
Spur- winged goose	*Plectopterus gambensis*	African Hoopoe	*Upupa Africana*
Knob–billed duck	*Sarkidiornis melanotos*	Red- billed Hornbill	*Tockus erythrorhynchus*
White –faced Whistling Duck	*Dendrocygna viduata*	Von der Deckens Hornbill	*Tockus deckeni*
Cape Teal	*Anas capensis*	Jackson's Hornbill	*Tockus jacksoni*
Yellow-billed Kite	*Milvus parasiticus*	African Grey Hornbill	*Tockus nasutus*

African fish eagle	*Haliaeetus vocifer*	Red-fronted Tinkerbird	*Pogoniulus pusillus*
African Harrier-Hawk	*Polyboroides typus*	Red-fronted Barbet	*Tricholaema diademata*
Augar buzzard	*Buteo augur*	Black throated Barbet	*Tricholaema melanocephala*
Common buzzard	*Buteo buteo*	White -headed Barbet	*Lybius leucocephalus*
Montangu's Harrier	*Circus ranivorus*	d'Arnaud's Barbet	*Trachyphonus darnaudii*
Dark Chantineg Goshhawk	*Melierax metabates*	Red and Yellow Barbet	*Trachyphonus erythrophalus*
Gabar Goshhawk	*Micronisus gabar*	Lesser Honeyguide	*Indicator minor*
Tawny Eagle	*Aquila rapax*	Nubian Woodpecker	*Campethera nubica*
Steppe Eagle	*Aquila nipalensis orientalis*	Cardinal Woodpecker	*Dendropicos fuscescns*
Verreaux Eagle	*Aquila verreauxii*	Bearded Woodpecker	*Dendropicos namaquus*
Martial Eagle	*Polemaetus bellicosdus*	Grey Woodpecker	*Dendropicos goertae*
Pygmy Falcon	*Polihierax semitorquatus*	Fischer's Sparrow Lark	*Eremopterix leucopareia*
Peregrine Falcon	*Falco peregrinus*	Rock Martin	*Hirundo filigula*
Helmeted Guinea fowl	*Numida meleagris*	Plain Martin	*Riparia paludicola*
Red-rumped Swallow	*Hirundo fuligula*	Sand Martin	*Riparia riparia*
Lesser striped swallow	*Hirundo abyssinica*	African scops-owl	*Otus senegalensis*
Barn swallow	*Hirundo rustica*	Verreaux's eagle-owl	*Bubo lacteus*
Wire-tailed swallow	*Hirundo smithii*	Pearl-spotted owlet	*Glaucidium perlatum*
African pied wagtail	*Motacilla lutea*	Little swift	*Apus affinis*
Common bulbul	*Pycnonotus barbatus*	White-rumped swift	*Apus caffer*
African thrush	*Turdus pelios*	Mottled swift	*Apus aequatorialis*
Isabelline wheatear	*Oenanthe pleschanka*	Nyanza swift	*Apus niansae*
Sported morning Thrush	*Cichladusa guttata*	Eurasian swift	*Apus apus*
Grey-baked camaroptera	*Camaptera brachyuran*	Speckled mousebird	*Colias striatus*

Southern black flycatcher	*Melaenornis pammelaina*	Blue-naped mouse bird	*Urocolias macrourus*
African grey flycatcher	*Bradornis microrhynchus*	Red-faced mouse bird	*Urocolias indicus*
Silverbird	*Empidornis semipartitus*	Grey-headed kingfisher	*Halcyon leucocephala*
Rufous chatterer	*Turdoides rubiginosus*	Woodland kingfisher	*Halcyon senegalensis*
Northern pied babbler	*Turdoides hypoleucus*	Malachite kingfisher	*Alcedo cristata*
White-bellied tit	*Parus albiventris*	African pigmy kingfisher	*Ispidina picta*
Northern grey tit	*Parus thruppi*	Beautiful sunbird	*Cinnyris pulchella*
Red-throated tit	*Parus fringillinus*	Eastern violet-backed sunbird	*Anthreptes orientalis*
Ruff	*Philomanchus pugnax*	Common fiscal	*Lanius collaris*
Common sandpiper	*Actitis hypoleucos*	Long-tailed fiscal	*Lanius cabanisi*
Wood sandpiper	*Tringa glareola*	Grey-backed fiscal	*Lanius excubitoroides*
Green sandpiper	*Tringer ochropus*	Slate-coloured boubou	*Laniarius funebris*

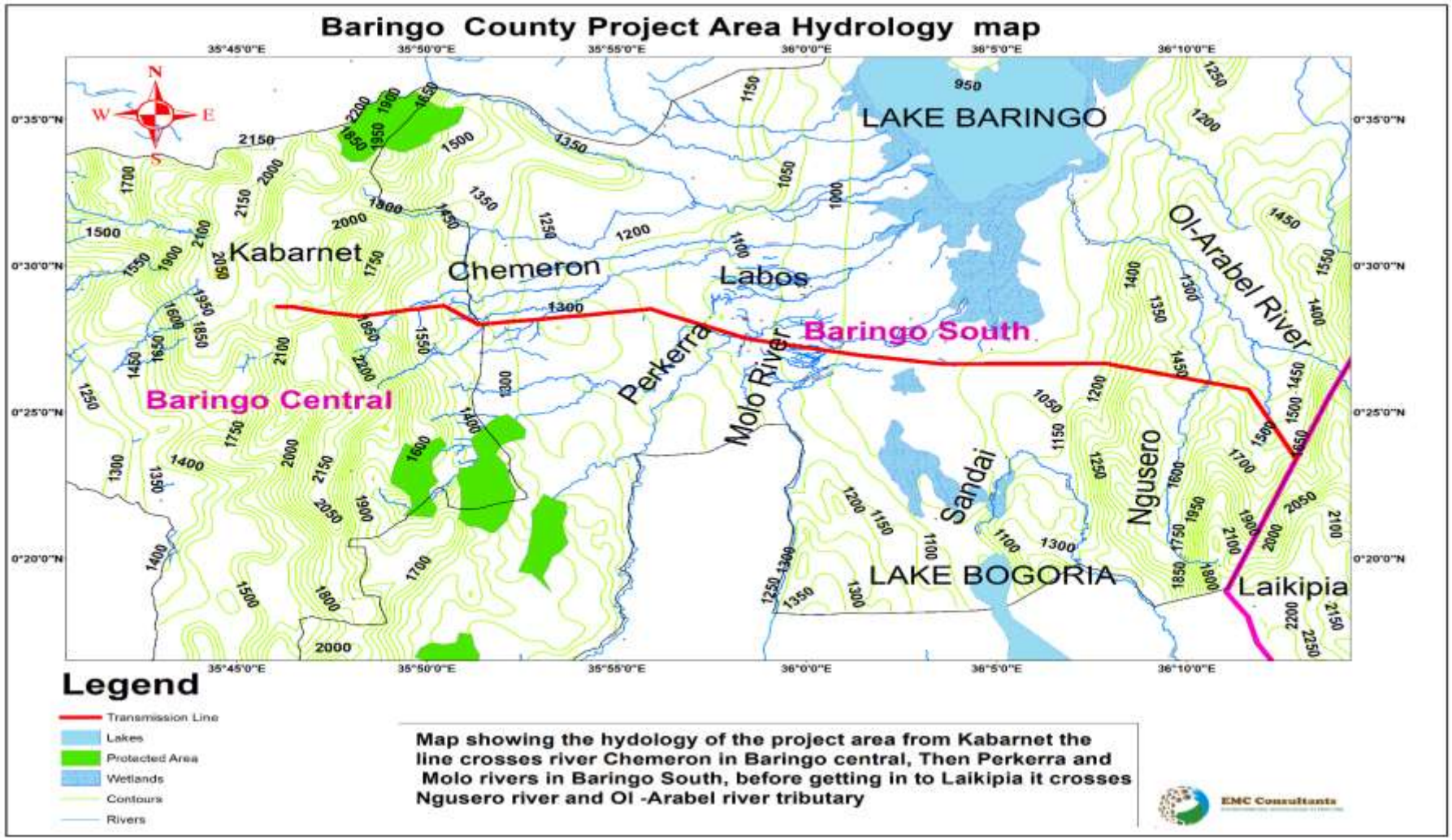


Figure 5-14: Hydrology of area traversed by transmission line.

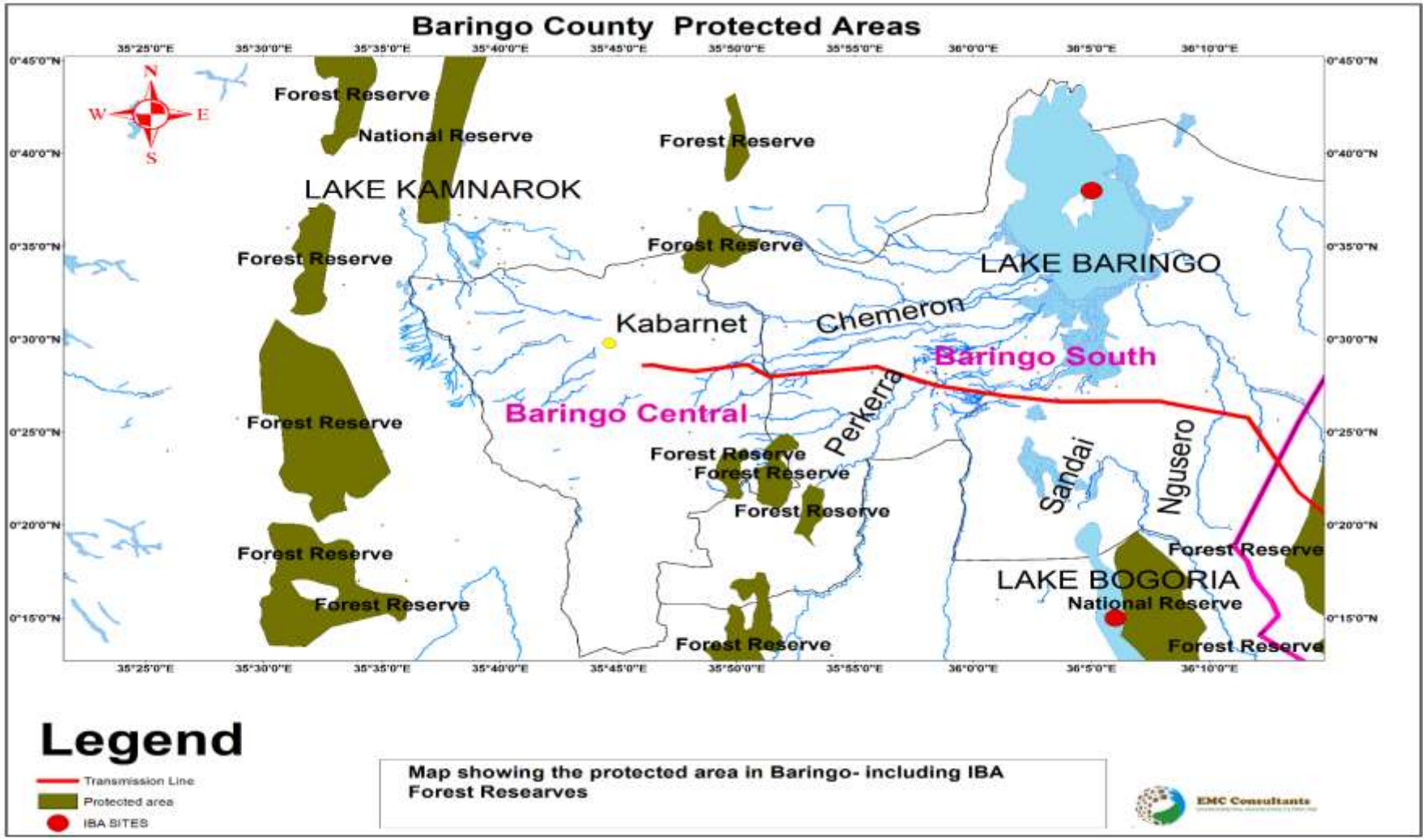


Figure 5-15: Protected Areas in Baringo County

5.3.8 Biological Environment

Baringo County has 25 gazetted forests where majority are indigenous and are found in Kabarnet, Kabartonjo, Tenges, Lembus, Saimo, Sacho and Ol' Arabel and Eldama Ravine. The main exotic species include: *Grevellea Rabusta*, *Cuppressus lusitanic* and *Eucalyptus saligna*. *Prosopis juliflora.* Kipng'ochoch forest in Sacho is one of the 10 forest blocks under Tenges forest station and is an example of a well conserved indigenous forest where visitors and nature lovers view the entire Lake Baringo basin, fluorspar mines, Laikipia ranges, Elgeyo escarpment, Kerio Valley, and other touristic attractions that the county offers. The county is classified as arid and semi-arid since most of East Pokot, Baringo Central, Baringo South, Baringo North, Mogotio sub-counties are arid and semi-arid except for Koibatek sub-county, which is in a highland zone. Bushland and thickets is the most common tree species belong to the deciduous genera Acacia and Commiphora occupying major proportion of the line route. The understory consists of shrubby herbs less than one meter high, such as Acalypha, Barleria and Aerva. At lower elevations where rainfall is less consistent, vegetation becomes semi-desert scrubland. Acacia and Commiphora are joined by Euphorbia and Aloe, as well as grass species such as *Dactyloctenium aegyptium* and *Panicum turgidum*. Important evergreens include Boscia, Dobera, Salvadora, Grewia and Cadaba. Additionally, Lake Bogoria supports 53 plant families and approximately 210 plant species. Six broad vegetation types can be classified according to physiognomic representation. They include riverine forest, wooded bushland, bushed thicket, bushland, bushed grassland, and swamps. Depressions (wadis) harbour varied vegetation types such as those found in the Loboi swamps and grasslands.

Evergreen and semi-deciduous bushland cover large areas along stream, valley, and other inhospitable areas. Spirulina platensis and other species of phytoplankton, which occur depending on season and water chemistry, dominate the lake's open water. A small forest of Ficus sp. occurs at the southern end of the lake associated with freshwater springs. Because of the gentle topography of the land around Lake Bogoria, human beings have settled on it and disturbed it. This has promoted the invasion of ***Prosopis juliflora*** (Mathenge weed) which is rampant especially adjacent to major settlements.

Figure 5-16: Coffee trees and indigenous trees in Baringo County

5.3.8.1 Avifauna and EBA and IBA Site

Birdlife in the project area is supported by the numerous ecosystem types found within the confines of the transmission line. Despite this, birdlife is sparsely populated and scattered in

the area. They included: Fork-tailed Drongo, Yellow-vented Bulbul, Superb Starling, Rupelles Long tailed Glossy Starling, White-crested Helmet Shrike, Kori Bustard, Northern White-crowned Shrike, Brown-necked Crow, Mourning Dove, White-bellied Cuckoo, Martial Eagle, Abyssinian Roller, Rufous-crowned Roller, Blue-headed Coucal, African Scops Owl, Greyheaded Kingfisher, Pied Kingfisher, Pied Wagtail, White-browed Sparrow-Weaver, Crested Lark, Variable Sunbird, Shinning Sunbird, Speckled Pigeon, Blue-headed Bee-eater, Carmine Bee-eater, Paradise Flycatcher, Namaqua Dove, White-headed Buffalo Weaver, White-browed Sparrow-Weaver, Nubian Woodpecker, Ring-neck Dove, Eastern Pale Chanting Goshawk, Sacred Ibis, Lesser Flamingo, Greater Flamingo, Lesser Egret, Intermediate Egret, Greater Egret, Goliath Heron, Yellow-billed Stork, Red-billed Hornbill, White-headed Moosebird, Somali Ostrich and African Hoopoe among others.

Figure 5-17: Sample birdlife in Baringo

The transmission line crosses tiny sections of Endemic Bird Areas in Baringo Central, in Kabarnet but does not cross any Important Bird Area.

5.3.8.2 Arthropods

The ecosystem has a rich diversity of invertebrate species, including insects such as: Odonata (Dragonflies), Orthoptera (Grasshoppers and crickets), Isoptera (termites), Coleoptera (Beetles), Lepidoptera (Butterflies and Moths), Diptera (Flies and Mosquitoes), Hymenoptera (Wasps and Bees), Blattodea (Cockroaches) and Phasmida (Walking sticks). Arachnids present include ticks, spiders and scorpions.

Figure 5-18: Traditional beehives in Marigat, Baringo county.

5.3.8.3 Reptiles

The semi-arid to arid climate in the block creates a suitable environment for reptilian life and thus it is expected that many reptilian species are present. They include: Snakes, Lizards, Tortoise, Crocodile, Gecko and Skinks. During the course of the field trip not many were encountered.

Figure 5-19: Red-headed Agama lizard

5.3.8.4 Mammals

The habitats found within the block are numerous and diverse. A few live observations were made but a majority of the mammalian life observed were made indirectly by signs of their activity. The animals include: Greater kudu, Dik dik, Cape hare, Silver backed jackal, Hedgehog, Porcupine, Impala, Elephant, Buffalo, Grants gazelle, Cheetah, Leopard, Lion, Vervet monkey, Olive baboon and Hyena, among others. There are no wildlife dispersal routes or migratory corridors in the areas traversed by the line based on secondary literature and confirmed by Kenya Wildlife Service.

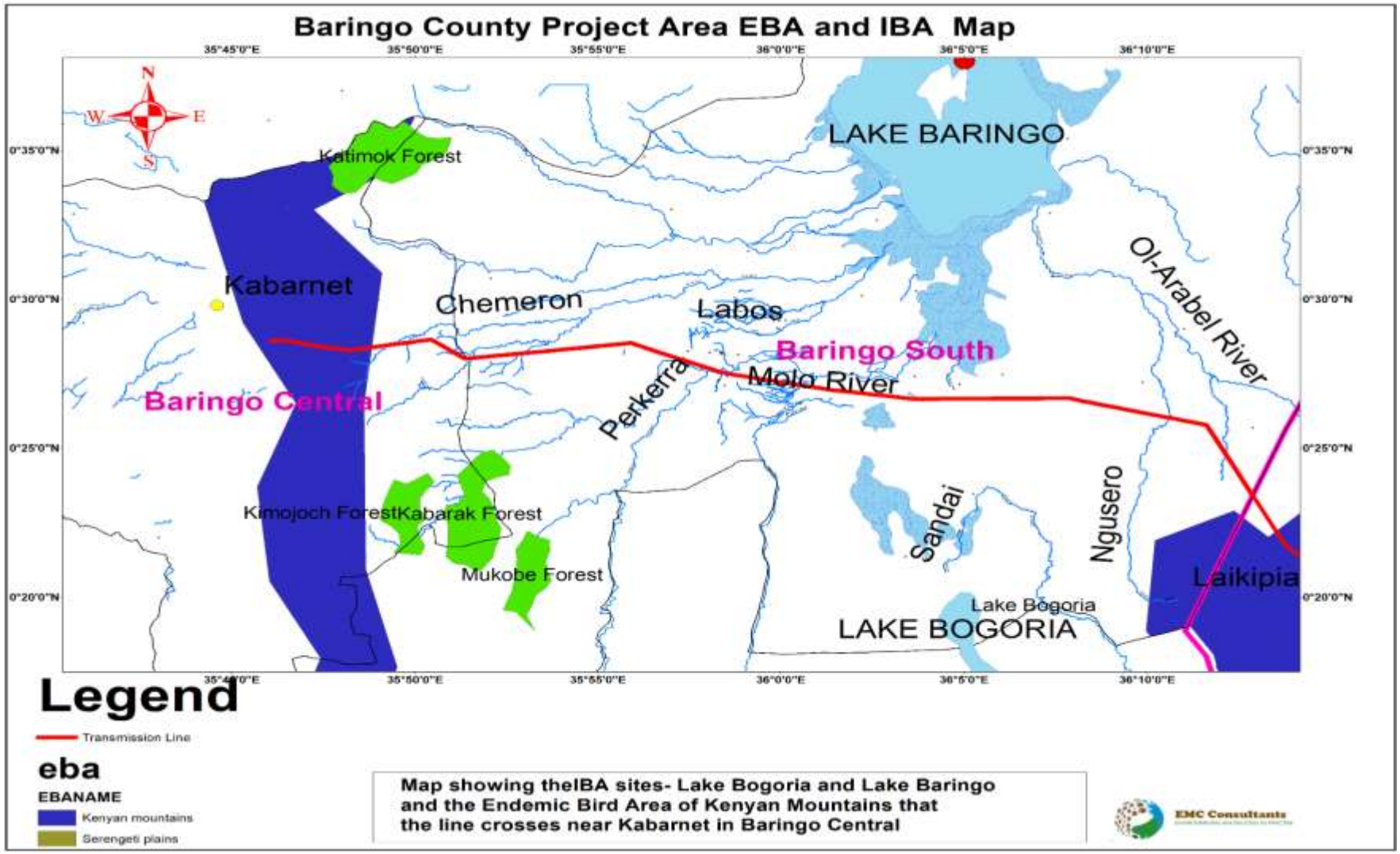


Figure 5-20: Map showing the Endemic Bird Areas and IBA in Baringo County

5.4 Baringo County Socio–Economic Baseline

5.4.1 Population and Demography

The County's population according to the 2019 National Population and Housing Census was approximately 666,763 million with 336,322 males and 330,428 females and 13 intersex. The population is estimated to be; 804,346 in 2020; 829,346 in 2021; and 853,515 by 2022 using inter-censural population growth rate for the county. Majority (54.4%) of the household members in the project area were females, while the males formed 45.6% of the household members.

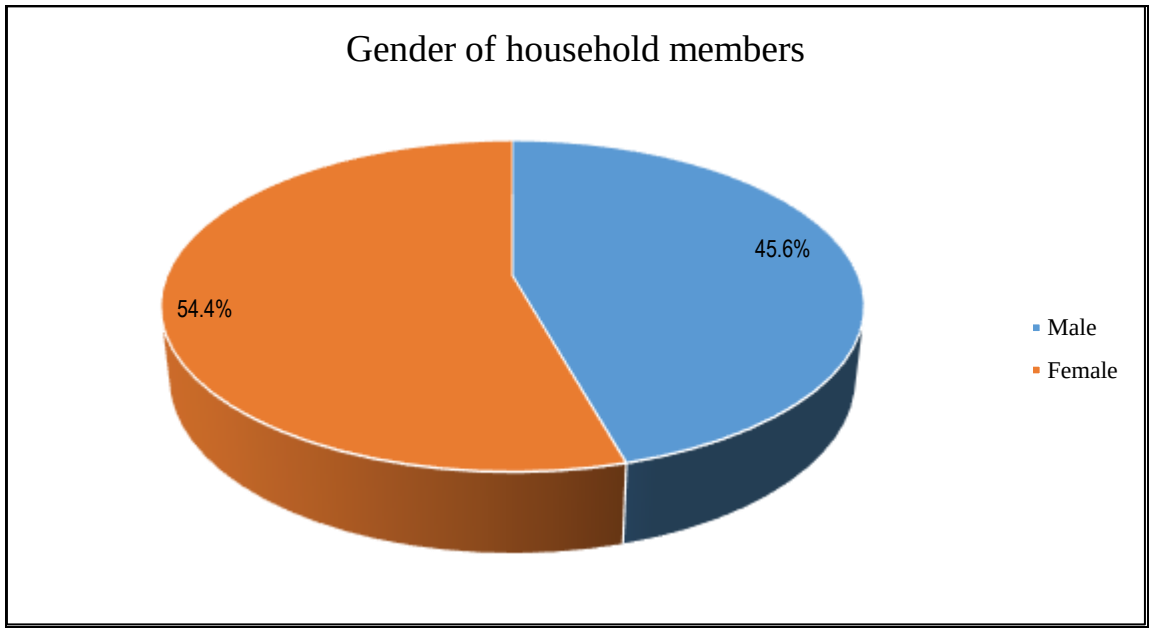


Figure 5-21: Gender of household members

5.4.2 Ethnic Composition

The main ethnic communities inhabiting Baringo County are the Tugen, Pokot and Ilchamus with minority groups such as the Endorois, Nubians, Ogiek, Kikuyu and Turkana. The ethnic communities in the project route in Baringo County are categorized as Vulnerable and Marginalized with respect to KETRACO's VMGP policy. These communities identified during the ESIA as present along the transmission line include; Ilchamus/Njemps and Endorois who were identified in the areas of Eldume, Il'ngarua, Logumgum, Arabal, Kasiela and Kapkechir. A Vulnerable and Marginalized Groups Plan (VMGP) has been prepared as a result of the findings of the ESIA and in accordance with KETRACO's VMGP Policy

5.4.3 Settlement Patterns

Settlement patterns in Baringo County can be classified into rural and urban.

Urban Centres: -Urban settlements are characterized by linear settlements configured majorly by road transport network, administrative functions and commercial. Settlements patterns in the urban areas are either linear or clustered and can be categorized as principal towns, rural towns and market/local centres. The settlements in the following towns are influenced by transport network; Mogotio, Emining, Marigat, Loruk, Ngiyang', Chemalingot,

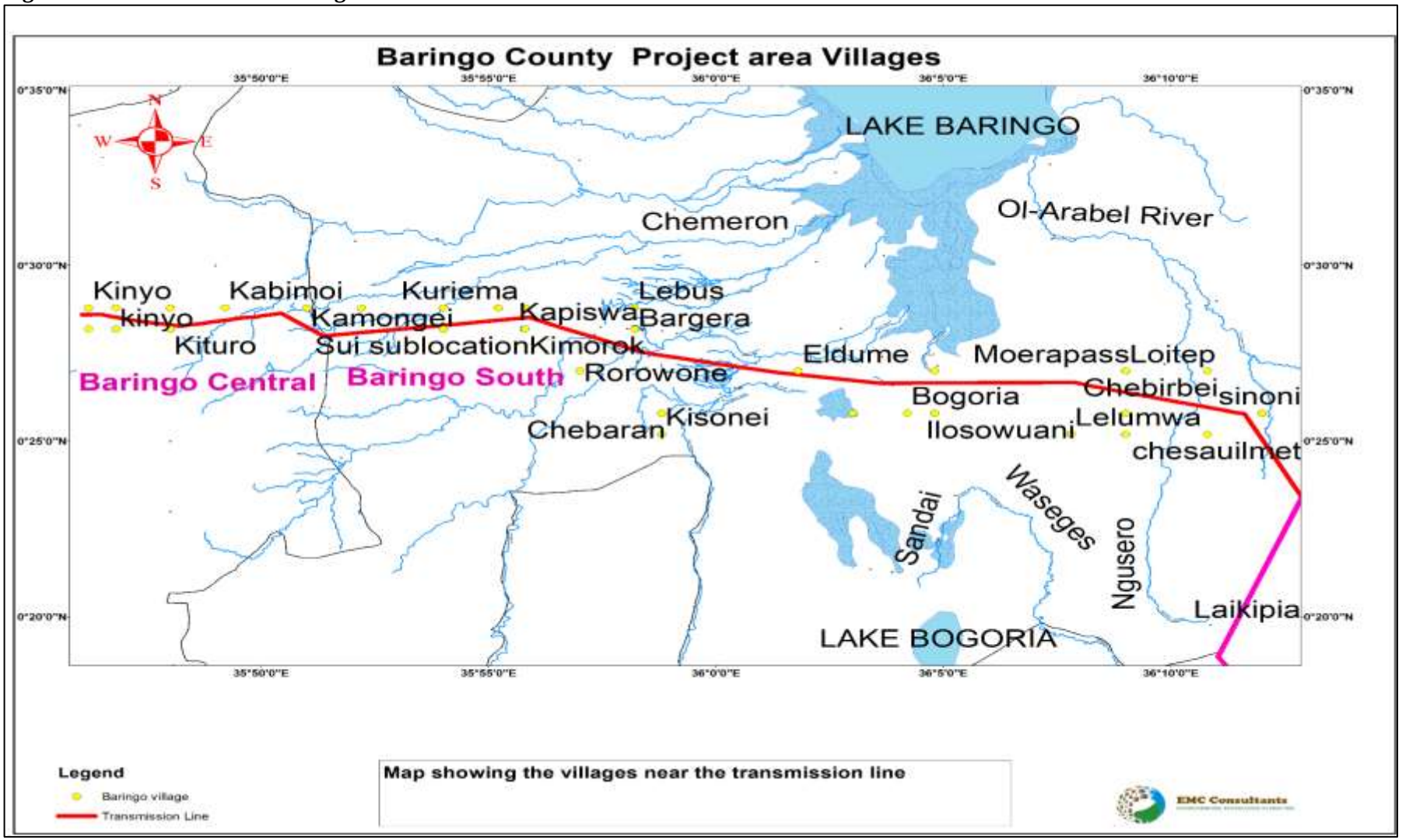
Kolowa, Muserechi, Ravine, Majimazuri, Timboroa, Kabarnet, Tenges, Kabartonjo, Kipsaraman, Bartabwa and Barwessa. Urban centres with administrative function include Kabarnet, Mogotio, Eldama Ravine, Chemolingot, Marigat and Kabartonjo. The predominant settlements patterns in urban areas are linear and clustered. Rural settlements follow nucleated patterns. This is necessitated by the economic activities in rural areas (agriculture and livestock keeping).

Rural Settlements: -Human settlements are more concentrated in Baringo central and Eldama Ravine due to the favorable climate for agriculture. The rural agricultural land is subdivided into smaller parcels due to rapid growing population in the highlands. Subdivision of agricultural land leads to the decline of the rural economy that heavily depend on agriculture. Cultivation along forests and water catchment towers has far reaching implications on conservation and protection of reserves as it leads to degradation. The challenge with agriculturally based settlements is the declining productivity due to subdivision of land, poor road infrastructure and the impacts of climate change. Example of such settlements include Majimazuri, Sabatia and Narasha in Eldama Ravine sub county; Kabartonjo, Barwessa, Pemwai, Bartolimo in Baringo North. Other areas include Baringo central, Baringo south and Mogotio.

Along the project route, the proposed project will displace a number of residential structures (settlements). According to the RAP report, **137** residential structures will be affected by the project. The structures are generally made of mud as depicted in the photos below.

Figure 5-22: Sample residential structures along the project route

Figure 5-23.Settlement Areas along Transmission Line



5.4.4 Land Tenure and Land Use

Land, sometimes referred to as dry land, is the solid surface of the earth that is not permanently covered by water. Most human activities occur on land which supports agriculture, vast habitats, and natural resources. Baringo County with a total land area of 11,015 square kilometres, has total arable land of 4,435, total non-arable land of 5, 700 and total urban area land of 715 square kilometers. The largest portion of land in Baringo County is under community land tenure system, held in trust by the County Government. Community land is protected under Article 63 of the Kenyan Constitution and is governed as outlined by the Community Land Act 2016. Community land ownership in the county is predominant in Tiaty, North and South Baringo sub-counties. Private land ownership is dominant in Baringo Central, Eldama Ravine and Mogotio while in the highlands of Baringo North (such as Ossen, Kabartonjo and Kipsaraman) land is largely held under freehold basis. In towns/urban centers, land is held on leasehold basis. Group ranches are mostly found in Marigat, Kimalel, Bartun, Salabani, Kokwa Island, Eldume, Sabor, and Ngaratuko.

Figure 5-24: Maize crop in Muchongoi, Baringo county

The community land in Baringo South has been a source of conflict; this will be addressed through the Community Land Act 2016 which provides a big opportunity for development where large portions of community land exist. The Act will enable communities to register their rights and interests in communal land, and prepare their own plans for development, management and use of the land. Conservancies are one form of community land management, and the benefits range from improved security, better land management, income, employment, and support to community projects. The county has several conservancies. Public land refers to land governed either by the national government or by the county government (other than community land). In Baringo County public land includes forests, Lake Bogoria National Reserve and Lake Kamnarok National Reserve (managed by the County Government), Lake Baringo and the public land within town centres.

In Baringo County, along the project transmission line, the dominant land uses include agriculture (animal husbandry and crop production) and residential. The Project will affect PAHs with formal rights to land (Laikipia County) and those who do not have formal rights to the land (Baringo County). The line traverses' areas where PAHs own the land privately

and communally as group ranch or community land. These areas include Kimalel (registered Group Ranch), and unregistered community land in Eldume, Il'ngarua, Logumgum, Arabal and Kasiela. Public land is also affected by the project.

The project will affect individually owned private land used by the PAHs for farming, grazing and residential and commercial purposes.

Part of the land within the ROW is categorized as community land which exist in the form of one registered group ranch4 with a group title (Kimalel Group Ranch) and will also be compensated in accordance with the Community Land Act 2016 unless the group ranch agrees to dissolve the group ranch and subdivide into individual parcels. Group ranch members preferred dissolution of the ranch in order to be compensated individually for loss of land and were sensitized (refer to executive summary section of RAP report) on the implication of their preferred form of compensation. There are also unregistered community lands in Eldume, Il'ngarua, Logumgum, Arabal and Kasiela areas of Baringo South Sub County. Communities in Eldume, II'ngarua, Arabal and Kasiela and Kimalel Group Ranch were sensitized on the provisions of the Community Land Act 2016, and particularly on cash compensation whereby, compensation monies are to be deposited in a special interest earning account held by the County Government and shall be released (including interest accrued) to the community upon registration of the community land and the community. The County Government is prohibited from selling, disposing, transferring, and converting for private purposes or in any other way disposing of any unregistered community land that it is holding in trust on behalf of a community. Upon registration of community land and the community, the trusteeship of the county government to manage and administer the community land ceases to exit.

The project will re-sensitize affected communities and ranch members and their management on the Community Land Act 2016 (and particularly on cash compensation for unregistered community land/ranch) during the disclosure of ESIA and RAP.

The transmission line route also traverses' part of Lairak Forest which is forest land managed by Kenya Forest Service (KFS). A chief's office in Baringo County and a cattle dip owned by Laikipia County Government will also be affected by the project.

5.4.5 Agriculture

Horticultural crops in the County are: Fruits which include Banana, mango, avocado, oranges, lemons, passion fruits, pawpaw, water melons, guavas, tree tomato, custard apple, apples, plums, pears, and peaches; Nuts and Oils include macadamia nuts and ground nuts; Vegetables grown in the County include cabbage, kales, tomato, carrots, French beans, spinach, garden peas, snow pea, snap peas, potato, eggplant, bell pepper/sweet paper, pumpkin fruit, pumpkin leaves, butter nut, leaf amaranth, African nightshade, spider plant and cowpeas

[4]A livestock production system or enterprise where a group of people jointly hold freehold title to land (theoretically on an equal basis), maintain agreed stocking levels, and herd their individually-owned livestock collectively. (The Lawrence Report).

and Medicinal and Aromatic Plants (MAPs) including Bulb onion, Spring onion, Chilies and Aloe.

Figure 5-25: Sample cultivation activities along the project route

The cereal crops grown in the county are: Maize, Wheat, Rice, Sorghum, Finger millet, Pearl millet, Oats, Grain amaranth. Maize and beans are mainly grown in the highlands while sorghum and finger millet are grown in the lowlands. There is need to put incentives in agriculture like subsidized farm inputs to encourage more people into farming to reduces incidences of food shortage. Coffee is also another cash crop grown in some parts Baringo north, Baringo central. Investors have shown interest in this crop and its production is expected to increase by double digits since the county for the last 3 years has been subsidizing coffee seedlings to farmers.

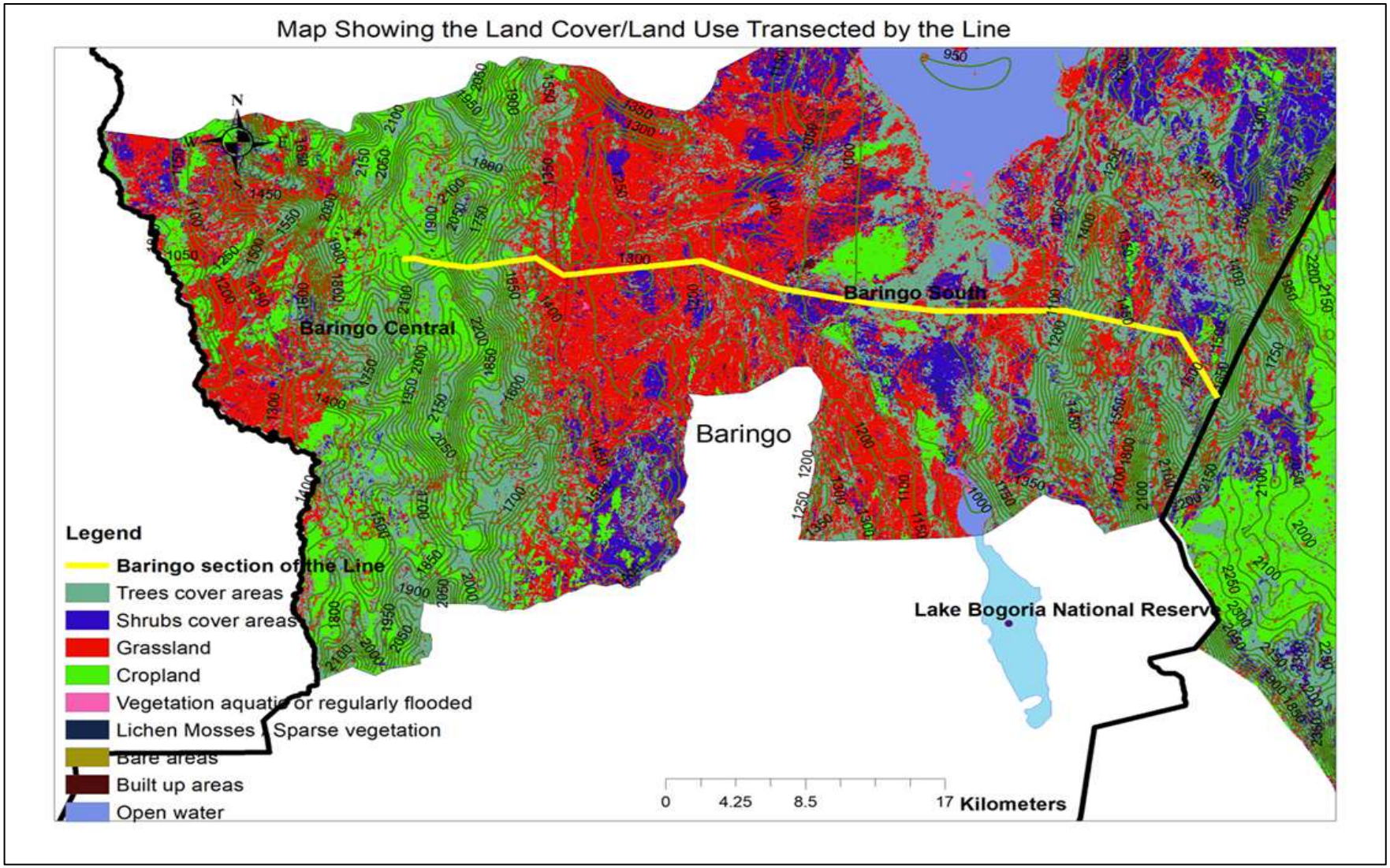


Figure 5-26: Land Use Map showing transmission line route

5.4.6 Education

Education is one of the indicators of a population's potential for socioeconomic development and the more educated a person is the more productive they are. Baringo County has relatively low education indicators, 16% of the population have a secondary level of education Baringo Central is the constituency with the highest share of residents with a secondary level of education or above at 27%. This is nine times Tiaty constituency, which has the lowest share of residents with a secondary level of education or above. Baringo Central constituency is therefore 11% points above the county average. Kapropita ward has the highest share of residents with a secondary level of education or above at 34%. This is 34% points above Silale ward, which has the lowest share of residents with a secondary level of education or above. Kapropita ward is 18% points above the county average.

Figure 5-27: Sample school along the project route

The proportion of Baringo County residents who only have a primary education stands at 48%. Baringo North constituency has the highest share of residents with a primary education only at 60%. This is four times Tiaty constituency, which has the lowest share of residents with a primary education. Baringo North constituency is 12% points above the county average. Lembus ward has the highest share of residents with primary education only at 64%. This is 32 times Silale ward, which has the lowest share of residents with primary education only. Lembus ward is 16 percentage points above the county average. The share of Baringo County residents with no formal education is at 36%. Tiaty constituency has the highest share of residents with no formal education at 82%. This is five times the number in Baringo Central constituency, which has the lowest share of residents with no formal education. Tiaty constituency is 46 percentage points above the county average. Silale ward has the highest percentage of residents with no formal education at 98%. This is seven times more than Kabartonjo ward, which has the lowest share of residents with no formal education. Silale ward is therefore 62 percentage points above the county average.

About 23.7% of the PAPs household heads had attained primary level of education and 19.3% achieving secondary levels of education. These percentages are inclusive of household heads and other members of the household. In the survey conducted 6.8% of the PAPs had completed technical training, while 3.1% and 10.6% respectively did not complete Secondary and Primary level education. A further 4.8% of the PAPs had no formal education.

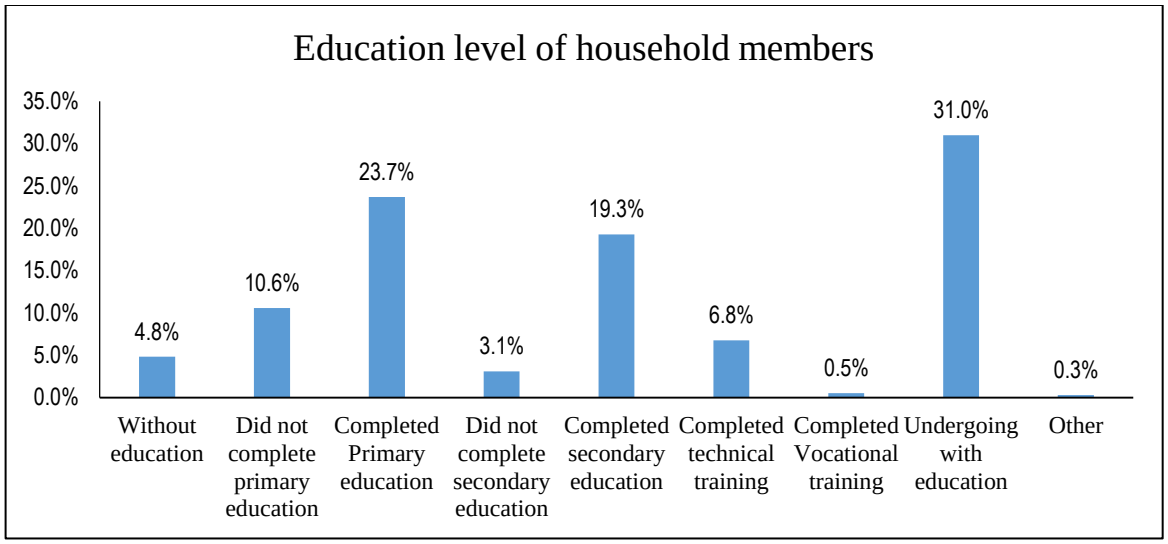


Figure 5-28: Household Literacy Level

5.4.7 Health

Access to health care refers to the ease with which an individual can obtain needed medical services. A healthy population is important for development; it is more productive and contributes to economic development. Access to basic health services for majority of Baringo County residents is a challenge; some cover a distance of more than 15km to access health services to the nearest health center. The county has health facilities distributed across the sub-counties as follows; one level 5 facility the Baringo County Referral Hospital located in Kabarnet, 4 level four facilities located in Eldama Ravine, Marigat, Kabartonjo and Chemolingot towns, level 3 facilities are health centres while level four facilities are dispensaries. Level one represents the community units which are the lowest level of health care are carried out mostly by community health volunteers (CHVs). Vulnerability identified during the survey within the PAPs as shown below was composed of: -

1. The elderly over 60 years (66.2%)
2. Women headed households/widows (21.6%)
3. The sick/Chronic illnesses (10.8%)
4. Disabled (1.4%)

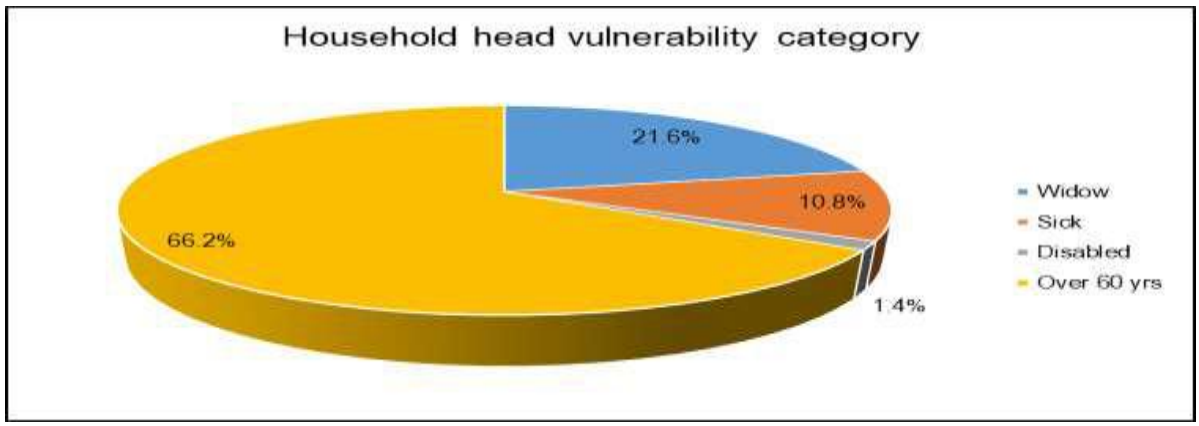


Figure 5-29: Perceived level of vulnerability.

5.4.8 Poverty, Income and Employment

Baringo County is among the marginalized counties in Kenya with a poverty incidence of 52.2% against 45.2% nationally and a contribution of 1.7% to the national poverty. The economic growth and development of the county is mainly driven by agriculture. Trade and tourism are the other major contributors to the county economy. There are various economic activities in the county ranging from–land sale, manufacturing, horticulture, agro-business and strong service industry.

Work force

According to 2009 KPHC Analytical report, projected population within the age brackets 15-64 years which forms the County's labour force forms about 48 per cent of the projected total population during the planning period as indicated below. The County has a population of 5% with no formal education, 14% with primary education and 26% with a secondary level of education or above is working for pay. Work for pay is highest in Nairobi at 49%, which is almost twice the level of work for pay in Baringo for those with a secondary level of education or above.

Unemployment

Unemployment Rate in Kenya averaged 10.62 percent from 1991 until 2016, reaching an all-time high of 12.18 percent in 2010 with 9.7 per cent in 2009 and a record low of 8.10 percent in 1999. In Baringo County, unemployment stood at 11 per cent in 2009 and increased at the same rate. The percentage of employed labour force in the formal sector in the county is at 15.8% compared to 21.9% in the Country, with the county having a higher percentage of economically inactive population in the labour force at 29.4% compared to 22.9% national percentage.

5.4.9 Livelihoods

Agriculture employs 80% (GoK, 2013) of the population. About 46% of the heads of households are engaged in agriculture (crop and livestock farming) as a primary occupation. More male-headed households are engaged in the sector compared to youth- and female-headed households (32, 10, and 6% respectively). However, adult female members of households provide the highest share of family labour for crop (46%) and livestock (44%) production; hired labour for crops (42%) and livestock (50%) is mostly provided by youth.

Figure 5-30: Economic activities In Baringo County

Livestock and crop farming; are the key sources of livelihood for the people and the main economic activity in the county. The county is largely semi-arid with a few pockets for intensive agriculture. Mixed farming is mainly in the Highland areas and pastoralism in the arid regions.

Majority of the respondents were farmers 97.8%. Being that the project area is rural, formal employment and business are not the main socio-economic activities. The other socio-economic activities are shown in figure below.

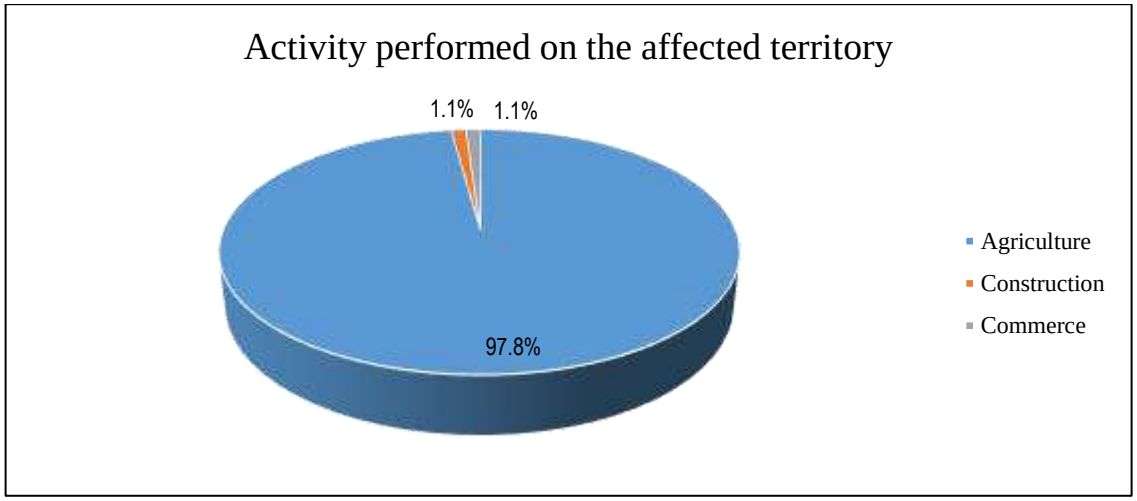


Figure 5-31: Economic Activities

5.4.10 Gender Based Violence

Perennial insecurity in the County, which revolves around cattle rustling, causes displacement, closure of health facilities (making them inaccessible) and gender-based violence (GBV). The vastness and terrain of the County coupled with poor health-seeking behavior hinders access and utilization of health services. Gender inequality leads to GBV which contributes to poor health-seeking behavior for survivors of violence. It also affects disclosure of HIV status, especially among young girls and women. Stigma hinders the uptake of HIV testing and counselling and safer sex practices. It prevents PLHIVs from seeking health services and disclosure. According to the National Crime Research Centre statistics, GBV accounted for 5.2% of crimes in the County during the 2019 period.

5.4.11 Energy

Electricity connections in the county are just above 9.6% of the County Population compared to 22.7% average for the Country population. This situation is rapidly changing as the County in collaboration with the National Government invests more resources in power generation, transmission, and distribution through its last mile program. The County is still below the national averages in the renewable improved energy sources.

Access to various utilities is high in the urban areas compared to the rural areas. According to Kenya Power and Lighting Company (KPLC), over 49,000 households connect to electricity; of these, 10% use electricity for cooking. Firewood is a major source of cooking

and lighting fuel (87 and 28% respectively). Access to water is limited, with 14% of the households accessing piped water while 52% use streams.

Dry plants/wood fuel/dry plant parts are the main source of energy used by the community for cooking at 83.6%. Other fuel sources constitute 16.4%.

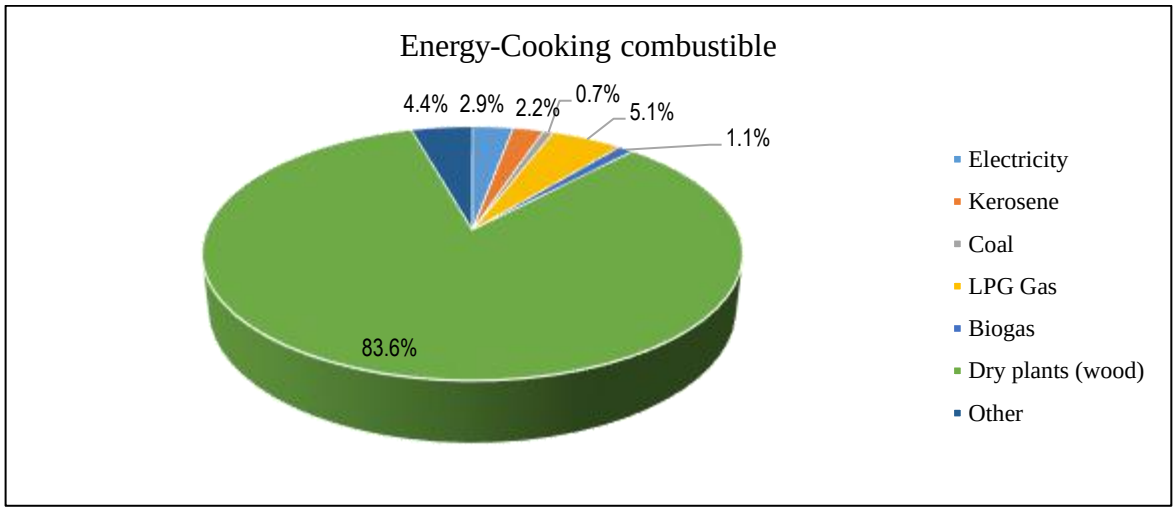


Figure 5-32: Sources of Energy for cooking

Kerosene (43.8%) is the main source of energy used in lantern lumps for lighting; those PAPs using electricity formed 23.5%.

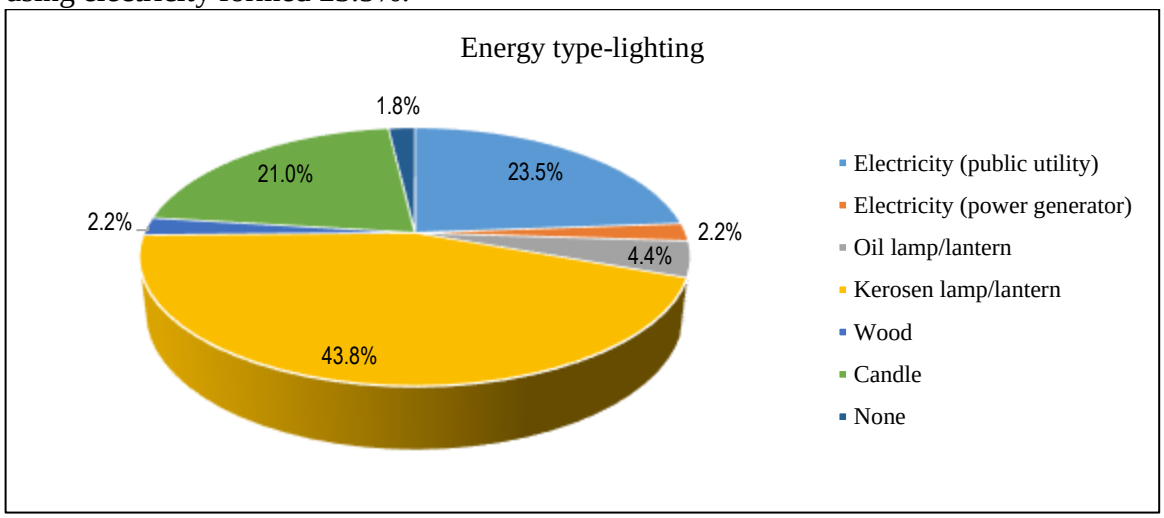


Figure 5-33: Sources of Energy for lighting

5.4.12 Water and Sanitation

The main sources of water in Baringo County include dams, lake, water pans, streams, wells, springs, and boreholes; others include piped water or point sources. The average distance to the nearest water point is 5km which is way below the (SHERE) Standards on access to water.

Being an ASAL county, Baringo has prioritized the provision of water for human, livestock and for irrigation as a necessary requirement for the general development of the county. Water shortage is prevalent, especially around Lake Baringo and Lake Bogoria, parts of Kerio Valley, Mogotio, western slopes of Ng'elecha (Mochongoi) and the entire Tiaty (Kolloa to Tangulbei) sub-county. This is caused by the low rainfall received and cyclic droughts. This has hindered development in livestock production and farming activities, as people spend many hours daily looking for water. The socio-economic survey outcomes concluded that surface water was the most used source of water (30.2%) Traditional wells at home followed (23.0%), while water sourced from boreholes at home was third (6.25%). Water sourced at home from taps was at 12.6%. Other sources of water formed about 28.0%.

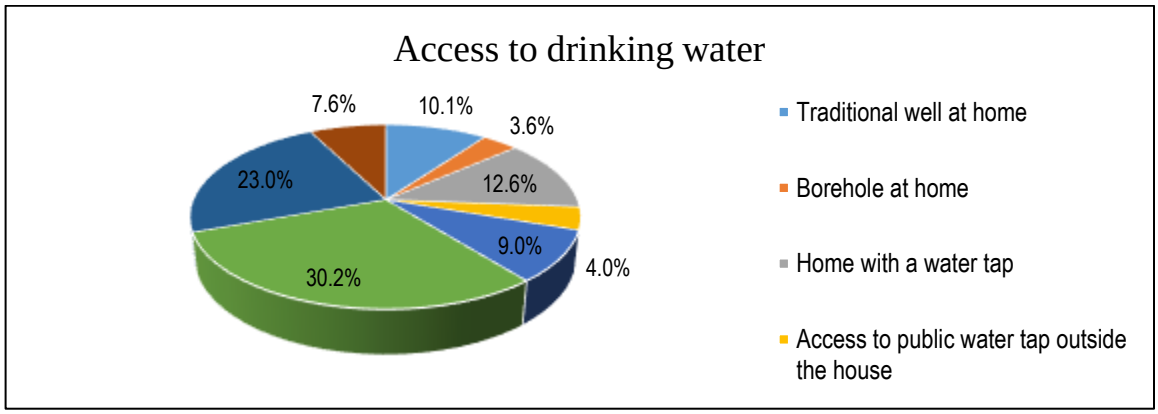


Figure 5-34: Sources of Water

5.4.13 Sanitation

The main sanitary facility used by the community interviewed was a latrine without septic tank (80.0%).

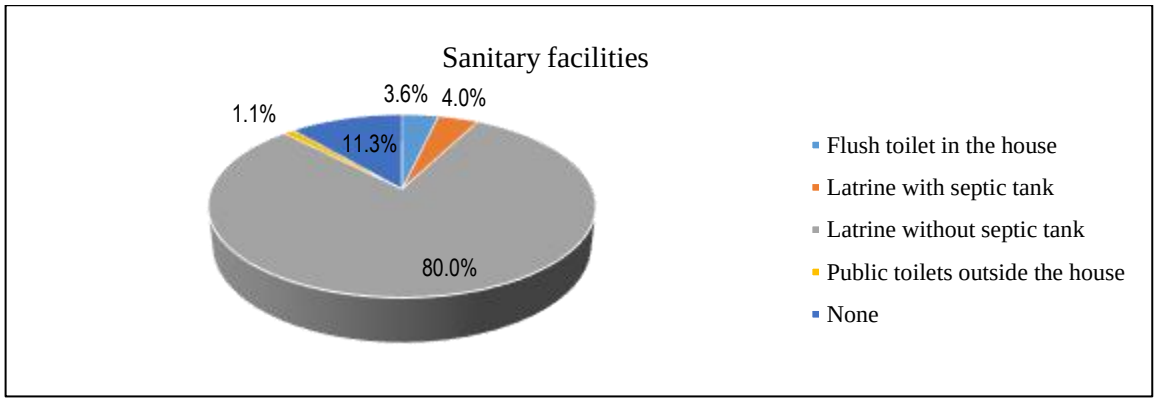


Figure 5-35: Sanitation facilities

5.4.14 Tourism and Recreation

The bubbling waters, hot springs, gushing geysers, flamingoes and ostriches are among the major attractions in Lake Bogoria and Kapedo hot springs. Other wildlife includes tortoises, large aquatic and terrestrial game. There is also huge potential for private/community conservancies as well as cultural and agro-eco-tourism tourism.

Baringo County boasts of high-class tourist resort centers, among them Lake Bogoria Spa Resort and Papyrus Inn hotels. Some forests in Tugen Hills, Laikipia escarpment and Eldama Ravine have beautiful sceneries that attract regular visitors. Apart from being good catchment areas for birds, wildlife, picnics and eco-tourism, forests encourage soil conservation through terracing, vegetable growing and beekeeping.

Figure 5-36: Tourism sites in Baringo County

Lake Baringo has 13 islands and viewpoints that provide magnificent views of the lake. The largest island being Ol-kokwe, with Samatian being small but with breathtaking views across the bronze waters of Lake Baringo. Other interesting tourist locations in the lake are Soi Safari Lodge, Lake Baringo Club as well as Reptile Park, which is one of the largest reptile parks in the Rift Valley. Another one is Ruko Wildlife Conservancy that scenic attractions ranging from wildlife to cultural villages. Korossi volcano, which rises 1,449m above sea level, offers an ideal spot for watching birds such as bat hawks and majestic verreauxs eagle. Kabarnet National Museum and Kipsaraman Community Museum are located on top of Tugen Hills. The two museums form unique tourist sites with varied attractions and house traditional Kalenjin artifacts, which include musical instruments, storage equipment, furniture, and ornamental decorations. At Eldama Ravine, there are the Kursalal falls, a stunning waterfall within Lembus forests.

5.4.15 Trade and Industry

Trade and Industrialization are important economic activities in Baringo County. These two thematic areas have so many informal entities that contribute to the county revenue base. These two thematic areas require transformation in order to sustainably develop. The three formal industries in the county which include:

- Salawa Cotton Ginnery in Salawa.
- Goldox slaughterhouse in Mogotio,
- Abattoir in Mogotio.

There are also two existing industrial zones in Kabarnet and Eldama Ravine, planned industrial zones in Marigat and Mogotio. There are two operating coffee processing factories at Kituro and Kapkawa. There is small scale honey processing at Koriema, Radat (KBS approved) and Kapimoi. Several slaughterhouses are being constructed in Barwessa, Maoi and Loruk. Mineral extraction is being undertaken in Tenges and Tiaty.

Figure 5-37: Economic activities in Koriema and Marigat, Baringo County

A lot of emphasis should be laid on the promotion of medium and Small-Scale businesses (MSEs), the informal sector, Jua-Kali- retail and wholesale trade and the transport sector. These sectors create a lot of employment to the citizens especially for women and youth. The industrialization sub sector through the Economic Stimulus Programme has constructed and equipped Constituency Industrial Development Centres in four constituencies in the county, namely Kuresoi South, Nakuru town, Rongai and Subukia Constituencies. These centres will give the community an opportunity to channel their creativity, innovation, and entrepreneurial competencies in economic activities like jua-kali. The pyrethrum processing plant which is a significant agro-based industry in the county have not been operating at full capacity due year of inefficiencies and declining raw materials.

5.4.16 Transport Infrastructure and Network

Road transport is the main mode of transport in Baringo County. The County has a fairly good road network with most of the roads being earth roads which are rendered impassable during the rainy seasons. The current road coverage is estimated at 1,588 Kms of which 330 Kms are of bitumen standards, 720 Kms gravel and 538 Kms surface roads. The tarmac roads in the County include a section of the Nakuru-Marigat-Kabarnet highway which traverses the County from Nakuru to Kabarnet town and connects the county to Eldoret town via Elgeyo-Marakwet County.

Figure 5-38: Road network in Baringo County

Access/feeder roads within the villages are dirt roads. Some of these roads are not passable during the rainy season due to flooding or muddiness. The most common mode of transport is Boda Boda (motorcycles) which is a source of employment to the youth in the area. In addition to transporting people, the boda-bodas are used to transport farm produce to the market. The proposed transmission line crosses a number of road infrastructure under the mandate of different road agencies. The transmission line does not cross any railway line.

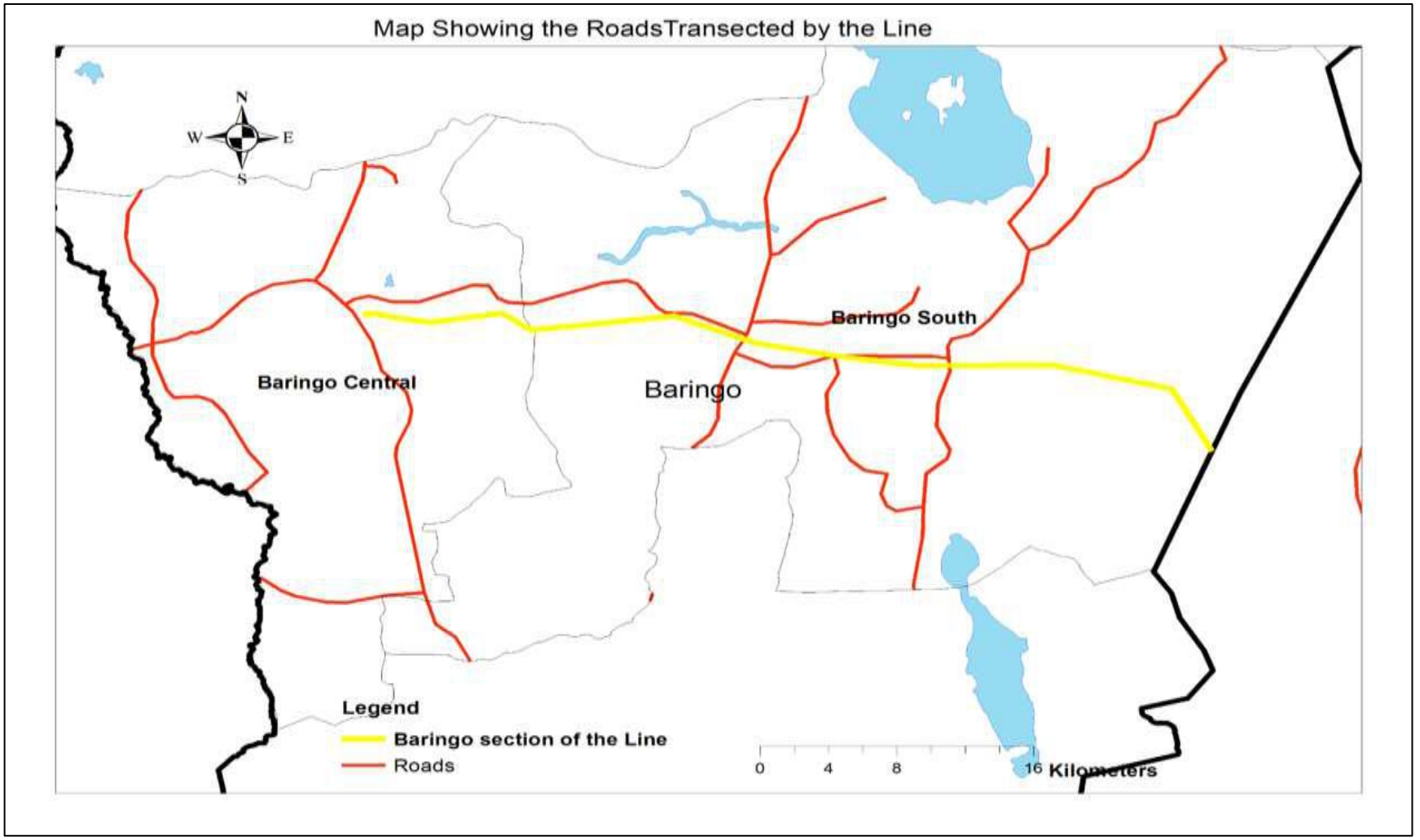


Figure 5-39. Road Infrastructures crossed by Project

5.5 Laikipia County Bio-Physical Environment

5.5.1 Location and Size

Laikipia borders Samburu County to the North, Isiolo County to the Northeast, Meru County to the East, Nyeri County to the Southeast, Nyandarua County to the South, Nakuru County to the South West and Baringo County to the West. The County lies between latitudes 0o 18" South and 0 o 51" North and between longitude 36^0 11" and 37^0 24' East. It covers an area of 9,462 km^2 and ranks as the15th largest county in the country by land size. The total length of the transmission line in Laikipia County is 41.2kms. Figure 5-40 below shows the geographical position of Laikipia County in Kenya.

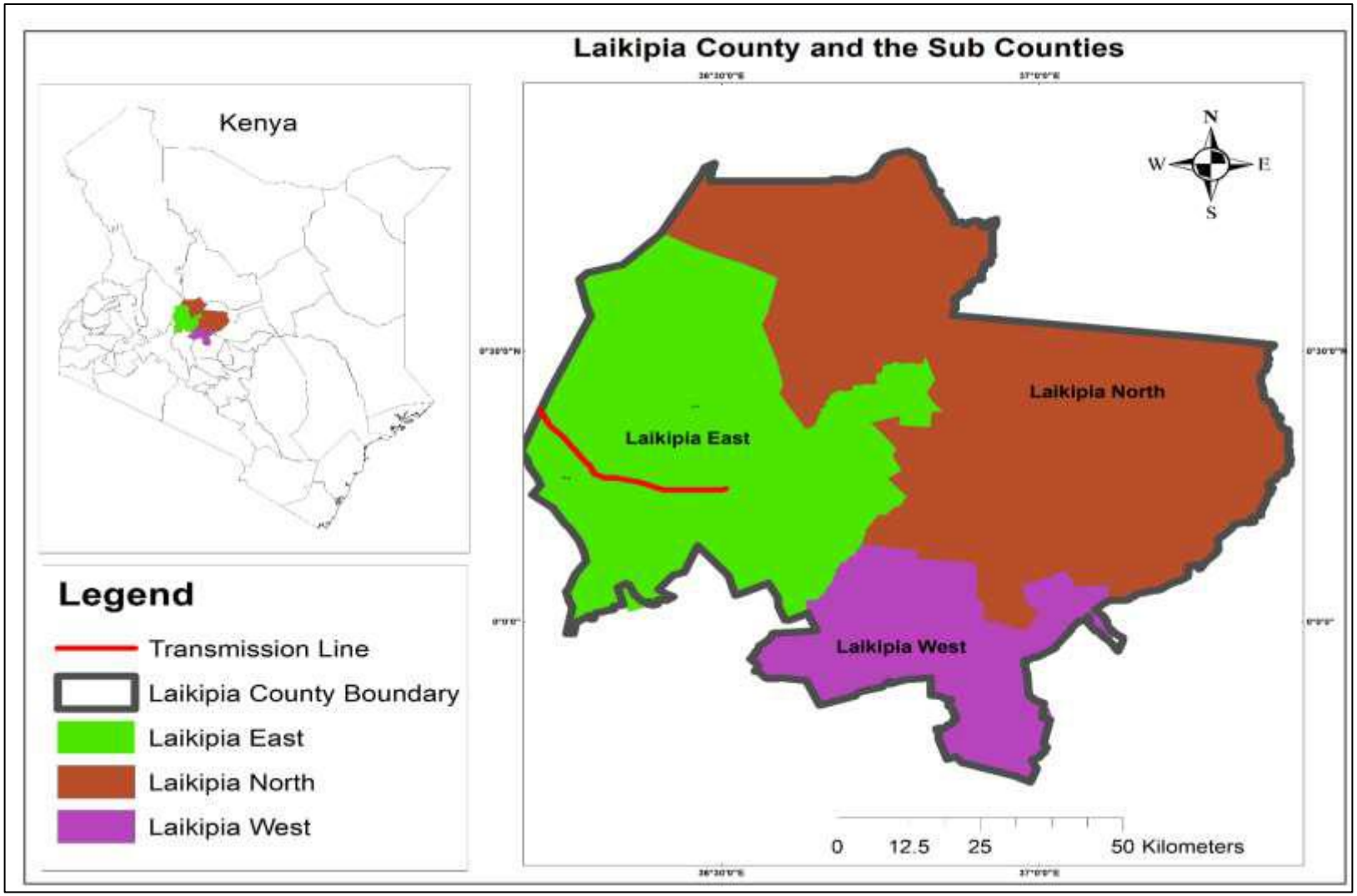


Figure 5-40: Transmission line Route in Laikipia County

5.5.2 Administrative and Political Units

Laikipia County comprises of three administrative sub-counties namely Laikipia East, Laikipia North, and Laikipia West (the sub county units are geographically equivalent to the constituencies). The sub county headquarters are at Nanyuki, Doldol, Rumuruti and Nyahururu respectively and further divided into five administrative districts namely: Laikipia East, Laikipia West, Laikipia North, Laikipia Central and Nyahururu. The county is further sub-divided into 15 divisions, 51 locations and 96 sub-locations respectively. The Laikipia East sub county lies to the east, Laikipia North to the North, Laikipia Central to the south east, Nyahururu to the south west and Laikipia West to the west of the county. The county has three constituencies namely; Laikipia East, Laikipia West and Laikipia North. It has 15 electoral wards, 5 in Laikipia East, 6 in Laikipia West and 4 in Laikipia North constituencies respectively. The table below shows land area by constituency.

Table 5-11: Land Area by Constituency

Constituency	No. of wards	Name of Wards
Laikipia North	4	Mukogodo East, Mukogodo West, Segera, Sosi
Laikipia East	5	Ngobit, Tigithi, Thingithu, Nanyuki, Umande
Laikipia West	6	Olmoran, Rumuruti Township, Githiga, Marmanet, Igwamiti, Salama

Source: Independent Electoral and Boundaries Commission, 2017.

Table 5-12. Locations traversed by the Transmission Line in Laikipia County

LOCATIONS			
1	Sosian	10	Rumuruti
2	Olmoran	11	Muhotetu
3	Ildigiri	12	Marmanet
4	Mochongoi	13	Salama
5	Mukogondo	14	Mutitu
6	Kinamba	15	Sirrima
7	Mutara	16	Tigithi
8	Daiga	17	Nanyuki
9	Ilngwesi	18	Ngobit

5.5.3 Climatic Conditions

The County rainfall pattern is bimodal, with long rains being received in March to May while the short rains are experienced in October and November. The county experiences a relief type of rainfall due to its altitude and location. The annual average rainfall varies between 400mm and 750mm though higher annual rainfall totals are observed on the areas bordering the slopes of Mt. Kenya and the Aberdare Ranges. Rainfall varies from 1200 (in pockets) to 400 mm per year on average rainfall is generally distributed through two seasons, the long rains (May-August) and the short rains (October-November) (ALRMP, 2005). North Marmanet receives over 900mm of rainfall annually, while the drier parts of Mukogodo and Rumuruti receive slightly over 400mm annually. The plateau receives about 500mm of rain

annually, while Mukogodo Forest receives an average rainfall of about 706mm annually. The seasonal distribution of rainfall in the county is as a result of the influences of Northeast and South trade winds, the Inter-Tropical Convergence Zone and the Western winds. The long rains occur from March to May while the short rains are in October and November. The parts neighbouring Aberdare Ranges and Mt. Kenya form an exception to this pattern as they receive conventional rainfall between June and August because of the influence of the trade winds.

The annual mean temperature of the county ranges between 16° C and 26° C. This is as a result of relief and trade winds resulting to cooler conditions in eastern side which is near Mt. Kenya and hotter in the low-lying areas in the North. The western and southern parts of the county have cooler temperatures with the coolest month being April and the hottest month being February.

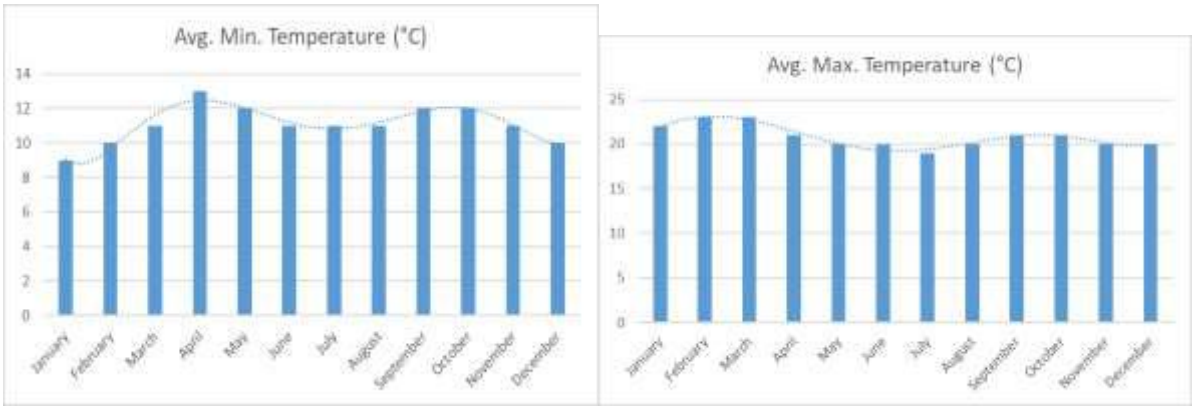


Figure 5-41: Minimum and Maximum temperatures in Laikipia County

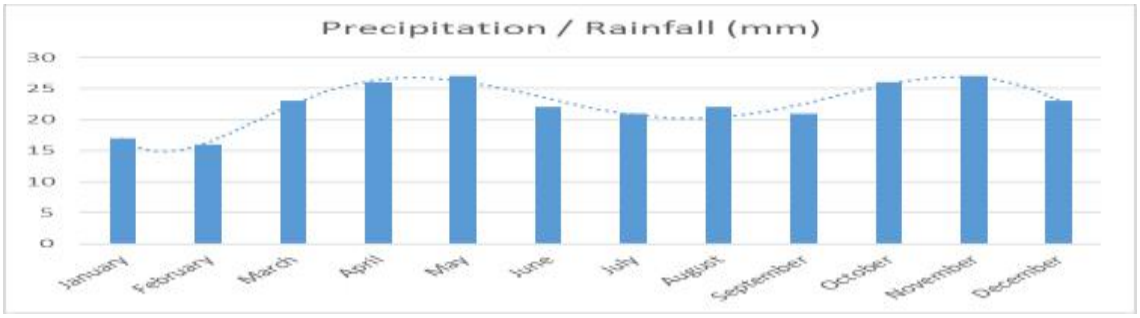


Figure 5-42: Average annual rainfall in Laikipia County

5.5.4 Baseline Ambient Environmental Measurements

Tables below are the results of ambient air and noise measurements conducted to understand the baseline situation of the project area specifically in areas with sensitive receptors that may be affected by the project construction activities. Tables shows the locations of the baseline environmental measurements.

5.5.4.1 Ambient Air Emission Measurements

Table 5-13: Ambient Air Emission: Air Quality Data – PM10

Location	**Proxy**	**PM10** ($\mu g/m^3$)	**WHO** AQG	**EMCA** (Air Qual. Reg. 2014)
Cheplogoi Siri Medical Clinic	MP1	21	50 $\mu g/m^3$ 24hrs	50 $\mu g/m^3$ 24hrs
Kimalel Day and Boarding School	MP2	39		
Patakwanin Primary School	MP3	26		
Ol'ngarua Village	MP4	53		
Gatundia Village	MP5	28		

Source: Field Data

Table 5-14: Weather Conditions

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30 Degrees Celcius
Cloud Cover	Sparse
Date	28th August 2019
Duration of Measurements	1hour

Source: Field Data

Table 5-15: Ambient Air Emission: Air Quality Data – Sulphur Dioxide, SO2

Location	**Proxy**	**SO_2** ($\mu g/m^3$)	**WHO** AQG	**EMCA** (Air Qual. Reg. 2014)
Cheplogoi Siri Medical Clinic	MP1	<8.1	20 $\mu g/m^3$ 24hrs	80 $\mu g/m^3$ 24hrs
Kimalel Day and Boarding School	MP2	<8.1		
Patakwanin Primary School	MP3	<8.1		
Ol'ngarua Village	MP4	<8.1		
Gatundia Village	MP5	<8.1		

Source: Field Data

Table 5-16: Weather Conditions

Sunlight	Sunny

Precipitation	None
Wind	Still
Temperature	30 Degrees Celcius
Cloud Cover	Sparse
Date	28TH August 2019
Duration of Measurements	1hour

Source: Field Data

Table 5-17: Ambient Air Emission: Air Quality Data – Nitrogen Dioxide

Location	**Proxy**	**NO_2** ($\mu g/m^3$)	**WHO** AQG	**EMCA** (Air Qual. Reg. 2014)
Cheplogoi Siri Medical Clinic	MP1	16	40 $\mu g/m^3$ Annual 200 $\mu g/m^3$ 1hr average	80 $\mu g/m^3$ 24hrs
Kimalel Day and Boarding School	MP2	20		
Patakwanin Primary School	MP3	23		
Ol'ngarua Village	MP4	20		
Gatundia Village	MP5	22		

Table 5-18: Weather Conditions

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30 Degrees Celcius
Date	28TH August 2019
Duration of Measurements	1hour

Source: Field Data

5.5.4.2 Ambient Noise Emission Measurements

Table 5-19: Ambient Noise Level

Location	Proxy	LAEq	LA Max	LA Min
Cheplogoi Siri Medical Clinic	MP1	42.1	48.1	40.8
Kimalel Day and Boarding School	MP2	36.4	41.7	40.3
Patakwanin Primary School	MP3	31.0	35.0	30.2
Ol'ngarua Village	MP4	35.1	42.0	34.5
Gatundia Village	MP5	47.2	52.1	50.3

Table 5-20: Weather conditions

Sunlight	Sunny
Precipitation	None
Wind	Still
Temperature	30 Degrees Celsius
Date	28th August 2019
Duration of Measurements	1hour

Source: Field Data

Figure 5-43. Sensitive receptors along the AOI.

5.5.5 Soils and Geology

The soils in the landscape can be grouped on the basis of the terrain under which they are developed. They have a high level of inherent fertility and the only limiting factors to agricultural production are poor weather characterized by frequent dry spells and poor rainfall distribution in terms of space and time. The landscape has red volcanic soils, clay loam, black cotton soil, sandy soils, and sandy loam soils. The most widespread soil type on the plains of Laikipia is 'black cotton', which is c. 50% clay and c. 24% sand (Young et al. 1998).

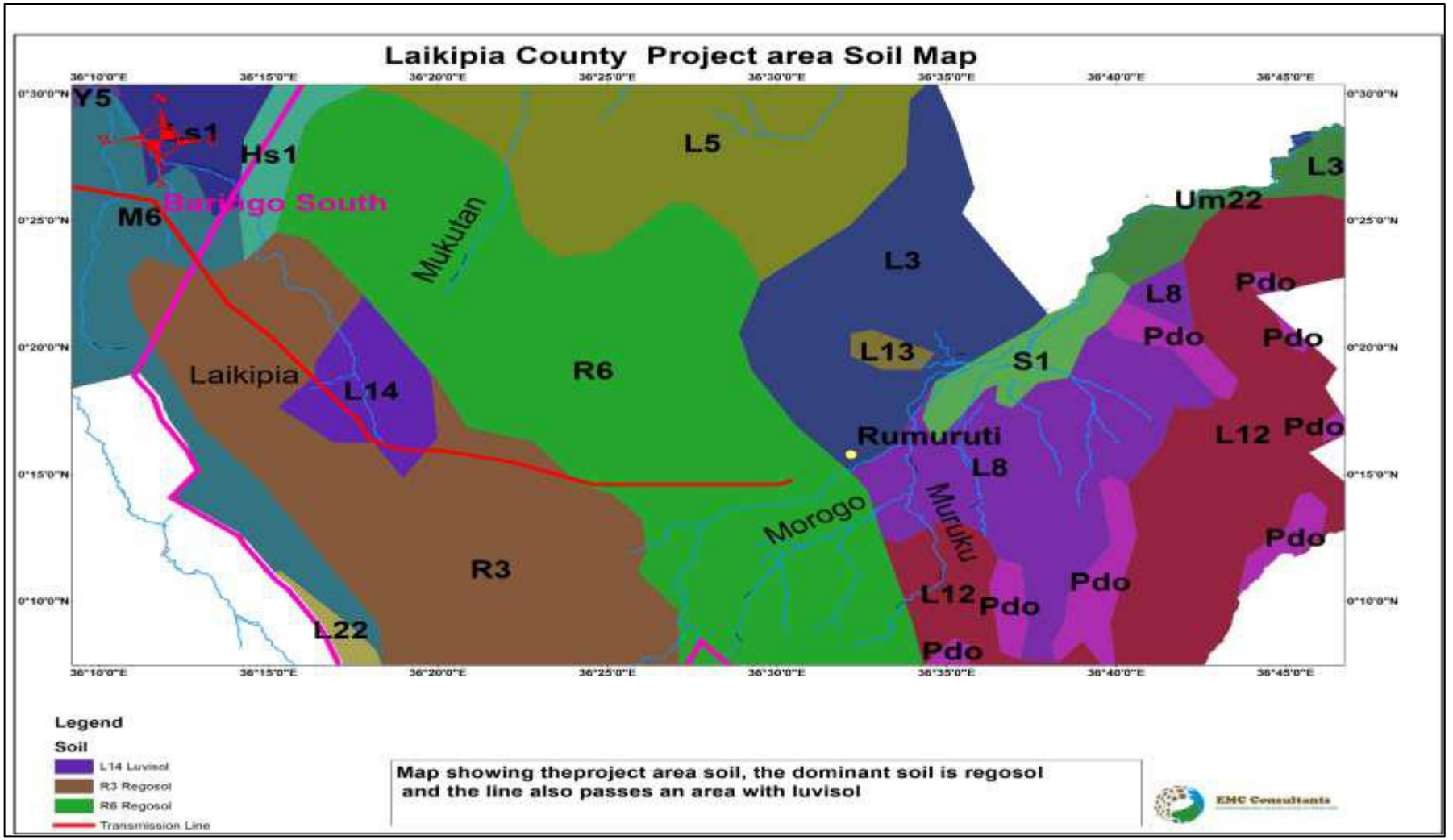


Figure 5-44: Laikipia County AoI Soil Map

5.5.6 Topography

The altitude of Laikipia County varies between 1,500 m above sea level at Ewaso Nyiro basin in the North to a maximum of 2,611 m above sea level around Marmanet forest. The other areas of high altitude include Mukogodo and Ol Daiga Forests in the eastern part of the county at 2,200 m above sea level. The county consists mainly of a plateau bordered by the Great Rift Valley to the West, the Aberdares to the South and Mt. Kenya massifs to the South East all of which have significant effects on the climatic conditions of the county. Around the Ol Arabel area, the terrain is quite steep and unstable and prone to earth movement and soil erosion as depicted in figure below. Refer to **figure 5-11** showing AP 013 as an area with steep terrain.

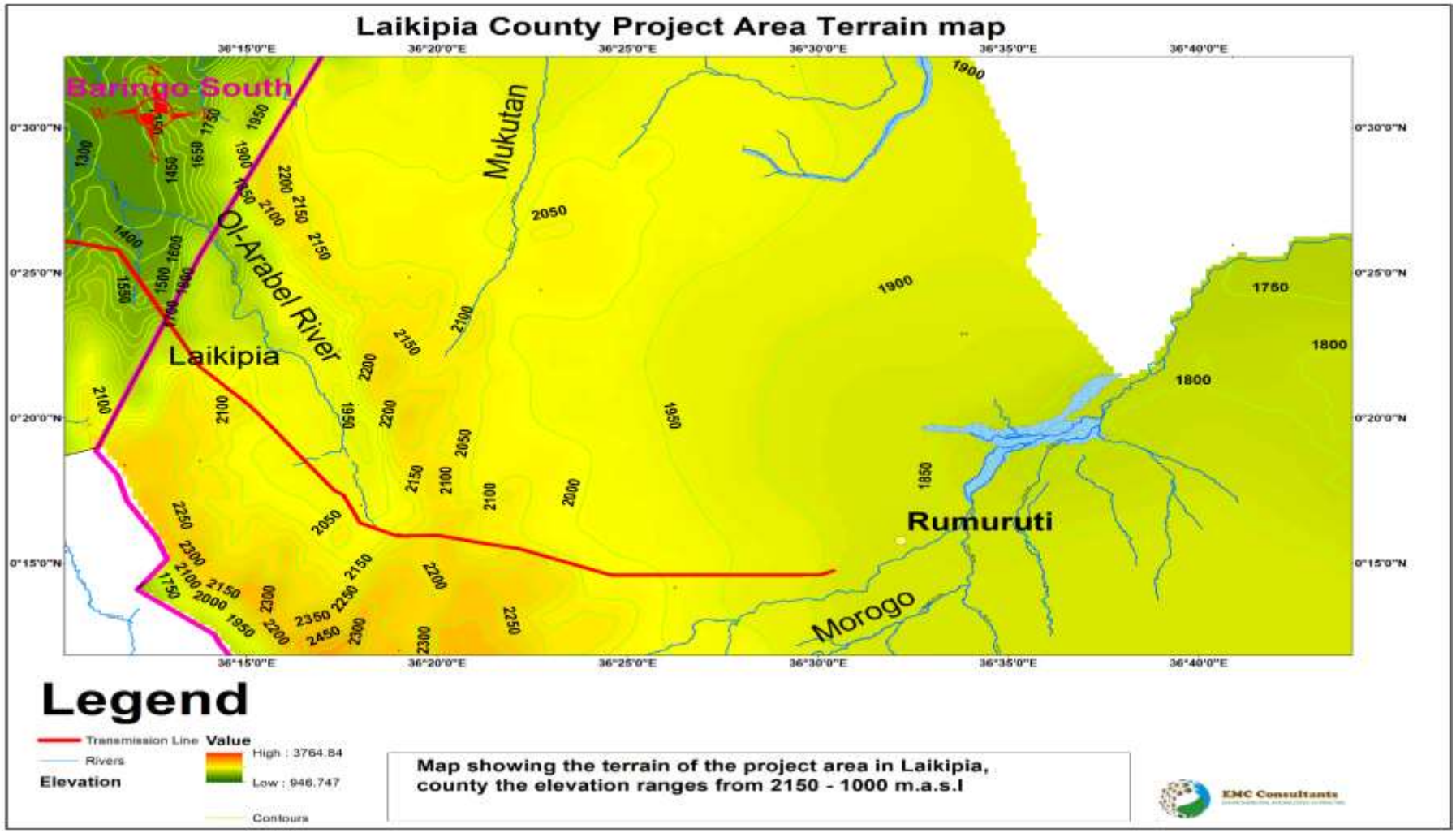


Figure 5-45: Terrain along the project route

5.5.7 Hydrology

The main river catchments are the Aberdares range and Mount Kenya and Laikipia's water system composed of at least 25 permanent or semi-permanent rivers. The Ewaso Nyiro River is the lifeline of the County to the North. Laikipia is water scarce, it is mostly classified as arid and semi-arid. The lack of water in the dry season, due to high abstraction upstream has recently resulted in some perennial rivers becoming seasonal and created serious conflicts and life-threatening situations.

The main drainage feature is Ewaso Nyiro North basin with its tributaries having their sources in the slopes of the Aberdares and Mt. Kenya. These tributaries include Nanyuki, Timau, Rongai, Burguret, Segera, Naromoru, Engare, Moyok, Ewaso Narok, Pesi and Ngobit rivers. The flow of these rivers matches the County's topography, which slopes gently from the highlands in the South to the lowlands in the North. The rivers determine to a large extent livelihood pattern in the county. The level plateau and the entire county drainage is dominated by the Ewaso Nyiro North basin with its tributaries which have their sources in the slopes of the Aberdares and Mt. Kenya and flow from South to North. The tributaries include, Nanyuki, Timau, Rongai, Burguret, Segera, Naromoru, Engare, Moyak, Ewaso Narok, Pesi and Ngobit Rivers. The flow of these rivers matches the county's topography, which slopes gently from the highlands in the South to the lowlands in the North. The main river catchments are the Aberdares range and Mount Kenya and Laikipia's water system composed of at least 25 permanent or semi-permanent rivers. The Ewaso Nyiro River is the lifeline of the County to the North.

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There are two major swamps in the county namely: Marura Swamp, which runs along the Moyot valley in Ol Pajeta Ranch and the Ewaso Narok Swamp around Rumuruti Township. The proposed transmission line route does not traverse any section of a wter body in Laikipia County as shown in **Figure 5-46.**

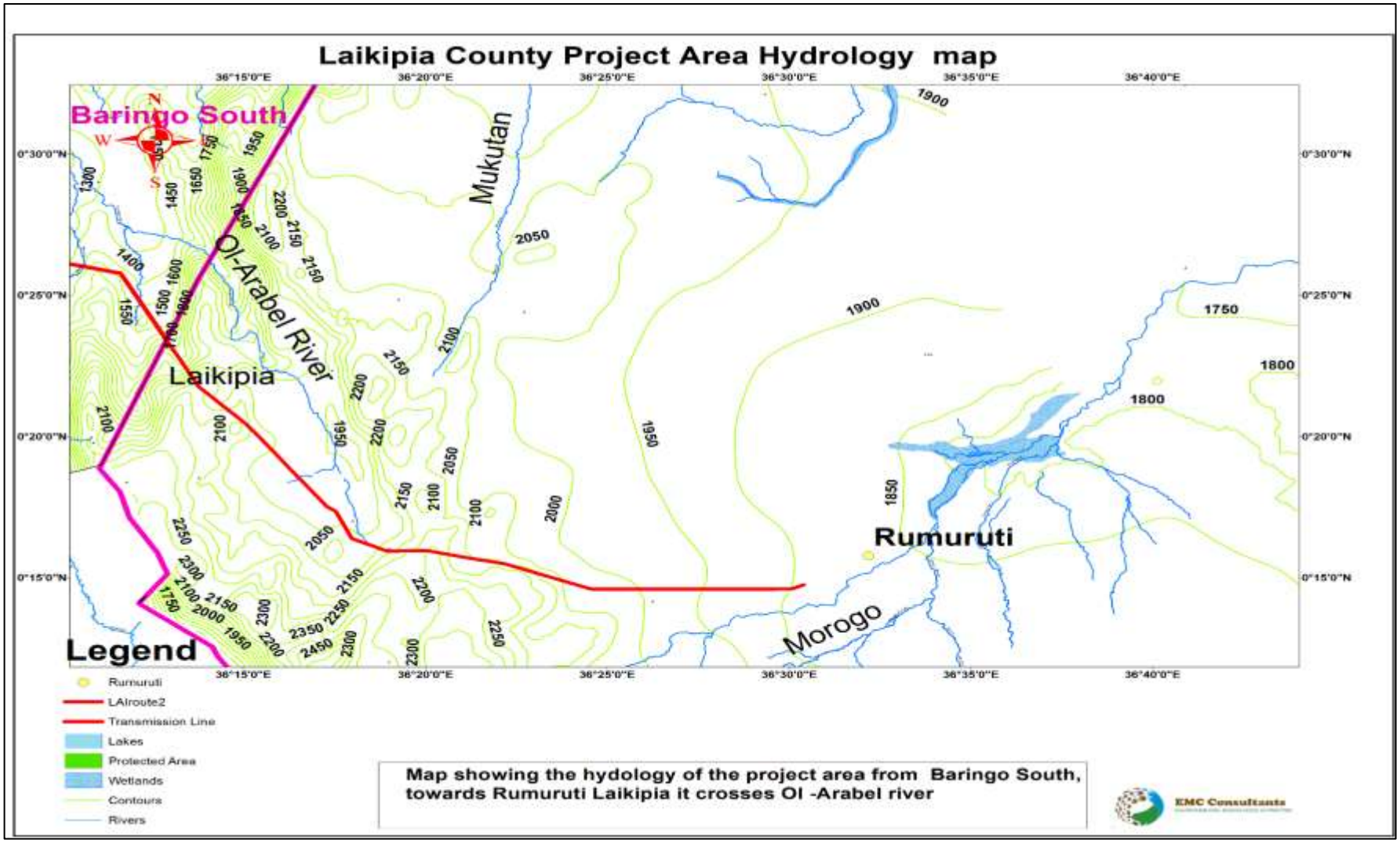


Figure 5-46: Hydrology Features along project route

5.5.8 Biological Environment

The county is endowed with several natural resources. These include pasture rangeland, forest, wildlife, undulating landscapes, and rivers among others.

5.5.8.1 Flora

Laikipia is in a transition zone for three major vegetation types; 'Somalia-Masai Semi-desert Grassland and Shrubland', 'Somalia-Masai *Acacia Commiphora* Bushland and Thicket', and 'Afromontane Undifferentiated Montane Vegetation'. Here, the savannahs of eastern Africa grade into both the semi-arid lands of the Horn of Africa and the montane elements of Mount Kenya and the Aberdares Range. The resultant great diversity of vegetation types, ecotones, and mosaics accounts, in part, for the high biological diversity of Laikipia.

Figure 5-47: Sample flora around project area

The primary vegetation types are grassland, bushland, woodland, and, on the higher ground, dry forest. Dry forest is typically dominated by pencil cedar *Juniperus procera* (Cupressaceae), wild olive *Olea europaea* (Oleaceae), podo *Afrocarpus gracilior* (Podocarpaceae), euclea *Euclea divinorum* (Ebenaceae), acokanthera *Acokanthera schimperi* (Apocynaceae), and croton *Croton megalocarpus* (Euphorbiaceae). Riparian forest is a scarce, but biologically important, vegetation type in Laikipia. It is often dominated by fever trees *Acacia xanthophloea* (Fabaceae). Other large trees in the riparian forest include Gerrard's acacia *Acacia gerrardii* (Fabaceae), *A. gracilior*, water pear *Syzygium guineense* (Myrtaceae), water berry *Syzygium cordatum* (Myrtaceae), cape chestnut *Calodendrum capense* (Rutaceae), East African greenheart *Warburgia ugandensis* (Canellaceae), and figs *Ficus spp*. (Moraceae) (especially sycamore *fig F. sycomorus).*

5.5.8.2 Forests

The county has gazetted forest area totalling to 580 Km^2 comprising of both the indigenous and plantation forests. The indigenous forests include Mukogodo and Rumuruti, which are under threat from encroachment. The plantation forests include Marmanet and Shamaneik. Laikipia has a network of 10 main forests, which play important social and economic roles. Forests are under the responsibility of the Kenya Forest Service. Forest provides essential

services to people, livestock, and wildlife in Laikipia, including watershed protection, dry season grazing, a wide range of traditional non-timber forest products (food and medicinal plants, fungi etc.), habitats and forage, and timber products such as firewood. They also provide a sink for carbon.

The transmission line traverses Lariak forest over a distance of 1.8kms (13.5 acres) between AP 019 to AP 020. Lariak Forest is a gazetted forest and is part of the broader of the Marmanet forests on the eastern escarpment of the Rift Valley under the management of Kenya Forest Service. The species of trees in the forest include *Juniperus procera*, *Premna maxina*, *Dombeya goetzianii*, *Teclea noblis*, *Ekebergia*, *Celtis Africana*, *Olea hochstotterii*, *Prunus africanum*, *Podecarpos gracilior*, *Podecarpos miIanjianus.*

The transmission line does not traverse Ol Arabel forest but runs adjacent to the forest which is a gazetted forest and under the management of Kenya Forest Service. The species of trees include *Juniperus procera*, *Premna maxina*, *Dombeya goetzianii*, *Teclea noblis*, *Ekebergia*, *Celtis Africana*, *Olea hochstotterii*, *Prunus africanum*, *Podecarpos gracilior*, *Podecarpos miIanjianus* and the size of trees to be lost in acres as a result of the project is 17 acres.

5.5.8.3 Rangelands

Rangelands cover more than 70% of Laikipia. They are characterised by a patchwork of conservation and grazing areas, which are under high pressures. 37 % of Laikipia is under large-scale ranching under extensive livestock production. Pastoralist communities use approximately 32% of the County land area including 10% of "abandoned land" (240,000 acres of land purchases in the 1970s and abandoned due to insufficient rainfall for cultivation). Intense land degradation threatening communities' livelihood base has occurred in communally owned areas.

5.5.8.4 Fauna

The County is recognised as one of the most important areas for conservation in east Africa for numerous reasons including the diversity of its wildlife, the number of endangered species it holds (including wild dogs, Grevy's zebras and half of the population of Kenya's black rhinoceros) and having one of the largest contiguous areas under conservation. The highest densities of wildlife are found in on what is referred as private protected areas (i.e., mixed ranches) with community protected areas acting as dispersal areas (AFD, 2013). Among the major wildlife species found in this county are the lion, leopard, elephant, buffalo, and the rhinoceros though there are other smaller species also in abundance particularly the African Wild dog and gazelles. According to classification, the endangered species in the region includes among others African wild dog (*Lycaon pictus*), Grévy's zebra (*Equus grevyi*), Lelwel hartebeest (including Jackson's hartebeest) *Alcelaphus buselaphus lelwel.* Vulnerable Species include: Savanna elephant *(Loxodonta Africana*), Lion (*Panthera leo*), Cheetah (*Acinonyx jubatus*), Common hippopotamus (*Hippopotamus amphibious*), Reticulated giraffe (*Giraffa reticulate*), Chanler's mountain reedbuck (*Redunca fulvorufula chanleri*) and Eastern patas monkey *(Erythrocebus patas pyrrhonotus*). Near threatened species include Thomson's gazelle (*Eudorcas thomsonii*), White rhinoceros (*Ceratotherium simum*), Leopard (*Panthera pardus*) etc. Critically Endagered spp include Black rhinoceros (*Diceros bicornis*). Least Concern includes: Impala, Waterbuck, Greater kudu, Bushbuck, Spotted hyena, African

clawless otter, Monkey, Hyrax. The transmission line traverses as indicated above, Lariak Forest which is part of the broader of the Marmanet forests on the eastern escarpment of the Rift Valley.

5.5.8.5 Insects

Laikipia is home to insects of more species than all of its other creatures and plants combined. Laikipia's most conspicuous and colorful insects are butterflies, of which more than 150 species have been recorded. A commonly seen butterfly is the widely occurring *Citrus Swallowtail*, *Papilio demodocus*, whose dark upper wings bear flashy lemon-yellow markings. Other common butterflies are the *Pansies*, *Junonia spp*., Blueeyed (*J. oenone*) and Yellow (*J. hierta*). The Guineafowl Butterfly, Hamanumida daedalus, dark grey and speckled like the bird from which it gets its name, is typically seen floating low over paths in Acacia woodland. *Orange Tips, Colotis spp*., of several species frequent the Laikipia savannahs, sometimes in large numbers.

5.5.8.6 Reptiles and Amphibians

The combination of a moderate climate (neither too hot and dry nor too cold and wet) with a diverse array of habitats ensures that Laikipia supports many species of reptiles and amphibians. Dangerous snakes that typically seek refuge in rock crevices and on kopjes in Laikipia include the Puff Adder, *Bitis arietans*, Africa's most dangerous snake, and the Black-necked Spitting Cobra, *Naja nigricollis*. The large, unmistakable African Rock Python, *Python sebae*, is most often seen near water. The Leopard Tortoise, *Geochelone pardalis*, is found in most habitat types.

The amphibians are nearly all nocturnal. Lizards typically seen basking on rocks or mounds, or in trees and bushes are by far the most conspicuous reptiles. Snakes, while abundant, are much more secretive, usually moving off before they can be seen. In the open grasslands, you can expect to see several terrestrial lizards, including the Variable Skink, Mabuya varia, typically brownish and speck led with a pale flank stripe. The Grass-top Skink, M. megalura, slender and brown with a dark lateral stripe, has tiny limbs and an extraordinarily long tail (accounting for as much as two-thirds of its length), allowing it to slide swiftly through and over clumps of grass. The Yellow-throated Plated Lizard, *Gerrhosaurus flavigularis*, a large, long-tailed brown lizard with paired yellow dorso lateral stripes, may be seen emerging from holes, while Speke's Sand Lizard, Heliobolus spekii, a small, mottled brown species with black barred pale dorsal stripes, typically darts about on more open ground. Fast-moving Sand Snakes, *Psammophis spp*., often startled on grassland tracks into making off in haste, may include the sleek Northern Stripe-bellied Sand *Snake, P. sudanensis*, which has a brown back and two prominent yellow dorso lateral stripes. Larger species found on Laikipia's grasslands are the Olive Sand Snake, *P. mossambicus*, which is uniformly olive-brown, and the Speckled Sand Snake, *P. punctulatus*, often more than 1.5 m long, with black and yellow dorsal stripes and a striking orange head. Common in grasslands are the dark-striped, pale grey-brown Kenya Striped Skaapsteker, *Psammophylax multisquamis*, and the pale olive-grey-brown Mole Snake, *Pseudaspis cana*, a stout burrowing species with a short, pointed head.

5.5.8.7 Avi-Fauna

As home to some 450 of Kenya's estimated 1,100 bird species, Laikipia is a birder's paradise. Majority of the birds found in the county are distributed within the various ecosystems around, some of the birdlife observed include among others: White-faced whistling duck, Knob-billed duck, African black duck, Madagascar pond heron, African spoonbill, Black stork, Great white pelican, Great cormorant, Lesser kestrel, Red-footed falcon, Sooty falcon, African fish eagle, Eastern chanting goshawk, Western marsh harrier, African hawk–eagle, Corncrake, Red-knobbed coot, white-throated-bee-eater**,** Black-winged stilt, Greater painted snipe, Wood sandpiper, Red-fronted parrot, Common cuckoo, Barn owl, Little bee-eater, Crowned hornbill, Jackson's widowbird etc. Along the transmission route, there is an Endemic Bird Area (EBA), Kenyan Moutains traversed by the transmission line (see figure 5-49). The bird species located in the EBA are described above.

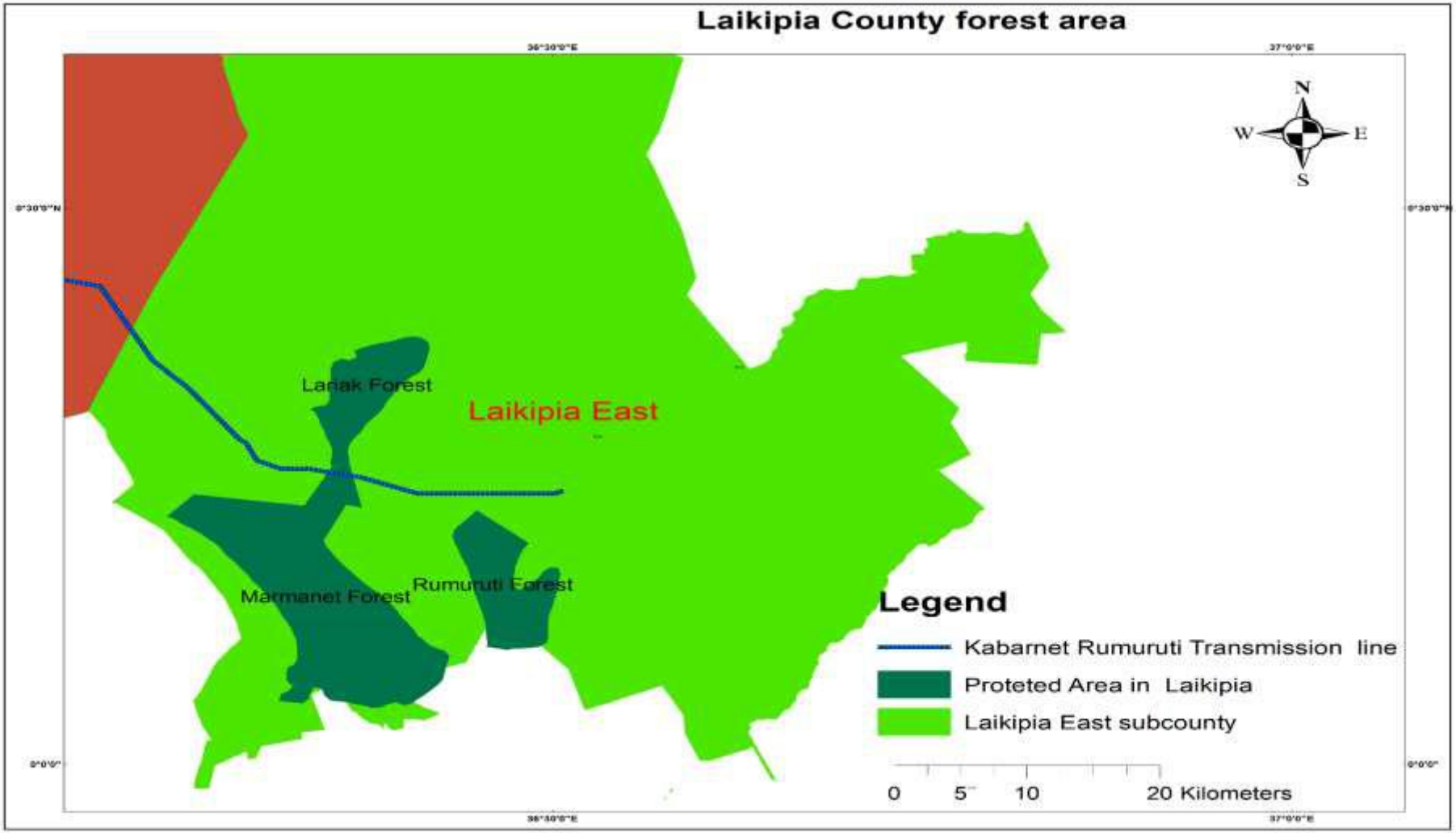


Figure 5-48: Transmission Line Route and Protected Areas

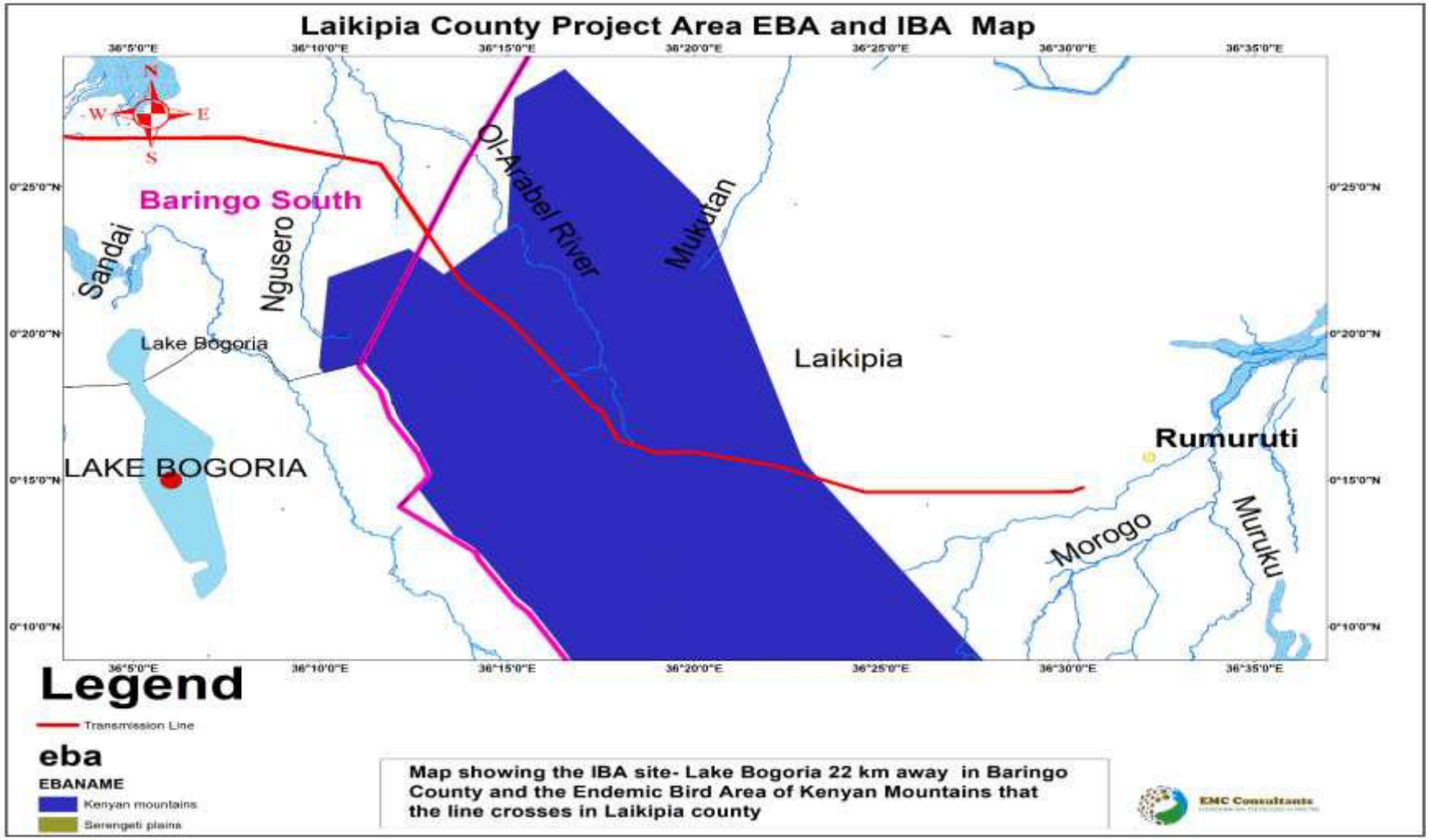


Figure 5-49: Map showing the transmission line IBA sites and EBA in the project area

5.6 Laikipia County Socio–Economic Baseline

5.6.1 Population Size and Composition

According to the 2019 KNBS Housing and Population Census, the total population for the county stood at 518,560 people of which 259,440 were males and 259,102 were females. The ratio of men to women stands at almost one to one with need for efforts towards gender parity in provision of socioeconomic opportunities. The possible explanation for lower male population across the age cohorts across the age of 19 years are factors related to lower life expectancy amongst males. The table below shows the population density by gender in each sub-county.

Table 5-21: Population and density by gender and sub-county

Sub County	Male	Female	Intersex	Total
Laikipia Central	**47,888**	**47,705**	**1**	**95,594**
Laikipia East	**52,078**	**50,732**	**5**	**102,815**
Laikipia North	**18,067**	**18,116**	**1**	**36,184**
Laikipia West	**65,158**	**64,102**	**3**	**129,263**
Nyahururu	**76,249**	**78,447**	**8**	**154,704**
Laikipia	**259,440**	**259,102**	**18**	**518,560**

Source: KNBS population and census data 2019

5.6.2 Ethnicity

Laikipia is cosmopolitan with about 23 communities comprising of Maasai, Samburu, Rendile, Somali, Pokots, Kalenjins, Meru, Kikuyu, and Turkana among others. Majority (52%) of the household members in the project area were female, while the males formed 48%. Majority (52%) of the household members in the project area were females, while the males formed 48%. The communities where the transmission line is traversing are Kikuyu and Meru and are not categorized as vulnerable and marginalized groups according to World Bank's OP. 4.10 since they do not meet the criteria for the same.

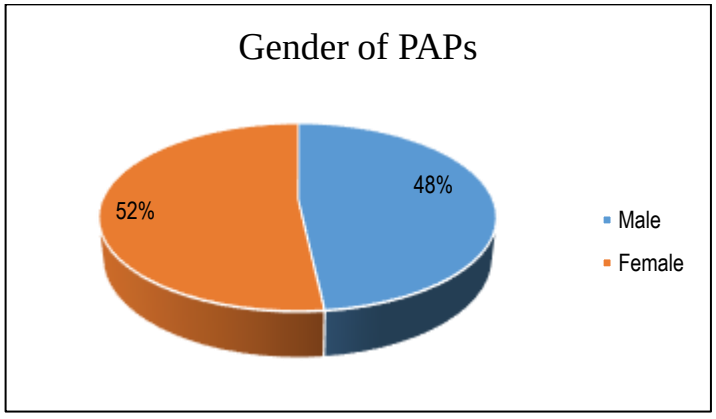


Figure 5-50: Gender Distribution of the Households Laikipia County

5.6.3 Settlement Patterns

Laikipia is a cosmopolitan county and largely rural in settlement. The settlement patterns in the county are uneven as and are influenced by the differences in land potential, livelihood zones, infrastructure development, land use system and availability of social amenities. Laikipia Central Sub-County has pockets of both high and low densities dictated by the differences in land potential. Laikipia North constituency is arid and semi-arid in nature and therefore the least populated arising from the limited economic activities such as livestock rearing and sand harvesting. The pockets of high population density include Nanyuki and Nyahururu towns, which are the commercial, administrative, and transportation hubs of the county. There are four major urban centers in the county namely: Nanyuki, Nyahururu, Rumuruti and Kinamba. The growth and expansion of Nyahururu and Nanyuki is attributed to their long-time role as the administrative headquarters for the former Laikipia and Nyandarua districts (in the neighbouring Nyandarua County). They are also major transport hubs for major routes namely: Nairobi-Isiolo-Marsabit, Nairobi-Meru, Nairobi-Mararal and Nakuru-Nyeri.

Figure 5-51: Sample settlement in Laikipia County

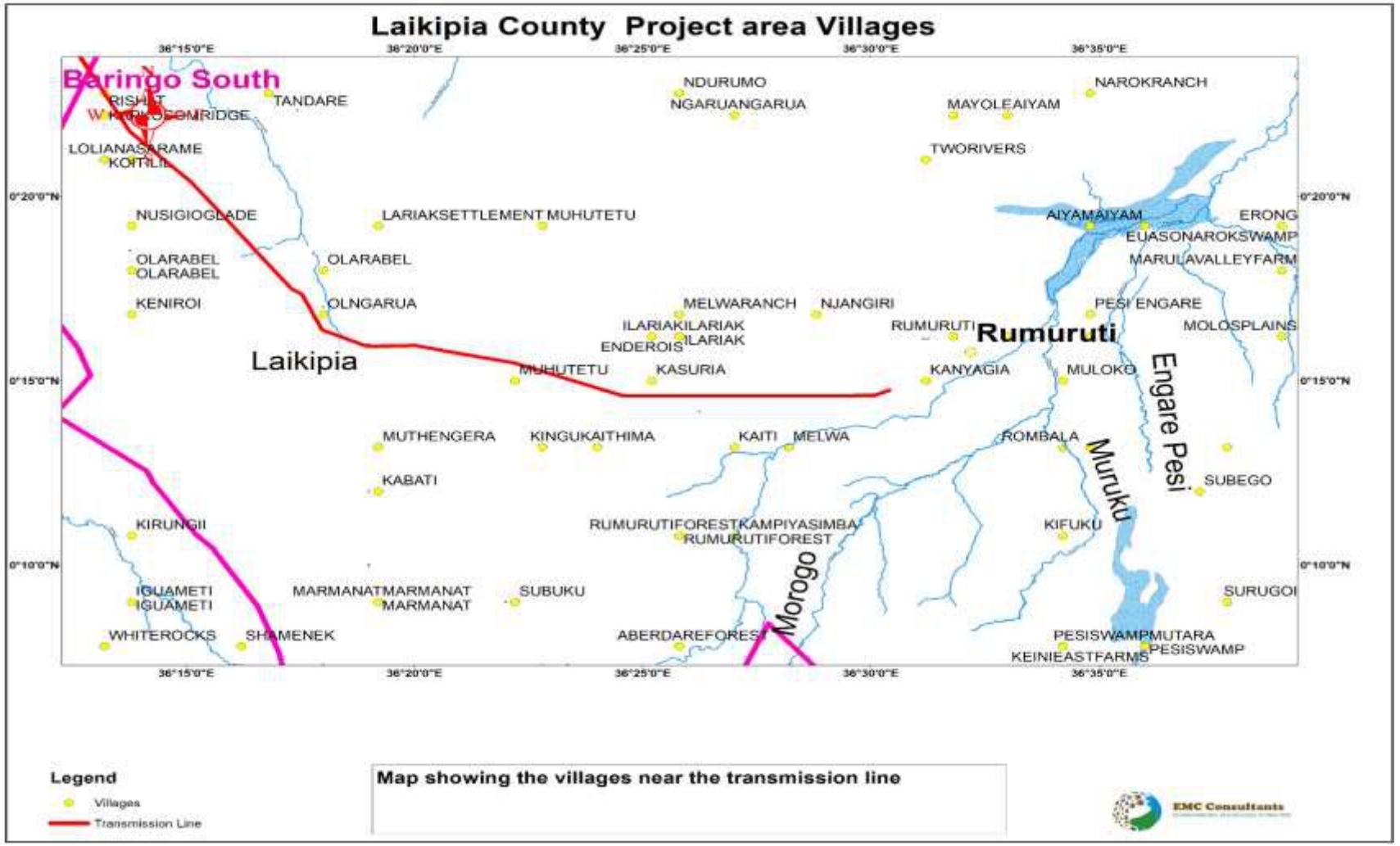


Figure 5-52. Settlements along the transmission line route

5.6.4 Land and Land Uses

Of the total land mass, arable land constitutes of 1,984 square kilometers. Non-arable land constitutes of 7,456 square kilometers. The urban area constitutes 243.3 square kilometres. Gazetted forestland stands at 580 square kilometres. There are 6 distinct land use patterns heavily influenced by the climatic conditions and the ecological zones. These include among others; pastoralism, mixed farming, ranching, agro-pastoral, marginal mixed farming, and formal employment/trade/business. The three main types of land categories in Laikipia are private, community and public. Along the project line in Laikipia County, PAHs affected by the project all have title deeds (private) and therefore conflicts and grievances associated with lack of title deed that would hinder compensation for land loss is not expected. Land use by the PAHs is mainly for agriculture (crop production and animal husbandry).

Figure 5-53. Land use in Laikipia County

5.6.5 Livelihoods

The County has five main livelihood zones namely; mixed farming, marginal mixed farming, pastoral, formal employment and ranching. The County has seven administrative divisions namely: Central, Lamuria, Mukogodo, Rumuruti, Olmoran, Ngarua and Nyahururu. 64 percent of the County's land mass is utilized under ranching. 90% of Laikipia is "high and dry": mostly too dry for cultivation. The map below shows that the County falls mainly under agro-ecological zones LH5 ('Highland Ranching zone'), UM5 ('Livestock-Sorghum zone') and UM6 ('Midland Ranching zone'). The Nyahururu zone is the only areas which has real natural potential for cultivation. Despite this, the highest proportion of land under cultivation occurs in the 'LH5' semi- arid ranching zone.

Figure 5-54: Economic activities in Rumuruti, Laikipia County.

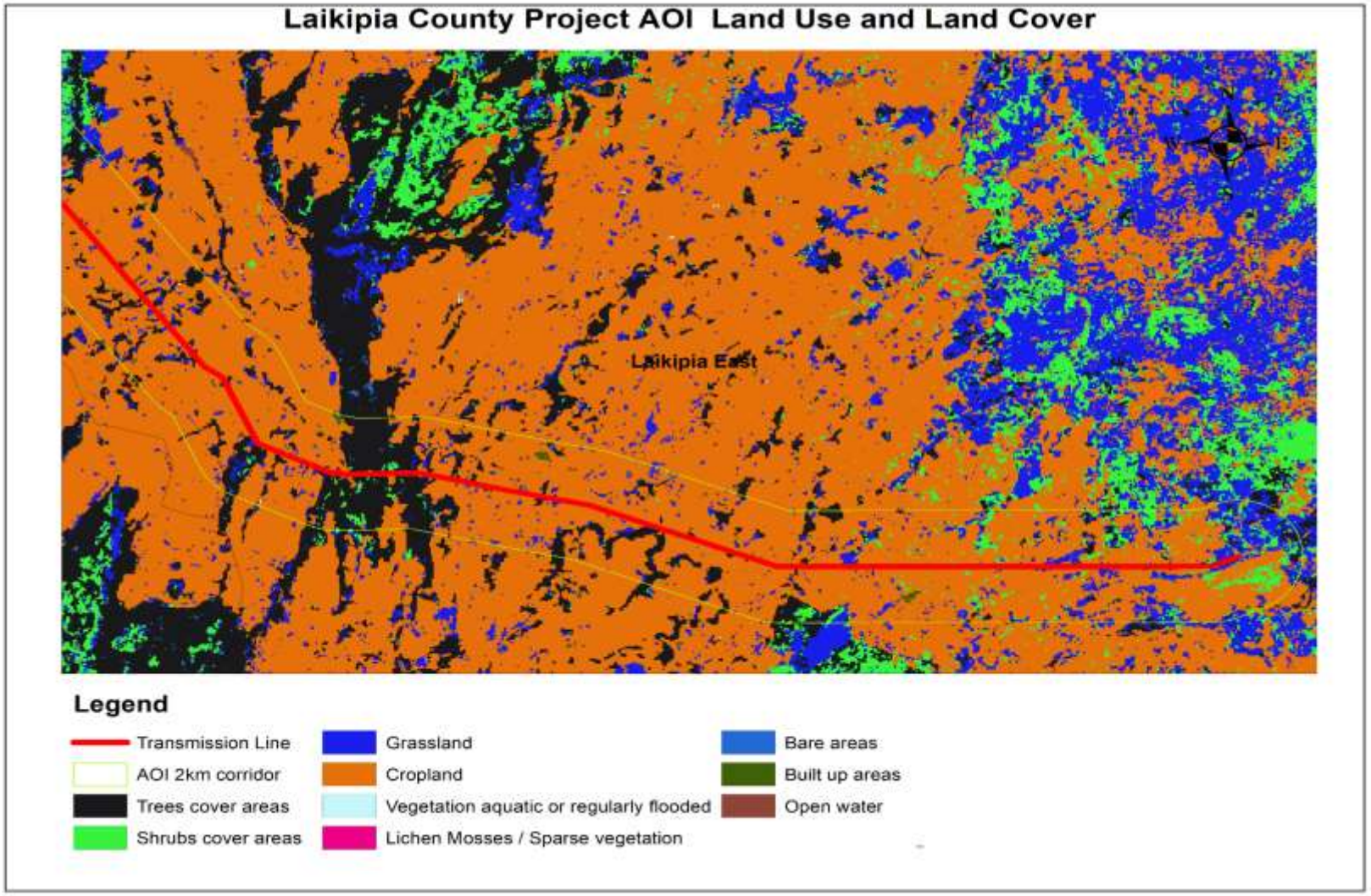


Figure 5-55: Land Use along Transmission Line Route

5.6.6 Agro-Ecological zones

Laikipia straddles several agro-ecological zones which, in addition to its topography makes is highly diverse in terms of habitat (LWF, 2012) which include grasslands and open woodlands, *Acacia commiphora* woodland in the dryer areas, evergreen bushland in the humid areas, riverine forests along rivers and wetlands, dry mountain forest, scarps and kopjes.

5.6.6.1 Crop Production

The main crops grown include wheat, maize, beans, potatoes, and vegetables. Maize takes about 51 per cent of the total planted area. Crop farming is mainly undertaken in the south-western parts of the county due to favorable weather conditions. Efforts are now being put in place to promote the resistant crops such as millet, sorghum, sunflower, and black beans (*dolichos*). There is an emerging trend of increased horticulture production both at large-scale and small-scale levels. This constitutes production of cut flowers, tomatoes, French beans, aloe, chillies and watermelons. There are also pockets of pineapple farms, orange trees and coffee bushes. The agricultural potential in the county is quite prospective as characterized by highly potential farming lands particularly in the South Western parts of the county. Over 20 per cent of the county's total land is arable. The total area under crops is about 1,984 Km2 of which 80 per cent is under food crops. Over 60 per cent of households derive their livelihood from agricultural activities. Livestock production is dominant in the Northern parts of the county. The main livestock products include beef, mutton, milk, eggs, and pork among others.

5.6.6.2 Apiculture

Bee keeping is one of enterprise undertaken by pastoralists and farmers practicing mixed farming. It is practiced in farm woodlots, perimeter fences and in forests for pollination. Honey as a main product is harvested using traditional log hives and only a few farmers use the modern hives such as Langstroth and Kenya Top Bar Hive (KTBH). In harvesting, most use traditional gears (fire for smoking) which are destructive to the bees occasionally killing the queen. Towards value addition, there are 5 co-operative societies that are at basic levels of packaging honey and related by-products. There are approximately 16,300 beehives (8,600 Log hives, 4,700 Top bar hives, 3,000 Langstroth hives. The average honey production per year is 9,630kgs translating to Ksh 5,778,000.

5.6.6.3 Aquaculture

Fish farming is practiced mainly in Laikipia West and Laikipia East sub-counties. The predominant species is tilapia with a small aspect of clarias (catfish) culture. Production infrastructure comprises of approximately 900 fish pods with an average of 1,000 fish stock capacity. There are 125 water reservoirs viable for capture aquaculture. Rumuruti fish farm is a prospective aquaculture training, demonstration and fish seed bulking facility.

5.6.6.4 Ranching

Ranches in the County produce high quality beef stock, embryo transfer for Boran breed nationally and regionally. There are 32 private ranches, one government ranch and 9 group ranches. The ranchers and the neighborhood cluster-grazing committees have a functional model allowing vulnerable households to graze in the ranch during drought on agreed monthly fees.

5.6.7 Education

There are 518 ECDE centers, 340 primary schools of which 265 are public across the county. There are also 96 secondary schools of which 70 are public. The average distance to the nearest primary school stands at 1.1 to 4.9 kilometers.

There are 340 primary schools with a total enrolment of 89,018 pupils. The number of primary school teachers is 2,303 giving a teacher pupil ratio of 1:38. The gross enrolment rate is 94.5 per cent and a net enrolment of 69 per cent. The completion rate is 92 per cent. Primary education is readily accessible as reflected by the fact that 90 per cent of the population is located between 0 and 4.9 kilometers from the nearest primary school with only 10 per cent located over 5 kilometers. The population of 15 years and above consists of 86.1 per cent persons who can read and write. The percentage of population above three years who are at school stands at 36.5% while those who have left school stand at 25.2 per cent Only 10.7 per cent of the population above three years have never attended school.

In 2019, there were 96 secondary schools with a total enrolment of 22,939 students. The number of teachers is 857 giving a teacher student ratio of 1:27. The gross enrolment rate, retention rate and the completion rate stand at 62 per cent 80 per cent and 79 per cent respectively. Secondary education is not readily accessible as reflected by the fact that 60 per cent of the population is located between 1.1 and 4.9 kilometers while 35 per cent is located over five kilometers from the nearest secondary school. Only five per cent of the population lies between zero and one kilometers.

There are 5 operational youth polytechnics in the county (Nanyuki, Wiyumiririe, Nyahururu, Marmanet and Salama). The county hosts one University College namely Laikipia University College. There are 3 University campuses namely Laikipia University College Town Campus in Nyahururu, Kenya Methodist University in Nanyuki and Karatina University Campus in Nanyuki. The middle level colleges include Kenya Institute of Management, St Anne Catholic College, Nanyuki Institute of Communication, Accountancy and Technology (NICAT) and Nanyuki Commercial College.

Most of the PAP household heads could read and write (90.4%). Only 9.6% per cent of PAP household heads could not read and write in English or Swahili. Kikuyu language was the most spoken language at home About 42.2% of the PAHs had attained primary level of education and 21.6% achieving secondary levels of education. These percentages are inclusive of household heads and other members of the household. In the survey conducted 3.8% of the PAHs had completed technical training, while 2.1% and 6.0% respectively did not complete Secondary and Primary level education. A further 3.6% of the PAHs had no formal education.

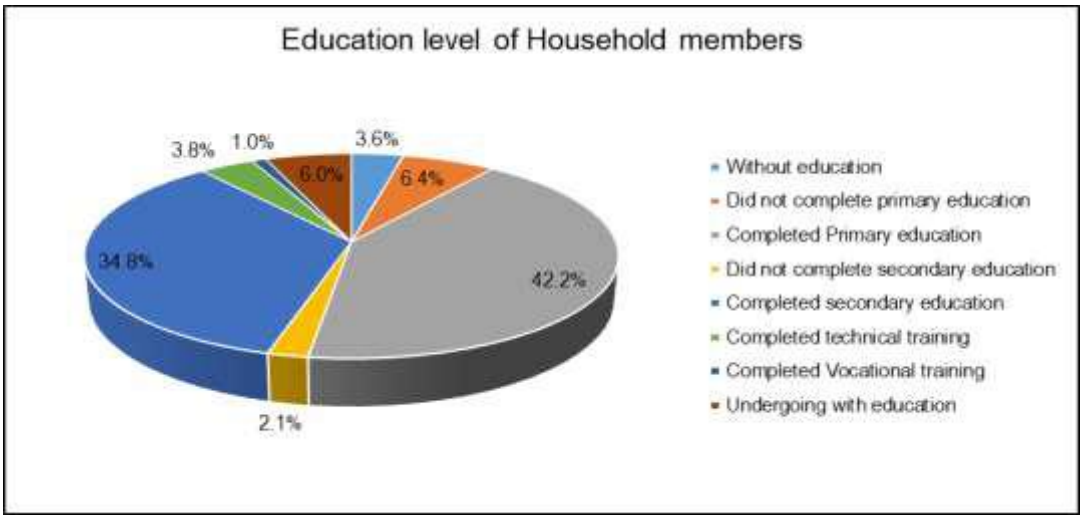


Figure 5-56: Literacy Level

5.6.8 Health

The health infrastructure consists of five sub county hospitals at Doldol, Rumuruti, Kimanjo, Nindika and Lamuria. The county has two County Referral Hospitals, Nanyuki and Nyahururu. The county also has eight public health centres, 34 public dispensaries and four FBO managed health centres. In addition, there are three private hospitals, one nursing home; one private health centre, six private dispensaries and 33 private clinics. Most of the public facilities have been established with the support of the devolved funds particularly Constituency Development Fund (CDF). The average distance to health facilities is 6 Km. There are about 10 per cent of the households lying in the range of zero to one kilometre from the nearest health facility while 40 per cent lie within the range of 1.1 to 4.9 Km. The remaining 50 per cent of households are found over five kilometres to the nearest health facility. The County government has 425 nurses, 71 public health officers, 76 clinical officers, 13 nutritionists, 111 doctors and 51 laboratory technologists. The doctor-population ratio stands at 1:4432 while the nurse-population ratio is 1: 1,000.

The five most prevalent diseases for under 5 in the county include; Respiratory Tract Infections (RTI), diarrhoea, clinical malaria, eye infections and Pneumonia. The leading diseases for the population of over 5s include; Respiratory Tract Infections (RTI), diseases of the skin, rheumatism and joint pains, diarrhoea and hypertension. The HIV prevalence rate stands at 3.2 percent.

Vulnerability identified during the survey within the sampled PAHs as shown below was composed of: -

1. The elderly over 60 years (41.5%)
2. Women headed households/widows (52.1%)
3. The sick/Chronic illnesses (3.2%)
4. Household headed children under 18yrs (1.1%)
5. Orphans (2.1%)

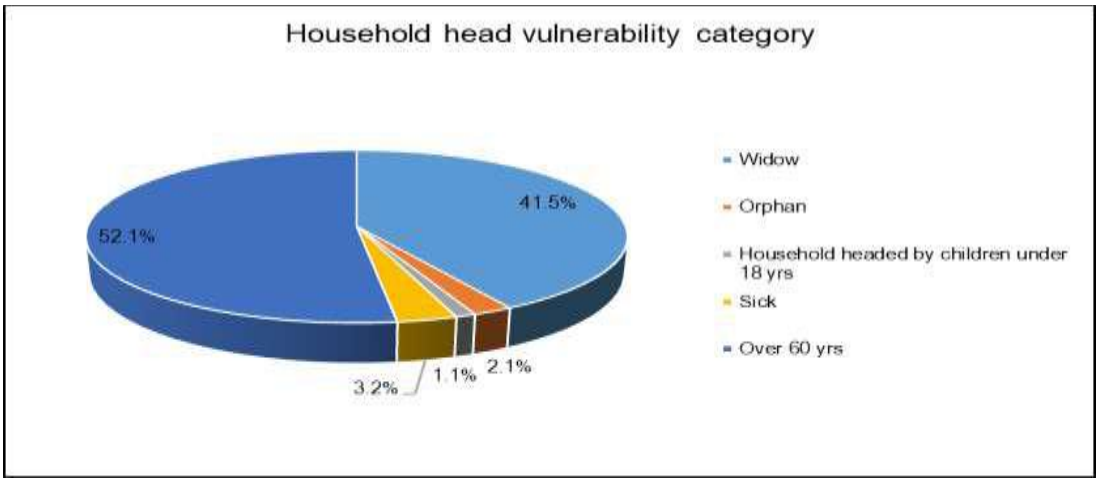


Figure 5-57: Perceived level of vulnerability.

5.6.9 Poverty and Income

Work force

According to the Kenya national bureau of statistics (Population and census, 2019) the labor force of Laikipia country stood at 260,859 persons (comprising of 119,047 males and 220,213 females) representing 43.5 percent of the county population. Based on 2019 national population census, 24.4 per cent of the labour force was employed in the formal sector whereas 42.8 per cent was employed in the informal sector. Most of the labour force under this category runs micro and small enterprises in both the formal and informal sector.

Unemployment

In Laikipia County, 16% of the residents with no formal education, 22% of those with a primary education and 32% of those with secondary level of education or above are working for pay. The youth form the bulk of the unemployed labour force. This is attributed to low industrial base, inadequate technical skills and poor motivation towards self-employment. Work for pay is highest in Nairobi at 49% and this is 17 percentage points above the level in Laikipia for those with a secondary level of education or above

5.6.10 Livelihoods

The agriculture sector employs up to 60 per cent of the total labour force in the county. The main source of livelihood includes, crop farming and livestock rearing. Other sources of livelihood include, being crop farming, livestock rearing, tourism, retail and wholesale trade. The main source of income as shown in the figure below for the household was agriculture at 88.9% followed by civil service at 3.2%. Animal husbandry, handicraft, and construction work at 0.5% same as handicraft. Commerce at 2.0%

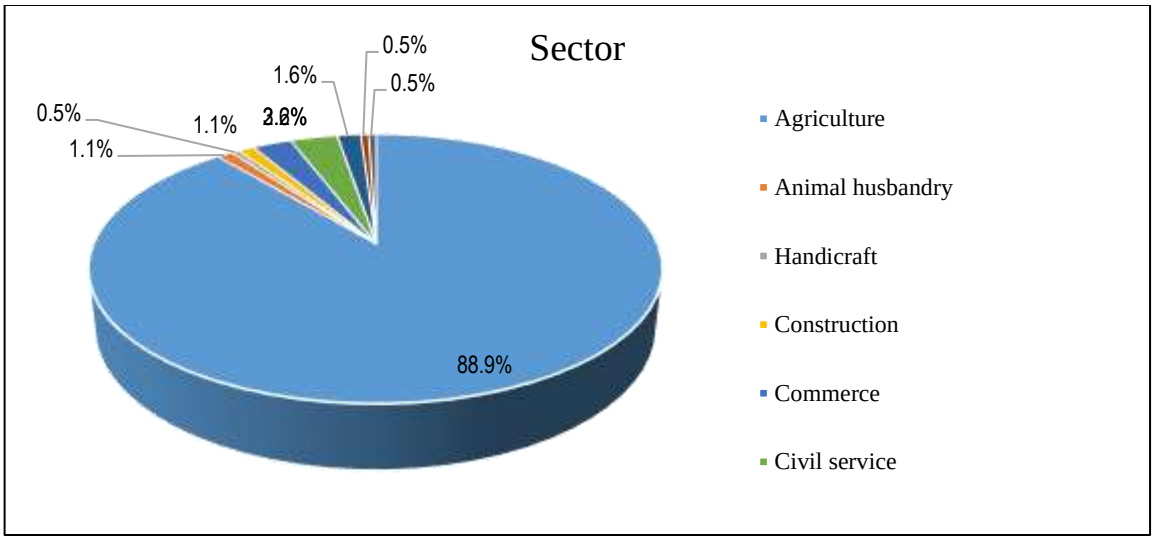


Figure 5-58: Economic Activities

5.6.11 Gender Based Violence

Domestic violence is rampant in Laikipia and despite interventions, notably by civil society actors; there has been a steady increase in the number of cases and the severity of domestic violence. According to the Police Administration, women suffer more in domestic disputes caused by their spouses than in any other circumstance. Domestic abuse accounted for 48% of all violations. Women are most likely to suffer abuse from their husbands. The primary research indicates that the most prevalent form of abuse of women is usually a combination of physical assault followed by emotional stress, sexual violence, and neglect, both financially and otherwise. However, is still not treated with the same gravity as other cases when they are reported. Often the victim reporting the incident is asked what she did to provoke the violence and is encouraged to resolve the issue at home.

5.6.12 Energy

The national power grid serves 156 trading centres and is yet to reach the other 24 centres. The households using electricity for lighting constitute 17.7 percent of the total households. The Last Mile Connectivity Programme has helped to upscale access for the rural households. The county has several learning institutions, health facilities and boreholes supported by solar energy. Being a semi-arid county, reliable sunshine throughout the year provides high potential for harnessing of solar energy. There are also opportunities of up scaling biogas and wind energy. It is expected that once the proposed transmission line is constructed and completed, it will be energised, and the additional power will alleviate some of the gaps that are present at the moment.

The main PAP household sources of energy for cooking were dry plants/wood (76.1%), LPG Gas (7.6%) and Kerosene (3.6%). Other sources of energy for cooking included electricity and biogas as shown in figure below.

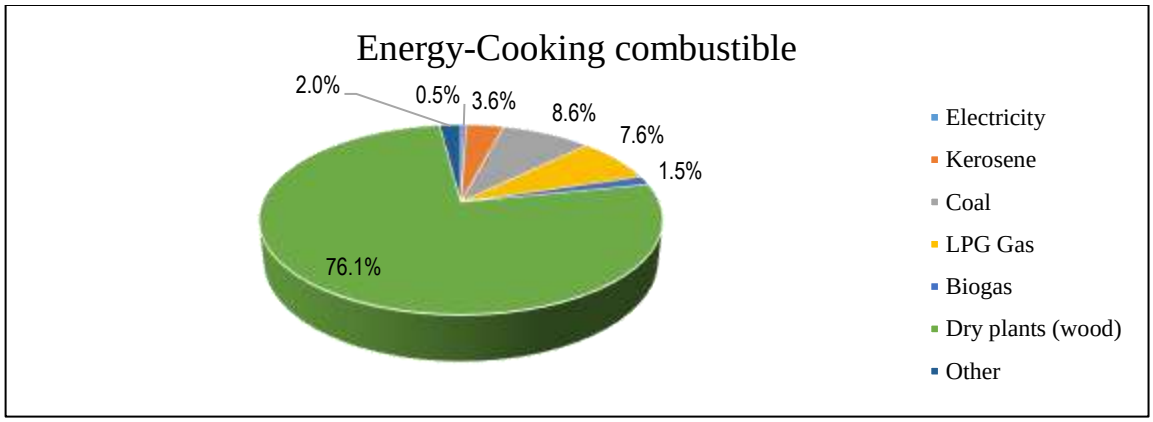


Figure 5-59: Sources of Energy for cooking

Electricity (62.2%) is the main source of energy used in lantern lumps for lighting; the other sources of energy for lighting formed 37.8%.

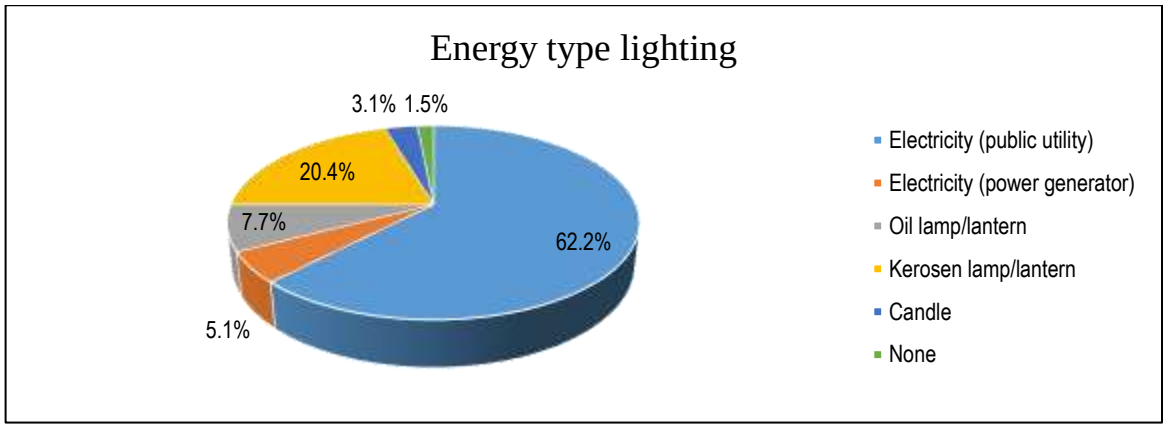


Figure 5-60: Sources of Energy for lighting

5.6.13 Water and Sanitation

Laikipia is drained by the Ewaso Ng'iro River and its tributaries, which originate from Mt. Kenya and the Aberdares. The main tributaries are Ewaso Narok (Ngare Naro), Narumoru, Likii, Sirimon, Ontulili, Ngare ndare, Melwa, Ngare Naro, Ngobit, Rongai, Timau, Moyak, Pesi, Suguroi, Mutara, Nanyuki, and Burguret rivers. Boreholes, pans, dams, shallow wells, springs and sub surface dams are also a common feature in the county for domestic and irrigation purposes. Rock catchments in the northern parts of Laikipia are increasingly being exploited.

The survey outcomes concluded that traditional well at home was the most used source of water (18.2%) boreholes at home followed (16.7%), while water sourced from boreholes within the community; rainwater and taps within the homestead were at (14.1%). Other sources of water formed about 22.8%

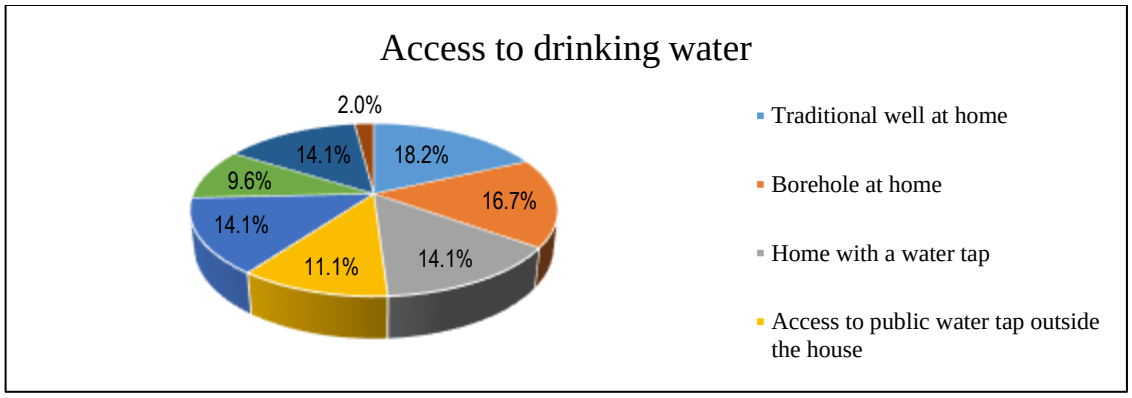


Figure 5-61: Sources of Water

The main sanitary facility used by the community interviewed was a latrine without septic tank (69.5%). Those who use public toilets outside the house constituted 19.8%, while PAPs with latrines with septic tanks formed 4.6%

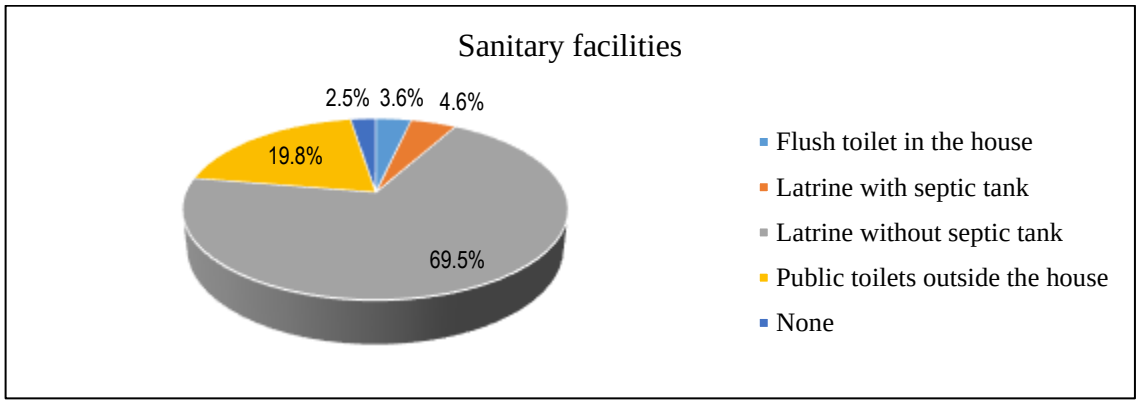


Figure 5-62: Sanitation facilities

5.6.14 Tourism and Recreation

The major tourist attractions are the wildlife, the unique Maasai cultural practices and the Thomson Falls. The proximity to Mt. Kenya, Meru, Aberdares and Samburu game parks have greatly boosted tourism within the county through provision of hospitality services to the tourists. Laikipia County has the greatest number of wildlife outside of the gazetted protected areas in the country. The wildlife is mainly found in the private ranches, but they are also found in the group ranches of Laikipia North, Mukogodo forest and small-scale holdings in Laikipia West. The most abundant species are the elephants. Other predominant species include Burchelles zebras, Thomson Gazelles, Impalas, Buffaloes, Lions, Elands and Grevy Zebras. The importance of wildlife is manifested by existence of a strong ranching organization called the Laikipia Wildlife Forum. Most of the tourists are hosted in conservancy lodges. The county has four international standard classified hotels i.e., Sweet Waters Tented Camp at Ol Pejeta, Sportsman Arms Hotel at Nanyuki, Thompson Falls Lodge at Nyahururu and Illingwesi Lodge at Illingwesi Community Ranch with a total bed capacity of 306.

5.6.15 Trade and Industry

The main commodity markets in the county are in Nanyuki and Nyahururu whereas main livestock markets are at Rumuruti, Doldol and Kimanjo. Other market centers include Olmoran, Sipili, Wiyumiririe, Lamuria and Debatas. Industrial zones are established within Nanyuki and Nyahururu towns. Rumuruti town has planned industrial zones with no activities. There are seven jua kali associations with a membership of 344 artisans who are involved in welding, fabrication, carpentry among other activities. Industrial processing is minimal with milk plants and grain milling being the major firms. Storage and distribution of petroleum products is also undertaken at a low scale. Alcoholic drinks processing/packaging is also an activity in Nanyuki.

5.6.16 Financial Services

Number of Institutions Laikipia is served by 16 banks, 2 microfinance institutions and 15 insurance companies operating within Nanyuki and Nyahururu townships. There are 112 SACCOs with 3 FOSAs in the county and 3 main mobile money service providers. Agricultural Finance Corporation runs two branches in Nanyuki and Nyahururu.

5.6.17 Archeological Sites

Mau Caves – Monument

The Mau Mau caves located at the foot of the Mount Kenya and along the Nanyuki – Nyeri Highway prevail as a solemn reminder of one of British Empire's bloodiest struggles in East Africa and a beacon of some significant steps to the independence of Kenya. Located at the foothills of Mount Kenya, the Mau Mau Caves were utilized by the infamous Mau Mau fighters as a military rendezvous point, between 1953 to 1959.

Rock Gongs of Lewa Downs Wildlife Conservancy

This wildlife paradise is a place with an ancient past including a lakebed where many hand axes have been found dating back several hundred thousand years. When struck in different places with a hammer gong produce different tones just like a musical instrument. Rock gongs were likely used for divining purposes and ritual communication in the past. It is believed that the paintings have been made by Twa hunter-gatherer people between 1000 and 3000 years ago.

The transmission line corridor is not at close proximity to any of these archeological sites in Laikipia County including graves.

Transport Network

Road Network

The total classified road network in the county is 1,038.1 Km out of which over 80 per cent are feeder roads. The bitumen, gravel, and earth surface stand at 207.3, 328.9 and 501.9 kilometres, respectively. The major transport routes serving the county are Nairobi-Isiolo-Marsabit (A102), Gilgil-Rumuruti (C55), Rumuruti-Mararal (A2) and Nakuru-Nyeri (B65).

Figure 5-63: Sample road network in Laikipia County

Rail Network

There exists an old railway network in covering 23 kilometers serving Nanyuki Town and a small stretch of about 2 Kilometers in Nyahururu Town.

Airport

The county is served by 1 airstrip near Nanyuki Town. There are several landing grounds across the county majority of which are within main private ranches.

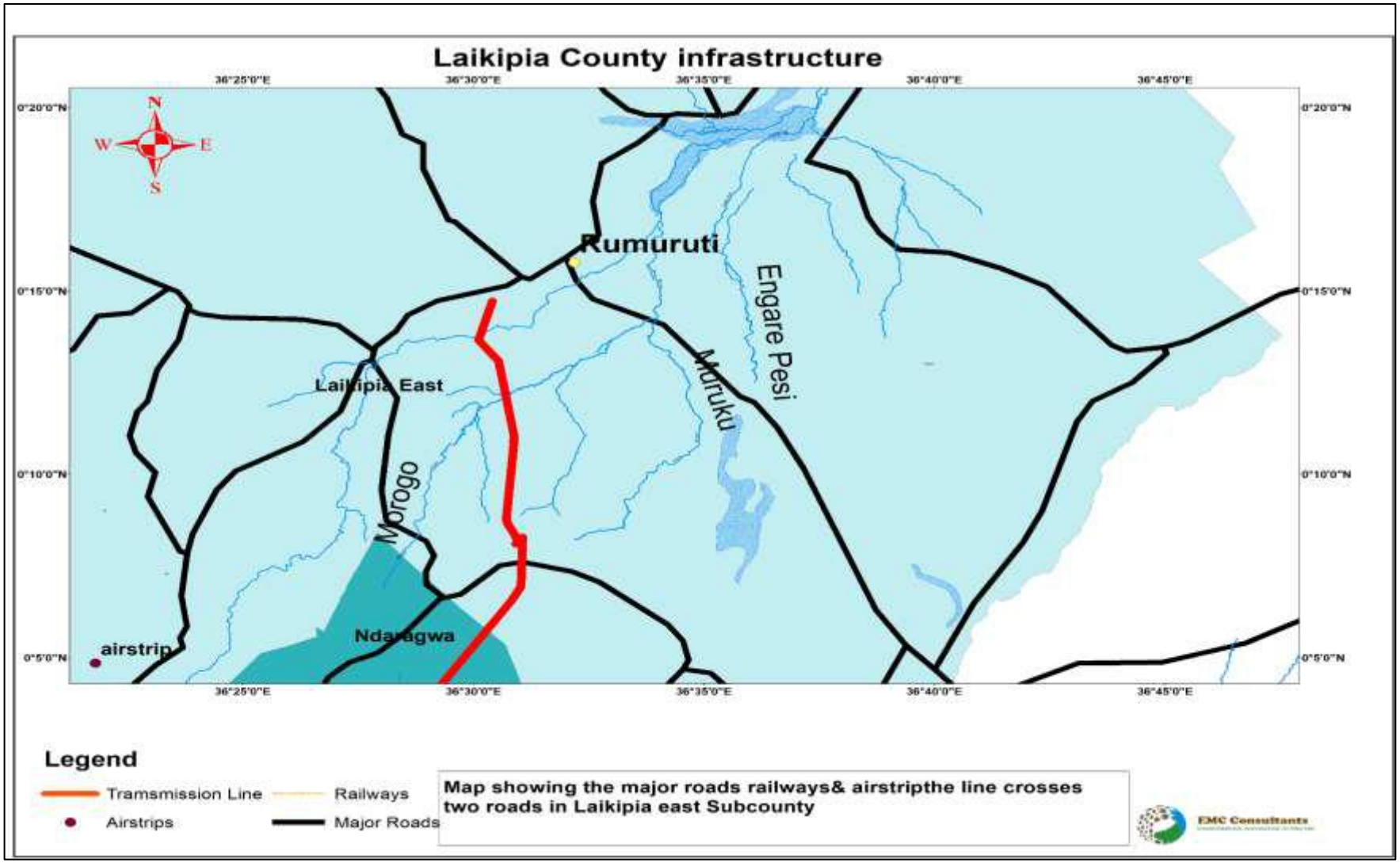


Figure 5-64: Road Infrastructure crossed by transmission line

6 STAKEHOLDERS CONSULTATIONS

This chapter provides a description of the main stakeholders of relevance to the Project and a summary of stakeholder engagement activities undertaken in 2019 and 2021 during the preparation of the ESIA.

Two years have elapsed since the initial ESIA was done in 2019 necessitating an ESIA update. As such, there was need to re-sensitize the public.

6.1 Stakeholder Engagement Principles

KETRACO understands that effective stakeholder engagement and public consultation is a cornerstone of successful Project development, and is committed to free, prior, and informed engagement with stakeholders throughout the Project lifecycle. The key principles guiding KETRACO's approach to stakeholder engagement on this Project are:

- To be open and transparent with stakeholders.
- To be accountable and willing to accept responsibility as a corporate citizen and to account for impacts associated with the Project activities.
- To have a relationship with stakeholders that is based on trust and a mutual commitment to acting in good faith.
- To respect stakeholders' interests, opinions and aspirations.
- To work collaboratively and cooperatively with stakeholders to find solutions that meet common interests.
- To be responsive and to coherently respond in good time to stakeholders.
- To be pro-active and to act in anticipation of the need for information or potential issues.
- To engage with stakeholders such that they feel they are treated fairly and their issues and concerns are afforded fair consideration.
- To be inclusive and accessible to stakeholders so that they feel able to participate; to receive and understand information; and to be heard
- To engage stakeholders using culturally appropriate languages and formats and techniques, in accessible locations, considering mobility, literacy and disability challenges, and in a timely manner to ensure meaningful consultations.

6.2 Stakeholder Engagement Objectives

The objectives of this stakeholder engagement were as follows;

- To identify and map all relevant stakeholders, their context, interests and concerns;
- To establish a two-way dialogue to understand concerns, management options and external perspectives;
- To promote and secure participation of PAHs by building their capacity for informed participation with special attention given to vulnerable PAHs in key decision making;
- To build and maintain trust between stakeholders;
- To support the resolution of emerging tension and maintain the project's social license to operate;
- To manage stakeholders' expectations;

- To facilitate the collection of quality primary and secondary information relevant; to the project processes including monitoring;
- To triangulate data collected and analysis done to inform decision making;
- To document information disclosed and public consultation efforts;
- To comply with regulations and requirements on disclosure and consultation;
- To provide information about the project and its potential impacts to those interested in or affected by the project, and solicit their opinion in this regard;
- To identify additional impacts/issues and possible mitigation measures;
- To inform the process of developing appropriate mitigation measures and facilitate consideration of alternatives and trade-offs (if any);
- To reduce chances of conflict through early identification of contentious issues;
- To ensure transparency and accountability of decision-making; and
- To increase public confidence in the project.

6.3 Stakeholder Mapping and Identification

Stakeholders include individuals or groups that may influence or be impacted by the Project, as described in **Box 6-1** below.

Box 6-1: Definition of a Stakeholder

Stakeholders are persons or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively. Stakeholders may include locally affected communities or individuals and their formal and informal representatives, national or local government authorities, politicians, religious leaders, civil society organizations and groups with special interests, the academic community, or other businesses."

The level of interest and impact of any given group of stakeholders is dependent on a number of factors including level of authority, socio-economic context, influence, education and cultural factors. Stakeholder identification began at Project inception and planning and has continued through the various stages of the Project development.

Stakeholders identified to date represent the organizations and individuals who may be directly or indirectly (positively or negatively) affected by the Project or who may have an effect on how the Project is implemented. Stakeholders identified for inclusion in engagement activities meet one of the following criteria:

- Have an interest in the Project;
- Would potentially be impacted by or have an influence on the Project (negatively or positively); and/or,
- Could provide commentary on issues and concerns related to the Project.

6.4 Approach and Methods of Stakeholder Engagement

Below is a summary of the approaches and strategies adopted throughout the stakeholder consultation exercise.

6.4.1 Mobilization

- **Introduction letters:** KETRACO provided the consulting team with official letters of introduction informing all stakeholders about the proposed project, introducing the ESIA consultant, informing about the planned consultation activities and requesting them to support the consultants wherever possible.
- **Mobilization through local administration:** KETRACO and the consulting team visited the offices of the local administrators and informed them about the proposed project and the upcoming consultation activities. Other than information sharing, these meetings were aimed at requesting the administrators to further mobilize the concerned stakeholders. Local administrators consulted included the local chief, sub chief, ward administrator and the village administrator.
- **Mobilization by phone and emails:** Other key stakeholders who were not available due to conflicting obligations were contacted either through email or by phone. This mainly applied to custodians of relevant data and literature for the ESIA study.
- **Confirmation of appointments:** Prior to the appointment dates, the ESIA consultant reconfirmed the appointments by contacting the focal persons at each venue at least one day prior to the meeting to verify whether the proposed schedule was still valid for the expected audience.

6.4.2 Interviews and Socio-Economic Surveys

Enumerators were employed during the stakeholder consultation period to undertake socio-economic surveys with key community members and stakeholders. A quantitative survey (targeting 100% of the PAHs along the ROW) was conducted using structured questionnaire designed to generate the required information. The information gathered was used to answer questions related social and economic parameters of the communities within the project site including, the availability or lack of social service facilities, existing levels of access to education, health, potable water, and related services. Consultations were held using both formal and informal meetings with carefully selected members of the communities and all PAHs.

6.4.3 Focused Group Discussions and Public Barazas

Stakeholders were further consulted in two ways; through public barazas where members of the community were called to a meeting with the agenda of discussing the proposed Project and through Focus Group Discussions (FGDs), where different groups were isolated and interviewed in a culturally appropriate setting. The FGD groups included women, youth, and men. The views and recommendations expressed during the consultation meetings were incorporated in the ESIA report. Generally, the result of the participation showed support for the proposed project, with the community looking forward to the anticipated socio-economic developments associated with the project.


Figure 6-1: Consultation with stakeholders in Baringo County_2019


Figure 6-2: Consultation with stakeholders in Baringo County_2021_Marigat (1) _Kasiela (2)

Figure 6-3: Stakeholder consultations in, Laikipia County_2019 (1-Muruku) _2021 (2-Muhotetu)

Figure 6-4: Focused Group Discussion with Women in Baringo County_2019

Table 6-1: Presents an overview of the main stakeholder groups of relevance to the Project.

Table 6-1: Overview of stakeholder groups_2019_2021

Year	Stakeholder Category	Stakeholder Group	Connection to the Project	Stakeholders
2019	National Government	Key Ministries National Regulatory bodies Government Agencies	National government is responsible for establishing policy, granting permits or other approvals for the Project, and monitoring and enforcing compliance with Kenyan Law throughout all stages of the Project life cycle.	**Interested Parties** Ministry of Petroleum and Energy County Commissioner, Laikipia County County Commissioner, Baringo County Deputy County Commissioner, Baringo County Deputy County Commissioner, Laikipia County Chiefs and Assistant Chiefs in affected locations and sub locations
2021		Key Ministries National Regulatory bodies Government Agencies	National government is responsible for establishing policy, granting permits or other approvals for the Project, and monitoring and enforcing compliance with Kenyan Law throughout all stages of the Project life cycle.	**Interested Parties** PA to the County Commissioner, Baringo County Deputy County Commissioner, Baringo County Deputy County Commissioner, Laikipia County Chiefs and Assistant Chiefs in affected locations and sub locations
2019	County Government	County Governments	County Governments are responsible for approval of development plans	**Interested Parties** Governor of Laikipia County Governor of Baringo County
2021				Interested Parties CECM- Lands, Housing, Physical Planning and Urban Development

				CECM- Water, Energy, Forestry and Natural Resources
2019	Parastatals	Government funded private enterprises in charge of managing specific activities.	Parastatals may have land or other assets which could be affected by the Project. KETRACO is the owner of the transmission line and electricity network that the Project will connect to KETRACO is responsible for all the Very High Voltage Transmission assets.	**Interested Parties** KETRACO, Kenya Forest Service, Kenya Wildlife Service, National Museums of Kenya, Water Resources Authority and Kenya Civil Aviation Authority.
2021				**Interested Parties** Kenya orest Service, Kenya Wildlife Service, Water Resources Authority, Baringo County Conservancies and NEMA(Baringo),
2019	Civil Society Organizations			**Interested Parties** Birdlife International
2019_2021	Project Affected Communities	Project affected communities along the 1,000m	Households and communities that may be directly or indirectly affected by the proposed Project and its activities.	**Directly Affected**: Affected Community Members and Infrastructures Households losing access to land Households losing access to livelihood resources

		buffer including: Landowners and users; Residents Community members who use access roads to access nearby natural resources; social/public infrastructure and services.	This includes people living on land affected by the Project, through direct land take or by social and environmental impacts, and other people who visit or use land or resources that may be affected. Primary stakeholders include landowners and land users. These communities need to be engaged around Project impacts anticipated through the project cycle Land affected households will need to be informed about land acquisition and restrictions to land, to participate in the finalization of agreements around compensation and livelihood restoration and take active ownership of the resulting implementation of these measures.	Households with houses at risk of displacement

Table 6-2: Baringo County Stakeholder Consultations Venues, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS	MALE	FEMALE
19th June 2019	Kabarnet Deputy County Commissioner's Office	5	4	1
20th June 2019	Marigat Deputy County Commissioner's Office	3	3	0
	Chief Officer Land's Office	3	2	1
	Kituro Location Chief's Office	6	5	1
	Kapropita Location Chief's Office	5	5	0
	Land Adjudication Officer's Office	3	3	0
21st June 2019	Kimalel Location Chief's Office	3	2	1
24th June 2019	KFS Office-Kabarnet	3	3	0
	NEMA Office-Kabarnet	4	3	1
25th June 2019	Logumum Location Chief's Office	4	4	0
	Ilngarua Location Chief's Office	4	4	0
	Eldume Location's Chief's Office	4	4	0
Total		**50**	**45**	**05**

Table 6-3: Baringo County Stakeholder Consultations Venues, Dates and Number of Participants_2021

Date	Venue	Participants	Male	Female
30/11/2021	PA to Baringo County Commissioner, Baringo County	6	5	1
30/11/2021	County Environmental Officer, NEMA	6	5	1

1/12/2021	Water Resources Authority (WRA)	6	5	1
1/12/2021	Baringo DCC's Office	6	5	1
1/12/2021	Kenya Forest Service (KFS)	6	5	1
1/12/2021	Kenya Wildlife Service (KWS)	6	5	1
14/12/2021	CECM- Lands, Housing, Physical Planning and Urban Development	4	3	1
14/12/2021	CECM- Water, Energy, Forestry and Natural Resources	4	2	2
14/12/2021	Baringo County Conservancies	4	2	2
Total		**48**	**34**	**12**

Table 6-4: Baringo County Stakeholder Consultations Venues, Dates and Number of Participants_2021

Date	Venue	Participants	Male	Female
30/11/2021	PA to Baringo County Commissioner, Baringo County	6	5	1
30/11/2021	County Environmental Officer, NEMA	6	5	1
1/12/2021	Baringo DCC's Office	6	5	1
1/12/2021	Kenya Forest Service (KFS)	6	5	1
1/12/2021	Kenya Wildlife Service (KWS)	6	5	1
Total		**30**	**25**	**5**

Table 6-5: Baringo County Public Consultations, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS	MALE	FEMALE
14th August 2019	Arabal Location, Chemorongon Center	29	21	09
16th August 2019	Kapkechir Location, Lomoiwe Dispensary Grounds	27	17	10
16th August 2019	Karandi Locations, Ol Ngarua Primary School	34	30	04
7th August 2019	Kasoiyo Location, Kasoiyo Dispensary	19	09	10
9th August 2019	Kituro Location, Chief's Office/Dispensary	25	16	09
5th August 2019	Marigat Location, Rabai Primary School	45	31	14
8th August 2019	Logumgum Location, Logumgum Primary School	33	20	13
Focus Group Discussions **(Participants randomly selected from the public baraza)**				
14th August 2019	3 FGDs at Arabal Location, Chemorongon Center	72	36	36
16th August 2019	3 FGDs at Kapkechir Location, Lomoiwe Dispensary Grounds	72	36	36
16th August 2019	3 FGDs at Karandi Locations, Ol Ngarua Primary School	72	36	36
7th August 2019	3 FGDs at Kasoiyo Location, Kasoiyo Dispensary	72	36	36
9th August 2019	3 FGDs at Kituro Location, Chief's Office/Dispensary	72	36	36
5th August 2019	3 FGDs at Marigat Location, Rabai Primary School	72	36	36
8th August 2019	3 FGDs at Logumgum Location, Logumgum Primary School	72	36	36
Total		**212**	**144**	**69**

Table 6-6: Baringo County Public Consultations, Dates and Number of Participants_2021

Date	Venue	Participants	Males	Females
7/12/2021	Arabal Location, Chief's office	41	25	16
10/12/2021	Kiserian Location, Area church	37	30	7
10/12/2021	Ilngarua & Elchamis locations, Chief"s office-Ilngarua	37	35	2
11/12/2021	Marigat Location, Chief's office	23	16	7
11/12/2021	Kimalel Location, Chief's office	44	39	5
13/12/2021	Kituro Location, Chief's office	42	34	8
14/12/2021	Kapropita Location, Kasoyo Dispensary	20	16	4
15/12/2021	Chebininy Location, Chief's office	40	39	1
Total		284	234	50

Table 6-7: Laikipia County Stakeholder Consultations Venues, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS	MALES	FEMALES
26th June 2019	County Commissioner's Office – Laikipia County	03	03	00
26th June 2019	Deputy County Commissioner's Office - Nyahururu	03	03	00
25th June 2019	Deputy County Commissioner's Office - Rumuruti	03	03	00
20th June 2019	Deputy County Commissioner's Office – Laikipia West Sub County	03	03	00

Total		**12**	**00**	**00**

Table 6-8: Laikipia County Stakeholder Consultations Venues, Dates and Number of Participants_2021

Date	Venue	Participants	Males	Females
1/12/2021	Deputy County Commissioner- Laikipia County	5	4	1

Table 6-9: Laikipia County Public Consultations Venues, Dates and Number of Participants_2019

DATE	VENUE	PARTICIPANTS	MALES	FEMALES
Focus Group Discussions (Participants randomly selected from the public baraza)				
15th August 2019	3 FGD at Melwa Chiefs Camp-Melwa Location	72	36	36
15th August 2019	3 FGD at Mohotetu Chiefs Camp – Mohotetu Location	72	36	36
Total		**66**	**49**	**17**

Table 6-10: Laikipia County Public Consultations Venues, Dates and Number of Participants _2021

Date	Venue	Participants	Males	Females
7/12/2021	Kiambogo location, Chief's office	12	8	4
8/12/2021	Gituamba Location, Chief's office	23	17	6
8/12/2021	Rumuruti Location, Chief's Office	20	17	3
9/12/2021	Melwa location, Chief's office	41	19	22
9/12/2021	Muhotetu Location, Chief's office	38	26	12

Total		**134**	**87**	**47**

The comments and concerns raised by the community during stakeholder consultation and the responses given by both the consultants and the client are highlighted table 6-6 below. **Annex A** contains the list of participants consulted along the project route and minutes of the meetings.

Table 6-11: Summary of Concerns raised by the Project-Affected Persons_2019_2021

Theme	Comments and Issues	Response
Waste Generation	Stakeholders were concerned about waste generation and methods of waste disposal. Specifically, they wanted to know the types of wastes that would be generated and the mode of disposal.	Wastes streams would include solid and liquid including emissions i.e., air and noise. Waste would be managed in accordance with the NEMA waste management regulations and contractor will be required to prepare a Waste Management Plan.
Biodiversity	Stakeholders expressed concern about the routing of the transmission line into Lariak Forest and wondered if there was any other alternative. Further, stakeholders wanted to know would happen to all the trees that would be cut down to clear the project area	There was an analysis undertaken to determine the best route by engineers and the most optimal route was determined to cut through the forest. There would be off-set program to be implemented to compensate for the trees that would be cut down for the ROW. Communities would be given the right to salvage for the trees that are cut and existing in their personal land/property.

Air Pollution	Some of the community members feared that the project will generate emissions and generate dust leading to air pollution.	The ESIA contains robust mitigation measures for protecting against air pollution (dust and gaseous) and the contractor will be expected to comply with the measures outlined including the preparation of dust mitigation plans where necessary.
Noise and Vibration	Questions concerning potential air and sound pollution arising from excessive noise and vibration also arose from community members	The ESIA contains robust mitigation measures for protecting against noise pollution and the contractor will be expected to comply with the measures outlined including the preparation of noise mitigation plans where necessary.
Employment	Community members enquired if there will be employment opportunities, and what would be the criteria for employment. They asked to be given first priority whenever employment opportunities arise.	The client informed the community members of their intention to hire locally whenever possible and further that there are plans to develop a community engagement plan which will cover all employment issues. However, he cautioned that where specialist skills are required for the project and the skills are not locally available, specialist would be hired from other jurisdictions. The stakeholders were informed of the requirement by contractor to develop a Labour Recruitment Plan to guide recruitment.

Land Use and Compensation	There were fears that the transmission line would pass through private and community land. Stakeholders wanted to know if they would be compensated.	Community members were informed that they would be compensated for land acquired for the ROW and any other associated facilities e.g., camping sites; access roads etc. Compensation would be undertaken in accordance with the NLC Act. Stakeholders were informed that a RAP would be prepared to inform the category of PAPs and entitlement.
	Stakeholders were further concerned whether they would be compensated for loss of beehives as a result of felling of trees for ROW.	Stakeholders were informed that the compensation would include all assets including livelihoods and would ensure that there is livelihood restoration as part of the RAP.
	What is the approach that will be utilized to compensate those persons who are residing in group ranches (communal land)?	Community group ranches are governed under the Community Land Act 2016. All affected persons who reside on group ranches will still be compensated in accordance with the provisions of the AfDB's OS 2 on involuntary resettlement and Kenyan laws.
Project Benefits	The communities inquired as to the nature of benefits that they would receive from the project. Would their houses be connected to the national grid? Would they get opportunities for employment? etc.	The client informed the community members that there will be both direct and indirect benefits arising from the project such as employment (guided by local recruitment plan to be developed by

		contractor and reviewed by KETRACO), improved roads since they will need to be upgraded to facilitate transportation of project equipment's and other opportunities etc. Electrification plans for the project area in line with the national electrification strategy will be communicated to PAPS in consecutive consultation sessions e.g., during the disclosure of the RAP, ESIA etc.
Health and Safety Issues	Communities wanted confirmation from the client that their safety will be considered at all times during project operation. There were concerns about possibility of electrocution by the transmission line. The community also inquired about the issue of radiation affecting those near the power line during operation	The stakeholders were informed that part of the ESIA study was to assess the adverse impacts on community health and safety and that electrocution being a common impact of electricity transmission lines, was going to be adequately addressed in the ESIA report. Communities were informed that there were mitigation measures that will be included to address impacts related to electrocution during the operation phase. The contractor would be required to prepare a detailed Community Health and Safety Plan to cover all construction community health and safety concerns and KETRACO would implement its

		community health and safety policy during the operation phase.
Social impacts	Is the project likely to affect our livestock especially those that may graze under the transmission line?	Livestock can be grazed below the transmission lines upon completion. However, extended exposure of livestock to the EMF could be hazardous and therefore, it is important to limit the duration of grazing the livestock under the lines.
	Foreign workers from outside of the area may introduce foreign culture and influence our children negatively including spread of public health diseases. How will this be addressed in your ESIA study?	This is a key aspect that will be captured in the ESIA, and associated impacts identified and assessed. The mitigation measures in the ESIA will address how to mitigate the impacts associated with labour influx. The contractor will develop a Labour Influx Management Plan and a GBV (SEA/SH) Management Plan as well as measures to minimize the spread of HIV/AIDS and other STDs.
	After the erection of the transmission line, can one continue growing crops and trees on the corridor and under the transmission line?	Certain crops are allowed to be grown under the transmission lines for as long as they are within the required height of not more than 1.8metres. Crops or trees above the required height will not be allowed as they can cause health and safety hazards.
	Is there a probability of contractors establishing camp sites along the project route? What guidelines are going to be used in case this happens? Construction camps are known to lead to social ills	It is not known whether the contractors will establish camp sites along the route or utilize existing accommodation facilities. However, the impacts

	including conflict and tension with local communities.	associated with establishment of camp sites (wastes, social ills, resource use conflict) etc. have been flagged out and this ESIA report as a mitigation measure includes the requirement for the contractor and client to prepare a separate ESIA report for every camp site once a determination is made by the contractor and prior to commencement of construction activities.
Water Quality	The community raised concerns on impact of the project on water quality. They stated that water resources may be contaminated by project waste rendering it unfit for human consumption. They were also concerned about over abstraction during project implementation.	The consultants informed the community that the ESIA will propose that a waste management system be put in place. Stakeholders were also informed that the project had taken into account the estimated water usage for the project and made plans for alternative water sources to ensure adequacy of water for the project without depleting local resources.

6.4.4 Post ESIA Consultations

KETRACO is aware that public consultation is a key component of project implementation and will therefore put in place a Stakeholder Engagement Plan (SEP). The overall aim of SEP will be to address the concerns and opinions of the stakeholders with the ultimate view to assuring a smooth project implementation. KETRACO shall welcome suggestions and information from relevant stakeholders, contractors, visitors, and the general public. Community Liaison Officers (CLOs) will be appointed by the contractor and will address complaints and suggestions from the communities. Further, consultations, which began during the ESIA process, will continue throughout the project life cycle in line with the SEP.

6.4.5 Monitoring/Reporting Stakeholder Engagement Activities

It will be important to monitor and report on the on-going stakeholder engagement activities to ensure that the desired outcomes are being achieved, and to maintain a comprehensive record of engagement activities and the issues raised.

6.4.6 Data Management

In order to record activities, assess the effectiveness of the Stakeholder Engagement Plan and associated community dialogue activities, KETRACO will implement a data management and monitoring process. Stakeholder engagement activities will be documented and filed in order to track and refer to records when required and ensure delivery of commitments made to stakeholders. The following stakeholder community dialogue records and documentation will be used and maintained by KETRACO during pre-construction and construction phase:

- Stakeholder list
- Stakeholder engagement log
- Commitments register
- Meeting minute template
- Grievance log
- Media monitoring of press and radio stories relevant to the project and unconventional related issues and activities.

6.4.7 ESIA Study Report Disclosure

This ESIA study report will be disclosed in accordance with the country's disclosure requirements as well as AfDB's disclosure policy. The report upon approval by NEMA will be disclosed on KETRACO's website and NEMA's website, as well as on the AfDB's external website. Hard copies will also be made available at the Contractor's office, Chief and NEMA county offices. Summaries of the ESIA will be disclosed to PAPs in culturally appropriate languages and formats using feasible engagement techniques such as FGDs and public barazas, in accessible locations and in a timely manner that ensures meaningful consultations and considering any mobility, literacy and disability challenges.

7 ANALYSIS OF PROJECT ALTERNATIVES

This chapter describes the analysis of technically and financially feasible alternatives considered in the development of the Project and provide documentation of the rationale for selecting a particular option. The purpose of the alternatives analysis is to identify feasible alternatives that could improve the sustainability of the Project's design, construction, and operation.

7.1 No Project Alternative

No project alternative is the option of not constructing the proposed power transmission line project at the identified routing i.e., from Kabarnet to Rumuruti. This alternative would result in no environmental and social impacts in the project area. Whilst this would without doubt result in complete avoidance of impacts, this needs to be balanced with the strategic need for the development of new electricity generation capacity in Kenya.

The Electricity and Petroleum Regulatory Authority undertakes long-term planning for the country's electricity generation and transmission system through the Least Cost Power Development Plan (LCPDP), a 20-year rolling plan updated every year. The most recent version of this study was completed in 2013 and plans for the period 2013 to 2033. The update involves review of the load forecast in light of changed pertinent parameters, commissioning dates for committed projects, hydro data, costs of generating plants and transmission system requirements. Electricity consumption is forecasted to grow in the long term by an average of 7.3% per year (reference scenario), 9.6% Vision and 5.6% Low scenario. This would lead to consumption figures 50% above (vision) and 25% blow (low) the values in the reference scenario by 2035. The annual peak load is expected to grow at slightly higher rates from 1,600 MW in 2015 to 6,700 MW in 2035, (with Vision rate of 10,000 MW and low case of 5,000 MW).

The 2011 updated LCDP for Kenya projects a capacity need in the range of 12,739-22,995 MW by 2031, with an intermediate projection of 3,751 MW by 2019. Projected energy demand is expected to increase from 7,296 GWh in 2010 to 22,695 GWh in 2019 and 91,946 GWh in 2030. 2,700 MW in generation capacity could come online by 2030 to reach 5,000MW and a leap from 4,150km in transmission lines to double by 2030. 20-30% of population could be connected to off grid assess to electricity (primarily solar) by 2020. This will bring 70-80% of the Kenyan population to on-grid electricity by 2020 from 46% in 2015. These projections are based on an array of planned infrastructural, mining and manufacturing projects including an electrified standard gauge railway (SGR) line, the establishment of a steel smelting plant in Meru, Konza Techno City and several other major energy intensive undertakings. Kenya has only 33% electrification and devolution of energy is on an online plan. Reticulation of energy by county governments is a role expanded in the new energy bill 2018.

Kenya long term PGTMP master plan 2015-2035, identifies and models the expansion paths of the Kenya power system for the period, complying with the defined planning criteria and scenario framework. The plan includes a scenario in which RE is significantly upscaled and another scenario in which Energy Efficiency (EE) significantly affects supply. The PGTMP

investment modelling compares energy investments (including nuclear) by aspects of technology like capacity and also uses PESTEL to rank different investment over the long term for prioritization and scheduling.

This projected growth rate in electricity demand will require corresponding increases in capital outlay to provide the needed incremental generation capacity and associated supply and distribution infrastructure. It is envisaged that the private sector will play a key role in providing the required capital either on its own or through Public Private Partnerships. The government of Kenya has in this course created a platform to entice investors in the energy sector KETRACO being one of them.

The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- There will be no added values to the reference plot.
- There will be no added value to other establishments in the neighborhood.
- The proponent will not benefit from the revenue expected from the facility.
- The government kitty will not benefit from the revenue to be earned due to the establishment of the proposed project.
- The economic status of the Kenyans and the local people would remain unchanged.
- The local skills would remain underutilized.
- Reduced interaction both at local, national and international levels.
- No employment opportunities will be created for thousands of Kenyans who will work in the project

From the analysis above, it becomes apparent that the No Project Option is no alternative to the proponent, local people, Kenyans, and the government of Kenya. Subsequently, the do-nothing alternative is not a preferred alternative and will not be assessed in further detail during this ESIA phase.

7.2 Alternative Transmission Line Route

The analysis of alternatives route involved the evaluation certain sensitivities associated with the various options. **Table 7-1** below summarizes the sensitivity criteria used for the alternative analysis. Each sensitivity aspect was assigned a score and the score was used as a basis for comparison between options.

Table 7-1: Social Sensitivity

Social Sensitivity								
Category	**Score**	**Physical and Economic Displacement**	**Community Infrastructure and Resources**	**Socio-Economics and Income-Generating / Subsistence Livelihoods**	**Socio-Cultural Characteristics and Intangible/ Living Cultural Heritage**	**Environmental Sensitivity**	**Aesthetic**	**Community Health & Safety**
High	4	Dense permanent Housing (larger populations) or areas highly significant for Livelihoods which are not available elsewhere.	Substantial or highly Significant infrastructure present (e.g. school, hospital, medical centre etc.).	Area is essential for principal Livelihoods.	Presence of large number/highly sensitive intangible / living cultural heritage sites. e.g., graves or cemeteries or religious buildings.	Landscapes that: feature concentrations of biological diversity Including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels; and Feature ecosystems and ecosystem mosaics that are significant at global, regional or	Major changes affecting a substantial part of the view, continuously visible for a long duration, or obstructing a substantial part or important elements of view. Contrast may dominate the view and be the major focus of	Severe health effects for a large portion of the community

						national levels, and that contain viable populations of naturally occurring species in natural patterns of distribution and abundance; and Feature rare, threatened, or endangered Ecosystems, habitats refuges.	viewer attention	
Medium	3	Small-medium groups of houses, priority areas used frequently for livelihoods, or businesses potentially requiring economic Resettlement.	Some infrastructure Present with some alternatives available.	Area is significant for principal livelihoods.	Individual grave sites.	Landscape features that Include ecosystems and ecosystem mosaics that are significant at global, regional, or national levels, and that contain viable populations of naturally occurring species in	Clearly perceptible changes in views at intermediate distances, resulting in a either a distinct new element in a significant part of the view, or a more wide ranging, less concentrated	Moderate Health effects for a larger portion of the community and severe health effects for a small portion of the community

						natural patterns of distribution and abundance.	change across a wider area. Contrasts may attract attention but should not dominate the view of the casual observer.	
Low	2	Individual houses or Small communities, Non-priority areas used for livelihoods.	Some infrastructure Present although Typically accessed at Alternatives sites.	Area is used for livelihoods.	Intangible cultural heritage sites known to be used, e.g., views or landscapes.	Ecologically important areas that do not form part of recognized protected areas	Minor changes in views, at long distances or visible for a short duration, perhaps at an oblique angle, or which blends to an extent with the existing view. Contrasts may be seen but should not attract	Non-permanent Health effects for a Larger portion of The community and moderate health effects for a small portion of the community

							the attention of the casual observer.	
Negligible	1	No significant human land use for livelihoods / housing.	No significant areas used to collect resources or House infrastructure.	Area only occasionally used for Livelihood activities.	No significant Culturally sensitive areas.	Other areas not considered sensitive.	Change which is Barely visible, at a very long distances, or visible for a very short duration, perhaps at an oblique angle, or which blends with the existing Acceptable contrasts are primarily natural ecological changes.	Non-permanent Health effects for small portion of the community.

Table 7-2: Preferred Route

Topic	**Option 1: Transmission Line in accordance with KETRACO's Coordinates**		**Option 2. Transmission line Route in accordance with ESIA Team Analysis (Avoiding the Forest)**	
	Analysis	**Scoring**	**Analysis**	**Scoring**
Environmental Sensitivity	This option would include the construction of the transmission line which will cross	**2**	This option would include the construction of the	**1**

	inside/into Lariak Forest (1.8km) long and which is considered sensitive. Due to the traversing of the route transmission line into the Lariak Forest the potential impacts on flora and fauna can be tentatively considered as high. Potential noise and air quality sensitive receptors are also high.		transmission line avoiding Lariak Forest which is a sensitive ecosystem.	
Physical and Economic Displacement	No significant human land use for livelihoods/housing.	**1**	No significant human land use for livelihoods/housing.	**1**
Community Infrastructure and Resources	No significant areas used to collect resources	**1**	No significant areas used to collect resources.	**1**
Socio-Economic and Income Generating Livelihoods	Project route and areas along the 2 Counties used for livelihood activities.	**1**	Project route and areas along the 3 Counties used for livelihood activities.	**1**
Socio-Cultural Characteristics and/Living Cultural Heritage	As per the ESIA baseline, no culturally-sensitive areas.	**1**	As per the ESIA baseline, no culturally- sensitive areas.	**1**
Aesthetics	There are no other overhead transmission lines in the area, hence moderate impacts.	**2**	There are no other overhead transmission lines in the area, hence moderate impacts.	**2**
Community Health and Safety	Overhead transmission structures are clearly marked and have security mitigation measures to prevent harm to the community, both during construction and operation phases. The line snapping and causing injury is a potential risk (although considered to be low). The line hardware used on the overhead transmission line is rated or designed higher than the	**1**	Same as Option 1.	**1**

	conductor ultimate tensile strength and the conductor is only pulled to 20% of its ultimate tensile strength. Therefore, the likelihood of a transmission line snapping is possible but unlikely. Specifically, during operation, due to the transmission servitude being maintained, this risk is not material.			
Total Score		**9**		**8**

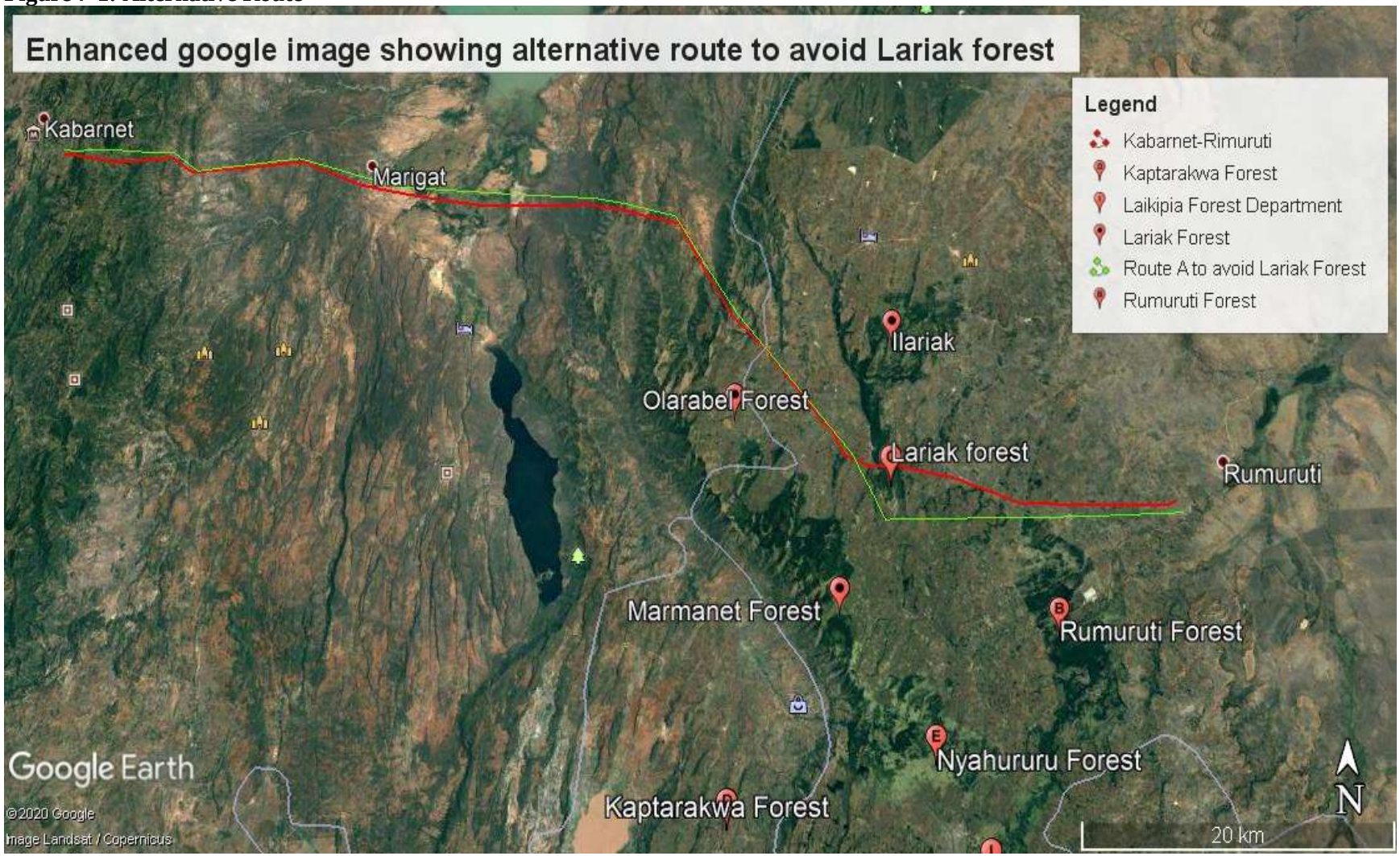
Preferred Transmission Line Route A:

In proposing the above line route, consideration was given to social and environmental impacts of the project. The transmission line will generally follow open ground with minimum settlement to avoid areas of dense settlement and where impacts on environment and local people e.g., from loss of farmland or grazing land are minimal. The proposed route of the transmission line was done to avoid ecologically sensitive areas such as forests, game reserves, wetlands, hilltops etc. The routing was also done in consideration of cost-effectiveness by avoiding as much as possible excessively steep areas such as hills and areas with high population. Therefore, there would be no added benefit of rerouting the route as all important parameters were considered in mapping the current route.

Alternative Transmission Line Route B: Avoid Forest

This ESIA is proposing an alternative route (Route B) which would primarily avoid the transmission line crossing into Lariak Forest as shown in **figure 7-1 below.** This option would thereby ensure that the adverse impacts associated with clearing the vegetation in Lariak Forest is avoided.

Figure 7-1: Alternative Route



7.3 Alternative Construction Practises

The table below, shows the different construction practices/methods that may be adopted by the contractor and the associated justification for such construction practices. The contractor will be expected to select the most appropriate methods/alternatives as needed and subject to site characteristics and cost implication.

Table 7-3: Illustrative Differences in Construction Practices

No.	Project Type	Construction Technique normally used	Alternative Methods of construction available	Reason
A. Transmission Line				
1	Tower material	Manual labour used to carry material to site of erection from the last accessible point on access road	Tower material reached to erection site by high boom cranes in hilly areas	Cost issues and status of access roads.
2	Tower foundation	Digging, reinforcement cement concrete (RCC)	Digging, casting using mechanical tools and prefabricated casts	Terrain issues and cost of erection
3	Tower erection	It is erected member by member using chain pulleys manually	Tower structure is completely erected lying on ground and then mechanically/aerially erected.	Terrain issues and cost of erection
4	Installation of Tower suspension accessories	They are erected manually by hauling the accessory using chain pulley	Tower material reached to top of erection site by high boom cranes	Terrain issues and cost of erection
5	Paying out	Manually controlled conductor drums used.	Mechanically (diesel/gas) operated conductor drums	Cost issues and lack of equipment
6	Stringing of pulling line over each stinging block for the conductor	The pilot wire is manually strung over valley in mountainous area which is attached to power cable	The pilot wire is sometimes shot using a winch or through drones.	Cost issues and lack of equipment

7	Tensioning and sagging of Conductor.	Tension and sag corrected using manual winch, chain pulleys, bull wheel type pullers and other associated equipment	Mechanically operated (diesel/ gas) powered pullers and tensioners to correct the tension and complete sagging operation.	Cost issues and lack of equipment

7.4 Alternative Transmission Materials and Technology

The project considered alternatives of construction materials and processes before and during the construction process where it is environmentally found to be viable. Alternatives and their advantages or disadvantages include;

Table 7-4: Alternative Transmission Material and Technology

Type of pylon by material used	
Wood pylons: For support pylons a straight trunk impregnated with tar is usually used, which carries one or more cross beams with the conductor cables on the top. For anchor pylons constructions looking like a V or an A are used, because these can stand higher forces. Due to the limited height of available trees, the maximum height of wood pylons is limited (approx. 30 metres). This alternative was considered and **rejected**.	
Concrete pylon: or concrete pole, is an electricity pylon made from reinforced concrete. Concrete pylons are manufactured at the factory and put up at the power line's right of way. Concrete pylons, which are not prefabricated, are also used for constructions taller than 60 meters. This alternative was considered and **rejected**.	
Steel tube pylon: is a pylon, which is manufactured from a steel tube. This type of pylon is generally assembled at the factory and set up on the power line's right of way with a crane. This alternative was considered and **rejected**.	
A lattice steel pylon is an electricity pylon consisting of a steel framework construction. Lattice steel pylons are used for power lines of all voltages. For lines with operating voltages over 50kV, lattice steel pylons are the form of pylon used most often. Lattice steel pylon is usually assembled from individual parts at the place where it is to be erected. This makes very high pylons possible (generally up to 100 meters-in special cases even higher). This is the **preferred** option.	

Table 7-5: Advantages and Disadvantages of Concrete and Wooden poles

Material	Advantages	Disadvantages
Concrete poles	-These materials cost less when compared to steel contraptions. -Will not be eroded or rot	-Likely to collapse due to loose soils -Suitable for lower voltage electricity lines -Requires heavy machinery for installation because they are heavy -Have low tensile strength and needs to be reinforced -Low ground clearance of cables
Wooden poles	-Low installation cost. -Easy to transport. -Readily available.	-Not durable due to rot and decay. -Can easily collapse.

7.5 Energy Evacuation/Transmission Alternative

Overhead energy transmission is the proposed option by KETRACO to evacuate the electricity using lattice steel pylons. However, electricity can also be evacuated through installation of underground transmission cables. The **table 7-6 below** shows the advantages and disadvantages of both methods and justification for selecting overhead transmission.

Table 7-6: Alternative Transmission Modes

Transmission Mode	Advantages	Disadvantages
Underground transmission cable/line	-Underground cables ensures that the aesthetic pollution associated with pylons is avoided -Ensures dangers posed by pylons such as birds strikes are avoided - Underground cables are less affected by bad weather, vandalism and acts of terrorism -Risks of accident in construction and maintenance of the lines is reduced when using underground cables.	-Construction and maintenance on the lines is a complex undertaking -The costs of insulated cable and excavation during construction are much higher than overhead construction -Electric faults in underground transmission lines take longer to locate and to repair
Overhead transmission line	-Less civil works compared to underground transmission -Easy to repair and maintain. -Lower installation costs	-Affected by extreme weather and may cause outages -Susceptible to lighting strikes

	-Appropriate for long distance transmissions -More durable compared to underground transmission lines.	-May interfere with flight paths and communication lines

8 ASSESSMENT OF POTENTIAL RISK AND IMPACTS

8.1 Introduction

This chapter presents the assessment of the issues likely to arise as a result of implementation of the proposed project and possible mitigation measures. For each issue, the analysis is based on its nature, the predicted impact, extent, duration, intensity and probability, and the stakeholders and/or values affected.

8.2 Beneficial Impacts

8.2.1 Pre-Construction and Construction Phase

8.2.1.1 Compensation Benefits

The construction of the transmission line will lead to acquisition of land and the private land owns will receive cash compensation for loss of land and other assets.

8.2.1.2 Expected Impact on Poverty Alleviation

With the implementation of the project, the power supply will be stable and reliable hence more customers will be connected to the system. The people under power supply will engage in income generating activities in order to improve their economic status.

8.2.1.3 Employment

The construction of the transmission lines including operation and maintenance activities will provide employment opportunities–directly and indirectly–to skilled as well as unskilled manpower primarily to local manpower. During construction, the project will be beneficial through creation of employment opportunities for the local communities. The income, thus enhanced, of the local skilled and unskilled work force would also bring out a multiplier effect to other sectors of the economy.

8.2.1.4 Knowledge/Skills Transfer

Local workers will benefit in terms of knowledge transfer especially from external skilled workers who when paired with the local workers will transfer on-the job skills to them. Further, local workers may undergo certain training as part of skill enhancement prior to employment.

8.2.1.5 Local Material Supplies

Another positive impact of the project involves local material sourcing mainly sale of materials for use in the project. Some of these can be expected to be sourced locally and the rest through importation. It is expected that the project will generate new income revenues for the local population across the Country in harvesting and transportation of sands, ballast, stones, concrete/wooden poles, and gravel. The new income revenues received will create demand for other goods and services causing a trickledown effect to the entire economy.

8.2.2 Operation Phase

8.2.2.1 Up Scaling Electricity Access to the Poor

According to Kenya Power's annual report of 2012/2013, electricity access stood at 4.8milliom customers as at June 2016. This translates to about 60 % of the total population accessing electricity. The project will increase electricity access to the residents on the 3 Counties.

8.2.2.2 Project Health Benefits

Use of kerosene for cooking and lighting poses health problems as reported by World Bank report 2008 on the Welfare of Rural Electrification. The report notes that kerosene lamps emit particles that cause air pollution; these are measured by the concentration of the smallest particles per cubic meter (PM10). The health risks posed by this indoor air pollution mainly include acute lower respiratory infections, but also low birth weight, infant mortality, and pulmonary tuberculosis. Additionally, available data suggest that insufficient illumination (low light) conditions can cause some degree of eye strain and reading in these conditions over long periods of time may have the potential to increase the development of near sightedness (myopia) in children and adults. The project will result in many families replacing kerosene lamps for lighting with electricity there-by reducing disease burden at the family level and on the government.

8.2.2.3 Education Benefits

Access to constant and reliable electricity supply at the household level and schools will create opportunities for children to study. For example, children from homes with electricity have an advantage because they have more time for study and doing homework in the evening as opposed to children from homes without electricity. This benefit will in the end translate to better results.

8.2.2.4 Improved Living Standard

Access to stable and reliable electricity will change the standard of living of the people as they can use domestic appliances like iron boxes, fridges, television sets, washing machines to mention but a few. Use of electricity for lighting implies that the people will not be exposed to smoke arising from use of kerosene lamps which predisposes people to respiratory diseases.

8.2.2.5 Security

There will be enhanced security arising from well-lit social, commercial, individual premises and use of electrical surveillance gadgets that use broadband data services. With the implementation of the project, the level of security will improve across the county.

8.2.2.6 Communications

Access to reliable electricity will lead to improved communication. This will be enabled by the fact that charging of mobile phones will be easier and cheaper. Access also to mass media like radio and TV will provide opportunity for people to access a wide range of information which is useful for decision making. Some of information beneficiaries receive include information on markets, farm inputs, livestock and crop management and local affairs, nutrition, diseases, investments and entertainment among others.

8.2.2.7 Gender Considerations

The vision of National Gender and Equality Commission is "A society that upholds gender equality, dignity and fairness for all". The Commission is guided by a mission "To effectively and efficiently promote gender equality and freedom from discrimination of all persons in Kenya". Access to modern electricity will go a long way towards alleviating the daily household burdens of women, giving them more time, improving their health and enhancing their livelihoods. Available literature on gender and energy suggests that providing electricity to communities and homes will promote gender equality, women's empowerment, and women's and girls' access to education, health care, and employment. Lighting and television will improve access to information, the ability to study, and extend the effective working day. This is more so because children can have extended time of study. The women will also benefit more due to access of information especially on health and nutrition since they also spend more time at home. The project will also enhance security in the rural areas as most homes will be lit up, a benefit that is more appreciated by women.

8.2.2.8 Reduced GHG Emissions

The proposed project may contribute to reduction in Green House Gaseous (GHGs) emissions due to the fact that beneficiaries may not continue to rely on biomass as a main source of energy at the domestic level which leads to felling of trees and hence contributing to the green-house effect.

8.3 Adverse Impacts

Following a scoping process, this impact assessment was focused on interactions between the Project activities and various resources/receptors that could result in significant impacts.

8.3.1 Pre-Construction Phase

Land Acquisition and Involuntary Displacement The construction of the transmission line will lead to loss of land or restrictions on land use and land-based livelihoods during construction. Potential impacts include: -

- Physical displacement.
- Economic displacement.

Baseline Conditions

Relevant baseline conditions that may potentially influence impacts are summarized as follows:

- The transmission lines cross primarily rural and peri-urban areas where subsistence agriculture and animal husbandry are predominant. Other economic activities such as small-scale trading/street vending, informal temporary jobs (including farm labour, construction-related work, etc.), informal businesses, and employment in the public sector, are also observed in the peri-urban areas.
- Small-scale agriculture of seasonal crops and some permanent crops as well as animal husbandry activities are mainly practiced for self-consumption and small-scale commerce of surplus agricultural production.
- Most families in rural areas have animals that are free to roam around settlements, mainly chicken, goats, pigs, and ducks for subsistence.
- Charcoal and wood are the main sources of energy for cooking in the settlements

- Vulnerable groups include households with particularly low incomes and high land dependency for subsistence and income generation. These households can be found throughout the Study Area and are prevalent in the rural settlements where agriculture is the primary livelihood activity. Households with disabled and elderly household members as well as female or child-headed household are also particularly vulnerable to potential loss of livelihoods related to land access restrictions.
- The average parcel size was reported to be less than 5 acres. Households may share the use of different plots to grow different crops.
- In urban/peri-urban areas, land access is less dependent on inheritance and is generally transferred through sale
- Physical structures found along the Study Area mainly includes residential houses and business structures (beehives). Most houses are mud walled with fewer being built with concrete block. Block houses are mostly found in established urban and peri-urban settlements.

Impact Assessment – Pre-Construction
Loss of Livelihoods as a result of Loss of Agricultural Resources.
The loss of agricultural land, grazing land agricultural crops, and beehives (livelihood sources) (PAPs pratise crop production and animal husbandry) will be as follows:

- Temporary tower site working areas inside of the 30m OHTL RoW:
- Temporary loss of access of land for the establishment of the temporary tower sites working areas (average 40m x 50 m). These construction sites will be located entirely inside the 30m OHTL RoW.
- Permanent loss of access to land in the 30m OHTL RoW.
- Removal of all trees and crops.

The loss of access to land associated with the 30m OHTL footprint corridor, temporary tower sites working areas, and maintenance corridor will result in the loss of land used for seasonal crops, removal of trees, and restrictions to animal grazing. With respect to animal grazing activities, potential impacts during the construction phase stem from farmers having restricted access to grazing land due to the establishment of the tower sites working areas and access roads. Regardless of the fact that animal grazing is usually undertaken over a wide area; affected farmers will be compensated in line with the AfDB's OS 2 on involuntary resettlement. In the case of land compensation, KETRACO will ensure to provide land with higher or equal productive potential and locational advantages.

The total size of land to be acquired by the project to include area for erecting the transmission line as well as RoW is approximately **695**acres in size based on the Resettlement Action Plan report (see separate report) which was prepared based on the ESIA scoping that determined the likelihood of involuntary resettlement and recommended development of RAP report. Land losses in terms of severity will be experienced in the following locations namely Melwa, Muhotetu, Kimalel, Kipkaech, Koriema, Kituro, Thigio, Logugum, Rumuruti and Yatoi where the number of PAPs losing land is significant. The number of PAHs losing over 90% of their land is only 5% of the number of PAPs. The loss by the PAPs is mostly economic in terms of displacement accounting for over 90%, with physical displacement accounting for only 10%. (See RAP report for detailed information). The project will adversely affect **490**

households consisting of **1,449** individuals (PAHs) and 2 public institutions. The project will affect a total of **490** PAHs along the proposed project route including those PAPs with formal rights to land (private landowners mainly in Laikipia County) and those who do not have formal rights (communal landowners mainly in Baringo County) to the land but either own structures or trees and crops and beehives. The number of PAHs who will be affected due to restrictions on use of land is 390 and a total of 40 PAHs will lose both land and structures. The total of PAHs that will lose main residential structures have no claim to land ownership only are 61. The proposed transmission line route has been designed by KETRACO to avoid the displacement of physical structures to the extent possible. The proposed route has reduced the number of sensitive receptors at risk of removal inside the 30m OHTL footprint corridor from the RAP approximately **325** structures will be affected. These structures include a mix of residential and non-residential structures, farms, animal shelters, and commercial buildings.

Table 8-1: Pre-Mitigation Impact Assessment

Impact **Temporary loss of livelihoods and household income as a result of temporary land take and loss of access to land during construction**					
Impact Nature	Negative	Positive	Neutral		
	The temporary land take during construction activities may lead to a temporary loss of livelihoods and household income.				
Impact Type	Direct	Indirect	Induced		
	Potential loss of livelihoods and household income due to a direct interaction between the Project (i.e., land taken) and land users/owners.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The majority of the construction land take will be reinstated after construction (18-24 months). Permanent impacts are expected on livelihoods related to fruit trees removal in the 30 m OHTL footprint corridor.				
Impact Extent	Local	Regional	International		
	Impact limited to the Study Area				
Impact Scale	Total land required for the project in the construction phase (503 ha).				
Frequency	The impact is expected to be continuous over the 18-24 months of construction. Some permanent impacts such as the restriction will also extend to the operation phase.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above and the embedded measures in place to minimize land take and land clearance the magnitude is considered small.				
	Low	Medium	High		

Resource/ Receptor Sensitivity	The sensitivity of the receptors is considered high considering the dependence on agriculture as a main source of livelihood in the area.			
Impact Significance	Negligible	Minor	Moderate	Major
	Considering the magnitude is small and sensitivity is high, the impact on livelihoods and household income during construction activities is considered of Moderate significance.			

Displacement of Physical Structures and Potential Resettlement (Pre-Construction)
The proposed transmission line route has been designed by KETRACO to avoid the displacement of physical structures to the extent possible. The proposed route has reduced the number of sensitive receptors at risk of removal inside the 30m OHTL footprint corridor from the RAP approximately **325** structures will be affected. These structures include a mix of residential and non-residential structures, farms, animal shelters, and commercial buildings.

Considering the measures in place to minimize the number of structures at risk of being physically resettled, the magnitude of the impact is considered ***medium***. The receptors sensitivity is considered ***high*** given the low incomes and presence of households with disabled and elderly household members as well as female or child-headed households. Impact significance is therefore considered ***Major***.

Table 8-2: Pre-Mitigation Impact Assessment

Impact	**Displacement of physical structures and potential resettlement during construction**			
Impact Nature	Negative	Positive	Neutral	
	The temporary land taken during construction activities may lead to the permanent relocation of residential and non-residential structures.			
Impact Type	Direct	Indirect	Induced	
	Potential relocation of physical structures and potential loss of employment and livelihoods related to economic structures due to a direct interaction between the Project (i.e., land taken) and land users/owners.			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	Although land take for construction is temporary, the displacement of physical structures is considered permanent.			
	Local	Regional	International	

Impact Extent	Impact limited to the Study Area.				
Frequency	The impact is expected to be a one-time impact occurring before the start of construction activities.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the measures in place to reduce the number of physical structures at risk of displacement, the magnitude is considered to be medium.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the receptors is considered high given the low incomes and presence of households with disabled and elderly household members as well as female or child-headed households				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the medium impact magnitude and medium sensitivity of receptors, the impact related to the displacement of physical structures is considered to be of major significance.				

Mitigation Measures

Pre-Construction

As introduced previously, the main embedded measures for land and livelihood related impacts developed by KETRACO will be delivered through avoidance through detailed routing and design which was aimed at: -

- Avoiding or minimizing the number of towers sites working areas in agricultural areas or areas of community resources.
- Minimizing clearance of the maintenance road as in some cases clearance may not be necessary since other access roads are available.
- Minimizing as far as possible tree cut-off and tree trimming in the temporary tower sites working areas.

In addition, KETRACO has developed a Resettlement Action Plan (RAP) to ensure that Project Affected Persons (PAPs) receive adequate compensation for the loss of crops and related loss of income and, when required, are provided with access to alternative land of equal productivity. Compensation will also take into account the investment required to prepare new agricultural plots (for alternative land) and to return the reinstated land to initial productivity levels for seasonal and permanent crops. The objectives of the RAP are as follows:

- To provide compensation for loss of assets at replacement cost and for the loss of income opportunities from seasonal and permanent crops. This also includes community-level compensation for the loss of community resources inside the 30m footprint corridor and related livelihood and subsistence losses.

- To provide compensation for PAPs who lose their pasture grounds or are restricted from grazing grounds due to project activities
- Ensure that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.
- Resolve conflicts related to land ownership by supporting PAPs resolve succession related conflicts, supporting registration process for unregistered community land for PAPs in community owned land and converting group ranch land into community land in accordncae with Community Land Act 2016 in order to facilitate smooth compensation and relocation. Engage a legal consultant to support in resolution of succession cases; support grievance redress committess to resolve land related conflicts etc.
- Improve or, at a minimum, restore the livelihoods and standards of living of displaced persons to pre-project levels, so as to facilitate sustainable improvements to socio-economic status (including the provision of alternative land for cultivation with equal or better soil productivity, and the provision of improved replacement housing). The provision of improved assets and alternative land constitutes a positive outcome that contributes to offsetting the inconvenience and disturbance and potential risk to livelihoods of the economic and physical displacement.
- Pay particular attention to the needs of vulnerable groups, identifying additional compensation and livelihood restoration measures as necessary.

Operations

Permanent Loss of Livelihoods and Household Income Due to Permanent Land Restrictions

The following restrictions will apply during operations to ensure access for the maintenance of the transmission lines and towers:

- Crop trees: planting of trees is not allowed inside the 30 m footprint corridor.
- These restrictions will result in reduced areas available for cultivation and other livelihoods.
- The permanent land take and restrictions to trees is a direct negative impact which is permanent in nature. The amount of land where restrictions will apply are relatively small in the overall context of the land around the settlements. Given the verbal confirmation of local leaders that adequate replacement land is available the magnitude of the impact is considered low. Receptor sensitivity is considered high considering the level of dependence on agriculture as the primary source of subsistence and livelihoods. The potential impact is therefore considered moderate.

Table 8-3: Pre-Mitigation Impact Assessment

Impact	**Permanent Loss of Livelihoods and Household Income during operations**		
	Negative	Positive	Neutral

Impact Nature	The permanent land restrictions will lead to a permanent loss of livelihoods and household income. Permanent restrictions to the planting and cultivation of crop trees in the 30m footprint corridor may also result in livelihood losses considering the amount of time and money required for new crop trees to bear fruit and reach maturity.				
Impact Type	Direct	Indirect	Induced		
	Potential loss of livelihoods and household income due to a direct interaction between the Project (i.e., land taken and restrictions) and land users/owners.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The loss of livelihoods and income associated to the restrictions for operation activities is considered to be permanent during the project operational life.				
Impact Extent	Local	Regional	International		
	Impact limited to the Study Area				
Impact Scale	The scale of the impact is considered low as the amount of land where restrictions will apply are relatively small in the overall context of the land around the settlements.				
Frequency	The impact will be felt continuously throughout the 50 years of operation as the restrictions will apply throughout.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above and the relatively small amount of land permanently required for the project, the magnitude is considered small.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the receptors is considered high given the levels of dependence over agriculture for subsistence and livelihoods and their vulnerability to potential losses of livelihoods.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude and sensitivity are small and high, the impact on livelihoods and household income during operation activities is considered to be of moderate significance.				

Mitigation Measures

Operations

Impacts during the operations phase will be managed by KETRACO as operator of the line. Mitigation measures will include the following:

- Responsibilities will include monitoring and providing the necessary follow-up to support households to restore their livelihoods throughout the operations phase.
- The grievance mechanism established during the construction phase will be maintained during operations to ensure that local communities and stakeholders have an adequate channel to voice concerns.

Residual Impact

Provided the above mitigation measures are implemented, the residual impact related to temporary land taken during construction and permanent restrictions and land take during operations is reduced to ***minor*** levels.

Table 8-4: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Temporary loss of livelihoods and household income as a result of temporary land take and loss of access to land	Construction	Moderate	Minor
Physical displacement of PAPs during construction	Construction	Major	Minor
Permanent loss of livelihoods and household income due to permanent land take and restrictions	Operation	Moderate	Minor

8.3.2 Construction Phase

Construction Air Pollution Impacts

Air pollution during construction include gaseous and dust emissions which may have an impact on air quality. Project activities that have potential to impact air quality include emissions of air pollutants from temporary power generators, construction equipment and vehicles. The construction of the transmission line will entail the use of motorized machinery and vehicles which will lead to air pollution which will impact human health and the environment in general. Pollutants from motorised equipment during construction will include:

1. CO – Carbon monoxide;
2. HC–unburned hydrocarbons generated through combustion processes and fugitive fuel evaporation, including benzene, a known carcinogen;
3. CO2 - Carbon dioxide;
4. NOX– Nitrogen oxides including NO2 - nitrogen dioxide and NO – nitric oxide;
5. PM10 – fine particulate matter including soot/black; and

6. Sulphur dioxide (SO2): SO2 is of concern because of its impacts on health and vegetation.
7. Dust is defined as all particulate matter up to 75 µm in diameter and comprising both suspended and deposited dust, whereas PM10 is a mass fraction of airborne particles of diameter 10 µm or less. Dust and PM10 emissions arise from a number of sources, so both construction activities and emissions from vehicles associated with the construction site need to be considered.

Construction vehicles are generally fueled with diesel, and thus, SO_2, PM_{10}, NO_X, VOC and CO emissions are expected to occur along the route. In addition to these mobile source emissions, there will be also stationary emissions from the activities in the camp site (if decided upon by contractor). These emissions will be mostly due to power generations in diesel generators if used. Most site equipment (bulldozers, diggers, etc.) can be considered as similar to medium or heavy-duty trucks. Vehicles are used for the transport of materials and equipment on and off site as well as carriage of personnel to and from site using minibuses and cars. Since the project construction phase duration will be about 18-24 months long, air quality impact generated from these activities will not be static. Although the general terms of the construction of phases are similar, their application locations will follow each other. The quantities of motorized equipment (trucks, excavators) etc. will be minimal due to the short length of the transmission line. In addition, quantities of material to be loaded and unloaded, number and type of construction equipment and machinery all which are contributors to air emissions are also expected to be minimal due to project limited scope and footprint.

The above pollutants are only likely to be significant where coal or heavy fuel oil are in use. As these fuels will not be used for the Project, significant impacts on air quality from these pollutants are therefore considered unlikely. The above pollutants are of concern due to the adverse effects on human health and natural ecosystems in the local environment.

Construction activities will also create dust in particular where vehicles are using unpaved roads close to properties and agricultural areas. Dust emitted from excavation, earth moving, loading, handling, and transportation of materials. Dust deposition from road traffic is not likely to be a more significant issue than exhaust emissions, as many of the roads used by construction vehicles are paved. The construction of the proposed transmission line has the potential to cause emissions of dust Total Suspended Particles (TSP) from land clearing, earthworks, movement of vehicles over unpaved surfaces and roads, handling of friable materials etc. These sources have the potential to increase ambient concentrations of particulate matter, resulting in nuisance at nearby settlements and to affect crops and natural vegetation through dust deposition.

Table 8-5: WHO reference standards and guidelines for NOx PM, SOx.

Parameter	WHO Air Quality Guidelines
Sulphur Dioxide, SO_2	20 µg/m^3
Nitrogen Oxides, NO_X as NO_2	200 µg/m^3 (1hr)
Suspended Particulate Matter	200 µg/m^3

PM10	100 µg/m^3
PM2.5	25 µg/m^3
Ozone	100 µg/m^3

Baseline Conditions
Pollutant Levels
Based upon the potential impacts, the pollutants of interest are oxides of Nitrogen, and particulate matter. Baseline dust and PM_{10} is influenced by a wide range of emissions, including man-made and natural sources. Along the route it is anticipated that there will be locations where the dust and PM10 baseline is elevated and close to and frequently above air quality standards due to existing levels of human activities including vehicle traffic. This includes the urban areas and in settlements where there are unpaved roads, at individual properties close to unpaved roads and properties close to agricultural activities. On this basis, the baseline dust and PM10 airshed is considered to be degraded but only on a localized basis.

NO_2 is emitted from combustion sources, and these are almost exclusively man-made. In the absence of significant local sources, NO_2 concentrations are not expected to approach or exceed air quality standards. On this basis, existing levels of NO_2 will be below air quality standards throughout the route and the airshed is considered to be undegraded. The net impact of the project on air quality is not significant and temporary and will be limited to construction period.

Receptor Sensitivity
The sensitivity of receptors in the Area of Influence are defined as follows: For sensitive human receptors:

- High locations where there are particularly vulnerable receptors, including hospitals with high dependency and intensive care wards;
- Medium locations where people are generally present permanently, including dwellings, schools and settlements; and
- Low–where people are only present for short periods, such as agricultural areas and fishing areas.

For sensitive ecological and agricultural receptors:

- High–habitat sites with international designations, such as Ramsar sites;
- Medium–habitat sites with statutory national protection, and sites where agricultural activities are producing particularly sensitive crops, such as fruit or green vegetables; and
- Low–local or national habitats sites with no statutory protection, and other agricultural areas

Based on a review of the proposed route and the access roads the following specific sensitivities have been identified:

- Sensitive human receptors are defined as Medium where there are permanent settlements of dwellings, and low elsewhere; and

- Sensitive ecological and agricultural receptors are defined as **Low** in all locations, as there are no protected habitats with the exception where the line crosses protected Lariak Forest all in Baringo County.

The transmission line is not within close proximity of key sensitive receptors including educational and health facilities therefore, the emissions from the construction activities are not expected to significantly affect such sensitive receptors.

Impact Assessment

Exhaust Emissions

No detailed traffic data is available at this stage. However, the numbers of Heavy-Duty Vehicles (HDV) and Light Duty Vehicles (LDVs) are expected to be well below the thresholds for potentially significant impacts. On this basis, the magnitude of impacts associated road traffic exhaust emissions are predicted to be Negligible. Combined with the Medium and Low receptor sensitivities identified the overall significance of impacts is Negligible at all locations.

Dust and PM10

These are the potential for impacts to arise from:

- Traffic on unpaved roads;
- Earthworks;
- Construction activities; and
- Track out[5]

The Project will generate traffic on unpaved roads close to dwellings and within settlements. As this is expected to be more than five HDVs/day, and at some locations for more than four weeks, the magnitude is large. The Project will require earthworks along the length of the route. These works will include stripping vegetation from the route, construction of access roads and the route haul track, excavations for the concrete bases for the pylons. Due to the scale of these activities, the Magnitude is Medium. Due to this, the Magnitude is Negligible.

The exact number of HDVs that will be generated is unknown. However, this is expected to range from 10 to 15 HDVs per day category using unpaved site roads. On this basis, the magnitude of trackout is medium. Combined with the Medium and Low receptor sensitivities identified the significance of unmitigated impacts is:

- Traffic on unpaved roads is **Major** where there are receptors within 50m of unpaved roads used by construction traffic, or the haul route.
- Earthworks are **Major** where there are receptors within 350m of locations where earthworks are being undertaken, including route stripping, construction compounds and excavations;
- Construction activities are **Negligible** at all receptors; and

[5] Track-out or carry-out is dirt, mud or other debris tracked onto a paved road surface or area accessible to the public by a vehicle.

- Track out are **Majo**r at receptors within 50m of routes used to access the construction route where these are within 500m of the access point to the route or construction compounds.

On this basis there is a need for mitigation to be implemented to reduce dust emissions/impacts.

Table 8-6: Pre-Mitigation Impact Assessment

Impact	**Degradation of the Airshed during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Increase in airborne pollution.				
Impact Type	Direct	Indirect	Induced		
	Impact is a result as a direct interaction between project activities and the environment along the footprint of the project.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact is expected to be temporary as emissions arise throughout the construction phase.				
Impact Extent	Local	Regional	International		
	The impact will arise locally in the footprint of the project and immediate surrounds. Impacts will also arise further afield close to unpaved public roads used to access the work sites during construction.				
Impact Scale	The impact is considered as small (local) scale.				
Frequency	Intermittent – impacts will typically only arise during working hours				
Likelihood	Inevitable				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered small.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity of human receptors is Medium in dwellings and settlements, Low elsewhere. The receptors of agricultural activities is Low.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Dust emissions have the potentially to have Major significant impacts at nearby sensitive human receptors.				

Mitigation Measures

Mitigation measures are split into general considerations for all construction activities, and specific mitigation measures for traffic on unpaved roads, earthworks and track-out. As general measures for all locations:

- Develop a Dust Management Plan;
- Record all dust and air quality complaints, identify cause (s), take appropriate measures;
- Liaise with local communities to forewarn of potentially dusty activities;
- Undertake monitoring close to dusty activities, noting that this may be daily visual inspections, or passive/active monitoring
- Undertake inspections to ensure compliance with the Dust Management Plan;
- Plan potentially dusty activities so that these are located as far from receptors as feasible;
- Erect solid screens if feasible around stockpiles and concrete batching;
- Avoid run off of mud and water and maintain drains in a clean state;
- Remove dusty materials form site as soon as possible if not being re-used. If being re-used, cover or vegetate if possible;
- Impose speed limits on haul routes and in construction compounds to reduce dust generation;
- Minimise drop heights when loading stockpiles or transferring materials; and
- Avoid waste or vegetation burning.

For traffic on unpaved roads:

- Undertake watering to attenuate dust near sensitive receptors. The duration and frequency of this should be set out in the **Dust Management Plan** and will consider water availability and any stakeholder grievances; and
- On unpaved roads in use for more than 1 month, consider use of surface and sealants to reduce the use of water and water trucks. Use of lignin-based sealants recommended due to low environmental toxicity.

For earthworks:

- Revegetate exposed areas as soon as feasible
- Revegetate or cover stockpiles if feasible;
- Expose the minimum area required for the works and undertake; and exposure on a staged basis to minimise dust blow.

For trackout:

- Where trackout is onto paved roads, use wet road cleaning methods to remove dirt and mud build up;
- Avoid dry sweeping of large areas; and
- Where feasible, undertake wheel washing and vehicle clean down prior to accessing public roads.

Decommissioning Air Pollution Impacts

Air pollution during decommissioning include gaseous and dust emissions from temporary power generators, equipment and vehicles. The pollutants include Carbon Dioxide (CO2), Volatile Organic Compounds (VOC), carbon monoxide (CO), Nitrogen Oxides (NO2) and

particulate matter (PM). Excavation, earth moving, loading, handling and transportation of materials will also give rise to fugitive dust. The significance of the impacts on air quality from the decommissioning activities is considered minor. The numbers of vehicles and mobile equipment are expected to be well below the thresholds for any significant impact associated with traffic exhaust emissions. The traffic management plan developed during construction will be used during this phase. The impact on air quality is predicted to be negligible.

Residual Impact

The residual impacts associated with road traffic exhaust emissions are **Negligible**. With the implementation of suitable mitigation and with adequate monitoring, residual impacts associated with dust and PM10 from construction activities are **Negligible**.

Table 8-7: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Road Traffic Exhaust Emissions	Construction	Negligible	Negligible
Dust and PM 10 from construction activities.	Construction	**Major**	Negligible

Noise Emission and Vibration Impacts

Potential noise impacts may arise as a result of the construction activities associated with the transmission line. There will be risks and impact of noise and vibration resulting from the construction equipment and machinery on people. Potential sources of noise and vibration during construction will include clearing and grubbing of the transmission corridor, excavations, earthmoving, construction traffic etc. Construction activities and equipment are not expected to result in significant levels of vibration. Equipment that might cause high levels of vibration (such as impact piling or vibratory compaction) will not be used. Blasting as construction activity is not envisaged in the project because the installing of the transmission lines (pylons) etc. Therefore, vibration effects have been scoped out of further assessment. The equipment used in construction will generate minimum noise during construction of the transmission lines and will not adversely affect communities and fauna.

It is expected that existing access roads can be utilized. Before construction begins, it may be necessary to carry out maintenance work on these roads. Typically, this would involve minor re-grading using a grader. This is not expected to give rise to significant noise impacts and has therefore been scoped out of further assessment. Few if any new access roads will be required. Where required, basic access tracks will be established to each structure position by moving obstacles such as rocks, levelling high points and filling in holes. This is not expected to give rise to significant noise impacts and has therefore also been scoped out of further assessment.

Baseline Conditions

The ambient noise environment at settlements along the transmission line corridor is influenced by activities within settlements including people activities, animals (such as birds), occasional cars, vegetation blowing in the wind, and weather (wind, rain). The noise baseline survey conducted for the ESIA determined that daytime noise levels, L_{Aeq}, were generally low and in the range 35 to 41 dB. Noise monitoring was not carried out during the night as significant night-time noise effects from the construction and operation of the Project are not expected.

The transmission lines extend approximately 95km in total. Concrete foundations will be used to support the steel lattice tower structures, which will be installed using a mobile crane. A sound power level of 105 dB (A) has been assumed for the noisiest phase of construction, which is expected to be foundation works. This includes a concrete mixer truck, a tracked mobile crane, a compressor, and a poker vibrator working simultaneously.

When assessing effects from noise, impact significance is not determined in the same way that it is for most other technical disciplines i.e., using a matrix of impact magnitude and receptor sensitivity. Consideration of receptor sensitivity is made at the start of the assessment, and impacts are only assessed where sensitive receptors are identified. Receptor sensitivity is represented by impact criteria determined by reference to appropriate standards or guidelines. The significance of an impact is derived from the impact magnitude but takes account of other factors such as the duration of the impact and the design of the receptor.

Environmental Management and Co-ordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009 provides acceptable permissible noise levels for construction sites as shown in **table 8-8 below**

Table 8-8: Maximum Permissible Noise Levels for Construction Sites

Facility		Maximum Noise Permitted (Leq) in dB(A)	
		Day	Night
	Health facilities, educational institutions, homes for disabled etc.	60	35
	Residential	60	35
	Areas other than those prescribed in (i) and (ii)	75	65

Time Frame
Day: 6.01 a.m. – 8.00 p.m. (Leq, 14h)
Night: 8.01 p.m. – 6.00 a.m. (Leq 10h)

The transmission line is not within close proximity of key sensitive receptors including educational and health facilities as well as residential areas and therefore, the emissions from the construction activities are not expected to significantly affect such sensitive receptors.

Impact Assessment

Construction

Although the overall construction program may last for up to 18-24 months, construction works to install each tower will affect individual Noise Sensitive Receptors (NSRs) for approximately one month. Installation work will be carried out during the day only. Noise levels exceeding the daytime criterion for a medium magnitude impact are predicted at distances of 19m or less. However, the predictions conservatively assume all equipment will always be located at the closest part of the site to the receptor which is unlikely to be the case in practice. In addition, contractors are required to safeguard the work site to protect the safety of people and animals which may include erecting a temporary fence around the site. Most towers will be located well away from such that impacts would be negligible. Small magnitude impacts of minor significance may affect a small number of the closest receptors during the daytime only.

Table 8-9: Pre-Mitigation Impact Assessment

Impact	**Noise during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Elevated noise levels from operation of construction equipment.				
Impact Type	Direct	Indirect	Induced		
	Impact is a result of noise generated by construction activities.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	Impacts are expected to be short term (up to one month) at any individual NSR in the vicinity of a proposed steel lattice tower worksite				
Impact Extent	Local	Regional	International		
	The impact will be limited to the NSRs within the immediate surrounds of each tower worksite.				
Impact Scale	Local				
Frequency	Impacts may occur during daytime periods over a short-term duration at each tower worksite.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered negligible to small.				

Resource/ Receptor Sensitivity	Low	Medium	High	
	Dwellings are considered to have a high sensitivity to noise.			
Impact Significance	Negligible	Minor	Moderate	Major
	Considering the impact magnitude is small to negligible and the sensitivity is high, the overall significance is considered to be negligible to minor.			

There will be noise and vibrations generated during the construction phase, but it will be typical of any construction site. The noise impact during construction is expected to be negative and short-term. The major receptors are expected to be the construction workers as well as any immediate neighbouring residential premises. Sources of noise will be trucks and the off-road vehicles in transit, use of compressor to break hard ground and the use of motorized chain saws for vegetation clearing. The noise from the project vehicles is only significant in areas where the proposed line passes through dense settlements such as close to the towns' neighborhoods. The noise from compressors will only be significant where hard ground-breaking is carried out close to settlements. Noise from the motorized chain saws will only be experienced in the wooded areas but it will not be a significant impact since the density of settlements is not very high. Impacts of noise include noise-induced hearing loss for the project employees and nuisance for the affected settlements.

Operation

During the operational phase, high voltage overhead power transmission lines can generate noise by a phenomenon known as 'corona discharge'. The associated noise levels are weather related, and the transmission lines are normally quiet during dry weather with corona noise sometimes occurring during wet weather conditions. However, ambient noise levels also increase significantly during periods of rain. This increased ambient noise level is expected to mask effects from corona discharge noise and this impact has been scoped out of further assessment.

Mitigation

Mitigation measures are set out below, which have been assumed for the base case assessment. They are assumed to result in a 5 dB (A) reduction in the overall noise from construction plant teams. The following standard mitigation measures will be employed:

- Siting noisy equipment as far away as possible from NSRs, and use of barriers (e.g., site huts, acoustic sheds or partitions) to reduce the level of construction noise at receptors wherever practicable;
- Where practicable noisy equipment will be orientated to face away from the nearest NSRs;

- Working hours for significant noise generating construction work (including works required to upgrade existing access roads or create new ones), will be daytime only;
- Alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, will be used, where practicable;
- Where practicable, stationary equipment will be located in an acoustically treated enclosure
- For machines with fitted enclosures, doors and door seals will be checked to ensure they are in good working order; also, that the doors close properly against the seals;
- Throttle settings will be reduced, and equipment and plant turned off, when not being used;
- Equipment will be regularly inspected and maintained to ensure it is in good working order. The condition of mufflers will also be checked; and
- Fitting of mufflers or silencers of the type recommended by manufacturers

Decommissioning Noise Emission and Vibration Impacts

Potential sources of noise and vibration include excavations, earthmoving, and traffic. The equipment generates noise levels below values that will adversely affect communities and fauna. To further minimize exposure to noise, work will be carried out during the day only. The significance of the noise impacts during decommissioning has been rated as negligible.

Residual Impact

Standard mitigation measures listed above have been assumed for the base case noise assessment. No impacts above small are predicted and therefore no further mitigation is required. Consequently, the residual impacts are the same as those presented above.

Table 8-10. Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Noise from construction activities affecting nearby dwellings	Construction	Negligible-Minor	Negligible

Soil Erosion and Contamination Impacts

Construction activities will have direct physical impacts to soil. Possible direct physical impacts to soil include erosion resulting from activities such as excavation of foundations for electricity pylons, clearing of vegetation for infrastructure such as roads, laydown areas, construction zones and workers camp (if applicable).

The excavation of soil for the construction of pylon foundations will disrupt the soil cohesion and also may result in surplus soil due to the use of concrete for the foundation. If not properly restored or managed, this soil may erode and wash into nearby surface water bodies adversely impacting these. Any temporary soil stockpiles established during construction of infrastructure will be at risk of erosion from wind and rainfall. Impacts to soil from unplanned events, such as accidental release of hazardous materials is discussed elsewhere.

Baseline Conditions
The potential for soil erosion to occur during the construction phase is based on a number of factors including the type and physical properties of soil, the topographic slope, the vegetation cover, and the nature and duration of construction activities which disrupt the soil.

The proposed transmission line traverses the 2 Counties, which is characterized by different soil types as reflected in the baseline description chapter. The sensitivity to erosion of soils along the proposed transmission line depends on the type and properties of the soils.

Impact Assessment
The excavation of foundations and the construction of temporary roads and equipment laydown areas will have a direct negative effect on soil cohesion, thereby increasing the risk of erosion along the entire footprint of the project. The impact is likely to occur, but the extent of the impact is likely to be limited to the footprint of the activities, particularly the construction and use of access roads, laydown areas (i.e., local extent).

The impacts of construction activities on soil erosion are anticipated to last for the duration of the construction phase only (i.e., short term). Given the subtropical location of the Project and the nature of vegetation present, it is anticipated that cleared areas will revegetate naturally and relatively quickly (assuming rainfall patterns similar to the current averages persist), minimizing the risk of erosion.

During construction there is the potential for spills of fuels and oils during construction activities, fueling, maintenance of machinery and vehicles. Spills could occur in a number of locations along the transmission line RoW. Spills have the potential to affect terrestrial environments and could lead to the deterioration of soil, water, and sediment quality. This could lead to knock on effects for flora and fauna and local community users.

If hazardous materials such as fuel were to be released to the soil and surface water resources, this would be limited to the local extent, depending on the volume spilt and rate of spillage. Within the Project AoI there are limited surface water resources such as streams and rivers which could be impacted if the spill were to occur within proximity of the resource.

Likelihood: -Incidental spills of fuels are infrequent but do occur; most frequently due to malfunction of handling systems, poor practice of workers and force majeure. Spills are most likely to occur during refilling and transportation of substances. Large releases of hazardous materials are rare, and it is considered unlikely that a spill would occur of emergency scale.

Operational Phase
The RoW will be reinstated following construction with soil spread and graded and the area revegetated. Following reinstatement, no significant soil erosion is anticipated.

Significance of Impacts: -For impacts to soils, the spatial scale is considered to be local. The impact could be long term and is a direct negative impact. The overall magnitude is considered to be medium. There are areas along the transmission RoW which are used for cultivation and therefore the sensitivity is considered of medium sensitivity.

Table 8-11: Pre-Mitigation Impact Assessment

Impact	**Soil Erosion during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Loss of soil cohesion contributing to erosion.				
Impact Type	Direct	Indirect	Induced		
	Impact is a result as a direct interaction between project activities and soil along the footprint of the project.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact is expected to be short term, however in the case of serious erosion the impacts may be experienced long term.				
Impact Extent	Local	Regional	International		
	The impact will be limited to the footprint of the project and immediate surrounds.				
Impact Scale	The impact is considered as small (local) scale.				
Frequency	Continuous				
Likelihood	Possible				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered small.				
Resource/Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the soil along the proposed transmission line to erosion is considered to be medium to low.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is small and the sensitivity is medium to low, the overall significance is considered to be minor.				

Mitigation

The following mitigation measures will be implemented to minimize the potential for soil erosion:

- Vegetation clearing and topsoil disturbance will be minimized.
- Contour temporary and permanent access roads/laydown areas so as to minimise surface water runoff and erosion;
- Sheet erosion of soil shall be prevented where necessary through the use of sandbags, diversion berms, culverts, or other physical means.
- Topsoil shall be stockpiled separate from subsoil. Stockpiles shall not exceed 2 m height, shall be located away from drainage lines, shall be protected from rain and wind

erosion, and shall not be contaminated. Wherever possible construction work will take place during the dry season.

- Topsoil shall be evenly spread across the cleared areas when reinstated.
- Accelerated erosion from storm events during construction shall be minimised through managing storm water runoff (e.g., velocity control measures).
- Soil backfilled into excavations shall be replaced in the order of removal in order to preserve the soil profile.
- Spread mulch generated from indigenous cleared vegetation across exposed soils after construction.

Decommissioning Soil Erosion and Contamination Impacts

Decommissioning activities will have direct physical impacts to soil including erosion resulting from excavation to remove stainless steel pylons. This will disrupt the soil cohesion and also will result in surplus soil extracted from the foundation. The removed soil will be backfilled into the excavations in the order of removal to preserve the soil profile. Given the subtropical location of the Project and the nature of vegetation present, it is anticipated that cleared areas will revegetate naturally and relatively quickly. There is also the potential for spills (e.g., of fuels and oils from fueling, maintenance of machinery and vehicles), these have the potential to affect terrestrial environments and could lead to the deterioration of soil, water and sediment quality, the extent of this will be limited to the project site. The overall magnitude is considered to be **minor**. The mitigation measures employed during construction, will be used to mitigate this impact.

Residual Impact

The implementation of the proposed mitigation measures reduces the significance of the residual impact to negligible to minor along the entire route of the transmission line.

Table 8-12. Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Loss of soil resources due to erosion	Construction	Negligible-Minor	Negligible to minor

Surface Water Quality Impacts

Construction activities associated with the transmission lines can have significant effects on the surface water resources along the proposed project route and good environmental management, including control of runoff, sediments, storage of fuels and good practice should be followed. Project activities will interact with water resources in the following ways:

- There will be direct interaction during clearing and construction near to or in surface water bodies.
- There will be indirect interaction in the case of erosion of soils into water bodies.
- There will be direct interaction from the abstraction of water from surface water bodies for construction (e.g., for dust control).

- There will be direct interaction from the discharge of treated domestic wastewater to surface water bodies (in the event camp sites are established).
- In addition, if vegetation and soil clearing are not properly managed, there is the potential for soils to run into water bodies and increased sediment load. This in turn may have a detrimental effect on water quality and affect surface water users.

During the construction of the transmission line, water will be required for several purposes including for use in the workers' accommodation camp (if determined), transmission line construction process which requires water, cleaning of the vehicles and equipment, keeping down construction dust impacts among others. The potential impacts and risk of the project relating to surface water supply are:

- Stresses on local water resources from construction water abstractions from surface and/or ground water; and
- Potential indirect effects from water demand caused by local population expansion due to in-migration.
- Overall raw water supply requirements for the construction of will be very low and necessary during concrete mixing only and keeping down the dust.

Baseline Conditions

The proposed transmission line is located within the catchment basin of the Ewaso Nyiro Basin. The transmission line routing crosses a number of rivers including Perkerra, Molo, Chemeron, Ngusero and Ol Arabel. The potential risks of detrimental impacts on water quality will be higher where construction activities are close to surface water bodies or from the potential de-stabilization of soils and channel banks that may lead to erosion and deposition of sediment into water bodies.

Construction Phase

Below are risks and impacts on surface water that are likely to be encountered as a result of the project during the construction phase:

1. The construction of the project may cause temporary disturbances and negative effects on surface water resources. These negative impacts could increase without proper scheduling or programming of the works or particular activities. In other words, there are likely to be impacts of construction of the project on water quality where required mitigation activities are not implemented correctly.
2. Stockpile and other materials may enter any other surface water resources near to the Project site where there are inadequate containment measures. Such surface runoff may carry sediments or harmful wastes, and these may collect in rivers or any other surface water resources and therefore there will be negative impacts on water quality.
3. In addition, in the project site there may be storage areas for chemicals, fuels, oils, etc., used for construction activities including refueling of vehicles. These materials must be stored according to the regulatory requirements, including the related regulation. Otherwise, there may be risk of leakage of all chemicals to the surface water resources, and so there may be impact on water quality.
4. In addition, all chemicals, fuels, oils etc. used for construction activities must be handled, transported, and used according to related regulation and procedures.

Otherwise, there may be risk of spill of these by accidents etc. Therefore, there may be impact on water quality.

5. There may also be risks of pollution from the uncontrolled runoff or accidental spillage of fuels and lubricants, or from the inadequate or unsafe disposal of wastewater from construction sites.
6. Land cleared during the construction of the transmission line and associated service infrastructure will have a direct negative effect on surface water quality by increasing the turbidity and concentration of total dissolved/ suspended solids, with potentially adverse effects on river biota.

No information is available about the turbidity and concentration of suspended solids in rivers in the project area, however given the extent of human settlement and agricultural activities it is probable that these are elevated already and therefore that these rivers have a low to medium sensitivity to change. The volume of soil like to be disturbed by proposed project activities is likely to be ***minor*** and therefore the extent of the impacts from sediment addition to the river is considered to be local. Owing to the subtropical location of the project and the high probability that cleared areas will revegetate naturally thereby limiting erosion, the duration of this impact is anticipated to be short term.

The nature of the construction activities for the transmission line renders the erosion of soil and subsequent siltation of rivers along the route possible. The ***small*** magnitude of this impact on surface water quality and the *low* sensitivity of these rivers to increased turbidity means the significance of this impact is assessed as ***minor***.

Table 8-13: Pre-Mitigation Impact Assessment

Impact	**Siltation of surface water**			
Impact Nature	Negative	Positive	Neutral	
	Eroded soil entering surface water bodies.			
Impact Type	Direct	Indirect	Induced	
	Impact is a result as a direct interaction between project activities and the environment along the footprint of the project.			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	The impact is expected to be short term, however in the case of serious erosion the impacts of siltation of surface water may be experienced long term (into the operational phase).			
Impact Extent	Local	Regional	International	
	The impact will be limited to the footprint of the project and immediate surrounds. The dilution of sediments in the river will render this impact negligible at the regional scale.			

Impact Scale	The impact is considered as small (local) scale.				
Frequency	Continuous				
Likelihood	Possible				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered small.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the rivers along the proposed transmission line to siltation is considered to be medium to low.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is small and the sensitivity is medium to low, the overall significance is considered to be minor.				

Operation Phase
Once the RoW is reinstated, no direct disturbance of surface water bodies is anticipated.

Mitigation
The mitigation measures listed for soil management above are also applicable to surface water quality. In addition, the following mitigation measures will be implemented to minimise the potential for siltation of surface water:

- Activities shall be conducted >100m away from water bodies, except where crossings are required.
- All wastewater which may be contaminated with oily substances must be managed in accordance with an appropriate waste management plan and no hydrocarbon-contaminated water may be discharged to the environment; and
- Domestic wastewater shall be treated and disposed of in accordance with an approved waste management plan.

Decommissioning Surface Water Quality Impacts
Decommissioning activities could have significant effects on the surface water resources along the project route. The impact will be limited to the footprint of the project and immediate surrounds. Good environmental management, including control of runoff, sediments should be followed. The volume of soil to be disturbed by proposed project activities is projected to be **minor** and extent of the impacts from sediment addition to water bodies is considered to be local. The mitigation measures employed during construction, will be used to mitigate this impact.

Residual Impact
The implementation of the proposed mitigation measures reduces the significance of the residual impact to ***negligible*** to ***minor*** along the entire route of the transmission line.

Table 8-14: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Availability and Quality of Water	Construction	Minor	Negligible to minor

Impact on Flora and Vegetation

According to data from the survey carried out for the ESIA, some of the areas to be crossed by the transmission line are of a considerable biodiversity, particularly within areas of Lariak Forest which is a sensitive habitat and vulnerable to changes to its components. To clear a RoW for the project infrastructure, it will be necessary to remove some native vegetation particularly. This will cause impacts, such as loss of biodiversity, fragmentation of habitat, changes in light conditions and possible invasion by invasive alien species (e.g., *mathenge*), whose competitiveness and growth rate are considered high

Table 8-15: Summary of Potential Impacts to Flora and Vegetation

Construction Phase	Operation Phase
Loss and fragmentation of areas of native forest due to project infrastructure and RoW Change in the structure of the vegetation communities	• Fragmentation of habitat • Spread of invasive alien species

This impact of the project on flora along the transmission line will be direct and permanent in nature, since trees and vegetation will be removed to clear the RoW, install the infrastructure, and carry out regular maintenance, and along that strip no tree regeneration whose height may compromise the safety of the transmission lines is allowed.

Baseline Conditions

The baseline conditions along the proposed transmission line reflects the vegetation dominated by grasses and shrubs, to forest, and to modified habitat due to urban expansion and agriculture and logging activities. As indicated in baseline section, in the proposed area with the exception of Lariak Forest area where the transmission line will cross, there are no other protected areas (e.g., national parks or forest reserves) within approximately 10 km distance from the transmission line routes.

The vegetation cover around most of the urban and rural areas has been largely modified to give room for anthropogenic activities. The open space, plantation areas, cultivation and vegetable farms that have been observed within the transmission line routes are modified areas and are unlikely to have any natural vegetation with any conservation significance. Moreover, flora and vegetation in cultivated areas are unlikely to have any conservational significance, except for the section where the line crosses Lariak forest.

The transmission line is going to traverse Lariak Forest for about 1.8 kms and hence the flora within this forest section will be affected. Lariak Forest is located in Laikipia County. The

floral trees species include i.e. cedar, Leleshwa (*Tarconanthus camphorates*), Euphorbia, Acacia, *Prunus africana, Cordial abyssinica, Croton macrostachyus, Olea africana, Ekebergia rueppelliana, Croton megalocarpus, Juniperus procera* and *Podocarpus falcatus.* The naturalized exotic species are; *Gravillea robusta,* and *Mangifera indica,* guava and avocado fruit species. The forest is a habitat for different fauna and also provides fuel wood to the local communities.

Impact Assessment
Construction Phase
During construction, improved access to some presently remote areas also increases human pressure on the vegetation resources for example where trees are cut for fuel wood and land is converted for agriculture use. Disturbance will also occur due to construction activities which will generate noise, vibration, and human and vehicle presence. However, these impacts are likely to be temporary and short-lived impacts as the construction work will be progressive (overall programme of 18-24 months) and most of these will take place along areas already disturbed by the existing transmission line infrastructure. The removal and vegetation associated with vehicle movement can also lead to the establishment of favourable conditions for the massive and rapid dissemination of invasive alien plants. Based on the available data it is not expected that the above-mentioned aspects will result in negative impacts on any sensitive species.

This direct impact is permanent, since the tree and shrub vegetation will be removed to clear the RoW, install the infrastructure, and carry out regular maintenance, and along that strip no tree regeneration whose height may compromise the safety of the transmission lines is allowed. The habitats within the transmission line RoW are primarily modified and are considered to have a low sensitivity in most of the areas. The impact is direct and negative; resulting from the vegetation removal and disturbance during the construction phase. The extent of the impact is presented is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be medium. Based on the analysis provided above, the impact of vegetation removal, habitat fragmentation and degradation will be a ***moderate*** negative impact pre-mitigation **(*Table 8-16).***

Table 8-16: Pre-Mitigation Impact Assessment

Impact	**Flora and Vegetation during Construction**			
Impact Nature	Negative	Positive	Neutral	
	Disturbance to vegetation and habitat loss and fragmentation as a result of the RoW or degradation to environment and habitat during			
Impact Type	Direct	Indirect	Induced	
	Impact is as a result of a direct interaction between the project (i.e. construction activities) and the existing vegetation along the transmission line			
Impact Duration	Temporary	Short Term	Long Term	Permanent

	The effect is considered permanent as the areas where vegetation will be removed for the construction of the line will have to be permanently kept with vegetation for maintenance purposes during the operational phase.				
Impact Extent	Local	Regional	International		
	Impact is limited to AoI				
Impact Scale	The impact is considered medium scale. Although the impact will occur across the whole length of the proposed transmission line RoW and access roads, large sections of the lines are in built up areas with modified habitat (i.e. urban areas, agricultural land and along the existing corridor) and thus there is a decreased risk of impacts to vegetation in these areas.				
Frequency	Once off				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/ Receptor Sensitivity/Value/ Importance*	Low	Medium	High		
	Although the transmission line will cross some disturbed and modified habitats that occur along the transmission line RoW, it will also cross a sensitive forest patches and river. The sensitivity is considered medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is large and the sensitivity is medium, the overall significance is considered to be of moderate significance.				

Operation Phase

During the operational phase there is the potential for impacts on vegetation and flora as a result of the existence of the transmission line, particularly due to the maintenance including periodic clearing of the RoW which perpetuate habitat fragmentation. Due to the location of the transmission lines within the exiting corridor where three other lines are present it is not expected that there will be larger impacts on the existing flora and vegetation during the operation phase. However, there is the potential for spread of invasive alien species due to the maintenance works.

Due to the inexistence of surrounding protected areas nor sensitive habitats the impact of the operation of the transmission line is expected to have a low sensitivity. The impact is directly negative, will be permanent during the project life period, maintenance will be conducted periodically. The extent of the impact is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be small.

Based on the analysis provided above, the impact of direct loss of vegetation and flora and degradation and fragmentation of habitat will be of ***minor*** significance pre-mitigation ***(Table 8-17).***

Table 8-17: Pre-Mitigation Impact Assessment

Impact	**Flora and Vegetation during Operations**				
Impact Nature	Negative	Positive	Neutral		
	Disturbance to vegetation and potential grow of invasive species as result of the maintenance works during operation				
Impact Type	Direct	Indirect	Induced		
	Impact is as a result of a direct interaction between the transmission line infrastructure in the RoW				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The effect is considered permanent as the RoW will be kept free of vegetation during operation				
Impact Extent	Local	Regional	International		
	Impact is limited to AoI				
Impact Scale	The impact is considered low scale as most of the impacts related to vegetation removal occurred during the construction phase. However, there will be a degree of habitat fragmentation.				
Frequency	Once off				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/ Receptor Sensitivity/Value/ Importance*	Low	Medium	High		
	The sensitivity is considered low as most of the major impacts on the vegetation and flora will occur during the construction phase.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is small and the sensitivity is low, the overall significance is considered to be of minor significance.				

Mitigation

The following standard mitigation measures will be employed:

- Avoidance of impacts should be prioritised. This is especially where the transmission line crosses Lariak Forest. In order to protect these habitats, it is strongly

recommended to closely/re-route follow the main road along these transmission-line segments. Where impact avoidance is not possible, existing indigenous vegetation must be kept intact, where possible. Vegetation will be removed only as absolutely necessary. Servitude (also called easement) is to be cleared in line with Kenyan standards for minimum vegetation clearance distance;

- Rivers, watercourses and other water bodies shall be kept clear of felled trees, vegetation cuttings and organic waste and debris from clearing;
- Alien invasive vegetation should be removed immediately and disposed of properly, at a licensed waste disposal facility as necessary;
- There should be no deviation from the access road position without prior discussions with the authorities;
- Firewood collection by the project's employees should be strictly forbidden.
- Rehabilitation of temporary construction sites and pioneer camps (if needed) should be done as swiftly as possible and always with suitable native grasses and other plants – construction of new camps is unlikely to happen;
- Materials (e.g. pylons and cables) and equipment should not be delivered to the site prematurely, as this could result in need for laydown or storage areas and additional areas being cleared or affected unnecessarily; and
- Whenever possible, all damaged areas shall be reinstated and rehabilitated upon completion of the contract to as near pre-construction conditions as possible.

Decommissioning Impact on Flora and Vegetation

The impacts on flora and vegetation will be **minor** and temporary impacts as the decommissioning work will take place on areas already modified by the transmission line infrastructure. It is not expected that the activities will result in negative impacts on any sensitive species. Based on the analysis provided above, the impact of vegetation removal, habitat fragmentation and degradation will be **negligible**.

Residual Impact

The impact significance is Moderate after mitigation measures during construction and Minor post mitigation for operations (Table 8-18). There will be some habitat loss and fragmentation as well as potential increase of invasive species as a result of the construction, however most of the habitat is modified and not expected to have conservational value, except for sections where the lines cross the forest area (Lariak Forest). With the proposed mitigation measure the residual negative impacts on flora are assessed to be of a low magnitude.

Table 8-18: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Disturbance to vegetation and habitat loss and fragmentation as a result of the ROW or degradation to environment and habitat	Construction	Moderate	Minor

Disturbance to vegetation and potential grow of invasive species as result of the maintenance works	Operation	Moderate	Negligible

Impacts on Fauna

The natural environment along the transmission line has been largely transformed along with the reception of the section of where the line crosses Lariak Forest. The open space, plantation areas, cultivation and vegetable farms that have been observed within the transmission line routes are modified areas and have no natural fauna of any importance. Moreover, fauna in cultivated areas unlikely to have any conservational significance. The habitats within the transmission line RoW are primarily modified and are considered to have a low sensitivity.

Baseline Conditions

With the exception of Lariak Forest where the transmission line will cross, there are no protected areas within approximately 10 km distance from the transmission line route. The natural environment has been largely transformed along the route of the overhead transmission lines. The open space, plantation areas, cultivation and vegetable farms that have been observed within the transmission line routes are modified areas and are unlikely to have any natural vegetation with any importance. Moreover, fauna in cultivated areas is unlikely to have any conservational significance.

However, in the sections of the transmission line, where it crosses inside the Lariak Forest, the inherent fauna will be directly affected. The cutting down of the trees which are a habitat to various fauna as well as the disturbance associated with the construction will adversely affected the fauna. The potential impacts are restricted to disturbance of wildlife in terms of their feeding and general movements, and only at the point of intense construction activities, i.e., at the towers and the station. Disturbance could be caused by presence of labour force, noise, and vibration. The other possibility is by hunting for game meat by construction workers. Fauna species in the Lariak Forest include African hare, kirks Dik Dik, impala, Thompsons Gazelle, spring Hare, Bush squirrel, porcupine, warthog, black faced vervet monkey, Impala, and honey Badger.

Impact Assessment

Construction Phase

During construction, fauna within the near surrounds of the development area will be disturbed due to noise, vibration and human and vehicle presence. Disturbance impacts during construction are likely to be temporary and short lived. Impacts as the construction work will be progressive (overall program of 18-24 months). Although disturbance and displacement impacts are likely to be temporary and limited in their magnitude, if combined with the impacts of direct habitat loss, it could lead to disturbance of wild fauna. Based on the survey carried out for the ESIA, it is not expected that there will be any sensitive species in the Project area of international or local importance.

The habitats within the transmission line RoW are primarily modified and are considered to have a low sensitivity with the exception of Lariak Forest. The impact is direct and negative; resulting from the land take and disturbance during construction. The extent of the impact is

presented is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be medium. Based on the analysis provided above, the impact of direct loss and degradation of habitat will be a **Minor** negative impact pre-mitigation.

Table 8-19: Pre-Mitigation Impact Assessment

Impact	**Avifauna during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Disturbance to avifauna species and loss of habitat as a result of the RoW or degradation to environment during construction.				
Impact Type	Direct	Indirect	Induced		
	Impact is as a result of a direct interaction between the project (i.e., construction activities) and the fauna population along the transmission lines				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The effect is considered temporary as it will only occur during the construction period				
Impact Extent	Local	Regional	International		
	Impact is limited to AoI				
Impact Scale	The impact is considered medium scale. Although the impact could occur across the whole length of the transmission line RoW's and access roads, large sections of the lines are in built up urban areas and there is a decreased risk of impacts to fauna in these areas.				
Frequency	Once off				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/ Receptor Sensitivity/Value/ Importance*	Low	Medium	High		
	The sensitivity is considered low due to the disturbed and modified habitats that occur along the transmission line RoW.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is medium and the sensitivity is low, the overall significance is considered to be of minor significance.				

Operation Phase

During the operational phase there is the no significant impacts expected on fauna populations as a result of the transmission line and pylons and by electrocution. The extent of the impact is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be low. Based on the analysis provided above, the impact of direct loss and degradation of habitat will be of Minor significance pre-mitigation (Table 8-20).

Table 8-20: Pre-Mitigation Impact Assessment

Impact	**Fauna during Operations**				
Impact Nature	Negative	Positive	Neutral		
	Increase in fauna mortality during operation				
Impact Type	Direct	Indirect	Induced		
	Impact is as a result of a direct interaction between the erection of the transmission lines and the fauna species along the RoW				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact is considered permanent throughout the life cycle of the project				
Impact Extent	Local	Regional	International		
	Impact is limited to the Project AoI				
Impact Scale	The impact is considered medium scale. Although the impact could occur across the whole length of each of the transmission line RoW's, large sections of the lines are in built up urban areas and there is a decreased risk of impacts to fauna in these areas.				
Frequency	The frequency is expected to be occasional				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	The impact magnitude is expected to be small due to wildlife mortality				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity is considered low, birds of conservational significance are not expected along the transmission line RoW.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude of the impact is small and the sensitivity is low the overall significance is considered to be of minor significance				

The following mitigation measures are recommended during operations:

- All areas disturbed by construction activities shall be landscaped and rehabilitated;

- Vegetation that does not grow high enough to cause interference with the overhead power lines, or cause a fire hazard, should not be trimmed or cut unless it is growing in the road access area
- Speed of project vehicles should be controlled at a maximum limit of 40 km/h to minimise roadkill
- No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct)
- All animal dens in close proximity to the work areas must be marked as no-go areas.
- Guidance shall be given to all staff that they are not allowed to harm any animals during any routine maintenance of the project's infrastructure.

Decommissioning Impacts on Fauna

The impacts on fauna will be **minor** and temporary impacts as the decommissioning work will take place on areas already modified by the transmission line infrastructure. The modified areas have low sensitivity with no natural fauna of unique importance or conservational significance. The impact of direct loss of fauna and degradation of habitat will be **negligible.**

Residual Impact

The impact significance is **Negligible** after mitigation measures during construction and **Minor** post mitigation for operations **(*Table 8-21*).** There will be some habitat loss as a result of the construction, however the habitat is modified and not expected to have conservational value.

Table 8-21: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Disturbance to fauna species and degradation to environment during construction	Construction	Minor	Negligible
Disturbance to fauna species and degradation to environment during operation and maintenance.	Operation	Minor	Minor

Impacts on Avifauna

In terms of avi-fauna, project potential impacts will be focused on the avian populations within the development area and near surrounds, by habitat loss associated with the construction activities, such as displacement from breeding and foraging habitat and habitat degradation; there are also indirect impacts associated with changes to ecosystem and biophysical processes.

Table 8-22: Potential Impacts to Avian Fauna

Construction Phase	**Operation Phase**

• Disturbance due to noise, vibration and human and vehicle presence • Loss of habitat as a result of RoW or other project infrastructure	Bird strikes along transmission lines

Baseline Condition

Along the project route and within the project area of influence, the transmission line does not cross into any area designated as an Important Bird Area (IBA) and therefore the bird strike impacts associated with transmission lines is not likely to occur especially to important bird species. The line however passes through 2 Endemic Bird Areas within both Counties (Mount Kenya and Serenengeti Plains) where bird life are known to range and thus will be exposed to potential strikes and electrocution. Within the Lariak Forest, there are bird species which are likely to be affected by the transmission line (bird strikes), however, these species are categorized as species of Least Concern (LC) under the IUCN Red List.

Impact Assessment

Construction Phase

During construction, avifauna within the near surrounds of the development area will be disturbed due to noise, vibration, and human and vehicle presence. Disturbance impacts during construction are likely to be temporary and short lived. Impacts as the construction work will be progressive (overall program of 18-24 months). Although disturbance and displacement impacts are likely to be temporary and limited in their magnitude, if combined with the impacts of direct habitat loss, it could lead to disturbance of wild fauna. Based on the survey carried out for the ESIA, it is not expected that there will be any sensitive species of international or local importance in the Project area.

The habitats within the transmission line RoW are primarily modified and are considered to have a low sensitivity. The impact is direct and negative; resulting from the land take and disturbance during construction. The extent of the impact presented is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be medium. Based on the analysis provided above, the impact of direct loss and degradation of habitat will be a **Minor** negative impact pre-mitigation.

Table 8-23: Pre-Mitigation Impact Assessment

Impact	**Avifauna during Construction**		
Impact Nature	Negative	Positive	Neutral
	Disturbance to avifauna species and loss of habitat as a result of the RoW or degradation to environment during construction		
Impact Type	Direct	Indirect	Induced
	Impact is as a result of a direct interaction between the project (i.e., construction activities) and the fauna population along the transmission lines		

Impact Duration	Temporary	Short Term	Long Term	Permanent
	The effect is considered temporary as it will only occur during the construction period			
Impact Extent	Local	Regional	International	
	Impact is limited to AoI			
Impact Scale	The impact is considered medium scale. Although the impact could occur across the whole length of the transmission line RoW's and access roads, large sections of the lines are in built up urban areas and there is a decreased risk of impacts to fauna in these areas.			
Frequency	Once off			
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/ Receptor Sensitivity/Value/ Importance*	Low	Medium	High	
	The sensitivity is considered low due to the disturbed and modified habitats that occur along the transmission line RoW.			
Impact Significance	Negligible	Minor	Moderate	Major
	Considering the impact magnitude is medium and the sensitivity is low, the overall significance is considered to be of minor significance.			

Operation Phase

During operation, there is the potential for bird strikes to occur along the transmission lines. This is most likely for large bird species, migrating species and species which have a varied flight pattern (dipping and circling). During the operational phase there is the potential for impacts on avian populations as a result of direct strike with the transmission line and pylons (bird collision) and by electrocution. A number of species of large birds suffer losses resulting from electrocution. This would mainly affect birds associated with the site; and electrocutions on power supply structures by raptors and other medium sized birds on passage. Birds sitting on power poles and /or conductors could cause short circuits between energized wires or short to ground especially numerous medium and large sized birds using the power poles as perching, roosting, and even nesting sites. Birds are able to cause electrical faults (short circuits on power lines through Bird pollution). The species of bird which are most likely to be impacted by collision with transmission lines are large species (such as raptors and waterfowl), birds that regularly migrate across the path of the transmission line (either daily or seasonal migration) and species whose flight patterns result in an increased time spent at transmission line height in the area of the development (predominantly display flight activities such as looping or circling repeatedly in the area). None of the species such as raptors and waterfowls are found within the proposed transmission route.

Collisions are a significant threat posed by overhead lines to birds. Collision with power lines is a lesser-known problem than electrocution and is harder to detect because it can occur at any point along the transmission line. Collision risk is influenced by the topography of surrounding terrain and the proximity of lines and pylons to nests and other areas used frequently by local species. Potential impact through collision could occur along river valleys that are mostly utilized by birds especially during the dry season. In most cases the impact of collision would lead to immediate death or fatal injuries.

Due to the inexistence of IBAs or migratory corridor, the impact of bird strikes is expected to have a low sensitivity. The impact is directly negative, will be permanent as the lines will be in place throughout, the project life. The extent of the impact is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be low. Based on the analysis provided above, the impact of direct loss and degradation of habitat will be of **Minor** significance pre-mitigation **(Table 8-24).**

Table 8-24: Pre-Mitigation Impact Assessment

Impact	**Avifauna during Operations**				
Impact Nature	Negative	Positive	Neutral		
	Increase in bid mortality due to bird strikes during operation				
Impact Type	Direct	Indirect	Induced		
	Impact is as a result of a direct interaction between the erection of the transmission lines and the bird species along the RoW				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact is considered permanent throughout the project life.				
Impact Extent	Local	Regional	International		
	Impact is limited to the Project AoI				
Impact Scale	The impact is considered medium scale. Although the impact could occur across the whole length of each of the transmission line RoW's, large sections of the lines are in built up urban areas and there is a decreased risk of impacts to Avifauna in these areas.				
Frequency	The frequency is expected to be occasional				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	The impact magnitude is expected to be small due to bird mortality				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity is considered low, birds of conservational significance are not expected along the transmission line RoW.				

Impact Significance	Negligible	Minor	Moderate	Major
	Considering the magnitude of the impact is small and the sensitivity is low the overall significance is considered to be of minor significance			

Mitigation

In addition to the controls mentioned above, as well as those specified for mitigating impacts to flora and vegetation the following mitigation measures are recommended during operations:

- In the event of receiving confirmation of regular bird strikes along the transmission line, high-visibility markers should be installed to make the lines more visible to birds, to reduce the risk of collision;
- Where feasible and safe, provide artificial bird-safe perches and nesting platforms placed at a safe distance from the energised parts of transmission infrastructure
- Cross-arms, insulators and other parts of the power lines can be constructed such that there is no space for birds to perch where they can come into contact with energised wires
- Undertake regular (at least annual) monitoring of the transmission line for evidence of birds nesting on the pylons. In the event of nesting, anti-perch and nest devices will be installed to discourage birds from regularly visiting these structures. These will be replaced when necessary;
- No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct)
- Guidance shall be given to all staff that they are not allowed to harm any animals during any routine maintenance of the project's infrastructure.
- All terminal structures (transformers) should be constructed with sufficient insulation on jumper wires and surge arrestors
- Contractor should consider installing line marking to increase the visibility of the line. There are three general types of line marking devices: aerial marker spheres, spirals, and suspended devices

Decommissioning Impacts on Avifauna

Avifauna within the surrounds of the activities may be disturbed by noise, vehicles, and human presence during decommissioning. The disturbance will be temporary and short lived, and the impact will be **negligible.**

Residual Impact

The impact significance is **Negligible** after mitigation measures during construction and **Minor** post mitigation for operations **(*Table 8-25*).** There will be some habitat loss as a result of the construction, however the habitat is modified and not expected to have conservational value.

Table 8-25: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)

Disturbance to avifauna species and degradation to environment during construction	Construction	Minor	Negligible
Increase in bird mortality due to bird strikes during operation	Operation	Minor	Minor

Solid and Liquid Waste Impacts

Improper waste management procedures or lack of mitigation measures during construction, phase of the Project may result in adverse environmental and social impacts on: -

- Storm water quality and thus water quality in the water bodies in project areas;
- Soil quality;
- Surface water quality;
- Ground water quality; and
- Ecological receptors or human health.

The different types of wastes and sources that are likely to be generated from the construction of the transmission line are described below.

a) Recyclable and Reusable Waste

The types of recyclable and reusable wastes to be generated on site during the construction period include among others: -

Box 8-1: Recyclable and reusable waste

1. Waste metal
2. Waste plastic
3. Waste cables
4. Waste glass
5. Wastepaper (packaging material)
6. Clean containers, drums, bins etc.

b) Excavation Waste

The greatest volume of excavated material will arise from the construction activities of the Project during civil works associated with construction of the transmission lines. The excavated materials will be re-used immediately as back fill material.

c) Wastewater

Water will be required for the construction works, dust suppression, mixing of concrete and washing of construction equipment and in camp sites (if established by contractor) among others.

d) Hazardous Waste

The construction activities will generate hazardous wastes which may adversely impact on the local environment due to handling, storage, transport and disposal. These include, oil, grease etc. During the construction period, waste oil will result from the maintenance of machines, equipment and construction vehicles.

Impact Assessment

Direct and indirect disposal of waste oils to the receiving environment is likely to adversely impact on the environment and human health. Without mitigation measures, it is anticipated that there will be potential major to moderate adverse impacts during construction and moderate adverse impacts during the maintenance and operations periods. Wastewater if discharged indiscriminately into the environment, will lead to risks and impacts on water bodies, soil, vegetation, fisheries and human health.

Table 8-26: Pre-Mitigation Impact Assessment

Impact	**Waste generation and hazards during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Disposal of waste to the receiving environment is likely to adversely impact on the environment and human health.				
Impact Type	Direct	Indirect	Induced		
	Waste generated from the used materials during construction and operation activities that could cause land and groundwater contamination if spilled or not handled, stored and disposed of correctly.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact is considered to be temporary for the duration of the construction phase.				
Impact Extent	Local	Regional	International		
	Impact limited to the Study Area				
Impact Scale	The impact is considered as small scale since it is local to the construction area.				
Frequency	The frequency is considered to be occasional considering that the construction activities are localized.				
	Positive	Negligible	Small	Medium	Large
Impact	**Waste generation and hazards during Operation**				
Impact Magnitude	Based on the parameters above and considering the embedded measures, the magnitude is considered to be small.				
Resource/Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the of the potential receptors- land and ground water is High				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude is small and sensitivity is high, the impact on the land and water resources during construction is considered to be of **moderate** significance.				

Mitigation

The following mitigation measures should be employed to reduce any impacts on associated with waste generation.

- A Waste Management Plan must be prepared prior to commencement of construction by the contractor (s).

Decommissioning Solid and Liquid Waste Impacts
Solid and liquid waste will be generated during this phase of the project and include plastic, cables, metal, transformers, capacitors, drywall, wood, glass, fasteners, wastewater etc. excavated materials will be re-used immediately as back fill material. Solid waste associated with transmission lines are largely re-used or recycled. To mitigate any residual impact, the waste management plan used during construction will be implemented.

Residual Impact
The impact significance is **Negligible** after mitigation measures during construction and **Minor** post mitigation for operations (*Table 8-27*).

Table 8-27: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Poor waste disposal	Construction	Minor	Negligible
Poor waste disposal	Operation	Minor	Minor

Access to Infrastructure and Services
The Project will use the existing infrastructure for activities such as transportation and waste disposal. The transportation of construction material and equipment will take place by trucks and through the existing road network during construction. Stringing activities will also require short-term road closures and will disrupt transit routes. Although road improvement and construction of access roads may lead to disruption of traffic during the construction phase, these improvements are expected to benefit the local communities in the long run during the operation phase. The potential increase in the risk of road accidents is addressed under community and occupational health and safety impacts section.

During construction, the Project is not considered to give rise to any significant impact associated the increased pressure on health care infrastructure in the study areas as the number of workers will be low/negligible. Similarly, the potential pressure on local sources of water has also been scoped out since the sources of water for construction and operating the campsite will be determined by the contractor and a water use plan will be required. No pressure on existing waste management infrastructure and services in the study area is expected either as the construction wastes associated with transmission lines are insignificant. However, wastes from the camp site could be significant and overburden the existing wastes disposal facilities in the area. The contractor will be required to develop a Waste Management Plan and ensure that the wastes generated during construction are disposed in accordance to the NEMA waste management regulations. There are dumpsites in all the 3 Counties that are designated by NEMA and capable of handling the wastes from the construction activities which will not be significant in terms of quantity.

Baseline Conditions

Relevant baseline conditions that may influence the significance of potential impacts on infrastructures and services are summarized as follows:

- Road infrastructure and road safety are precarious along the Project line.
- Road conditions and lack of public transportation system are the main challenges as regards access to services such as health and education, as well as to job opportunities.
- Lack of infrastructure, poor maintenance, and long dry seasons are the main difficulties related to water access. A very small % of the settlements in the Study Area have in-house running water.
- Majority of households in the settlements of the Study Area do not have access to sanitation or sewage system, and most households use pit latrines/toilets.
- In the project area, most households burn or bury their waste. Only urban households have access to appropriate waste disposal.

Impact Assessment

Disruption to road traffic and transportation during the upgrade of existing access roads, access to tower sites, transport of equipment and material supply and stringing activities could result in impacts to quality of life, and if unmanaged, in health impacts for local populations (e.g., worsening of the sanitary situation, inability to reach healthcare infrastructure during an emergency due to road upgrading or traffic, etc.). Therefore, if unmanaged, disruption to services might also result in community distrust and resentment towards the Project. This being said, the associated increased pressure and disruption of the existing road network and related traffic issues will be temporary and limited to the construction phase. KETRACO commits to performing site reinstatement and rehabilitation including repairing any damage caused as part of the construction activities and reinstating existing access roads if needed. As described above, the impact magnitude is considered small and receptor sensitivity is high resulting in an impact of moderate significance.

Table 8-28: Pre-Mitigation Impact Assessment

Impact	**Damage / Access to Local Infrastructure and Services during Construction**			
Impact Nature	Negative	Positive	Neutral	
	Damage road infrastructure can lead to disruptions and reduced quality of life of communities in the Study Area.			
Impact Type	Direct	Indirect	Induced	
	Increased pressure on road infrastructure is expected to occur as a result of direct utilization by the Project (road usage, transport of equipment, material, workers, water, waste, etc.).			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	The impact is considered to be of temporary duration as it is not expected that transportation and road upgrades will be continuous throughout the construction phase.			
	Local	Regional	International	

Impact Extent	Impact limited to the Study Area				
Impact Scale	The impact is considered as small scale since could result in temporary reductions in community well-being from loss of access to basic services before reinstatement.				
Frequency	The frequency is considered to be occasional considering that the traffic generated by the Project is expected to be low and localised and the building of new roads will be limited.				
	Positive	Negligible	Small	Medium	Large
Impact Magnitude	Based on the parameters above and considering the embedded measures in place to reinstate road networks, the magnitude is considered to be small.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the local communities is considered to be high as they depend on the road network to access healthcare and other services.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude is small and sensitivity is high, the impact on community access to infrastructure during construction is considered to be of moderate significance.				

Operations

Improvements to roads have the potential to positively impact on community access to education, employment, services, and road safety. Along the project route, communities in rural and remote areas are currently lacking in quality roads and infrastructure and they have the potential to be most positively impacted by infrastructure improvement. Communities benefiting from the upgrade and construction of new roads may also experience positive impacts such as enhanced access to markets for their local agricultural produce, and access to transportation and services (education, health, transport, etc.) As the Project is expected to as much as possible use mainly existing roads, these will require upgrading during the construction phase and maintenance during operations which result in a long-term positive impact for local communities.

Table 8-29: Pre-Mitigation Impact Assessment

Impact	**Damage / access to local infrastructure and services during operations**		
Impact Nature	Negative	Positive	Neutral
	Improvement of the local road network leading to improved access education, employment, healthcare and improved road safety for local communities in the Study Area.		
	Direct	Indirect	Induced

Impact Type	The improvement in access to service and in livelihoods and employment is a direct result of Project Road improvement, reinstatement and maintenance activities.			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	The impact is considered to be of long-term duration throughout the 50-year operation phase.			
Impact Extent	Local	Regional	International	
	Impact limited to the Study Area.			
Impact Scale	The impact is considered as medium scale considering the length of the Transmission Line route.			
Frequency	The frequency of the impact is continuous throughout the operation phase.			

Mitigation Measures

The following mitigation measures should be employed to reduce any impacts on local infrastructure access and/or damage:

- Methods will be implemented to maintain open, clear, and transparent communication with the local communities regarding the use of local infrastructures by the Project throughout the different phases.
- Engagement with the relevant authorities is recommended in order to avoid damage to common property and minimize access disruption to education and healthcare facilities
- A **Community Grievance Mechanism Plan** will be implemented.
- A **Traffic Management Plan** shall be issued before earth movements and construction start in order to minimize traffic disruptions
- Where temporary closure of road is required, alternative access to property will be ensured and local solutions including diversions will be implemented to ensure uninterrupted mobility.

Decommissioning Access to Infrastructure and Services

The transportation of decommissioned material and equipment will take place by trucks and through the existing road network. The exercise is not considered to give significant rise to pressure on existing infrastructure in the study area as the number of trucks will be low/negligible. The low number of workers are not also anticipated to strain the existing health infrastructure. The existing waste management infrastructure and services in the study area is not expected to suffer additional burden as decommissioning wastes associated with transmission are largely re-used or recycled. The impact is classified as **insignificant.**

Residual Impacts

Considering the mitigation measures in place, the significance of traffic and road network disruption may be reduced to minor, while the impact from road network improvements in the operation phase is positive.

Table 8-30: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Disruption to traffic and transportation	Construction	Moderate	Minor
Improvement of the local road networks	Operation	Positive	Positive

Air Navigation and Safety

For purposes of ensuring aircraft safety, the Kenya Civil Aviation Authority (KCAA) is mandated to evaluate and approve aerial masts and other structural heights. The installations, like the Power transmission towers, should not be erected in the vicinity of an aerodrome that may impact of aircraft operation being conducted safely. The impact to aircraft safety can be directly through collision, or indirectly through radar and radio interference. There are different heights and distance allowed depending on how far the building is from the runway and the approach path. A permit must be obtained from the KCAA for these kinds of installations. There are 9 aerodromes and airstrips around the site, these are outlined in figure below. The tower heights of the stainless-steel pylons is approximately 40m above ground level and none is on the flight path of any of the airports.

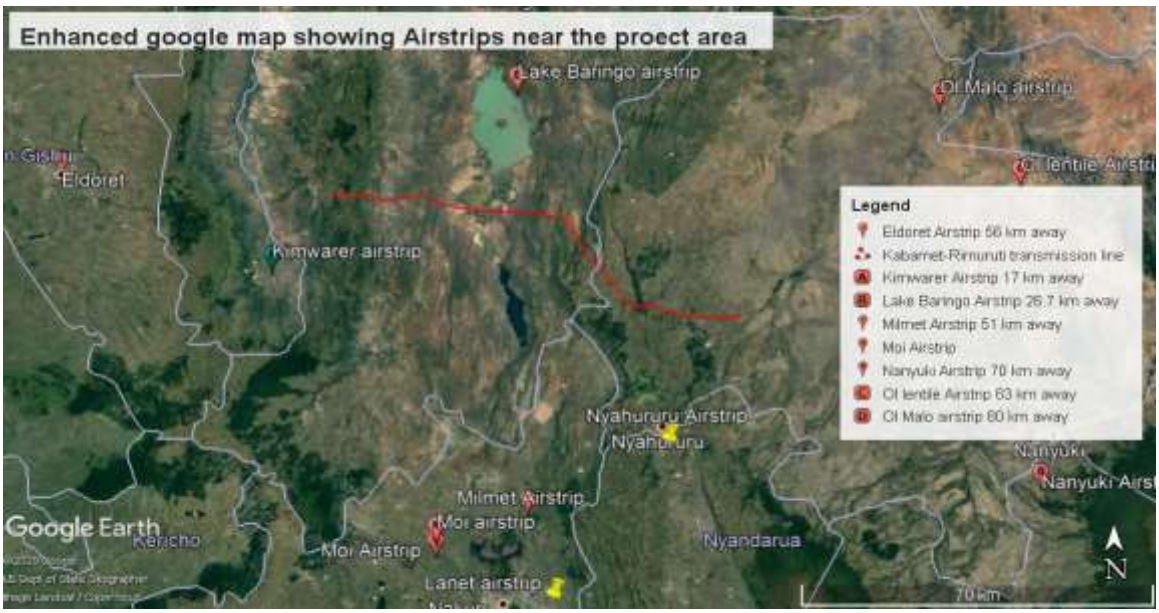


Figure 8-1: Aerodromes and Airstrips

Table 8-31: Impact Analysis Air Navigation and Safety

Impact	**Air Navigation and Safety**		
Impact Nature	Negative	Positive	Neutral
	Compromise on aircraft operation safety, directly through collision, or indirectly through radar and radio interference		

Impact Type	Direct	Indirect	Induced	
	The height of the stainless-steel pylons can affect aircraft operation directly through collisions, from visual errors, or indirectly by radiations interfering with radar and radio			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	The impact is considered to be of long-term duration throughout the 50-year operation phase.			
Impact Extent	Local	Regional	International	
	Impact limited to the location of the specific tower			
Impact Scale	The impact is considered as medium scale considering the length of the Transmission Line route.			
Frequency	The frequency of the impact is continuous throughout the operation phase.			
Mitigation	The siting of the stainless-steel pylons, are not of adequate height, considering distances from the airports on its RoW to cause these impacts.			
Residual Impact	None			

Landscape and Visual Amenity Risks and Impacts

Visual Impacts refers mainly to the changes to the visual character of landscape views resulting from: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the views of the visual receptors and intrusion of foreign elements into the view shed of landscape features. The construction activities for the transmission lines will have an impact on the visual character of the landscape due to:

- Clearance of vegetation along the transmission line corridor, construction yards and access roads;
- Presence of construction vehicles and equipment;
- Worker presence and activity; and
- Dust emissions resulting from construction activities and traffic.

Table 8-32: Potential Impacts to Landscape and Visual Amenity

Construction Phase	Operation Phase
Presence of construction vehicles and work force	Presence of transmission lines and towers/monopoles Permanent clearance of vegetation

Baseline Conditions

The local settings of the landscape are mainly characterized by the presence of open space plantations and cultivation areas with the line crossing small sections of Lariak Forest.

Impact Assessment

Construction Phase

As per the current settings of the project area, the proposed transmission line will cause minimal change to people's existing views. Despite the direct and negative impact of additional construction vehicles on site, it will be temporary and local. The small magnitude on visual amenity and the low sensitivity of the receptors means the significance of this impact is assessed as negligible. Based on the analysis provided above, the visual impact and change of landscape will be of minor significance.

Table 8-33. Pre-Mitigation Impact Assessment

Impact	**Visual Amenity during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Change in visual amenity				
Impact Type	Direct	Indirect	Induced		
	Impact is a result as a direct interaction between project activities and local views				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact duration will be temporary				
Impact Extent	Local	Regional	International		
	The impact will be limited to the immediate surroundings of the construction yards and access roads.				
Impact Scale	The impact is considered as small (local) scale.				
Frequency	Continuous				
Likelihood	Possible				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered small.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The area has mainly modified environment with no relevant scenic views' locations				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the impact magnitude is small and the sensitivity is low, the overall significance is considered to be Negligible.				

Operation Phase

Along the proposed alignment, only the few communities in close proximity to the corridor will be able to perceive the presence of the project features, being more sensitive to the visual intrusion. Moreover, the expected pylons type (not solid but lattice) are limiting their evidence in the landscape as the viewer moves further away from them. The visual absorption capacity of the landscape is enhanced by the existing infrastructure as well as by the local vegetation patches and local gentle topography.

Based on the analysis provided above, the visual impact and change of landscape will be of ***minor*** significance.

Table 8-34: Pre-Mitigation Impact Assessment

Impact	**Visual Amenity during Operations**				
Impact Nature	Negative	Positive	Neutral		
	Change in visual character				
Impact Type	Direct	Indirect	Induced		
	Impact is as a result of a direct interaction between the project and surrounding residents and land users				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The impact duration will be permanent throughout the project life.				
Impact Extent	Local	Regional	International		
	The view shed experience is limited to few kilometres				
Impact Scale	The impact is considered as local scale. Visual impacts will not only impact people who live near the transmission line route, but also people who are travelling by the line daily.				
Frequency	Likely				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is expected to be medium				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The area has mainly modified environment with no relevant scenic views' locations				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude is medium and the sensitivity is low the overall significance is considered to be minor				

Mitigation

The nature of the development (i.e., tall structures and a linear formation) does not allow many opportunities for complete screening. The objective of mitigation is to minimize visual scarring of the landscape and to enhance absorption of the development's permanent equipment and structure into the surrounding environment. Specific recommended measures during operation as best practices include:

- Any excavated or cut and fill areas will be landscaped and revegetated.
- No debris or waste materials will be left at the work sites, good housekeeping on site to avoid litter and minimise waste;
- Towers and structures should have a non-reflective finish;
- Night lighting of sites should be minimized within requirements of safety and efficiency.
- Ongoing rehabilitation of cleared areas to minimise visual scarring and maintenance clearing will be kept to the absolute minimum and should not extend beyond the corridor; and

It is suggested to evaluate locations in proximity of very close sensitive receptors to determine whether installation of screening items such as vegetated areas with indigenous species will reduce visual impacts and install if warranted.

Residual Impact

Considering the nature of the construction activities, the foreseen mitigation measures are able to furtherly reduce the impacts avoiding an alteration of the view shed experience. For the operational phase, the nature of the project features is limiting the possibility to greatly reduce the potential impacts. There are, however, a number of sensitive visual receptors in proximity to the power line and the power line will intrude on their existing views. These visual receptors are mainly limited to residents with houses within 1 km of the route. Mitigation measures are unlikely to reduce the visual impact of the power lines on these visual receptors but for they will grant the local scale of the residual impacts.

Table 8-35. Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Visual impact	Construction	Minor	Negligible

Worker's Health and Safety and Workers Management

The construction of the transmission lines is likely to attract workers from within the project area and outside of the project area. The total number of work force cannot be estimated at this point and will be provided by the contractor. The total work force is going to be skilled and unskilled and sourced from project locality and outside of locality including internationally depending on the skill sets desired. The workers required by the contractor may include among others: -

a) Engineers-Skilled Experts (civil, mechanical, electrical) etc.
b) Supervisors, Inspectors Foreman and Operators –Skilled Experts;

c) Technicians (inspectorate, welders, masons, steel fixers, drivers etc.)–Skilled Experts; and
d) Flagmen, diggers, cleaning, security, mixing, watering, help team- Unskilled.

The construction activities will also entail engagement of contractors, sub-contractors and third-party entities which will form part of the supply chain. Workers' rights including occupational health and safety may be abused hence adverse impact and may include exposure to accidents and injuries, loss of man-hours, labour abuses and to ensure fair treatment, remuneration and working conditions. These issues should be considered not only for those who are directly employed by the proponent but also its contractors (including sub-contractors) and within the supply chain. The Project could potentially lead to workforce-related social and health issues throughout the life cycle of the Project if worker management and rights do not meet Kenyan law or international best practice. The potential for occupational health and safety incidents throughout the life cycle of the project is higher during construction phase.

Workers' rights including occupational health and safety need to be considered to avoid accidents and injuries, loss of man-hours, labour abuses and to ensure fair treatment, remuneration and working conditions. These issues should be considered not only for those who are directly employed by KETRACO but also its contractors (including sub-contractors) and within the supply chain. The Project could potentially lead to workforce-related social and health issues throughout the life cycle of the Project if worker management and rights do not meet Kenyan law or international best practice.

Table 8-36 presents the potentially significant impacts associated with occupational health and safety and worker management during the construction and operation phases. The potential for occupational health and safety incidents throughout the life cycle of the project is higher during construction phase.

Table 8-36: Potential Impacts on Occupational Health and Safety and Worker Management

Construction Phase	Operation Phase
Impacts on workers' health and safety, in particular from road accidents, slip, and trip and falls hazards during tower erection and stringing activities, exposure to chemicals and inconsistent use of PPEs. Impacts on workers' rights from violations of labour laws in particular with respect to enforcement of health and safety measures by the employer such as the use of appropriate PPEs during construction of the transmission lines. Workers are likely to be exposed to work related risks during the construction phase	Impacts on workers' health and safety in particular during maintenance of the transmission lines are from occupational hazards such as electrocution and EMF during line maintenance and the exposure to chemicals. Impacts on worker's rights from lack of enforcement of health and safety measures by the employer such as the use of appropriate PPEs during maintenance of the transmission lines.

of the project especially when erecting the transmission towers and lines. Typical activities for the construction of the transmission lines include clearance of the RoW in vegetated areas, excavation work, erecting the towers, working at height and stringing the transmission lines. The above activities could expose workers to injuries and even fatalities when for instance those working at height fall, towers collapse, objects fall on workers, electrocution etc. Similarly, the storage and disposal of hazardous waste and materials generated from the use of materials during the construction of transmission lines may also pose a hazard to the health of the workforce if not handled properly. Equipment and worker transport along the access roads to the pole positions may also result in road accidents in the absence of a proper traffic management plan or if traffic safety rules are not enforced. The often-poor conditions of the existing roads may also increase the risk of accidents.	

Non-routine events such as risk of transmission line collapse and risks during stringing activities are assessed in Section **8.2.2.1.17** on Unplanned Events.

Baseline Conditions

Relevant baseline conditions that may potentially influence impacts are summarized as follows:

1. There is adequate public health coverage in the 3 Counties and the majority of the population have access to County/GoK subsidized health services.
2. Settlement level key informants reported that the distance to health centres from these settlements varies between 0 and 2 km.
3. Road infrastructure and road safety are precarious along the Project transmission line route.
4. Enforcement of health and safety laws and standards in Kenya is expected to be limited, which contributes to high incidence of accidents on construction sites.

Impact Assessment

Construction

Worker's Health and Safety and Labour Rights

Typical activities for the construction of the transmission lines include clearance of the RoW in vegetated areas, excavation work, erecting the towers, working at height and stringing the

transmission lines. Considering that construction was identified as one of the sectors of employment (formal and informal) in Kenya (including in the peri-urban areas along the transmission line route), the locally hired workforce may have some experience in traditional/basic construction activities such as excavation works. However, work practices and consideration for health and safety may fall short of international standards and best practice, such as the use of personal protective equipment (PPE), which will increase the severity of hazards to which the workforce are exposed.

Similarly, the storage and disposal of hazardous waste and materials generated from the use of materials during the construction of transmission lines may also pose a hazard to the health of the workforce if not handled properly.

Equipment and worker transport along the access roads to the pole positions may also result in road accidents in the absence of a proper traffic management plan or if traffic safety rules are not enforced. The often-poor conditions of the existing roads may also increase the risk of accidents.

During construction, the direct interaction between the Project and the workforce if not managed properly, will result in negative impacts on the workers' working conditions and potentially permanent impacts on their health and safety. The impact is considered short-term and continuous over the 12 months construction phase resulting in a medium impact magnitude. Since contractors are expected to operate according to international standards and considering the level of prior training of the workforce, receptor sensitivity is considered medium. Therefore, the impact is of ***moderate*** significance.

Table 8-37: Pre-Mitigation Impact Assessment

Impact	**Workers Health and Safety and Rights during Construction**			
Impact Nature	Negative	Positive	Neutral	
	Poor planning, non-compliance with health and safety best practice and labour rights can result in injuries or fatalities.			
Impact Type	Direct	Indirect	Induced	
	Resulting from a direct interaction between the Project (i.e., increased project traffic, working at height, stringing the transmission lines across the towers, open excavations, and demining) and the workforce.			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	Injuries and fatalities could have permanent impacts on workers and their families.			
Impact Extent	Local	Regional	International	
	The workforce will be primarily contracted from urban centres and potentially from peri-urban areas along the Transmission line.			

Impact Scale	As mentioned above the workers will be working on different sections of the line at different times. The impact scale is therefore medium.				
Frequency	The frequency is considered to be infrequent as the workforce and drivers are expected to be trained and the employer is expected to enforce the use of PPEs and health and safety measures.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above and considering the embedded measures in place the magnitude is considered to be medium.				
Resource/ Receptor Sensitivity	Low		Medium		High
	The sensitivity of the receptors (workforce working along the transmission lines) is considered medium as some workers may not be aware of their rights.				
Impact Significance	Negligible		Minor	Moderate	Major
	Since the magnitude is considered medium and sensitivity is medium, the impact on workers' health and safety during construction activities is considered to be of moderate significance.				

Operations

Similar to the construction phase, the operation phase may also lead to occupational health and safety issues in particular with respect to maintenance of the transmission lines (risk of electrocution and exposure to electric and magnetic fields).

With respect to exposure to EMF, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) considers that there are occupational circumstances where, with appropriate advice and training, it is reasonable for workers voluntarily and knowingly to experience transient effects such as retinal phosphenes and possible minor changes in some brain functions. These symptoms are not believed to result in long term or pathological health effects.

Decommissioning Phase: Worker's Health and Safety and Labour Rights

Typical activities for the decommissioning of the transmission lines include excavation work, dismantling of the towers, working at height and un-stringing the transmission lines. During these activities, the use of personal protective equipment (PPE), will greatly manage the severity of hazards to which the workforce is exposed. The traffic management plan will also be used to manage road accidents. The impact is considered short-term and medium over the decommissioning phase. Since contractors are expected to operate according to international standards and are in possession of prior EHS training, the impact is of **moderate** significance.

Community Health and Safety Impacts

The presence of the Project could affect the health, safety and wellbeing of the communities along the transmission line route. Increased Project-related traffic, civil works for site preparation including site clearance and excavation work, change to the environment due to increased noise, decreased air quality, inappropriate waste handling or disposal, and accidental

leaks and spills, and the presence of the Project workforce all present potential hazards for the health and safety of local communities. Similarly, communities and stakeholder concerns around the safety of the transmission lines once they are operational including exposure to electric and magnetic fields (EMF), also have the potential to affect communities.

Construction activities are likely to expose the local communities to health and safety related risks. Local community members could be exposed to accidents which could lead to injuries or fatalities. Collapsing of the towers, falling objects, road accidents caused by construction vehicles, exposure to hazardous wastes from the construction sites among others are potential community health and safety impacts. Further as discussed external workers could bring with them communicable diseases including sexually transmitted diseases (STDs) that could be passed on to local communities. Table 8-38 presents the potentially significant community health, safety and security impacts that may occur during the construction and operation phases.

Table 8-38. Potential Impacts on Community Health and Safety

Construction Phase	Operation Phase
Potential impacts on community safety, in particular road accidents, trespass on the sites, and demining activities potentially resulting in accidents leading to injuries or fatalities. Environmental health: changes to the environment due to increased noise and vibrations, decreased air quality and, inadequate management of waste. Impact from workers presence and potential interaction with local populations.	Community health over exposure to EMF.

Baseline Conditions

Relevant baseline conditions that may potentially influence impacts are summarized as follows:

- Access to health services is limited throughout the transmission line route.
- The main health issues in the settlements of the Study Area are malaria, diarrhoea, respiratory problems, and urinary infections. HIV/AIDS prevalence in Kenya as of 2018 was approximately 4.7% among adults aged 15–49 years old.
- Road infrastructure and road safety are precarious along the Project transmission line route.
- Commercial activity such as the sale of agricultural products, wood and other small trades is often conducted on the side of the roads which increases the risk of accidents.

Operations

Potential Health Impact from Exposure to Electromagnetic Fields

Electric and magnetic fields (EMF) are invisible lines of force emitted by and surrounding any electrical device such as power lines and electrical equipment. Electric fields are created by differences in voltage; the higher the voltage, the stronger the resulting electric field. Concerns

over EMF health and safety risks are related to chronic (long term) health effects and acute (short term) effects. The potential impacts on community health and safety resulting from potential chronic and acute health effects caused by the transmission lines' EMF are assessed below.

Chronic effects relate to long term exposure to low magnetic fields and the potential impacts on health. Specifically, epidemiological studies indicated that long term exposure to 50-60 Hz magnetic fields might be associated with an increased risk of childhood leukemia. There are also some concerns about possible increased risk of cancer from exposure to electromagnetic radiation from overhead transmission line. However, according the IFC EHS guidelines for electric power distribution, there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment. Nevertheless, while the evidence of adverse health risks is weak, it is still sufficient to warrant limited concern.

Similarly, with respect to acute health effects from EMF, the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines notes that there are a number of well-established acute effects of exposure to low frequency EMFs on the nervous systems; these being a result of direct stimulation of nerve and muscle tissue and the induction of retinal phosphenes. These health effects are not believed to result in long term or pathological health effects.

The development of the Project has been designed to comply with the *IFC EHS Guidelines for Electric Power Transmission and Distribution (April 30, 2007)* and the *ICNIRP Guidelines (2010)*. As such, rerouting of the transmission line has aimed to minimize exposure to the public in accordance with ICNIRP guidelines on public and occupational exposure. Based on the analysis provided above, the potential impact from EMF from chronic and acute exposure is of ***minor*** significance.

Table 8-39: Pre-Mitigation Impact Assessment

Impact	**EMF Chronic and Acute Health Effects**			
Impact Nature	Negative	Positive	Neutral	
	Negative chronic and acute health effects as a result of EMF exposure.			
Impact Type	Direct	Indirect	Induced	
	The impact is a direct interaction between the transmission lines and surrounding residents and land users.			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	The duration is permanent as the project life cycle is expected to last throughout the project life.			
	Local	Regional	International	

Impact Extent	The impact is of local extent as it will be limited to the vicinity of the transmission line.				
Impact Scale	The impact scale is small considering the embedded measures in place to minimize exposure to the public in accordance with *ICNIRP guidelines on public and occupational exposure* and *IFC EHS Guidelines on Electric Power Transmission and Distribution.*				
Frequency	The occurrence of EMF is constant during the operation of the transmission lines; however, the risk of the chronic and acute health effects occurring is low.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	The impact magnitude is considered small considering the embedded measures in place.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	Receptor sensitivity is considered medium due to range of individuals in nearby settlements.				
Impact Significance	Negligible	Minor	Moderate	Major	
	The overall potential chronic and acute effects are considered minor.				

Residual Impacts

The significance of the residual impacts on community health and safety after the implementation of mitigation measures is presented in **Table 8-40** below.

Table 8-40: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Community Safety (Road Accidents, Site Trespass)	Construction	Moderate	Minor
Environmental Health (Nosie and Air)	Operation	Moderate	Minor
Interaction with Project Workforce	Operation	Moderate	Minor
EMF Health effects	Operation	Moderate	Minor

As stated previously, the Project during its lifetime will be subject to local labour laws and international standards with respect to the responsibility of the employer to safeguard the health and safety of its employees. The Project is therefore expected to abide by these regulations and develop and implement appropriate health and safety measures covering the operations phase including the use of PPE by the workforce. As stated for the construction phase, compliance with KETRACO's EHSS policy aimed at safeguarding the health and safety of its employees and subcontractors will additionally help prevent potential labour abuses and reduce the risk of health and safety incidents. Finally, all contractor contracts include explicit

reference to the need to abide by Kenyan law and KETRACO's standards and policies in relation to health and safety.

Any health and safety and labour rights related impact during the operations phase will be limited to a small number of workers and will be permanent over the operation phase. The magnitude is therefore considered small. Receptor sensitivity is considered low as most workers will be permanent skilled workers. Therefore, the impact is of ***minor*** significance.

Table 8-41: Pre-Mitigation Impact Assessment

Impact	**Workers Health and Safety and Rights during Operations**				
Impact Nature	Negative	Positive	Neutral		
	Poor planning, non-compliance with health and safety best practice and labour rights can result in injuries or fatalities.				
Impact Type	Direct	Indirect	Induced		
	Resulting from a direct interaction between the Project (i.e. increased project traffic, working at height, stringing the transmission lines across the towers, open excavations) and the workforce.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	Injuries and fatalities could have permanent impacts on workers and their families.				
Impact Extent	Local	Regional	International		
	The workforce will be primarily contracted from urban and rural centres within the 3 Counties and other Counties in Kenya as well as from other countries for some higher skilled jobs.				
Impact Scale	The impact scale is considered small during operations as the workforce size will be reduced and maintenance activities will be periodic.				
Frequency	The impact is considered to be infrequent since the operation activities will be limited to maintenance works. The workforce is expected to be trained and the employer is expected to enforce the use of PPEs and health and safety measures. Lessons learned from the construction phase are expected to enhance the safety conditions and thus reducing the frequency of safety incidents during the operation and maintenance phase.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above, and the embedded measures in place, the magnitude is considered small.				
	Low	Medium	High		

Resource/ Receptor Sensitivity/Value/ Importance*	The sensitivity of the receptors is considered low as workers will be mostly skilled permanent employees.			
Impact Significance	Negligible	Minor	Moderate	Major
	Considering the magnitude is medium and sensitivity is low, the impact on workers' health and safety during operations activities is considered to be of Moderate significance.			

Mitigation Measures

The following mitigation measures will be implemented during the construction phase to reduce any impacts on workers' health and safety and labour rights. KETRACO will develop and implement a Workers Health and Safety Management System covering all contractors and subcontractors including the following measures:

- KETRACO will require contractors to develop Human Resources Policy, which will outline worker rights to be included in all contracts including restrictions on working hours in line with applicable ILO standards, compensation including consideration of overtime, holidays etc.
- KETRACO will require its contractors and subcontractors to put in place policies in line with national legislation and applicable international legislation and KETRACO Code of Conduct and Policies.
- KETRACO will establish contractual clauses to be embedded in the contracts of the EPC and all sub-contractors that require adherence to Kenyan law and international standards to be upheld related to worker rights and providing the contractor and KETRACO with the right of audit.
- KETRACO require that contractors prohibit the use of alcohol or drugs, which could adversely affect the ability the employee to perform the work safely or adversely affect the health and safety of other employees, community members or the environment.
- Pre-employment medical assessments will be put in place as a workforce risk management tool to screen individuals for risk factors that may limit their ability to perform a job safely and effectively. Expected benefits of conducting a pre-employment medical assessment include a safer working environment, reduction in workplace injuries, minimised downtime, matching the capacity of the employee with the role, and overall recruitment cost and risk reduction.
- KETRACO will ensure that training on health and safety measures is provided to all construction workers prior to starting to work on the Project and that supervisors have adequate experience to deliver on their responsibilities.
- KETRACO will implement regular health and safety checks and audits of Workers, contractors and subcontractors and implementing sanctions in case of breaches of national standards and the Project's specific standards. Such audits to include workplace H&S; worker contracts, working hours, pay and conditions; housing and food standards.
- KETRACO will develop and implement a Workers Grievance Mechanism for the Project workforce including contractors and subcontractors.

- KETRACO will establish a procedure for the recording and analysis of incidents and lessons learned such that additional actions can be implemented to avoid or minimize occupational health and safety risks.
- KETRACO will ensure that facilities and work sites are designed and maintained such that robust barriers are in place to prevent accidents.
- KETRACO will ensure that its Code of Conduct is followed to regulate the performance and behaviour of all workers, including provision for disciplinary action for anti-social behaviour and non-compliance with health and safety regulations such as lack of use of PPE.
- Provision of condoms (male and female) for workers
- Creating awareness on HIV/AIDS spread among workers and community
- KETRACO will ensure that adequate clean water, adequate food, and access to medical care is provided to all workers on the worksite and at accommodation.
- KETRACO will develop and implement a Traffic Management Plan covering aspect such as vehicle safety, driver, and passenger behaviour, use of drugs and alcohol, operating hours, rest periods, community education on traffic safety and accident reporting and investigations.
- KETRACO will develop a Waste Management Plan for the construction phase with clear guidelines for the safe storage and disposal of hazardous waste and handling of hazardous materials.
- Recruitment will be undertaken in collaboration with local authorities and local agencies. KETRACO will put in place measures to ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, age, religion or sexual orientation.

During the operation phase, KETRACO will implement the following measures:

1. The Workers' Health and Safety Management System will be extended to the operation phase and adapted to address relevant aspects, including the following measures:
2. Identification and provision of appropriate PPE, training, and monitoring, as well as ongoing safety checks and safety audits.
3. Prohibiting the use of alcohol or drugs, which could adversely affect the ability the employee to perform the work safely or adversely affect the health and safety of other employees, community members or the environment.
4. Ensuring that training on health and safety measures is provided to all operation workers prior to starting to work on the Project.
5. KETRACO will undertake compliance monitoring of labour rights. KPIs will be developed around worker rights, discrimination and management, workforce grievance mechanism and monitoring of outcomes.
6. Implementing a Workers Grievance Mechanism for the Project workforce.
7. Establishing a procedure for the recording and analysis of lessons learned and implementation of additional actions to avoid or minimize occupational health and safety risks.
8. KETRACO will develop a Waste Management Plan for the operation phase with clear guidelines for the safe storage and disposal of hazardous waste and handling of hazardous materials.

9. KETRACO will put in place measures to ensure no employee or job applicant is discriminated against on the basis of his or her gender, marital status, nationality, age, religion or sexual orientation.

Residual Impacts

The implementation of mitigation measures will contribute to reducing occupational health and safety risks and the risk of labour rights abuses significantly. However, the risk of potential accidents still exists and may potentially lead to injuries or fatalities for the workforce during construction and operation. This risk will be short-term during the construction phase (18-24 months) and long-term during operations. With the implementation of mitigation measures the remaining impact significance is considered minor significance during construction and negligible during operation. In fact, during operations, knowledge and lessons learned in terms of health and safety and labour rights during the construction phase may extend to the operation phase and contribute to strengthening local knowledge and practices in Kenya.

Table 8-42: Residual Impact Significance

Impact	Project Phase	Significance (Pre-Mitigation)	Residual Impact Significance (Post Mitigation)
Worker health and safety and labour rights	Construction	Moderate	Minor
Worker health and safety and labour rights	Operation	Moderate	Minor

Impact on Community Safety related to Road Traffic, Site Trespass Activities

During construction there will be an increase in traffic movements of heavy machinery and light vehicles in the road along the Transmission Line route and in access roads leading to the temporary tower site working areas during a period of 18-24 months. This will include water trucks, cement trucks, transport of construction material, excavation machinery, etc. which is expected to increase the risk of road traffic accidents and potential injuries or fatalities to other road users or pedestrians. The increase in movement of vehicles during the construction phase may result in greater disturbance and decreased wellbeing for those communities closest to the tower site working areas and along transportation routes and access roads.

It is assumed that the tower site working areas (40x50m each on average) will not be fenced during construction activities. The risk of trespass is highest when the tower sites are closest to settlements and agricultural areas with no electricity coverage, which increases the risk of accidental trespass at night. Trespassing on the temporary tower site working areas could result in accidents leading to injuries or even fatalities, especially due to the presence of large machinery, tower construction parts such as metal structures, and open excavations, which could at times be partly filled with water (e.g., open excavations for the erection of towers).

Young people, elders and children are most at risk of being injured. The impact is a direct result of interaction with the increased traffic associated with construction activities. The impact is temporary in nature and limited to the settlements in the Study Area and the surrounding road network. Contractors will also be required to operate according to best international practice. However, considering the potential risk posed to communities, the magnitude is considered medium. Receptor sensitivity is also rated as medium, resulting in moderate impact significance.

Table 8-43: Pre-Mitigation Impact Assessment

Impact	**Community Safety**				
Impact Nature	Negative	Positive	Neutral		
	Increased traffic during the construction period may result in increased risk to road traffic accidents and the presence of unfenced tower site working areas near settlements may result in trespassing and potential injuries.				
Impact Type	Direct	Indirect	Induced		
	Impact that results from a direct interaction between the Project (i.e., increased traffic, unfenced tower work sites, risk posed by demining activities) and the local population along the transmission lines and road users.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The increased traffic effect and risks to injuries is temporary, as construction activities will take place in a sequential manner during the length of the construction period. However, although construction activities at the tower sites working areas will be sequential, access to these sites will be prohibited throughout the 18-24 months of construction, as machinery and equipment will be left at the sites in between team shifts from site to site until completion of the works.				
Impact Extent	Local	Regional	International		
	Impact limited to the settlements in the Study Area				
Impact Scale	The impact is considered as medium scale since temporary tower sites will be under construction along the transmission line.				
Frequency	The frequency is considered to be occasional or one time at each temporary tower site over the duration of the construction phase.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above, the magnitude is considered to be medium considering the potential consequence of accidents.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	The sensitivity of the receptors (local population along the transmission lines and road users including vehicle users, pedestrians and cyclists) is considered medium, as contractors will ensure that construction activities are undertaken in compliance with international standards. In addition, the transmission lines will be built in mostly rural areas and peri-urban areas where previous transmission lines have been built in recent years,				

	and dense traffic in these areas may not be unusual for the populations, which may also contribute to improving the overall sensitivity.			
Impact Significance	Negligible	Minor	Moderate	Major
	Considering the magnitude and sensitivity are medium, the impact on the community safety during construction activities is considered to be of moderate significance.			

Impact on Environmental Health for Communities

During the construction phase (approximately 18-24 months), activities will result in changes to the physical environment, with the potential to affect the health and welfare of communities. There will be temporary increases in dust during the duration of the construction phase, which will be mostly localised to the temporary tower site working areas and access roads. These are likely to result in increased disturbance and decreased wellbeing especially for residents closest to construction site and along unpaved access roads. There are no impacts on local air quality over the long term and therefore unlikely to result in a recordable increase in respiratory diseases in the population.

Similarly, the construction of the transmission lines is likely to result in temporary increased noise levels for residents close to the temporary tower site working areas. The increase in noise is likely to result in disturbance and decreased wellbeing for those closest to the construction activities. However, this will be limited to construction hours and sleep disturbance is unlikely assuming construction work will be undertaken during daytime hours.

Project construction will also entail some temporary, localized, ground works that will generate vibrations. Depending on the soil characteristics and on the distance to the nearest building, these activities could produce vibrations for houses in the vicinity. Impacts could range from the level of temporary nuisance and disturbance, up to actual damage to buildings. It should be noted that the minimum allowed distance from a physical structure to the tower position is 10m.

Waste production as a result of the construction activities is unlikely to impact on the health of communities along the route since most of the waste will be placed in the appropriate covered waste containers, and transported periodically to licensed dumpsites, and therefore opportunities for communities to come into contact with waste will be minimal.

KETRACO will reinstate and rehabilitate construction areas including repairing any damage caused as part of the construction activities.

The impacts on environmental health during construction are temporary in nature for the duration of the construction phase. Construction activities and associated vehicular traffic will take place in temporary tower working areas and dirt access roads along the transmission line and close to local settlements. Considering the temporary nature of the works and the sequential approach, the magnitude is considered medium.

Receptor sensitivity is also considered medium as receptors will include children, old people and others that may be susceptible to changes to environmental quality. However, it is noted

that the transmission line crosses areas where previous transmission lines have been built in recent years, and related environmental changes might not be unusual for the populations, which may reduce the overall sensitivity of the populations. The impact significance is therefore considered moderate.

Table 8-44: Pre-Mitigation Impact Assessment

Impact	**Environmental Health**				
Impact Nature	Negative	Positive	Neutral		
	Construction activities have the potential to impact on environmental health which may translate into decreased localized air quality and increase in noise emission and associated disturbance.				
Impact Type	Direct	Indirect	Induced		
	Impacts that result from a direct interaction between the Project (i.e., air and noise emissions, vibrations, changes into visual environment and generation of waste) and the population along the transmission lines.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The effect is considered temporary since it is expected to be limited to the duration of construction activities at each of the temporary tower sites. Note however that the time between each stop may vary, and that machinery and equipment will be left at the sites in between team shifts. Access to these sites will therefore be prohibited during the 18-24 months of construction.				
Impact Extent	Local	Regional	International		
	Impact limited to the Study Area and surrounding access roads connecting to settlements located further away (500m area from the line)				
Impact Scale	The impact is considered medium. Although construction will take place in a phased manner at the different sites, there is the potential for air and noise emissions to extend beyond the immediate tower sites working areas and associated access roads.				
Frequency	The frequency is considered to be occasional or one time at each tower site and associated access roads throughout the 18-24 months construction phase.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above, the magnitude is considered to be medium.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	Receptor sensitivity is considered medium as receptors may experience disturbance and decreased well-being. Also, although structures inside the 30m footprint corridor will be displaced to maintain security distances to the line, houses located further away mays still experience some impacts related to noise and air quality. However, since the transmission line crosses areas where previous transmission lines have been built in recent years, related environmental changes might not be unusual for the				

	populations, which may contribute to reducing the sensitivity of the local people.			
Impact Significance	Negligible	Minor	Moderate	Major
	Considering both the magnitude and receptor sensitivity are medium, the impact on the community health due to environmental changes during construction activities is considered of moderate significance.			

Potential Interactions with Project Workforce

Indirectly, results of the development activities might affect population growth. It is predicted that the following demographic processes will take place:

1. **In-migration:** People from other areas will move to the area in search of new opportunities. The opportunities may not be directly in the project; they could be in-coming to conduct business as a result of the project.
2. **Presence of temporary workers:** It is not expected that the area will experience substantial labor influx.

Without mitigation, the primary impact of in-migration will be an increase in population, physical expansion of project affected areas and informal development.

1. The potential for unplanned and uncontrolled growth could lead to issues surrounding safety, sanitation, and service delivery.
2. Where in-migrants compete directly against local people, especially for unskilled jobs, it may result in tension, and possible aggression, between job seekers within the affected areas, and the country more widely.
3. In-migration can also lead to negative social change and an erosion of cultural values, as migrants bring in different cultural norms and values and attitudes to traditional leadership systems.
4. An influx of in-migrants is likely to lead to an increase in communicable diseases such as TB, HIV/AIDS and other sexually transmitted diseases, exacerbated by increased pressure on health care facilities and the possible introduction of new diseases.
5. Influx of in-migrants is likely to lead to the risk of GBV (SEA and SH).

The Project workforce may be housed in open or closed accommodation camps. Interaction with nearby communities is therefore very likely and could potentially lead to an increased transmission of communicable diseases and sexually transmitted diseases within these communities. This is a particular risk in relation to communities located close to worker camps where the potential for interaction is highest. The exact locations of the workers camps are not confirmed at this stage but are expected to be located near the town centers.

The profile of these diseases will be influenced by the existing diseases profile of communities along the route and the diseases profile of the country's workers are sourced from (in case of international workers). In addition, if opportunistic workers arrive in the area hoping to benefit from employment spin offs this could also impact on the transmission of communicable diseases. Considering that 85% of the workers will be sourced from urban and peri-urban centers and areas near the transmission line route, communicable diseases of concern are likely to include diarrhea, respiratory infections, and typhoid fever. Children will be at particular

risk of diarrheal diseases due to their sanitary behaviors, while the elderly will be at risk of more severe health outcomes as a result of their frailty.

In addition, considering that HIV/AIDS prevalence in Kenya as of 2018 was approximately 4.7% among adults aged 15–49 years old, transmission of HIV may also occur. Since workers may live in open camps, prostitution may also be an issue considering the low levels of employment opportunities, and it is possible that some women in settlements close to the construction camps may resort to prostitution for short term economic gain. There is also a risk of increased pregnancies of young girls that could result in increased school dropouts in the settlements of the Study Area.

Based on the above, interaction between Project workforce and local communities in the Study Area is considered very likely during the construction phase. Receptor sensitivity is considered high as the low levels of employment opportunities might encourage prostitution and transmission of STDs and communicable diseases. This results in a moderate impact significance.

Table 8-45: Pre-Mitigation Impact Assessment

Impact	**Interaction with Project Workforce**				
Impact Nature	Negative	Positive	Neutral		
	The presence of Project Workforce will lead to interaction with the local communities which will potentially result in increased transmission of communicable diseases and sexually transmitted diseases.				
Impact Type	Direct	Indirect	Induced		
	Impacts that result from a direct interaction between the Project workforce and the population along the transmission lines.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The effect is considered short term as it is expected to last throughout the 18-24 months construction period in sequential manner along the transmission line and in the areas surrounding worker camps (if established).				
Impact Extent	Local	Regional	International		
	Impact limited to the Study Area and nearby urban centers.				
Impact Scale	Camps are open, workers will be free to access surrounding villages and settlements, and interaction is therefore very likely.				
Frequency	The frequency is considered to be continuous throughout the construction phase.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the parameters above, the magnitude is considered small since work forces is				
Resource/ Receptor Sensitivity	Low	Medium	High		
	Receptor sensitivity is considered high. The low levels of employment opportunities might encourage prostitution and transmission of STDs,				

	and children and the elderly are considered particularly vulnerable to the transmission of communicable diseases.			
Impact Significance	Negligible	Minor	Moderate	Major
	Since impact magnitude is considered small and receptor sensitivity is high, the impact on community health due to interactions with the Project Workforce during construction activities is considered of moderate significance.			

Mitigation Measures

The following mitigation measures will be implemented during the construction phase to reduce any impacts on community health and safety.

- KETRACO will develop and monitor the implementation of a Community Health and Safety Management Plan which will include the following measures:
    - Ensure that all workers are housed in accommodation camps rather than in the local settlements in order to minimize interaction with local communities and related health and safety impacts.
    - Ensure all workers including contractors and subcontractors undergo pre-employment screening and regular health screening including voluntary screening for STDs.
    - Ensure any trucking companies employed to work on the Project will have policies around health screening of their workers in line with Project requirements.
    - Ensure all workers including contractors and subcontractors receive education around transmission routes and symptoms of communicable diseases of concern and STDs.
    - Undertake awareness creation among the communities on HIV/AIDS and other STDs.
    - Provide access to health care for those injured by its activities.
    - Ensure that work sites are fenced and that signs are put up around work fronts and construction sites advising people of the risks associated with trespass. When work fronts are less than 100 meters from a community or house, employ security guards from the local community to prevent trespass.
    - Undertake a program of stakeholder engagement and consultation to educate local communities of the risks of trespassing onto sites, the meaning of signs, and the dangers of playing on or near equipment or entering fenced areas. Special attention to be paid in primary and secondary schools along the transmission routes and in areas where towers will be built close to residential or school areas.

KETRACO will develop Emergency Preparedness and Response Plans (EPRPs) in cooperation with local emergency authorities and hospitals.

- KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process.
- KETRACO will provide primary health care and first aid at construction camp sites to avoid pressure on local healthcare infrastructures.

- KETRACO will implement a Community Grievance Mechanism.
- KETRACO will develop and implement a Traffic Management Plan covering aspect such as vehicle safety, driver, and passenger behavior, use of drugs and alcohol, operating hours, rest periods, community education on traffic safety and accident reporting and investigations.

Decommissioning Phase: Community Health and Safety Impacts

Increased Project-related traffic for site decommissioning will cause change to the environment due to increased noise, decreased air quality, waste handling or disposal, accidental leaks and spills, and the presence of the Project workforce all present potential hazards for the health and safety of local communities. The community engagement plans, mechanisms and associated measures used during construction and operation will also be used in this phase.

Gender-Based Violence

An influx of in-migrants may also lead to Gender-Based Violence (GBV) (Sexual Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SEA) in the workplace, although the project is not expected to have a large influx of workers, the in-migration may increase the demand for sex work or the risk of forced early marriage in a community where marriage to an employed man is seen as the best livelihood strategy for an adolescent girl. Furthermore, higher wages for workers in a community can lead to an increase in transactional sex. The risk of incidents of sex between laborers and minors, even when it is not transactional, can also increase. The Project may create changes in the project affected communities and can cause shifts in power dynamics between the community members and within households. Male jealousy, a key driver of GBV, can be triggered by labor influx on a project when workers are believed to be interacting with community women. Hence, abusive behavior can occur not only between project-related staff and those living in and around the project site, but also within the homes of those affected by the project. Potential resettlement for civil works may equally render women vulnerable to GBV.

Mitigation Measures

The following mitigation measures will be implemented during the construction, operation, and decommissioning phases to mitigate the risk of GBV-SEA/SH.

- KETRACO will extend the Worker Code of Conduct to include guidelines on worker-community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process.
- Community sensitization including disseminating information on GBV (SEA and SH) risks and management protocols.
- Implementing a GBV-SEA/SH management plan to mitigate and respond to GBV cases, including a GRM that is sensitive and confidential.

Violence against Children

The recruitment of children under the age of 18 during the construction, operation, and maintenance and decommissioning of the transmission line is a potential risk and considered VAC. Based on current conditions in the sector it is assessed that the risk of child or forced

labor is negligible, and already managed through national legislation and the proponent's corporate requirement. Sex with minors is another form of child labour that may occur during construction, operation and decommissioning mainly by the work force.

Mitigation Measures

The following mitigation measures will be implemented during the project phases to reduce any impacts on VAC.

- KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process.
- Preparing and implementing a child protection plan
- Employing persons aged 18+ years (in accordance with the labour laws of Kenya).
- See 8.3.2.1.14 on SEA mitigation measures

Archaeology and Cultural Heritage Impacts

Baseline assessments have not identified cultural heritage sites along the proposed transmission line corridor and thus no valuable tangible cultural heritage structures and resources are likely to be impacted by the project. There were no cultural heritage and archaeological sites identified in the area. Further, there are no graves or cemeteries identified during the ESIA study along the transmission line and this is further confirmed by the asset inventory study undertaken during the RAP preparation. During the construction activities there will be the need to improve access to some of the areas for vehicle. The removal of vegetation and opening of road accesses might uncover cultural sites which can only be removed by the appropriate governmental structures and consultation with the traditional authorities. The potential impacts are likely to be temporary and short term and most of these can be avoided during the vegetation removal process. Based on the baseline data it is not expected that the planned activities will result in negative impacts over the existent cultural and archaeological sites.

Baseline Conditions

There are no cultural heritage and archaeological sites identified in the three Counties crossed by the project. The identified archeological and cultural heritage sites are located further away from the proposed transmission line route and thus are unlikely to be affected by the proposed project. There are also no graves along the proposed transmission line.

Impact Assessment

Pre-Construction Phase

This phase includes design related activities, compensation, and relocation of Project Affected Households due to loss of land, structure, and other assets. The design activities and loss of land and other assets will not lead to any archeological or cultural heritage impacts.

Construction Phase

During the construction activities there will be the need to improve access to some of the presently remote areas for vehicles and establishment of camps as well as in some inhabited areas. The removal of vegetation and opening of road accesses might uncover illegal grave

sites which can only be removed by the appropriate governmental structures and consultation with the traditional authorities. The potential impacts are likely to be temporary and short term and most of these can be avoided during the vegetation removal process. Based on the baseline data it is not expected that the planned activities will result in negative impacts over the existent cultural and archaeological sites. In terms of embedded controls, during the construction phase of the proposed transmission line project the contractor will apply the chance finding procedures as recommended by OP 4.09).

This direct impact is temporary since the impacts will be evident during the vegetation removal and installation of the infrastructure. As there are no grave sites identified within the transmission line RoW the likelihood of these impacts is low. The potential impact in case illegal grave sites are identified during the vegetation removal process, is direct and negative. The extent of the impact is presented is restricted to the Project RoW and therefore local in nature. The magnitude of the impact is considered to be negligible.

Based on the analysis provided above, the impact of the project on cultural sites, will be a low negative impact pre-mitigation (Table 8-46).

Table 8-46: Pre-Mitigation Impact Assessment

Impact	**Cultural Heritage during Construction**				
Impact Nature	Negative	Positive	Neutral		
	Disturbance to grave sites during vegetation removal and construction activities				
Impact Type	Direct	Indirect	Induced		
	Impact is as a result of a direct interaction between the project (i.e., construction activities) and potential cultural sites (e.g., grave sites) along the transmission line				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	The effect is considered temporary as grave sites would be identified during the vegetation removal activities				
Impact Extent	Local	Regional	International		
	Impact is limited to AoI				
Impact Scale	The impact is considered to be of negligible scale.				
Frequency	Once off				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/ Receptor Sensitivity/Value/ Importance*	Low	Medium	High		
	The receptors can be identified in the early stages of the process (e.g., vegetation removal and opening accesses). The sensitivity is considered low.				
	Negligible	Minor	Moderate	Major	

Impact Significance	Considering the impact magnitude is negligible and the sensitivity is low, the overall significance is considered to be of negligible significance.

Operations

During the operational phase there are not expected potential impacts on the cultural heritage as a result of the existence of the transmission line. Table 8-47 reflects the non-applicability of the significance of impacts on cultural heritage during the operation of the transmission line.

Table 8-47. Pre-Mitigation Impact Assessment

Impact	**Cultural Heritage during Operations**				
Impact Nature	Negative	Positive	Neutral		
	There are no expected impacts during operation				
Impact Type	Direct	Indirect	Induced		
	N/A				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	N/A				
Impact Extent	Local	Regional	International		
	N/A				
Impact Scale	The impact is considered to be of negligible scale.				
Frequency	N/A				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/ Receptor Sensitivity/Value/ Importance*	Low	Medium	High		
	N/A				
Impact Significance	Negligible	Minor	Moderate	Major	
	N/A				

Mitigation

The following standard mitigation measures will be employed:

- Consult community leaders when any community issue arises in order to engage traditional forms of community leadership.
- Work with local community representatives to develop cultural awareness materials (that will cover key issues including the location and importance of all local cultural sites and other cultural sensitivities.
- Should construction activity be required in proximity to existing graves, develop and implement working protocols in consultation with local traditional leaders.
- Do not remove any cultural heritage including graves without prior consultation to the communities and fulfilling the legal requirements. Any removal of cultural heritage should be conducted by the best available techniques.

- Establish a grievance procedure to ensure community concerns are addressed.
- Develop a chance find procedure which will detail the appropriate course of action that must be followed for any relevant cultural heritage discoveries.

Residual Impact

The impact significance is negligible after mitigation measures during construction and no impacts are expected during operations (Table 8-48). With the proposed mitigation measures, particularly the development of chance finding procedures the residual negative impacts on cultural resources are assessed to be of a low magnitude.

Table 8-48: Residual Impact Significance

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Damage of grave sites considered important by the local communities	Construction	Negligible	Negligible

Unplanned Events

The following section presents the assessment of impacts resulting from unplanned or non-routine events and those which are a result of accidents. These are different to impacts that would reasonably be predicted to occur in the normal course of activities (including the application of in-built control measures) during construction and operations. Unplanned and accidental events have the potential to occur during Project activities and therefore the evaluation of impacts for unplanned and accidental event takes into account the likelihood of the event occurring into the impact magnitude. Likelihood is determined as unlikely, possible, or likely based in professional judgement and quantitative information (statistical frequency) where available. Given the nature of Project activities, unplanned and accidental events relate to potential accidental spills of equipment fuel and oils and vehicle traffic accidents. If unplanned and accidental events did occur, there would be effects on the biophysical and social environment. The risks of unplanned and accidental events are described in this section.

Potential Impacts to Soil and Surface Water from Spill Events

During construction there is the potential for spills of fuels and oils during construction activities, fuelling, maintenance of machinery and vehicles. Spills could occur in a number of locations along the transmission line RoW. Spills have the potential to affect terrestrial environments and could lead to the deterioration of soil, water and sediment quality. This could lead to knock on effects for flora and fauna and local community users.

Impact Assessment

If hazardous materials such as fuel were to be released to the soil and surface water resources, this would be limited to the local extent, depending on the volume spilt and rate of spillage. Within the Project AoI there are surface water resources such as streams which could be impacted if the spill were to occur within proximity of the resource.

Likelihood

Incidental spills of fuels are infrequent but do occur; most frequently due to malfunction of handling systems, poor practice of workers and force majeure. Spills are most likely to occur during refilling and transportation of substances. Large releases of hazardous materials are rare and it is considered unlikely that a spill would occur of emergency scale.

Significance of Impacts

For impacts to soils, the spatial scale is considered to be local. The impact could be long term and is a direct negative impact. The overall magnitude is considered to be medium. There are areas along the transmission RoW which are used for cultivation and therefore the sensitivity is considered of medium sensitivity. This results in a potential negative impact of Moderate significance (Table 8-49 below).

Table 8-49: Potential Impacts from Spillages

Construction Phase	Operation Phase
Soil and surface water degradation due to fuel spills during construction activities (refueling, maintenance machinery)	Soil and surface water degradation as a result fuel spills due to maintenance activities of the transmission lines.

For surface water, the impact of the spill would be short to medium term as the release of fuel or oil is likely to be a discrete (i.e.: non-continuous) event and the effects on water quality naturally mitigated through dilution and natural attenuation. The magnitude of the impact is considered medium and the potential impact is therefore of Moderate significance (Table 8-50).

Table 8-50: Pre-Mitigation Impact Assessment

Impact	Accidental Fuel Spills on Soils			
Impact Nature	Negative	Positive	Neutral	
	Reduction in local soil quality as a result of spillage during maintenance of machinery, improper storage of hazardous materials, spillage during transfers of fuel and general construction activities.			
Impact Type	Direct	Indirect	Induced	
	Impact is a result as a direct interaction between project activities soil resources along the RoW areas			
Impact Duration	Temporary	Short Term	Long Term	Permanent
	The impact is long term due to time for remediation or natural attenuation expected for contaminated soils			
Impact Extent	Local	Regional	International	
	The impact will be limited to the AoI			
Impact Scale	The impact is considered as medium scale. If a spill occurs, it will be locally– usually at a construction site – and not along the whole of the transmission line.			
Frequency	Not Applicable			
Likelihood	Possible			

Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above the impact magnitude is considered medium				
Resource/ Receptor Sensitivity	Low		Medium		High
	While some areas along the RoW are in urban areas other sections include cultivated areas and therefore the significance is medium.				
Impact Significance	Negligible		Minor	Moderate	Major
	Considering the impact magnitude is medium and the sensitivity is medium the overall significance is considered to be moderate.				

Mitigations

The following management measures will be implemented in the Project's ESMP:

- The Project will develop a detailed Oil Spill Response Plan (OSRP) which includes community notifications of any significant spills that have the potential to affect communities. The Project will maintain spill clean-up and response capability adequate for addressing spills during all phases of the Project. All spills will be immediately contained and cleaned up. Contaminated areas will be remediated, and post remediation verification will be carried out (involving sampling of water and/or soil).
- Refuelling of equipment and vehicles will be carried out in designated areas on hard standing ground to prevent seepage of any spillages to ground. Collection systems will be installed in these areas to manage any spills, fuels will be collected and either reused, treated by incineration, or removed by an authorised local contractor. Drip trays must be used when refuelling and servicing vehicles or equipment, where it is not on a hardstanding surface.
- Hazardous material storage will be on hard standing and impermeable surface and the bulk storage facility will be bunded. The Project will restrict storage and handling of hazardous materials and fuels to bunded areas of sufficient capacity to contain a release.
- Hydrocarbon spill clean-up kits shall be available at all locations where refuelling or maintenance of vehicles and equipment is done, and responsible people shall be trained in the use thereof.

Residual Impact

The impacts on soils are considered Minor post mitigation, largely because parts of the transmission line occur in cultivated areas and spills of hazardous substances here are likely to have a greater impact than spills in unutilized areas. Based on the surface water context, impacts on surface water will be of Minor significance post mitigation.

Table 8-51: Residual Impact Significance

Impact	Project Phase	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Reduction in local soil quality	Construction and Operation	Moderate	Minor

Reduction in surface water quality	Construction and Operation	Moderate	Minor

Potential Impacts to Community Health and Safety

During the transmission line construction and operation phases, unplanned events with the potential to negatively affect human population could occur. Table 8-48 presents the potentially significant unplanned events that may occur during the construction and operation phases.

Impact Assessment

Stringing activity around the wires and other electrical units can be a potential hazard if proper planning is not followed. The assumption that local workers at times are not accustomed to using personal protective equipment (PPE) should be taken in consideration, i.e., their attitude to avoid PPE may result in accident/hazard. During operation, there is a possibility of lines or towers/parts of the tower failing and causing injuries and/or fatalities. Additionally, during the operation phase, contact with the transmission line can result in electrocution.

Embedded Controls

The following embedded controls are considered as part of the assessment:

- Contractor team will follow the method statement for overhead stringing; the activities will be managed by experienced Supervisors.
- Implementation of design standards (built in safety), the line hardware used on the overhead transmission lines is rated or designed higher than the conductor ultimate tensile strength and the conductor is only pulled to 20% of its ultimate tensile strength.

The potential impacts are all considered unlikely in that they are not likely to occur during the lifetime of the Project. The significance of the impact associated with stringing activities is summarized in Table 8-52. This is considered a negative event that could lead to permanent impacts if there are injuries and fatalities. The overall impact is considered of Moderate significance.

Table 8-52: Potential Impacts on Community Health and Safety

Construction Phase	Operation Phase
Risks during stringing activities.	Dielectric oil release that has the potential to ignite, create fire or explosion and could lead to fatalities. Potential disaster resulting in a transmission line snapping, transmission tower/pylon collapse.

In terms of the impact related to UXO exposure to the communities, it is considered a negative event that could lead to permanent impacts if there are injuries and fatalities. The overall impact is considered of major significance if unmitigated (Table 8-53).

Table 8-53: Pre-Mitigation Impact Assessment

Impact	**Risks during Stringing Activities**				
Impact Nature	Negative	Positive	Neutral		
	Inadequate planning of stringing activities has the potential to impact occupational and community health.				
Impact Type	Direct	Indirect	Induced		
	The community health and welfare of workers and population around the stringing activities could be directly impacted.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	Potential impacts are considered to be permanent as they could lead in injuries and fatalities.				
Impact Extent	Local	Regional	International		
	The impact will have a localized extent limited to the transmission lines footprint.				
Impact Scale	The impact is considered as medium scale covering the length of the transmission lines.				
Likelihood	Unlikely because it is not likely to occur during the lifetime of the project.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above, the event is considered to have a medium magnitude.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	Sensitivity of receptor considered as Medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude is medium as well as the sensitivity, the impact on the community health and welfare is considered to be of moderate significance.				

Table 8-54 summarizes the potential impact associated with transmission line snapping or pylon collapse. The negative impact is a direct impact, which while regional in its extent, could lead to permanent impacts and therefore has a large magnitude. The risk is influenced by poor foundation quality, tower member theft, material corrosion due to poor coating and poor quality or damaged fittings exposing the system to failure. The receptor sensitivity is considered high as there are households within the transmission line RoWs in the areas close to urban and peri-urban area. This is therefore considered as a major significant impact, which is unlikely to occur during the lifetime of the Project. In the rural areas, due to the fact that the transmission line routing was mostly designed far from the existing communities the receptor sensitivity is considered low but with medium significance.

Table 8-54: Pre-Mitigation Impact Assessment

Impact	**Risks during Stringing Activities**		
	Negative	Positive	Neutral

Impact Nature	Injuries or fatalities to community members or workforce.				
Impact Type	Direct	Indirect	Induced		
	The community health and welfare of workers and population around the construction areas could be directly impacted.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	Potential impacts are considered to be permanent as they could lead in injuries and fatalities.				
Impact Extent	Local	Regional	International		
	The impact will have a localized extent limited to the transmission lines footprint.				
Impact Scale	The impact is considered as medium scale covering the length of the transmission lines.				
Likelihood	Possible given the high incident of UXOs in the region.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the potential for fatalities, the event is considered to have a large magnitude.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	Sensitivity of receptor considered as Medium.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the risk of fatalities. the impact on the community health and welfare (and workforce) is considered to be of Major significance if unmitigated.				

Mitigations

The following mitigation measures will be employed to reduce any impacts resulting from a potential unplanned event:

- Stringing activities near wires and other electrical utilities will be done after proper shutdown of the line/utilities with prior information and permission.
- Making sure that temporary soil stockpiles are safely stored, with controlled access.
- An Emergency Prevention and Response Plan (EPRP) will be developed according to international industry standards and best practices.
- The EPRP will be developed in consultation with the competent authorities, emergency service and administrations along the transmission routes.
- Based on consultations with relevant stakeholders, KETRACO will investigate the capacity of statutory local emergency response providers to participate in emergency response activities.
- Personnel will be trained on how to respond to unplanned events.
- Periodic audits will be performed in order to ensure the safeguards are in place.
- Risks to general public during operation will be reduced by public awareness and education and physical measures by attaching an appropriate warning sign on all faces of the tower.

- Once the stringing work is complete, notices and permanent anti-climbing devices will be installed on the tower (in particular in lattice towers). The operational start date for electricity transmission and safety implications will be publicized locally in advance.
- In addition, the risk of the transmission line spanning, or pylon collapse can be mitigated through complying with design specifications, installing anti- theft devices, conducting material quality inspection and compliance, and following KETRACO's installation procedures.

Table 8-55: Pre-Mitigation Impact Assessment

Impact	**Potential Disaster Resulting in Transmission Line Snapping and/or Transmission Tower/Pylon Collapse**				
	Negative	**Positive**	**Neutral**		
Impact Nature	An unplanned event leading to the snapping of the transmission lines or collapse of transmission towers or parts of it has the potential to impact on community health and welfare.				
	Construction and operation	Moderate	Minor		
Impact Type	Direct	Indirect	Induced		
	The community health and welfare of population around the transmission lines could be directly impacted.				
Impact Duration	Temporary	Short Term	Long Term	Permanent	
	Impacts on community health and wellbeing are considered to be permanent as they could lead in injuries and fatalities.				
Impact Extent	Local	Regional	International		
	The impact will have a localized extent limited to the areas surrounding the transmission lines – more acute close to urban and peri/urban areas				
Impact Scale	The impact is considered as medium scale.				
Likelihood	Unlikely because the event is not likely to occur during the lifetime of the project.				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
	Based on the above, the event is considered to have a large magnitude.				
Resource/ Receptor Sensitivity	Low	Medium	High		
	Sensitivity of receptor considered as High, considering that significant portions of the transmission lines routes cross dense residential areas.				
Impact Significance	Negligible	Minor	Moderate	Major	
	Considering the magnitude is large and the sensitivity high, the impact on the community health and welfare in case of transmission line snapping or transmission tower/pylon collapse is considered to be of major significance in the urban areas with crowded settlements and moderate significance in the rural areas. It should be noted that although this event is unlikely to occur it has a great consequence since the majority of the transmission line crosses urban areas.				

Seismic Hazards

The location of the proposed transmission line project generally exhibits low seismic hazards as shown in the Figure 8-6. The measure of seismic risk is defined by Probabilistic Ground Acceleration (PGA) which is the maximum acceleration of the ground shaking during an earthquake. The PGA for an earthquake along the transmission line route is in the range of 0.2 – 0.8m/s.

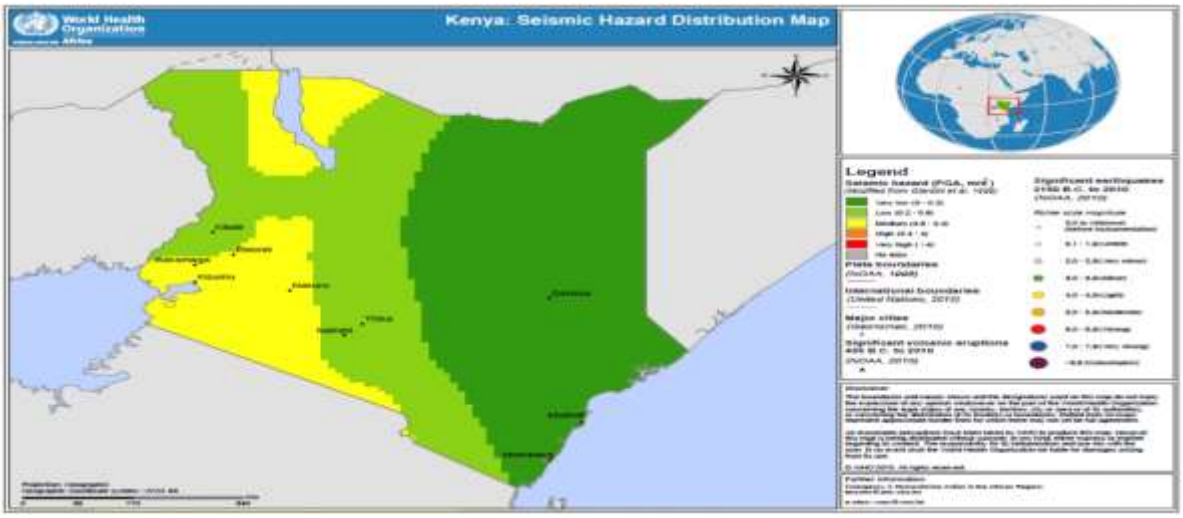


Figure 8-2: Seismic Hazard Distribution Map

8.3.3 Cumulative Impacts

Effects of an action, project, or activity (collectively referred to in this document as "developments") when added to other existing, planned, and/or reasonably anticipated future ones (IFC, 2013). The potential for cumulative impacts within the Project AoI is considered low as no significant urban developments are expected to occur as a direct cause of the project - the future transmission line will boost energy provision to the counties of Baringo and Laikipia. Consequently, is not likely to result in increased traffic activity in the AoI, increased pressure on waste management facilities and accidental events such as spillages or uncontrolled releases. Cumulative impacts are considered to be Project impacts that act with impacts from other projects such that:

- Sum of the impacts is greater than the parts; or
- Sum of the impacts reaches a threshold level such that the impact becomes significant.

The overall approach is summarized in Figure 8-7 below, as outlined in the IFC Good Practice Handbook on Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (Source: www.ifc.org 18/06/2020).

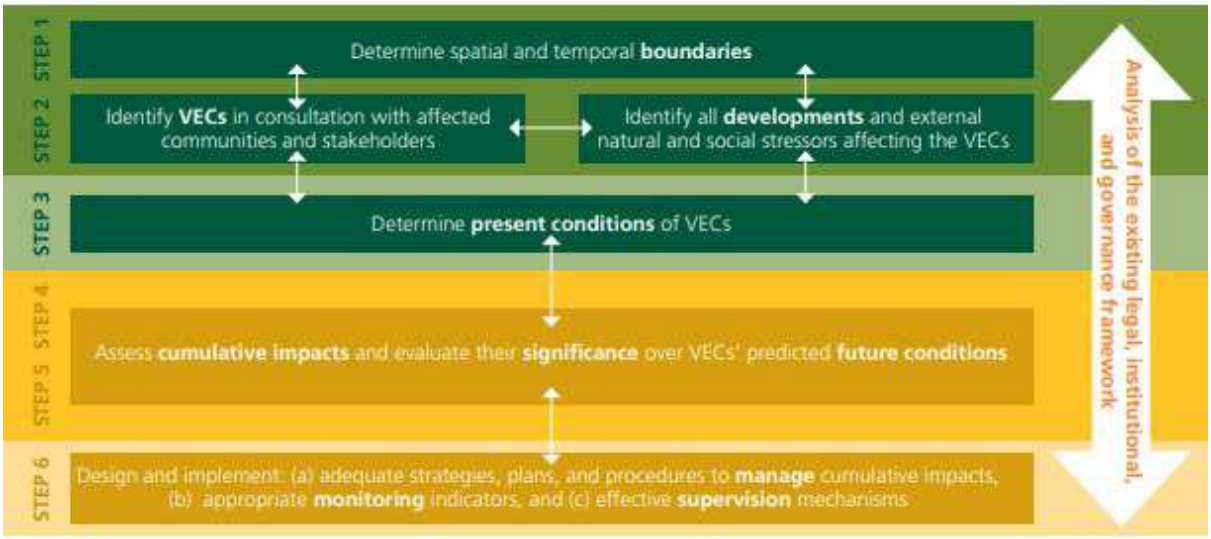


Figure 8-7: Cumulative Impact Approach

Due to the inherent uncertainties in the nature of cumulative impacts, the CIA has by necessity been performed in a qualitative manner, but still provides useful context for determining the significance of the Project's contribution to the overall impacts. Because all of Project predicted residual adverse impacts are of **Minor** or **Negligible** significance, only a high-level CIA has been carried out, on the basis that the potential significant cumulative effects are low. Upon assessment of the project impacts, the cumulative impact assessment will focus impacts on Atmospheric Air quality, Noise Levels, Water quality and use.

Air Quality

It is expected that air quality will be impacted due to cumulative impacts of additional machines and vehicles along the project RoW. The only source for air pollution from the Transmission Line construction shall be the excavation which shall be carried out during benching and foundation work. However, with only about 9mx9m area to be excavated, the amount of dust generated will be minimal. The other sources of air contaminants will be from the additional worker camps where wood and kerosene may be the main fuel for cooking and heating, especially since these camps will be located away from access roads and LPG or electricity will not be readily available. The net impact of the Project on Air Quality is **small** and **transient**, because air pollution will be generated at the sporadically spread worker camps and along the highway and will be limited to the pre-construction and construction period.

Noise Impacts

It is expected that the noise levels will be impacted due to cumulative impacts of additional construction machines, vehicles and general construction activities along the RoW given the noise levels of the machines used. The net impact of the Project on Noise Levels is **small** and **transient**, because noise will be generated at the construction sites of the stainless-steel pylons and along the highway and will be limited to the pre-construction and construction period.

Water Resources Demand

Depending on the number of workers deployed at the construction locations of the Transmission Line and in line with the World Health Organization (WHO) requirement that 50 to 100 liters of water per person per day is needed to ensure that most basic needs are met

and few health concerns arise. About 300 litres/day of water shall also be used in concrete works, concreting shall be done only for laying foundation for the stainless-steel pylon tower. About 50 liters of water will be also required for sprinkling on to the area of excavation to suppress dust. This shall only be required during the excavation at pylon foundation. The net impacts of the Project activities on water resources are **small** and **transient** because the only use of water for construction of the TL is to serve for domestic purposes. Water use has been calculated for the peak construction period and could be considerably lower than the estimated quantity depending on number of workers at each site.

Socioeconomic Parameters

With regard to socioeconomic parameters, if a project activity causes a negative impact in one parameter that can be compensated by an overall positive development impact, then the impact can usually be considered to be acceptable. The major socio-economic impact is the land acquisition along the RoW, this is mitigated by compensation and livelihood restoration for all persons affected by the project.

9 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

This chapter presents the assessment of the adverse impacts/issues likely to arise as a result of implementation of the proposed project and possible mitigation measures. For each issue, the analysis is based on its nature, the predicted impact, extent, duration, intensity and probability, and the stakeholders and/or values affected. In accordance with best practice, the analysis includes issues relating to the project's environmental and social sustainability.

9.1 Mitigation Measures

Mitigation Hierarchy for the Planned Project Activities

Avoid at source: Reduce at source
Avoiding or reducing at source is essentially "designing" the project so that a feature causing an impact is designed out (e.g., a Transmission line re-routed) or altered (e.g., reduced working width). Often this is called minimization.

Abate on site
This involves adding something to the basic design to abate the impact for example, pollution controls fall in this category. This is often called end-of-pipe.

Abate at receptor
If an impact cannot be abated on-site, then measures can be implemented off-site an example of this would be to install double-glazed windows to minimize the impact of noise at a nearby residence.

Repair or Remedy
Some impacts involve unacceptable damage to a resource, e.g., agricultural land during transmission line construction. Repair essentially involves restoration and re-instatement type measures.

9.2 Pre-Construction

The majority of mitigation measures and in particular mitigations to protect and enhance the physical environment are most effectively incorporated during the design phase. There are five key elements:

- Development of sustainable designs with the lowest possible environmental impact within the constraints of the project funding and the socio-economic setting.
- Incorporate the recommendations and requirements of the ESMP to be an integral part of the Bidding and Contract Documents thereby building in enforceable measures to protect the environmental and social matters throughout the construction phase.
- Development of stakeholder engagement plan or procedures
- Provide adequate grievance redress procedures to address the concerns of local people and stakeholders to ensure satisfactory resolution of any grievance arising from the project.

- Ensure adequate and fair compensation for involuntary resettlement for any party suffering inconvenience, financial or loss of livelihood due to being moved to accommodate the works, principally the construction of the transmission line.

For each of the identified impacts, mitigation measures have been suggested in accordance with a general rule defining mitigation criteria as:

1. Avoidance of major impacts: major impacts are generally considered unacceptable, ones that would endure in the long-term or extend over a large area;
2. Reduction of major and moderate impacts to as low as reasonably practicable (ALARP) by planning, designing, and controlling mitigation measures. This implies that mitigation measures will be applied until the limitations of cost effectiveness and practical application have been reached. The limitations are established by international practice;
3. Implementation of good practices for impacts rated as minor, in order to ensure that impacts are managed within good reason.

There will only be localized short-term impacts during construction due to the implementation of the civil works. Impacts have been addressed at the design stage by choosing engineering solutions that, as far as is possible, minimize the impacts during the construction and operational phase. The impacts which could not be eliminated by the design, mostly impacts during construction, will be reduced or eliminated by mitigation and monitoring measures specified in the ESMP. These construction related impacts can be mitigated by

i) the contractors' work practices, especially those related to maintenance of access, methods of trench excavation, the storage of construction materials and cleanliness of the work sites;
ii) cooperation by the local authorities with the contractor in terms of traffic management and use of public space and utilities;
iii) project management's strict enforcement of the correct construction practices and standards;
iv) the incorporation of the mitigation measures identified in the ESIA into the bid documents and specifications;
v) public awareness including liaison at ward level shortly in advance of work in each work location; and
vi) close monitoring of the contractor's implementation of the required mitigation measures. Environmental impacts and proposed mitigation measures during project pre-construction, construction, operation, and decommissioning phases are described in the following sections.

9.3 Environmental and Social Management Plan

The ESIA includes an ESMP which details the mitigation measures, environmental monitoring activities, institutional responsibilities, and environmental management capacity building. The relevant ESMP provisions are included in bid documents for contractors. During construction, the project management team will closely monitor the works contractors' environmental performance and overall ESMP implementation.

Table 9-1: Environmental and Social Management Plan

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
Pre-Construction Phase				
Land Acquisition and Involuntary Displacement	-Permanent and temporary loss of assets (land, structures, and crops), livelihoods and household income as a result of temporary land take. -Displacement of physical structures and physical resettlement.	Preparation and implementation of the RAP, including any livelihoods restoration measures, as applicable. ▪ Avoiding or minimizing the number of towers sites working areas in agricultural areas or areas of community resources. ▪ Minimizing clearance of maintenance road as in some cases clearance may not be necessary since other access roads are available. ▪ Minimizing as far as possible tree cut-off and tree trimming in the temporary tower sites working areas.	**380,525,162.35**	KETRACO

Table 9-2: Environmental and Social Management Plan

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
Construction Phase				

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
A1. Construction Air Impacts	Impact on sensitive receptors Impact on workers' health and safety Impact on community health and safety Impact on flora and fauna	**A1-1:** Develop a Dust Management Plan; **A1-2:** Record all dust and air quality complaints, identify cause(s), take appropriate measures **A1-3:** Liaise with local communities to forewarn of potentially dusty activities; **A1-4:** Undertake monitoring close to dusty activities, noting that this may be daily visual inspections, or passive/active monitoring **A1-5:** Undertake inspections to ensure compliance with the Dust Management Plan; **A1-6:** Plan potentially dusty activities so that these are located as far from receptors as feasible **A1-7:** Erect solid screens if feasible around stockpiles and concrete batching; **A1-8:** Avoid run off of mud and water and maintain drains in a clean state; **A1-9:** Remove dusty materials form site as soon as possible if not being re-used. If being re-used, cover or vegetate if possible; **A1-10:** Impose speed limits on haul routes and in construction compounds to reduce dust generation; **A1-11:** Minimise drop heights when loading stockpiles or transferring materials; and **A1-12:** Avoid waste or vegetation burning.	Contractors' Cost	Contractor
		For traffic on unpaved roads: **A1-13:** Undertake watering to attenuate dust near sensitive receptors. The duration and frequency of this should be set out in the Dust Management Plan and will consider water availability and any stakeholder grievances; and	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		A1-14: On unpaved roads in use for more than 1 month, consider use of surface and sealants to reduce the use of water and water trucks. Use of lignin-based sealants recommended due to low environmental toxicity.		
		For earthworks: **A1-15:** Revegetate exposed areas as soon as feasible **A1-16:** Revegetate or cover stockpiles if feasible; **A1-17:** Expose the minimum area required for the works and undertake; and exposure on a staged basis to minimise dust blow	Contractors' Cost	Contractor
		For track out: **A1-18**: Where track out is onto paved roads, use wet road cleaning methods to remove dirt and mud build up; **A1-19:** Avoid dry sweeping of large areas; and **A1-20:** Where feasible, undertake wheel washing and vehicle clean down prior to accessing public roads.	Contractors' Cost	Contractor
A2. Noise and Vibration Impacts	Impact on sensitive receptors Impact on workers' health and safety Impact on community health and safety Impact on fauna	**A2-1:** Siting noisy plant and equipment as far away as possible from NSRs, and use of barriers (e.g., site huts, acoustic sheds or partitions) to reduce the level of construction noise at receptors wherever practicable; **A2-2:** Where practicable noisy equipment will be orientated to face away from the nearest NSRs; **A2-3:** Working hours for significant noise generating construction work (including works required to upgrade existing access roads or create new ones), will be daytime only;	Contractors' Cost	Contractor
		A2-4: Alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, will be used, where practicable;	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		A2-5: Where practicable, stationary equipment will be located in an acoustically treated enclosure	Contractors' Cost	Contractor
		A2-6: For machines with fitted enclosures, doors and door seals will be checked to ensure they are in good working order; also, that the doors close properly against the seals;	Contractors' Cost	Contractor
		A2-7: Throttle settings will be reduced, and equipment and plant turned off, when not being used; **A2-8:** Equipment will be regularly inspected and maintained to ensure it is in good working order. The condition of mufflers will also be checked; and **A2-9:** Fitting of mufflers or silencers of the type recommended by manufacturers	Contractors' Cost	Contractor
A3. Soil erosion and contamination impacts	Impacts on water quality (sediment run-off/contamination) leading to deterioration of quality. Deteriorated water quality will impact on fauna if consumed.	**A3-1:** Vegetation clearing, and topsoil disturbance will be minimized. **A3-2:** Contour temporary and permanent access roads/laydown areas so as to minimise surface water runoff and erosion; **A3-3:** Sheet erosion of soil shall be prevented where necessary through the use of sandbags, diversion berms, culverts, or other physical means. **A3-4:** Topsoil shall be stockpiled separate from subsoil. Stockpiles shall not exceed 2 m height, shall be located away from drainage lines, shall be protected from rain and wind erosion, and shall not be contaminated. Wherever possible construction work will take place during the dry season.	Contractors' Cost	Contractor
		A3-5: Topsoil shall be evenly spread across the cleared areas when reinstated.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	Deteriorated water quality will impact on community health if consumed.	**A3-6:** Accelerated erosion from storm events during construction shall be minimised through managing storm water runoff (e.g., velocity control measures).		
		A3-7: Soil backfilled into excavations shall be replaced in the order of removal in order to preserve the soil profile. Material (e.g. fuel or chemicals).	Contractors' Cost	Contractor
		A3-8: Spread mulch generated from indigenous cleared vegetation across exposed soils after construction.	Contractors' Cost	Contractor
A4. Surface Water Quality Impacts	Impacts on water quality (sediment run-off/contamination) leading to deterioration of quality. Deteriorated water quality will impact on fauna if consumed. Deteriorated water quality will impact on community health if consumed.	**A4-1:** Activities shall be conducted >100m away from water bodies, except where crossings are required.	Contractors' Cost	Contractor
		A4-2: All wastewater which may be contaminated with oily substances must be managed in accordance with an appropriate waste management plan and no hydrocarbon-contaminated water may be discharged to the environment;	Contractors' Cost	Contractor
		A4-3: Domestic wastewater shall be treated and disposed of in accordance with an approved waste management plan. Park vehicles preferably on paved platforms	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
A5. Impact on Flora and Vegetation	Loss of biodiversity. Fragmentation of habitat.	**A5-1:** Avoidance of impacts should be prioritized. , it is strongly recommended to closely/re-route follow the main road along these transmission-line segments. Where impact avoidance is not possible, existing indigenous vegetation must be kept intact, where possible. Vegetation will be removed only as absolutely necessary.	Contractors' Cost	Contractor
		A5-2: Rivers, watercourses and other water bodies shall be kept clear of felled trees, vegetation cuttings and organic waste and debris from clearing;	Contractors' Cost	Contractor
		A5-3: Alien invasive vegetation should be removed immediately and disposed of properly, at a licensed waste disposal facility as necessary;	Contractors' Cost	Contractor
		A5-4: There should be no deviation from the access road position without prior discussions with the authorities; **A5-5:** Firewood collection by the project's employees should be strictly forbidden.	Contractors' Cost	Contractor
		A5-6: Rehabilitation of temporary construction sites and pioneer camps (if needed) should be done as swiftly as possible and always with suitable native grasses and other plants – construction of new camps is unlikely to happen;	Contractors' Cost	Contractor
		A5-7: Materials (e.g., pylons and cables) and equipment should not be delivered to the site prematurely, as this could result in need for laydown or storage areas and additional areas being cleared or affected unnecessarily; and	Contractors' Cost	Contractor
		A5-8: Whenever possible, all damaged areas shall be reinstated and rehabilitated upon completion of the contract to as near pre-construction conditions as possible	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
A6. Impact on Fauna	-Disturbance due to noise, vibrations, and vehicle presence.	**A6-1:** All areas disturbed by construction activities shall be landscaped and rehabilitated; **A6-2:** Vegetation that does not grow high enough to cause interference with the overhead power lines, or cause a fire hazard, should not be trimmed or cut unless it is growing in the road access area **A6-3:** Speed of project vehicles should be controlled at a maximum limit of 40 km/h to minimise roadkill **A6-4:** No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct) **A6-5:** Guidance shall be given to all staff that they are not allowed to harm any animals during any routine maintenance of the project's infrastructure. **A6-6:** No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct)	Contractors' Cost	Contractor
			Contractors' Cost	Contractor
			Contractors' Cost	Contractor
A7. Impact on Avifauna	-Disturbance due to noise, vibrations, and vehicle presence.	**A7-1**: In the event of receiving confirmation of regular bird strikes along the transmission line, high-visibility markers should be installed to make the lines more visible to birds, to reduce the risk of collision;	Contractors' Cost	Contractor
		A7-2: Where feasible and safe, provide artificial bird-safe perches and nesting platforms placed at a safe distance from the energized parts of transmission infrastructure	Contractors' Cost	Contractor
		A7-3: Cross-arms, insulators and other parts of the power lines can be constructed such that there is no space for birds to perch where they can come into contact with energized wires	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		A7-4: Undertake regular (at least annual) monitoring of the transmission line for evidence of birds nesting on the pylons. In the event of nesting, anti-perch and nest devices will be installed to discourage birds from regularly visiting these structures. These will be replaced when necessary;	Contractors' Cost	Contractor
		A7-5: No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct)	Contractors' Cost	Contractor
		A7-6: All animal dens in close proximity to the work areas must be marked as no-go areas.	Contractors' Cost	Contractor
		A7-7: Guidance shall be given to all staff that they are not allowed to harm any animals during any routine maintenance of the project's infrastructure.		Contractor
A8: Solid and Liquid Waste Impacts	-Impact on storm water quality and thus water quality in the water bodies in project areas -Impact on soil quality -Impact on surface water quality; -Impact on ground water quality; and -Impact on ecological receptors or human health	**A8-1:** The Contractor should prepare a Solid Waste Management Plan.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
A9. Access to Infrastructure and Services	-Disruption of transit routes -Disruption of normal traffic operations -Wastes from the camp site could be significant and overburden the existing wastes disposal facilities in the area	**A9-1:** Methods will be implemented to maintain open, clear and transparent communication with the local communities regarding the use of local infrastructures by the Project throughout the different phases. **A9-2:** Engagement with the relevant authorities is recommended in order to avoid damage to common property and minimize access disruption to education and healthcare facilities **A9-3**: Community Grievance Mechanism will be implemented. **A9-4:** A Traffic Management Plan shall be issued before earth movements and construction start in order to minimize traffic disruptions **A9-5:** Where temporary closure of road is required, alternative access to property will be ensured and local solutions including diversions will be implemented to ensure uninterrupted mobility.	Contractors' Cost	Contractor
A10: Landscape & Visual amenities risks	-Impacts on aesthetics of the surroundings with the possibility to affect the neighbouring residents.	**A10-1:** Any excavated or cut and fill areas will be landscaped and revegetated; **A10-2**: No debris or waste materials will be left at the work sites, good housekeeping on site to avoid litter and minimise waste **A10-3:** Towers and structures should have a non-reflective finish; **A10-4:** Night lighting of sites should be minimized within requirements of safety and efficiency. **A10-5:** Ongoing rehabilitation of cleared areas to minimise visual scarring and maintenance clearing will be kept to the absolute minimum and should not extend beyond the corridor;		Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
A11: Worker's Health and Safety and Workers Management	-Workers are likely to be exposed to work related risks during the construction phase of the project.	**A11-1**: KETRACO will develop a Human Resources Policy, which will outline worker rights to be included in all contracts including restrictions on working hours in line with applicable ILO standards, compensation including consideration of overtime, holidays etc.	Contractors' Cost	Contractor
		A11-2: KETRACO will require its contractors and subcontractors to put in place policies in line with national legislation and applicable international legislation and KETRACO Code of Conduct and Policies.	Contractors' Cost	Contractor
		A11-3: KETRACO will establish contractual clauses to be embedded in the contracts of the EPC and all sub-contractors that require adherence to Kenyan law and international standards to be upheld related to worker rights and providing the contractor and KETRACO with the right of audit.	Contractors' Cost	Contractor
		A11-4: Pre-employment medical assessments will be put in place as a workforce risk management tool to screen individuals for risk factors that may limit their ability to perform a job safely and effectively. Expected benefits of conducting a pre-employment medical assessment include a safer working environment, reduction in workplace injuries, minimised downtime, matching the capacity of the employee with the role, and overall recruitment cost and risk reduction. **A11-5:** KETRACO will ensure that training on health and safety measures is provided to all construction workers prior to starting to work on the Project and that supervisors have adequate experience to deliver on their responsibilities.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		A11-6: KETRACO will implement regular health and safety checks and audits of workers, contractors and subcontractors and implementing sanctions in case of breaches of nationals **A11-7:** KETRACO will develop and implement a Workers Grievance Mechanism for the Project workforce including contractors and subcontractor's standards and the Project's specific standards. Such audits to include workplace H&S; worker contracts, working hours, pay and conditions; housing and food standards. **A11-8:** KETRACO will establish a procedure for the recording and analysis of incidents and lessons learned such that additional actions can be implemented to avoid or minimize occupational health and safety risks. **A11-:9** KETRACO will ensure that facilities and work sites are designed and maintained such that robust barriers are in place to prevent accidents. **A11-10**: KETRACO will ensure that its Code of Conduct is followed to regulate the performance and behaviour of all workers, including provision for disciplinary action for anti-social behaviour and non-compliance with health and safety regulations such as lack of use of PPE. **A11-11:** KETRACO will ensure that adequate clean water, adequate food, and access to medical care is provided to all workers on the worksite and at accommodation. **A11-12:** KETRACO will ensure that condoms are provided to male and female workers		
	-Increased noise decreased air		Contractors' Cost	Contractor Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
A12: Community Health and Safety Impacts	quality, inappropriate waste handling or disposal, and accidental leaks and spills, debris and movement of heavy equipment may pose a safety risk to the general public. -Potential impacts on community safety, in particular road accidents, trespass on the sites, and demining activities potentially resulting in accidents leading to injuries or fatalities. ~ Environmental health: changes to the environment due to increased noise and vibrations, decreased air quality	**A12-1:** KETRACO will develop and monitor the implementation of a Community Health and Safety Management Plan which will include the following measures: • Ensure that all workers are housed in accommodation camps rather than in the local settlements in order to minimize interaction with local communities and related health and safety impacts. • Ensure all workers including contractors and subcontractors undergo pre-employment screening and regular health screening including voluntary screening for STDs. • Ensure any trucking companies employed to work on the Project will have policies around health screening of their workers in line with Project requirements. • Ensure all workers including contractors and subcontractors receive education around transmission routes and symptoms of communicable diseases of concern and STDs. • Undertake community awareness on HIV/AIDS and other STDs • Ensure that COVID-19 protocols and guidelines by GoK's Ministry of Health are adhered to during the decommissioning activities including social distancing, provision of face masks to all workers, provision of sanitizers, the establishment of handwashing areas and provision of water and soap, conducting temperature checks for all workers, creating awareness on signs and symptoms of COVID-19, encouraging staff to take		Contractor Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	and, inadequate management of waste. ~ Impact from workers presence and potential interaction with local populations	COVID-19 tests if symptoms associated with the same are exhibited, liasing with GoK to offer vaccination for workers • Provide access to health care for those injured by its activities. • Ensure that work sites are fenced and that signs are put up around work fronts and construction sites advising people of the risks associated with trespass. When work fronts are less than 100 metres from a community or house, employ security guards from the local community to prevent trespass. • Undertake a programme of stakeholder engagement and consultation to educate local communities of the risks of trespassing onto sites, the meaning of signs, and the dangers of playing on or near equipment or entering fenced areas. Special attention to be paid in primary and secondary schools along the transmission routes and in areas where towers will be built close to residential or school areas.		
		A12-2: KETRACO will develop Emergency Response Plans (ERPs) in cooperation with local emergency authorities and hospitals. • KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process.	Contractors' Cost	

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		• KETRACO will provide primary health care and first aid at construction camp sites to avoid pressure on local healthcare infrastructures. • KETRACO will implement a Community Grievance Mechanism. • KETRACO will develop and implement a Traffic Management Plan covering aspect such as vehicle safety, driver, and passenger behaviour, use of drugs and alcohol, operating hours, rest periods, community education on traffic safety and accident reporting and investigations		
A13: Gender-based violence at the community level	-Gender-based violence at the community level -Forced Early Marriages -Sexual Exploitation and Abuse -Transactional sex. -Shift in power dynamics in the community or family. -Abusive behaviour among project-related staff	**A13-1:** KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct periodically to all employees including contractors and subcontractors as part of the induction process. Ensure that the Worker Code of Conduct is publicly disclosed in local languages and are widely accessible to all workers and all group of people in the project areas. Establish a link between KETRACO activities or operations with, GBV cases at the community level such as domestic violence. This is to ensure that all GBV cases reported at the community level and resulting from or exacerbated by project operations are managed effectively. Conduct safety audits to identify settings affected by the project that might increase the risk of GBVH.	Contractors' Cost	Contractor KETRACO

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		Ensuring that all the workers have contracts and background checks including reference from the most recent employers.		
A14: Violation of children rights by contractor and labour force on site	-Violation of children rights by contractor and labour force on site. e.g., child labour, sexual relations with minors etc.	**A14-1: •** KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process. **A 14-2:** Prepare and implement a Child Protection Strategy **A 14-3:** Prepare and implement a child protection plan and monitoring the employment register, **A 14-4:** Employing persons aged 18+ years	Contractor's cost	Contractor
A15: Archaeology and Cultural Heritage Impacts	-Restriction to access cultural sites. -Destruction of cultural sites during construction or operations	**Avoid damage to, relocation of or restricting access to physical, cultural resources.** **A15-1:** Consult community when any community issue arises in order to engage traditional forms of community leadership. Develop stakeholder engagement procedures to guide consultations. **A15-2:** Work with local community representatives to develop cultural awareness materials (that will cover key issues including the location and importance of all local cultural sites and other cultural sensitivities (graves). Develop stakeholder engagement procedures to guide consultations. **A15-3:** Should construction activity be required in proximity to existing graves, develop and implement working protocols in consultation with local traditional leaders. Develop stakeholder engagement procedures to guide consultations. **A15-4:** Do not remove any cultural heritage including graves without prior consultation to the communities and fulfilling the	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		legal requirements. Any removal of cultural heritage should be conducted by the best available techniques. **A15-5:** Establish a grievance procedure to ensure community concerns are addressed. **A15-6:** Develop a chance find procedure which will detail the appropriate course of action that must be followed for any relevant cultural heritage discoveries.		
A16: Unplanned Events	-Impacts to soil and surface water from spill events	**A16-1:** Develop a detailed Oil Spill Response Plan (OSRP) which includes community notifications of any significant spills that have the potential to affect communities. **A16-2:** Refuelling of equipment and vehicles will be carried out in designated areas on hard standing ground to prevent seepage of any spillages to ground. **A16-3:** Hazardous material storage will be on hard standing and impermeable surface and the bulk storage facility will be bunded. **A16-4:** Hydrocarbon spill clean-up kits shall be available at all locations where refuelling or maintenance of vehicles and equipment is done, and responsible people shall be trained in the use thereof.	Contractors' Cost	Contractor

Table 9-3. Environmental and Social Management Plan

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
Operations and Maintenance Phase				
B1. Air pollution Impacts		**B1-1:** Develop a Dust Management Plan; **B1-2:** Record all dust and air quality complaints, identify cause(s), take appropriate measures **B1-3:** Liaise with local communities to forewarn of potentially dusty activities; **B1-4:** Undertake monitoring close to dusty activities, noting that this may be daily visual inspections, or passive/active monitoring **B1-5:** Undertake inspections to ensure compliance with the Dust Management Plan; **B1-6:** Plan potentially dusty activities so that these are located as far from receptors as feasible **B1-7:** Erect solid screens if feasible around stockpiles and concrete batching; **B1-8:** Avoid run off of mud and water and maintain drains in a clean state; **B1-9:** Remove dusty materials form site as soon as possible if not being re-used. If being re-used, cover or vegetate if possible; **B1-10:** Impose speed limits on haul routes and in construction compounds to reduce dust generation; **B1-11:** Minimise drop heights when loading stockpiles or transferring materials; and **B1-12:** Avoid waste or vegetation burning.	KETRACO Cost	KETRACO
		For traffic on unpaved roads:	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		B1-13: Undertake watering to attenuate dust near sensitive receptors. The duration and frequency of this should be set out in the Dust Management Plan and will consider water availability and any stakeholder grievances; and **B1-14:** On unpaved roads in use for more than 1 month, consider use of surface and sealants to reduce the use of water and water trucks. Use of lignin-based sealants recommended due to low environmental toxicity.		
		For earthworks: **B1-15:** Revegetate exposed areas as soon as feasible **B1-16:** Revegetate or cover stockpiles if feasible; **B1-17:** Expose the minimum area required for the works and undertake; and exposure on a staged basis to minimise dust blow/	KETRACO Cost	KETRACO
		For track out: **B1-18**: Where track out is onto paved roads, use wet road cleaning methods to remove dirt and mud build up; **B1-19:** Avoid dry sweeping of large areas; and **B1-20:** Where feasible, undertake wheel washing and vehicle clean down prior to accessing public roads.	KETRACO Cost	KETRACO
B2. Noise Emissions and Vibration Impacts	Intermittent noise from high voltage overhead power transmission lines can	**B2-1:** Siting noisy plant and equipment as far away as possible from NSRs, and use of barriers (e.g., site huts, acoustic sheds or partitions) to reduce the level of construction noise at receptors wherever practicable; **B2-2:** Where practicable noisy equipment will be orientated to face away from the nearest NSRs;	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	generate noise by a phenomenon known as 'corona discharge'	**B2-3:** Working hours for significant noise generating construction work (including works required to upgrade existing access roads or create new ones), will be daytime only;		
		B2-4: Alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, will be used, where practicable;	KETRACO Cost	KETRACO
		B2-5: Where practicable, stationary equipment will be located in an acoustically treated enclosure	KETRACO Cost	KETRACO
		B2-6: For machines with fitted enclosures, doors and door seals will be checked to ensure they are in good working order; also, that the doors close properly against the seals;	KETRACO Cost	KETRACO
		B2-7: Throttle settings will be reduced, and equipment and plant turned off, when not being used; **B2-8:** Equipment will be regularly inspected and maintained to ensure it is in good working order. The condition of mufflers will also be checked; and **B2-9:** Fitting of mufflers or silencers of the type recommended by manufacturers	KETRACO Cost	KETRACO
B3. Soil erosion and contamination impacts	~ Minimal or no soil erosion	**B3-1:** Vegetation clearing, and topsoil disturbance will be minimized. **B3-2:** Contour temporary and permanent access roads/laydown areas so as to minimise surface water runoff and erosion; **B3-3:** Sheet erosion of soil shall be prevented where necessary through the use of sandbags, diversion berms, culverts, or other physical means.	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		B3-4: Topsoil shall be stockpiled separate from subsoil. Stockpiles shall not exceed 2 m height, shall be located away from drainage lines, shall be protected from rain and wind erosion, and shall not be contaminated. Wherever possible construction work will take place during the dry season.		
		B3-5: Topsoil shall be evenly spread across the cleared areas when reinstated. **B3-6:** Accelerated erosion from storm events during construction shall be minimised through managing storm water runoff (e.g. velocity control measures).	KETRACO Cost	KETRACO
		B3-7: Soil backfilled into excavations shall be replaced in the order of removal in order to preserve the soil profile. Material (e.g. fuel or chemicals).	KETRACO Cost	KETRACO
		B3-8: Spread mulch generated from indigenous cleared vegetation across exposed soils after construction.	KETRACO Cost	KETRACO
B4. Surface Water Quality Impacts	-Minimal or no water pollution	**B4-1:** Activities shall be conducted >100m away from water bodies, except where crossings are required.	KETRACO Cost	KETRACO
		B4-2: All wastewater which may be contaminated with oily substances must be managed in accordance with an appropriate waste management plan and no hydrocarbon-contaminated water may be discharged to the environment; and	KETRACO Cost	KETRACO
		B4-3: Domestic wastewater shall be treated and disposed of in accordance with an approved waste management plan. Park vehicles preferably on paved platforms	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
B5. Impact on Flora and Vegetation	-No Large impact on existing flora and vegetation.	**B5-1:** Avoidance of impacts should be prioritized; it is strongly recommended to closely/re-route follow the main road along these transmission-line segments. Where impact avoidance is not possible, existing indigenous vegetation must be kept intact, where possible. Vegetation will be removed only as absolutely necessary.	KETRACO Cost	KETRACO
		B5-2: Rivers, watercourses and other water bodies shall be kept clear of felled trees, vegetation cuttings and organic waste and debris from clearing;	KETRACO Cost	KETRACO
		B5-3: Alien invasive vegetation should be removed immediately and disposed of properly, at a licensed waste disposal facility as necessary;	KETRACO Cost	KETRACO
		B5-4: There should be no deviation from the access road position without prior discussions with the authorities; **B5-5:** Firewood collection by the project's employees should be strictly forbidden.	KETRACO Cost	KETRACO
		B5-6: Rehabilitation of temporary construction sites and pioneer camps (if needed) should be done as swiftly as possible and always with suitable native grasses and other plants – construction of new camps is unlikely to happen;	KETRACO Cost	KETRACO
		B5-7: Materials (e.g., pylons and cables) and equipment should not be delivered to the site prematurely, as this could result in need for laydown or storage areas and additional areas being cleared or affected unnecessarily; and	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		B5-8: Whenever possible, all damaged areas shall be reinstated and rehabilitated upon completion of the contract to as near pre-construction conditions as possible	KETRACO Cost	KETRACO
B6. Impact on Fauna	~ Disturbance due to noise, vibrations and vehicle presence. ~ Direct strike with the transmission line and pylons (bird collision) and by electrocution ~ Change of avian flight patterns for some species.	**B6-1:** All areas disturbed by maintenance activities shall be landscaped and rehabilitated; **B6-2:** Vegetation that does not grow high enough to cause interference with the overhead power lines, or cause a fire hazard, should not be trimmed or cut unless it is growing in the road access area **B6-3:** Speed of project vehicles should be controlled at a maximum limit of 40 km/h to minimise roadkill **B6-4:** No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct) **B6-5:** Guidance shall be given to all staff that they are not allowed to harm any animals during any routine maintenance of the project's infrastructure.	KETRACO Cost	KETRACO
			KETRACO Cost	KETRACO
			KETRACO Cost	KETRACO
B7. Impact on Avifauna	~ Direct strike with the transmission line and pylons (bird collision) and by electrocution	**B7-1**: In the event of receiving confirmation of regular bird strikes along the transmission line, high-visibility markers should be installed to make the lines more visible to birds, to reduce the risk of collision;	KETRACO Cost	KETRACO
		B7-2: Where feasible and safe, provide artificial bird-safe perches and nesting platforms placed at a safe distance from the energised parts of transmission infrastructure	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	~ Change of avian flight patterns for some species	**B7-3**: Cross-arms, insulators and other parts of the power lines can be constructed such that there is no space for birds to perch where they can come into contact with energised wires	KETRACO Cost	KETRACO
		B7-4: Undertake regular (at least annual) monitoring of the transmission line for evidence of birds nesting on the pylons. In the event of nesting, anti-perch and nest devices will be installed to discourage birds from regularly visiting these structures. These will be replaced when necessary;	KETRACO Cost	KETRACO
		B7-5: No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct)	KETRACO Cost	KETRACO
B8: Solid and Liquid Waste Impacts	Minimal or no solid or liquid waste	**B8-1:** Implement Solid Waste Management Plan, as described in this report.	KETRACO Cost	KETRACO
B9: Landscape & visual amenities risks	Impacts on aesthetics of the surroundings with the possibility to affect the neighbouring residents.	**B9-1:** Ongoing rehabilitation of cleared areas to minimise visual scarring and maintenance clearing will be kept to the absolute minimum and should not extend beyond the corridor;	KETRACO Cost	KETRACO
B11: Worker's Health and Safety and	Potential impacts to workers health and safety	Develop and implement a Worker's Health and Safety Management System covering all contractors and subcontractors including the following measures: • HR Policy in line with Local labour laws and ILO standards		KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
Workers Management	-respect for labour rights during construction	○ Training on H&S Risks ○ H&S Audits for workers ○ Workers Grievance Mechanism ○ Incident and Accident Reporting • Code of conduct to regulate behaviour • Ensure that COVID-19 protocols and guidelines by GoK's Ministry of Health are adhered to during the decommissioning activities including social distancing, provision of face masks to all workers, provision of sanitizers, establishment of handwashing areas and provision of water and soap, conducting temperature checks for all workers, creating awareness on signs and symptoms of COVID-19, encouraging staff to take COVID-19 tests if symptoms associated with the same are exhibited, liaising with GoK to offer vaccination for workers		
		• Access to clean water	KETRACO Cost	KETRACO
		• Traffic Management Plan ○ Vehicle Safety ○ Drug and alcohol use ○ Rest periods ○ Traffic safety ○ Accident Reporting	KETRACO Cost	KETRACO
		• Non-Discrimination on basis of gender, marital status Age, Religion or sexual orientation	KETRACO Cost	KETRACO
				KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
B12: Community Health and Safety Impacts	-Exposure to Electromagnetic Fields	**B12-1:** KETRACO will develop and monitor the implementation of a Community Health and Safety Management Plan which will include the following measures: • Undertake a programme of stakeholder engagement and consultation to educate local communities of the risks of trespassing onto sites, the meaning of signs, and the dangers of playing on or near equipment or entering fenced areas. Special attention to be paid in primary and secondary schools along the transmission routes and in areas where towers will be built close to residential or school areas.	KETRACO Cost	KETRACO KETRACO KETRACO
		B12-2: KETRACO will develop Emergency Response Plans (ERPs) in cooperation with local emergency authorities and hospitals.		
B13: Gender-based violence at the community level	-Gender-based violence at the community level -Sexual Exploitation and Abuse -Transactional sex. -Shift in power dynamics in the community or family. -Abusive behaviour among project-related staff	**A13-1:** KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct periodically to all employees including contractors and subcontractors. Ensure that the Worker Code of Conduct is publicly disclosed in local languages and are widely accessible to all workers and all group of people in the project areas. Establish a link between KETRACO activities or operations with, GBV cases at the community level such as domestic violence. This is to ensure that all GBV cases reported at the community level and resulting from or exacerbated by project operations are managed effectively.	KETRACO Cost	KETRACO

PHASE/ IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		Conduct safety audits to identify settings affected by the project that might increase the risk of GBVH. Ensuring that all the workers have contracts and background checks including reference from the most recent employers.		

Table 9-4: Environmental and Social Management Plan

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
Decommissioning Phase				
C1. Demolition Air Impacts	Impact on sensitive receptors Impact on workers' health and safety Impact on community health and safety Impact on flora and fauna	**C1-1:** Develop a Dust Management Plan; **C1-2:** Record all dust and air quality complaints, identify cause(s), take appropriate measures **C1-3:** Liaise with local communities to forewarn of potentially dusty activities; **C1-4:** Undertake monitoring close to dusty activities, noting that this may be daily visual inspections, or passive/active monitoring **C1-5:** Undertake inspections to ensure compliance with the Dust Management Plan; **C1-6:** Plan potentially dusty activities so that these are located as far from receptors as feasible **C1-7:** Erect solid screens if feasible around stockpiles; **C1-8:** Avoid run off of mud and water and maintain drains in a clean state; **C1-9:** Remove dusty materials form site as soon as possible if not being re-used. If being re-used, cover or vegetate if possible;	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		C1-10: Impose speed limits on haul routes and in compounds to reduce dust generation; **C1-11:** Minimise drop heights when loading stockpiles or transferring materials; and **C1-12:** Avoid waste or vegetation burning.		
		For traffic on unpaved roads: **C1-13:** Undertake watering to attenuate dust near sensitive receptors. The duration and frequency of this should be set out in the Dust Management Plan and will consider water availability and any stakeholder grievances; and **C1-14:** On unpaved roads in use for more than 1 month, consider use of surface and sealants to reduce the use of water and water trucks. Use of lignin-based sealants recommended due to low environmental toxicity.	Contractors' Cost	Contractor
		For earthworks: **C1-15:** Revegetate exposed areas as soon as feasible **C1-16:** Revegetate or cover stockpiles if feasible; **C1-17:** Expose the minimum area required for the works and undertake; and exposure on a staged basis to minimise dust blow	Contractors' Cost	Contractor
		For track out: **C1-18**: Where track out is onto paved roads, use wet road cleaning methods to remove dirt and mud build up; **C1-19:** Avoid dry sweeping of large areas; and **C1-20:** Where feasible, undertake wheel washing and vehicle clean down prior to accessing public roads.	Contractors' Cost	Contractor
	Impact on sensitive receptors	**C2-1:** Siting noisy plant and equipment as far away as possible from NSRs, and use of barriers (e.g., site huts, acoustic sheds or	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
C2. Demolition Noise and Vibration Impacts	Impact on workers' health and safety Impact on community health and safety Impact on fauna	partitions) to reduce the level of decommissioning noise at receptors wherever practicable; **C2-2:** Where practicable noisy equipment will be orientated to face away from the nearest NSRs; **C2-3:** Working hours for significant noise generating decommissioning work (including works required to upgrade existing access roads or create new ones), will be daytime only;		
		C2-4: Alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, will be used, where practicable;	Contractors' Cost	Contractor
		C2-5: Where practicable, stationary equipment will be located in an acoustically treated enclosure	Contractors' Cost	Contractor
		C2-6: For machines with fitted enclosures, doors and door seals will be checked to ensure they are in good working order; also, that the doors close properly against the seals;	Contractors' Cost	Contractor
		C2-7: Throttle settings will be reduced, and equipment and plant turned off, when not being used; **C2-8:** Equipment will be regularly inspected and maintained to ensure it is in good working order. The condition of mufflers will also be checked; and **C2-9:** Fitting of mufflers or silencers of the type recommended by manufacturers	Contractors' Cost	Contractor
C3. Soil erosion and contamination impacts	Impacts on water quality (sediment run-off/contamination)	**C3-1:** Vegetation clearing, and topsoil disturbance will be minimized. **C3-2:** Contour temporary and permanent access roads/laydown areas so as to minimise surface water runoff and erosion;	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	leading to deterioration of quality. Deteriorated water quality will impact on fauna if consumed. Deteriorated water quality will impact on community health if consumed.	**C3-3:** Sheet erosion of soil shall be prevented where necessary through the use of sandbags, diversion berms, culverts, or other physical means. **C3-4:** Topsoil shall be stockpiled separate from subsoil. Stockpiles shall not exceed 2 m height, shall be located away from drainage lines, shall be protected from rain and wind erosion, and shall not be contaminated. Wherever possible decommissioning work will take place during the dry season.		
		C3-5: Topsoil shall be evenly spread across the cleared areas when reinstated. **C3-6:** Accelerated erosion from storm events during decommissioning shall be minimised through managing storm water runoff (e.g., velocity control measures).	Contractors' Cost	Contractor
		C3-7: Soil backfilled into excavations shall be replaced in the order of removal in order to preserve the soil profile. Material (e.g., fuel or chemicals).	Contractors' Cost	Contractor
		C3-8: Spread mulch generated from indigenous cleared vegetation across exposed soils after decommissioning.	Contractors' Cost	Contractor
C4. Surface Water Quality Impacts	Impacts on water quality (sediment run-off/contamination) leading to deterioration of quality.	**C4-1:** Activities shall be conducted >100m away from water bodies, except where crossings are required.	Contractors' Cost	Contractor
		C4-2: All wastewater which may be contaminated with oily substances must be managed in accordance with an appropriate waste management plan and no hydrocarbon-contaminated water may be discharged to the environment.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	Deteriorated water quality will impact on fauna if consumed. Deteriorated water quality will impact on community health if consumed.	**C4-3:** Domestic wastewater shall be treated and disposed of in accordance with an approved waste management plan. Park vehicles preferably on paved platforms	Contractors' Cost	Contractor
C5. Impact on Flora and Vegetation	Loss of biodiversity. Fragmentation of habitat.	**C5-1:** Avoidance of impacts should be prioritized; it is strongly recommended to closely/re-route follow the main road along these transmission-line segments. Where impact avoidance is not possible, existing indigenous vegetation must be kept intact, where possible. Vegetation will be removed only as absolutely necessary.	Contractors' Cost	Contractor
		C5-2: Rivers, watercourses and other water bodies shall be kept clear of felled trees, vegetation cuttings and organic waste and debris from clearing;	Contractors' Cost	Contractor
		C5-3: Alien invasive vegetation should be removed immediately and disposed of properly, at a licensed waste disposal facility as necessary;	Contractors' Cost	Contractor
		C5-4: There should be no deviation from the access road position without prior discussions with the authorities; **C5-5:** Firewood collection by the project's employees should be strictly forbidden.	Contractors' Cost	Contractor
		C5-6: Rehabilitation of temporary decommissioning. sites and pioneer camps (if needed) should be done as swiftly as possible	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		and always with suitable native grasses and other plants – construction of new camps is unlikely to happen;		
		C5-8: Whenever possible, all damaged areas shall be reinstated and rehabilitated upon completion of the contract to as near pre-construction conditions as possible	Contractors' Cost	Contractor
		C5-8: Whenever possible, all damaged areas shall be reinstated and rehabilitated upon completion of the contract to as near pre-construction conditions as possible	Contractors' Cost	Contractor
C6. Impact on Fauna	-Disturbance due to noise, vibrations and vehicle presence.	**C6-1:** All areas disturbed by decommissioning activities shall be landscaped and rehabilitated; **C6-2:** Vegetation that does not grow high enough to cause interference with the overhead power lines, or cause a fire hazards, should not be trimmed or cut unless it is growing in the road access area **C6-3:** Speed of project vehicles should be controlled at a maximum limit of 40 km/h to minimise roadkill **C6-4:** No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct) **C6-5:** Guidance shall be given to all staff that they are not allowed to harm any animals during any routine maintenance of the project's infrastructure. **C6-6:** No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct).	Contractors' Cost Contractors' Cost Contractors' Cost	Contractor Contractor Contractor
C7. Impact on Avifauna	-Disturbance due to noise, vibrations and vehicle presence.	**C7-1:** No hunting by Project personnel is to be tolerated under any circumstances (this measure should be a part of worker codes of conduct)	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		C7-2: All animal dens in close proximity to the work areas must be marked as no-go areas.	Contractors' Cost	Contractor
		C7-3: Guidance shall be given to all staff that they are not allowed to harm any animals during decommissioning.	Contractors' Cost	Contractor
C8: Solid and Liquid Waste Impacts	-Impact on storm water quality and thus water quality in the water bodies in project areas -Impact on soil quality -Impact on surface water quality; -Impact on ground water quality; and -Impact on ecological receptors or human health	**C8-1:** The Contractor should prepare a Solid Waste Management Plan.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
C9. Access to Infrastructure and Services	-Disruption of transit routes -Disruption of normal traffic operations -Wastes from the camp site could be significant and overburden the existing wastes disposal facilities in the area	**C9-1:** Methods will be implemented to maintain open, clear and transparent communication with the local communities regarding the use of local infrastructures by the Project throughout the different phases. **C9-2:** Engagement with the relevant authorities is recommended in order to avoid damage to common property and minimize access disruption to education and healthcare facilities **C9-3**: Community Grievance Mechanism will be implemented. **C9-4:** A Traffic Management Plan shall be issued before decommissioning start in order to minimize traffic disruptions **C9-5:** Where temporary closure of road is required, alternative access to property will be ensured and local solutions including diversions will be implemented to ensure uninterrupted mobility.	Contractors' Cost	Contractor
C10: Landscape & visual amenities risks	-Impacts on aesthetics of the surroundings with the possibility to affect the neighbouring residents.	**C10-1:** Any excavated or cut and fill areas will be landscaped and revegetated; **C10-2**: No debris or waste materials will be left at the work sites, good housekeeping on site to avoid litter and minimise waste **C10-3:** Night lighting of sites should be minimized within requirements of safety and efficiency; **C10-5:** Ongoing rehabilitation of cleared areas to minimise visual scarring and maintenance clearing will be kept to the absolute minimum and should not extend beyond the corridor;		Contractor
C11: Worker's Health and Safety and Workers Management	-Workers are likely to be exposed to work related risks during the	**C11-1**: KETRACO will develop a Human Resources Policy, which will outline worker rights to be included in all contracts including restrictions on working hours in line with applicable ILO standards, compensation including consideration of overtime, holidays etc.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	decommissioning phase of the project.	**C11-2:** KETRACO will require its contractors and subcontractors to put in place policies in line with national legislation and applicable international legislation and KETRACO Code of Conduct and Policies.	Contractors' Cost	Contractor
		C11-3: KETRACO will establish contractual clauses to be embedded in the contracts of the EPC and all sub-contractors that require adherence to Kenyan law and international standards to be upheld related to worker rights and providing the contractor and KETRACO with the right of audit.	Contractors' Cost	Contractor
		C11-4: Pre-employment medical assessments will be put in place as a workforce risk management tool to screen individuals for risk factors that may limit their ability to perform a job safely and effectively. Expected benefits of conducting a pre-employment medical assessment include a safer working environment, reduction in workplace injuries, minimised downtime, matching the capacity of the employee with the role, and overall recruitment cost and risk reduction. **C11-5:** KETRACO will ensure that training on health and safety measures is provided to all workers prior to starting to work on the Project and that supervisors have adequate experience to deliver on their responsibilities. **C11-6**: KETRACO will implement regular health and safety checks and audits of workers, contractors and subcontractors and implementing sanctions in case of breaches of nationals **C11-7:** KETRACO will develop and implement a Workers Grievance Mechanism for the Project workforce including contractors and subcontractor's standards and the Project's specific standards. Such audits to include workplace H&S;	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		worker contracts, working hours, pay and conditions; housing and food standards. **C11-8:** KETRACO will establish a procedure for the recording and analysis of incidents and lessons learned such that additional actions can be implemented to avoid or minimize occupational health and safety risks. **C11-:9** KETRACO will ensure that facilities and work sites are designed and maintained such that robust barriers are in place to prevent accidents. **C11-10**: KETRACO will ensure that its Code of Conduct is followed to regulate the performance and behaviour of all workers, including provision for disciplinary action for anti-social behaviour and non-compliance with health and safety regulations such as lack of use of PPE. **C11-11:** KETRACO will ensure that adequate clean water, adequate food and access to medical care is provided to all workers on the worksite and at accommodation. **C-11-12:** Ensure that COVID-19 protocols and guidelines by GoK's Ministry of Health are adhered to during the decommissioning activities including social distancing, provision of face masks to all workers, provision of sanitizers, establishment of hand washing areas and provision of water and soap, conducting temperature checks for all workers, creating awareness on signs and symptoms of COVID-19, encouraging staff to take COVID-19 tests if symptoms associated with the same are exhibited, liaising with GoK to offer vaccination for workers		
				Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
C12: Community Health and Safety Impacts	-Increased noise decreased air quality, inappropriate waste handling or disposal, and accidental leaks and spills, debris and movement of heavy equipment may pose a safety risk to the general public. -Potential impacts on community safety, in particular road accidents, trespass on the sites, and demining activities potentially resulting in accidents leading to injuries or fatalities. ~ Environmental health: changes to the environment due to increased noise and vibrations, decreased air quality and,	**C12-1:** KETRACO will develop and monitor the implementation of a Community Health and Safety Management Plan which will include the following measures: • Ensure that all workers are housed in accommodation camps rather than in the local settlements in order to minimize interaction with local communities and related health and safety impacts. • Ensure all workers including contractors and subcontractors undergo pre-employment screening and regular health screening including voluntary screening for STDs. • Ensure any trucking companies employed to work on the Project will have policies around health screening of their workers in line with Project requirements. • Ensure all workers including contractors and subcontractors receive education around transmission routes and symptoms of communicable diseases of concern and STDs. • Undertake awareness creation on STDs and specifically HIV/AIDS targeting the local communities • Provide access to health care for those injured by its activities. • Ensure that work sites are fenced and that signs are put up around work fronts and decommissioning. sites advising people of the risks associated with trespass. When work fronts are less than 100 metres from a community or house, employ security guards from the local community to prevent trespass.	Contractors' Cost	Contractor Contractor Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	inadequate management of waste. ~ Impact from workers presence and potential interaction with local populations	• Undertake a programme of stakeholder engagement and consultation to educate local communities of the risks of trespassing onto sites, the meaning of signs, and the dangers of playing on or near equipment or entering fenced areas. Special attention to be paid in primary and secondary schools along the transmission routes and in areas where towers will be built close to residential or school areas.		
		C12-2: KETRACO will develop Emergency Response Plans (ERPs) in cooperation with local emergency authorities and hospitals. • KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process. • KETRACO will provide primary health care and first aid at decommissioning. camp sites to avoid pressure on local healthcare infrastructures. • KETRACO will implement a Community Grievance Mechanism. • KETRACO will develop and implement a Traffic Management Plan covering aspect such as vehicle safety, driver, and passenger behaviour, use of drugs and alcohol, operating hours, rest periods, community education on traffic safety and accident reporting and investigations	Contractors' Cost	

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
C13: Gender-based violence at the community level	-Gender-based violence at the community level -Forced Early Marriages -Sexual Exploitation and Abuse -Transactional sex. -Shift in power dynamics in the community or family. -Abusive behaviour among project-related staff	**C13-1:** KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct periodically to all employees including contractors and subcontractors. Ensure that the Worker Code of Conduct is publicly disclosed in local languages and are widely accessible to all workers and all group of people in the project areas.Establish a link between KETRACO activities or operations with, GBV cases at the community level such as domestic violence. This is to ensure that all GBV cases reported at the community level and resulting from or exacerbated by project operations are managed effectively. Conduct safety audits to identify settings affected by the project that might increase the risk of GBVH. Ensuring that all the workers have contracts and background checks including reference from the most recent employers.	Contractors' Cost	Contractor KETRACO
C14: Violation of children rights by contractor and labour force on site	-Violation of children rights by contractor and labour force on site (e.g., child labour, sexual relations with minors etc.)	**C14-1:** KETRACO will extend the Worker Code of Conduct to include guidelines on worker –community interactions and will provide training on the worker code of conduct to all employees including contractors and subcontractors as part of the induction process. **C 14-2:** Prepare and implement child protection strategy **C14-3**: Prepare and implement a child protection plan and monitoring the employment register, **C14-4:** Employing persons aged 18+ years	Contractor's cost	Contractor
C15: Archaeology and Cultural Heritage Impacts	-Restriction to access cultural sites.	**C15-1:** Consult community when any community issue arises in order to engage traditional forms of community leadership.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
	-Destruction of cultural sites during decommissioning.	Develop stakeholder engagement procedures to guide consultations. **C15-2:** Work with local community representatives to develop cultural awareness materials (that will cover key issues including the location and importance of all local cultural sites and other cultural sensitivities (graves). Develop stakeholder engagement procedures to guide consultations. **C15-3:** Should decommissioning. activity be required in proximity to existing graves, develop and implement working protocols in consultation with local traditional leaders. Develop stakeholder engagement procedures to guide consultations. **C15-4:** Do not remove any cultural heritage including graves without prior consultation to the communities and fulfilling the legal requirements. Any removal of cultural heritage should be conducted by the best available techniques. **C15-5:** Establish a grievance procedure to ensure community concerns are addressed. **C15-6:** Develop a chance find procedure which will detail the appropriate course of action that must be followed for any relevant cultural heritage discoveries.		
C16: Unplanned Events	-Impacts to soil and surface water from spill events	**C16-1:** Develop a detailed Oil Spill Response Plan (OSRP) which includes community notifications of any significant spills that have the potential to affect communities. **C16-2:** Refuelling of equipment and vehicles will be carried out in designated areas on hard standing ground to prevent seepage of any spillages to ground.	Contractors' Cost	Contractor

IMPACT TYPE	POTENTIAL IMPACT	MITIGATION MEASURES	COST	RESPONSIBILITY
		C16-3: Hazardous material storage will be on hard standing and impermeable surface and the bulk storage facility will be bunded. **C16-4:** Hydrocarbon spill clean-up kits shall be available at all locations where refuelling or maintenance of vehicles and equipment is done, and responsible people shall be trained in the use thereof.		

Table 9-2. Environment and Social Monitoring Indicators

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	Frequency
A. General	**A-1** Planning	• Workforce briefed about the relevant environmental issues, including pollution control and site management	KETRACO	
	A-2 Implementation Oversight Capacity	• EHS Manager • Environmental Officers • Social Officers • Health and Safety Officer	KETRACO	
	A-3 Site Implementation Capacity	• Site EHS Officer	Contractor	
B. Land Acquisition	**B-1** Land will be used for permanent facilities like	• Development/Disclosure of RAP • Implementation of RAP • Development/Implementation of Stakeholder Engagement Plan	KETRACO/NLC	As per RAP Schedule

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**

	foundation, pylons etc.
	
	(Loss of land and Livelihoods. To be compensated. The rates for land are agreed on a negotiated basis)
		• Development/Implementation of GRM
		  ○ Number of complaints on land registered
		  ○ Number of complaints on land (registration, succession) etc, resolved
		• Development/Implementation of LRP
		  ○ Landowners informed about compensation package
		  ○ Number of PAPs receiving compensation
		  ○ Number of restored livelihoods
		  ○ Number of PAPs completing Livelihood restoration training courses
		  ○ Number of Grievances received/resolved
		  ○ Number of stakeholder consultations undertaken		

	B-2 Crop/Plant loss during temporary loss of land	○ Number of crops/plants losses	KETRACO/NLC	• Prior to land acquisition

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
	B-3 Communication and compensation *(to be communicated during negotiation)*	• Number of PAHs compensated • Number of communication consultations held with PAHs	KETRACO/NLC	
	B-4 Damage to community and private/individual property during construction activities	• Availability of grievance redress system • Number of grievances reported • Number of grievances resolved in a timely manner	KETRACO	
C. Labour Influx	**C-1** Higher rates of violence, injury, **C-2** Alcohol and drug consumption and **C-3** sexually transmitted diseases in the local population. **C-4** social conflicts within	Development/Implementation • HR Policy • Labour influx Management Plan • GBV (SEA and SH) Management Plan Indicators • HR records on the percentage of local versus non-local employment. • Number/attendance records (communities and workers) of sensitization meetings held on	HSE Manager Human Resource Manager Contractor/KETRACO	• Prior to construction commencing for Local Content and Procurement Plan. • Continuous during construction, operations and decommissioning phases for employment and

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
	and between communities GBV-SEA/SH	GBV (SEA and SH), HIV/AIDS and other STDs etc. • Review of training attendance records of capacity enhancement and transfer of knowledge that local personnel have received. • Code of conduct included in contracts • Established link between activities/operations with GBV at the community level such as domestic violence. This is to ensure that all GBV cases reported at the community level and resulting from or exacerbated by project operations are managed effectively.		procurement-related measures. • Quarterly for training-related measures.
D. Air Quality/ Atmospheric Conditions	**D-1** Dust Emissions associated with construction activities	Dust deposition in adjoining areas to be physically monitored using NEMA accredited labs to ensure compliance	Contractor/HSE	• At least once during excavation and casting
E. Noise	**E-1** Noise from construction activities (*to be managed by equipment choice and*	• Part of the subcontractors' contract	Contractor	• Each schedule of construction activities

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
	arrangement of construction activities)			
F. Soils	**F-1** Dumping of construction material outside the project construction footprint **F-2** Erosion and compaction **F-3** Contamination due to spill of civil construction material	• Visual checks at construction site • Visual inspection during casting	Contractor	• At least once per construction site
G. Ecology	**G-1** Disruption to existing flora and fauna **G-2** Loss of Vegetation **G-3** Disturbance to fauna due to movement in forest areas	• Sensitization trainings to worker on local ecology and extent of care • Signs and warnings against hunting • Number of revegetated areas. • % Area of site cleared vs. remaining un-cleared land.	Contractor	• Continuous
H. Waste	**H-1** accumulation of	• Construction Waste Management Plan	Contractor	• Continuous

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
	waste on site causing nuisances such as odor, pest control problems and general litter.	• Routine weekly checks of waste management arrangements should be undertaken.		
I. Traffic and Transport	**I-1** Increase in traffic	• Development/implementation of traffic management plan •		• Continuous
J. Landscape and Visual Amenity	**J-1** Visual scarring of the landscape	Inspection on a daily basis	Contractor	Continuous throughout the construction phase
K. Workers Heath, Safety and Labour Rights	Workers health and safety Respect for labour rights	• Worker Health and Safety Management System • Human Resources Policy. • Traffic Management Plan • Verify contractual clauses of Contractor and all sub-contractors requiring adherence to Kenya law and international standards. • Records of incidents and accidents. • Record on training sessions and attendance on health and safety measures	Contractor	• Continuous

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
		• Record of lessons learned to minimize occupational health and safety. • Code of Conduct document • Presence of COVID-19 prevention measures (hand washing points, sanitizers, masks provided to workers, observable awareness creation materials/signs, # of workers vaccinated, # of workers detected with COVID-19, observable social distancing.		
L. Community Impacts	**L-1** Labour Influx *(Health impacts including risks of STDs, HIV/AIDS)*	Development/Implementation • GBV (SEA and SH) Management Plan • Number/attendance records (communities and workers) of sensitization meetings held on GBV (SEA and SH), HIV/AIDS and other STDs etc. • Review of training attendance records of capacity enhancement and transfer of knowledge that local personnel have received. • Code of conduct included in contracts	Contractor	Continuous throughout the pre-construction, construction, operations, and decommissioning phases

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	Frequency
		• Established link between KETRACO activities or operations with GBV at the community level such as domestic violence. This is to ensure that all GBV cases reported at the community level and resulting from or exacerbated by project operations are managed effectively.		
	L-2 Community expectation for local benefits	Development/Implementation Labour influx Management Plan GBV (SEA and SH) Management Plan Number/attendance records (communities and workers) of sensitization meetings held on GBV (SEA and SH), HIV/AIDS and other STDs etc. Review of training attendance records of capacity enhancement and transfer of knowledge that local personnel have received. Code of conduct included in contracts Established link between KETRACO activities or operations with GBV at the community level such as domestic violence. This is to ensure that all GBV cases reported at the community level		

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
		and resulting from or exacerbated by project operations are managed effectively.		
	L-3 Violence Against Children	• Policies against VAC in place • HR Policy • Records of employees with National ID card indicated	Contractor and KETRACO	Continuous throughout the pre-construction, construction, operations, and decommissioning phases
	L-4 Gender Based Violence-SEA/SH	• Policies against GBV (SEA/SH) in place • HR Policy • Attendance records of Sensitization meetings held on GBV-SEA/SH	Contractor AND KETRACO	Continuous throughout the pre-construction, construction, operations, and decommissioning phases
M. Cultural Heritage	**M-1** Cultural and religious sensitivities maybe impacted by project	• Chance Find Procedures • Records of training on chance find procedures	Contractor	Continuous throughout the construction phase
N. Local amenities and infrastructure	**N-1** Pressure to local infrastructure from use of local resources	• Availability of grievance redress process • Number of grievances reported	KETRACO Community Liaison Officer Contractor	Continuous throughout the construction phase

Project Activity/Aspect	Impact/Effect	Monitoring Indicator	Institutional Responsibility	
			Monitoring Responsibility	**Frequency**
		• Number of grievances resolved in a timely manner • Number of grievances escalated to national courts and the AfDB.	Local representative administration	
O. Meaningful stakeholder consultations	**O-1** Lack of access to project benefits and opportunities by PAPs	Availability of Stakeholder Engagement Plan of stakeholder consultations held • Record of stakeholder consultations held (minutes of meetings and list of participants)	KETRACO Community Liaison Officer Contractor Local representative administration	Continuous throughout the pre-construction, construction, operations, and decommissioning phases
P. Grievance redress mechanism	**P-1** Inadequate handling and resolution of grievances leading to conflicts	• Availability of grievance redress process • Number of grievances reported • Number of grievances resolved in a timely manner • Number of grievances escalated to national courts and the AfDB	KETRACO Community Liaison Officer Contractor Local representative administration	Continuous throughout the pre-construction, construction, operations, and decommissioning phases

9.3.1 Construction Environment and Social Management Plan

For an effective integration of environmental and social safeguards into the project implementation the Contractor will need to adopt this ESMP and prepare a comprehensive Construction Environment and Social Management Plan (C-ESMP) that will provide the key reference point for compliance. The environmental supervision will also adopt the C-ESMP. Construction Environment and Social Management Plan (C-ESMP) is an upgraded ESMP illustrating realities of the project works to be prepared by the Contractor. The Contractor is expected to finalize the Work Plan and upon approval, list the works items and for each item present practical actions that will be undertaken to realize achievement of the ESMP. The actions on works items should address environmental and social aspects associated with the works and in line with guidelines from the ESMP. Based on these ESMP outline, the Contractor will be instructed to develop a Construction Environment and Social Management Plan (C-ESMP) for each component of the project and submit these plans to the KETRACO.

9.3.2 KETRACO Project Management Team

The Project will be implemented by KETRACO which has a long experience of implementing AfDB financed projects under the safeguards policies. KETRACO has experienced environmental and social safeguards specialist. The project implementation arrangements have been established and the proponent has appointed the KETRACO project implementation team including: -

- Project manager
- Environmentalist
- Socio-Economist /Social Specialist/ Community Liaison Officer
- Land Surveyor
- Land Economist
- Civil Engineer
- Electrical Engineer
- Project Accountant

The core functions of the team will be to coordinate and facilitate oversight for technical, environmental, and social safeguards, health and safety and social risks supervision.

9.3.3 Project Supervision Engineer

The Project Supervision Engineer will be required to recruit a qualified Environmental and Social Expert who will be charged with the responsibilities of supervision, review of site reports, preparation of monthly progress reports, prepare and issue appropriate instructions to the Contractor and monitor ESMP implementation.

9.3.4 Contractor

The Contractor will ensure that the established mitigation measures are integrated and implemented throughout the project works as per the C-ESMP. The Contractor will internalize the ESMP/C-ESMP, prepare monthly progress reports and implement instructions issued by the Supervision Consultant. The Contractor, therefore, will engage qualified Environmentalist (ensure compliance to ESMP and C-ESMPs) and Social Specialist (ensure compliance to social aspects of the ESMP and C-ESMPs) and Community Liaison Officer (link between community and contractor) on full time basis to interpret the C-ESMP and

advice on the implementation of the same, as well to the counterpart personnel for the supervision expert.

9.3.5 National Environment Management Authority

The National Environment Management Authority (NEMA) is responsible for ensuring environmental compliance in the country and has offices in Baringo and Laikipia Counties with staffing who will further ensure that the ESMP is implemented as part of their mandate, functions, and responsibilities. NEMA will undertake surveillance on the project implementation and review compliance performance based on the supervision monitoring reports.

9.3.6 Grievance Redress

AfDB operational policies require Grievance Mechanisms to provide a structured way of receiving and resolving grievances. Complaints should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities and is at no cost and without retribution. The mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both the company and stakeholders. The mechanism must not impede access to other judicial or administrative remedies, such as law courts (costs to be borne by the aggrieved) and the AfDB Grievances Redress Service and the AfDB Inspection Panel (at no cost to the aggrieved).

The project GRM will be vital in addressing grievances raised by PAPs and other stakeholders regarding project activities and operations. The workers GRM will be utilized by workers on site to raise grievances related to project activities and operations.

The project and workers GRM will be culturally appropriate, accessible, and understandable to all stakeholders and applicable to the entire project life. The GRMs will be communicated to all stakeholders including contractors. (See chapter 10.2.1)

There will be a separate mechanism within the GRM (see 10.2.8) that will be aimed at ensuring safety and confidentially while receiving complaints related to GBV-SEA/SH through a focal point system (KETRACO) as well as anonymous complaints mechanism managed by the CLO. A clear link will be established by KETRACO (which has full responsibility to manage the SEA and SH), between construction and operations/decommissioning activities and community level GBV cases such as domestic violence. This is to ensure that all GBV cases reported at the community level and resulting from or exacerbated by project operations are managed effectively.

9.3.7 Management and Monitoring

9.3.7.1 Management Plans

The ESMP has identified some additional plans that will be prepared by the procured contractor prior to construction commencing on all transmission line:

- Traffic and Transportation Management Plan;
- Construction Environmental and Social Management Plan;
- Waste Management Plan;

- Emergency Preparedness and Response Plan;
- Chance Find Procedure;
- Labour Management Plan
- Stakeholder Engagement Plan
- Local Recruitment Plan
- Community Health and Safety and Security Plan;
- Occupational Health and Safety Plan;
- Grievance Redress Mechanism
- Gender Based Violence (SEA/SH) Management Plan
- Vulnerable and Marginalised Groups Plan
- CSR Plan (to be informed by KETRACO's CSR Policy)
- Child Protection Strategy
- HIV/AIDs Prevention Strategy

The specific management plans are listed in Table 9.4 along with links to how these relate to the activities and impacts described within the ESIA as well as the identified responsible party for each. Together with this ESMP, these specific plans will form the overall Environmental and Social Management Plans for the Project.

Table 9-3. Management Plans

Plan Name	Includes	Plan Owner
Specific Management Plans		
Traffic & Transportation Management Plan	Controls over prescribed routes, driver training, vehicle maintenance, speed restrictions, appropriate road safety signage, and vehicle loading and maintenance measures and vetting procedures. Will also include specification for community awareness and safety programs.	Contractor
Construction Management Plan	Plan for the management of the establishment process, including logistics and site management	Contractor
Waste Management Plan	Project-related waste handling procedures for hazardous and non-hazardous wastes.	Contractor
Emergency Preparedness and Response Plan	Administration (policy, purpose, distribution, definitions, etc.), organization of emergency areas (command centers, medical stations, etc.), roles and responsibilities, communication systems, emergency response procedures, emergency resources, training and updating, checklists (role and action list and equipment checklist) and business continuity and contingency. The plan will also include specifications for emergency communications	Contractor

	as well as on-going public and community communication and disclosure.	
Change Find Procedure	Procedural guideline to be followed in the event that previously unknown heritage resources or and burial grounds and graves are exposed or found during the life of the project.	Contractor
Stakeholder Engagement Plan (SEP)	SEP will build on engagement undertaken to date and specify interactions with community and other stakeholders, as well as finalizing the grievance procedure to be used throughout the Project. Community and Employee awareness training and code of conduct procedures.	Contractor
Gender Based Violence (SEA/SH) Management Plan	Plan for mitigating Gender Based Violence (SEA and SH).	Contractor
Employment and Workforce Management Plan	Plan for local training and procurement for operations. Also specifies requirements for contractors during construction. The local recruitment plan will include policies and procedures for hiring of local labour, unskilled, semi- skilled and skilled labour as much as possible, and ensure fair and transparent recruitment considering gender, age, disabilities, and other vulnerabilities present in the project area.	Contractor
Community Health and Safety and Security Plan	The purpose of the CHSSP is to provide a clear set of actions and responsibilities for the control of impacts affecting the health and safety of the communities within the Project's area of influence. The plan includes measures to respond to exposure to diseases due to worker interaction, environmental change, and safety (traffic, unplanned events, etc.)	Contractor
Occupational Health and Safety Plan	Procedures on chemical hazards, fire and explosions, confined spaces and on site-traffic hazards. Communication and training programs. Safety analysis and industrial hygiene surveys procedures. Monitoring, record-keeping and audit procedures.	Contractor
Grievances Redress Mechanism	Procedures for complaints and grievance handling	Contractor

KETRACO will delegate certain responsibility but retain oversight and supervision role to construction contractors and supervising engineers as specified in this ESIA/ESMP section that highlights the roles of the contractors. During this phase KETRACO will manage its contractors to ensure that this ESMP is implemented and monitored effectively through contractual mechanisms regular direct oversight. As a contractual requirement, the contractors will be required to demonstrate compliance of their activities against the ESMP. This includes providing resources to ensure compliance of next tier contractors and a process for emergency stop-work orders in response to monitoring triggers. Contractors will be responsible for performing all work:

- In compliance with relevant national and international EHS legislation and regulations, and with other requirements to which the Project subscribes
- In conformance with the Project ESMP, and related management plans for specific aspects; and
- In accordance with contractual technical and quality specifications.

The Project's ESMP and related documentation will be the main contractual documentation to which the contractor(s) will be bound. Contractors will be required to develop their own management plans which show how they will comply with these environmental and social requirements.

In this way, the ESMP will be implemented and controlled using both KETRACO and the contractor management systems. The contractor management systems will therefore:

- Provide the framework that regulates their activities;
- Define responsibilities and reporting relationships for expediting, mitigation and monitoring actions detailed in the ESMP; and
- Specify the mechanisms for inspecting and auditing to ensure that the agreed actions are implemented.

Contractors will be required to self-monitor against their plan and compliance with the plan will be routinely monitored by KETRACO directly or by third parties. Contractors will be required to submit regular reports of monitoring activities and the Project will review these on a regular basis. KETRACO is ultimately responsible for the management and supervision of all Project activities and will have principal responsibility for implementing this ESMP and the mitigation measures.

9.3.7.2 Training and Awareness

KETRACO will identify, plan, monitor, and record training needs for personnel whose work may have a significant adverse impact upon the environment or social conditions. KETRACO recognizes that it is important that employees at each relevant function and level are aware of the Project's environmental and social policy; potential impacts of their activities; and roles and responsibilities in achieving conformance with the policy and procedures. Training and awareness-raising therefore forms a key element of both EHS and the expediting of this ESMP.

Key staff will, therefore, be appropriately trained in key areas of EHS management and operational control with core skills and competencies being validated on an on-going basis.

The identification of training and awareness requirements and expediting of the identified training/awareness events will be the responsibility of the HSE Manager.

Training and awareness are not a requisite solely of contractor's personnel (and subcontractors). It would be important to include an assessment of the need for training and capacity building of KETRACO staff (before and during the construction phase) and at the conclusion of the construction phase and handover of the ESMP, SEP and grievance mechanism. This will be achieved through a formal training process. Employee training will include awareness and competency with respect to:

- environmental and social impacts that could potentially arise from their activities (including, biodiversity and noise);
- legal requirements in relation to environmental and social performance;
- necessity of conforming to the requirements of the ESIA and ESMP, in order to avoid or reduce those impacts;
- activity-specific training on waste management practices, documentation systems and community interactions; and
- Roles and responsibilities to achieve that conformity, including those in respect of change management and emergency response.

Employees responsible for performing site inspections will receive training by drawing on external resources as necessary. Training will be coordinated by the HSE Manager prior to commissioning of the facilities. Upon completion of training and once deemed competent by management, staff will be ready to train other people. Similarly, the Project will require that each of the contractors' institute training programs for its personnel. Each contractor is responsible for site EHS awareness training for personnel working on the job sites. The contractors are also responsible for identification of any additional training requirements to maintain required competency levels. The contractor training program will be subject to approval by KETRACO and it will be audited to ensure that:

- Training programs are adequate;
- All personnel requiring training have been trained; and
- Competency is being verified.

9.3.7.3 Communication

KETRACO will maintain a formal procedure for communications with the regulatory authorities and communities. Dealings will be transparent, and stakeholders will have access to personnel and information to address concerns raised. The Project will implement a grievance mechanism whereby community members can raise any issues of concern. Grievances may be verbal or written and are usually either specific claims for damages/injury or complaints or suggestions about the way that the Project is being implemented. When a grievance has been brought to the attention of the Project team it will be logged and evaluated. The person or group with the grievance is required to present grounds for making a complaint or claiming loss so that a proper and informed evaluation can be made. Where a complaint or claim is considered to be valid, then steps are required to be undertaken to rectify the issue or agree compensation for the loss. In all cases the decision made and the reason for the decision will be communicated to the relevant stakeholders and recorded. Where there remains disagreement on the outcome then an arbitration procedure may be required to be overseen by

a third party (e.g., government official). Local community stakeholders will be informed on how to implement the grievance procedures.

9.3.7.4 Documentation

KETRACO will control EHS documentation, including management plans; associated procedures; and checklists, forms, and reports, through a formal procedure. All records will be kept on site and will be backed up at several offsite locations (including secure cloud storage facilities). Records will be kept in both hard copy and soft copy formats. And all records will be archived for the life of the project.

Furthermore, the document control procedure will describe the processes that the Project will employ for official communication of both hardcopy and electronic (through the internet) document deliverables. In addition, it will describe the requirement for electronic filing and posting and for assignment of document tracking and control numbers (including revision codes). The EHS Manager is responsible for maintaining a master list of applicable EHS documents and making sure that this list is communicated to the appropriate parties. The EHS Manager is responsible for providing notice to the affected parties of changes or revisions to documents, for issuing revised copies and for checking that the information is communicated within that party's organisation appropriately. The contractors will be required to develop a system for maintaining and controlling its own EHS documentation and describe these systems in their respective EHS plans.

9.3.7.5 Operational Control Procedures

Each activity for which a potentially significant environmental or socioeconomic risk or impact is expected will have an operational control associated with it that specifies appropriate procedures, work instructions, best management practices, roles, responsibilities, authorities, monitoring, measurement and record keeping for avoiding or reducing impacts. Operational controls are monitored for compliance and effectiveness on a regular basis through a monitoring and auditing procedure described in the ESMP. Operational control procedures will be reviewed and, where appropriate, amended to include instructions for planning and minimizing impacts, or to at least reference relevant documents that address impact avoidance and mitigation.

9.3.7.6 Managing Changes to Project Activities

Changes in the Project may occur due to unanticipated situations. Adaptive changes may also occur during the course of the project life cycle. The Project will implement a formal procedure to manage changes in the Project that will apply to all project activities. The objective of the procedure is to ensure that the impact of changes on the health and safety of personnel, the environment, plant and equipment are identified and assessed prior to changes being implemented. The management of change procedure will ensure that:

- Proposed changes have a sound technical, safety, environmental, and commercial justification;
- Changes are reviewed by competent personnel and the impact of changes is reflected in documentation, including operating procedures and drawings;

- Hazards resulting from changes that alter the conditions assessed in the ESIA have been identified and assessed and the impact(s) of changes do not adversely affect the management of health, safety or the environment;
- Changes are communicated to personnel who are provided with the necessary skills, via training, to effectively implement changes; and
- The appropriate KETRACO person accepts the responsibility for the change.

As information regarding the uncertainties becomes available, the Project ESMP will be updated to include that information in subsequent revisions. Environmental and social, as well as engineering feasibility and cost, considerations will be taken into account when choosing between possible alternatives.

10 GRIEVANCE MANAGEMENT

Grievance redressal is a critical component of effective ESMP implementation. The purpose of GRM is to provide a forum to the internal and external stakeholders to voice their concerns, queries, and issues with the project. Such a mechanism would provide the stakeholders with one project personnel or one channel through which their queries will be channeled and will ensure timely responses to each query. This will allow for trust to be built amongst the stakeholders and prevent the culmination of small issues into major community unrest. The GRM will be accessible and understandable for all stakeholders in the project and for the entire project life. The GRM will be communicated to all relevant stakeholders and will also be applicable for any contractor that will occupy and/or use land during the construction and operations phase.

AfDB standards require Grievance Mechanisms to provide a structured way of receiving and resolving grievances. Complaints should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities and is at no cost (except legal redress through courts) and without retribution. The mechanism should be appropriate to the scale of impacts and risks presented by a project and beneficial for both the company and stakeholders.
The mechanism must not impede access to other judicial or administrative remedies. This section contains the following:

- Grievance definition and categories and GRM principles; and
- The process of receiving, documenting, addressing, and closing grievances.

10.1 Grievance Definition/Categories

As stated earlier, a grievance is a concern or complaint raised by an individual or a group within communities affected by company operations. Both concerns and complaints can result from either real or perceived impacts of a company's operations and may be filed in the same manner and handled with the same procedure. Grievances may take the form of specific complaints for actual damages or injury, general concerns about project activities, incidents and impacts or perceived impacts. Based on the understanding of the project area and the stakeholders, an indicative list of the types of grievances have been identified for the project, as can be seen below: -

Internal Grievances: Grievances from Employees (including both direct and indirect employees, including local workers and migrant workers through contractors):

- Complaints pertaining to amount of wage, salary, other remuneration or benefits as per Company's Human Resource policy;
- Gender discrimination;
- Workplace Sexual harassment;
- Violence against children e.g., child labour.
- Issues related to workers organization;
- Labour Accommodation;
- Health and Safety issues; and
- Extended working hours.

External Grievances: Grievances from community members:

- Issues related to sexual exploitation and abuse by project workers against community members;
- Issues related to gender-based violence at the community-level e.g., domestic violence;
- Issues related to child labour and protection;
- Issues related to transportation and traffic;
- Increase in environment pollution;
- Impact on community health;
- Disturbances to locals due to influx of migrant workers in the area;
- Issues arising out of sharing of employment and business opportunity; and
- Concerns over the impact on local cultures and customs.

The list of grievances will be regularly updated as and when the new one arises.

10.1.1 Internal Grievance Mechanism

During consultations, it was revealed that the client will hire a Community Liaison Officer (CLO) who will serve to meet all community liaison responsibilities. The KETRACO Socioeconomist will assist the contractor social specialist in grievances management, (the bidding documents will reflect these requirements). The grievance mechanism will be advertised and announced to affected stakeholders so that they are aware of their rights to submit comments and how to go about it. The grievance mechanism will be founded on the following principles:

- Responsibilities will be adequately assigned: A responsible person or team will be constituted and mandated to organise the resolution of grievances. This will enable the system run without undue impediments.
- The process will be accorded due importance: It is important for affected communities and other stakeholder groups seeking to have their complaints resolved, to perceive the grievance management process as transparent and fair. The KETRACO grievance management process will enhance outcomes and give people satisfaction that their complaints have been heard, even if the outcome is less than optimal.
- The grievance procedures will be readily understandable, accessible, and culturally appropriated by the local population. From the outset, clarification will be made on who is expected to use this procedure. The people will be assured that there will be neither costs nor retribution associated with lodging a grievance. The entire process (from how a complaint is received and reviewed, through to how decisions are made and what possibilities may exist for appeal) will be made as transparent as possible through good communication.
- The Mechanism will be scaled as needed for the Project: The KETRACO grievance mechanisms will be designed to fit the context and needs of the project. As much as possible, it will have relatively simple means of addressing complaints, such as through community meetings, community liaison personnel and suggestion boxes allowing for anonymity. It may also need a more formalized process and mechanism, and a higher level of dedicated resources for receiving, recording, tracking, and resolving complaints.

The grievance mechanisms will not be taken as a substitute for community engagement process or vice-versa. The two are complementary and will be made mutually reinforcing. Not all grievances shall be handled in the same way. KETRACO will consider creating different levels of redress within the grievance mechanism that correspond to the scale and seriousness of the complaint.

- The process will be documented and publicized: The process will be put in writing and publicized. KETRACO recognizes that the GRM cannot be effective if nobody knows about it. Thus, the grievance procedures will be put into writing, publicized, and explained to relevant stakeholder groups. The people will be informed on where to go and whom to talk to if they have a complaint and understand what the process will be for handling it. As with all information, it will be provided in a format and language readily understandable to the local population and/or communicated orally where it's established that literacy levels are low. It will not be overly complicated to use nor will it require legal counsel to complete.
- The process will be made accessible: Projects that make it easy for people to raise concerns and feel confident that these will be heard and acted upon can reap the benefits of both a good reputation and better community relations. One of the best ways to achieve this is to localize your points of contact. Hire people with the right skills, training, and disposition for community liaison work and get them into the field as quickly as possible. Maintaining a regular presence in the local communities greatly helps to personalize the relationship with the company and engender trust. Talking with a familiar face who comes to the village regularly, or lives nearby, creates an informal atmosphere in which grievances can be aired and sorted out, or referred up the chain of command. This is usually more convenient and less intimidating to people than having to travel distances to the company offices during business hours to file a formal complaint.
- Response time will be defined, and transparency upheld: KETRACO will publicly commit to a certain time frame in which all recorded complaints will be responded to and ensure this response time is enforced. This will help allay frustration by letting people know when they can expect to be contacted by KETRACO personnel and/or receive a response to their complaint. Combining this with a transparent process by which stakeholders can understand how decisions are reached will inspire confidence in the KETRACO system. During critical times such as construction, there will be immediate responses to time-sensitive complaints. A related issue is making sure that the community liaison officer has the authority to resolve basic complaints herself, as well as a direct reporting line to senior managers if the issue is more serious or costly to address.
- Good record-keeping and feedback: a grievance logbook will be kept where necessary, and a sophisticated database will be maintained where required. Written records of all complaints will be kept as this is critical for effective grievance management. The record shall contain the name of the individual or organization; the date and nature of the complaint; any follow-up actions taken; the final result; and how and when this decision was communicated to the complainant. Overly personal data such as national identity and phone numbers will be optional and kept confidential unless required to disclose to authorities. In addition to informing the complainant of the outcome (in writing where appropriate), as part of the broader community engagement process KETRACO will report back periodically to communities and other stakeholder groups as to how the company has been responding to the grievances it has received.

- There will be a separate reporting and documentation mechanisms for GBV (SEA and SH) cases that are discrete and anonymous. The KETRACO Community Liaison Officer (CLO) will support the Social Specialist to establish the system to handle these complaints that will include reference to confidentiality, safety, and survivor- centred approach. All registration of the data will be confidential and anonymized. KETRACO will recruit a CLO with experience in community engagement and liaison as well as GBV-SEA/SH management. The CLO will assist KETRACO's social specialist in GBV-SEA/SH management.
- Access to legal remedies will not be impeded: If the project is unable to resolve a complaint, it may be appropriate to enable complainants to have recourse to external experts. These may include public defenders, legal advisors, or NGOs. The client may find that it can work in collaboration with these third parties and affected communities to find successful resolution of the issues. However, this is not always possible, and situations may arise where complainants will choose to pursue legal recourse. In this case, KETRACO will not impede access to these mechanisms.

Table 10-1. Sample Grievance Recording Form

GRIEVANCE REGISTRATION	
CASE No.	**DATE**
Name	
Department/Contractor Name	
Phone Number	
Details of Grievance	
Name of Person Recording Grievance	
Designation of Person Recording Grievance	
Proposed Date of Response to Grievance	
Signature of Recording Person	Signature of Complainant
GRIEVANCE REDRESS RESPONSE	
Date of Redress	
Decision of CLO (Give full details)	

10.1.2 Maintaining a Grievance Register

Each grievance thus received, shall be recorded in a grievance register. The format for the grievance register shall be as follows.

Table 10-2: Sample Grievance Recording Form

Date	GR #	Name of Grievant	Ward/Village	Grievance Details	Concerned Department	Name of Recording Person	Present Status	Remarks

This grievance register shall be updated at each stage of the grievance redressal. Once the grievance is recorded in the register, a preliminary analysis shall be undertaken by the Community Liaison Officers for KETRACO and contractors to ensure that the grievance is within the scope of the GRM.

10.2 External Grievance Mechanism

The process to be followed for the redressal of the external stakeholder grievances is summarized below.

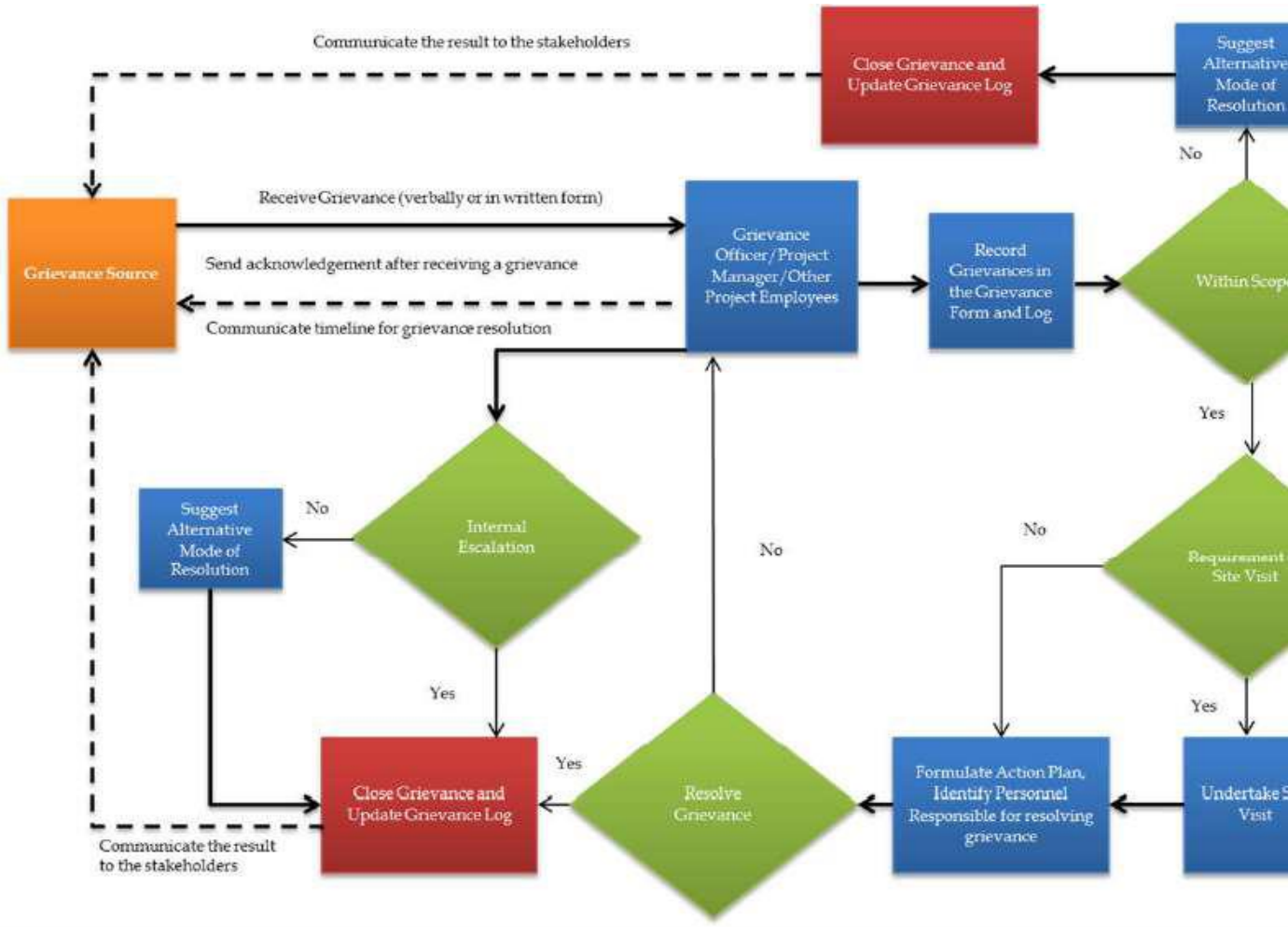


Figure 10-1. GRM Steps

10.2.1 Publicizing and Disclosure of the GRM

The GRM and other project-specific management plans will be disclosed to PAPs in culturally appropriate languages, formats, and techniques (e.g., FGDs, public barazas etc.) and considering any disability, mobility and literacy challenges in a timeframe that ensures meaningful consultations.

10.2.2 Receiving and Recording Grievances

As part of the GRM, the grievances from the stakeholder or their representatives may be communicated verbally (in person or over a telephonic conversation) or in written form (in the format given below) to the project representatives or to the CLO directly. If the grievance is received directly by the CLO or other project representatives, it will be recorded directly into the Grievance Form as soon as the personnel return to site. A sample grievance form is as follows.

Table 10-3. Sample Grievance Recording Form

GRIEVANCE REGISTRATION	
CASE No.	**DATE**
Name	
Department/Contractor Name	
Phone Number	
Details of Grievance	
Name of Person Recording Grievance	
Designation of Person Recording Grievance	
Proposed Date of Response to Grievance	
Signature of Recording Person	Signature of Complainant
GRIEVANCE REDRESSAL RESPONSE	
Date of Redress	
Decision of CLO (Give full details)	

All project staff and community members will be informed that they must pass all grievances, communications to the CLOs on site as soon as possible after they are received. Details of the person lodging the grievance shall be noted and passed along with the grievance. The CLO in turn will communicate all grievances to the Environmental and Social Officers for the contractor or KETRACO. For assisting the communication of grievances, a register will be maintained at the project office at which any individual/group can come have their complaint registered. Village leaders and government departments will also be advised to pass any complaints they receive to the site level community liaison officer.

10.2.3 Maintaining a Grievance Register

Each grievance thus received, shall be recorded in a grievance register. This grievance register shall be updated at each stage of the grievance redressal. Once the grievance is recorded in the register, a preliminary analysis shall be undertaken by the social officer to ensure that the grievance is within the scope of the GRM.

10.2.4 Acknowledgment of Grievance

Upon the completion of the recording of the grievance, the stakeholder will be provided with an acknowledgment of the receipt, along with a summary of the grievance.

Box 10-1: Sample Acknowledgement Receipt for Claimant

This receipt is acknowledgement of grievance registration by _____,resident of village

_____ on date _____ His case number is _____ and the date for response is _____

Full name & signature of recording person_____

In case the grievance is assessed to be out of the scope of the GRM, a communication towards the same shall be made to the grievant, and an alternative mode of redressal shall be suggested.

10.2.5 Site Inspection and Resolution

For the purpose of verifying and resolving the grievances received, site inspection may not be required in all the cases. Depending upon the sensitivity of the issue, requirement of a site inspection will be identified.

A site inspection will be undertaken by the site level community liaison officers or the project member assigned by the contractor's Environment and Social officer. The purpose of the site inspection will be to check the validity and severity of the grievance.

For this purpose, the personnel may also undertake discussions with the concerned external stakeholder. The inspection will be undertaken within ten days of receiving the grievance. The assigned individual will then work with other relevant members of the Project team to investigate the problem and identify measures to resolve the grievance as appropriate. The personnel to be involved in the grievance resolution shall be dependent upon the nature of the grievance.

10.2.6 Resolution, Escalation, and Closure

Based on the understanding thus developed, the CLO, in consultation with the concerned departments, shall identify a suitable resolution to the issue. This could involve provision of information to clarify the situation, undertaking measures to remedy actual problems or compensate for any damage that has been caused either by financial compensation or compensation in-kind, and introduction of mitigation measures to prevent recurrence of the problem in the future. This resolution shall be accordingly communicated to the grievant within 10 working days of completing the site investigation.

10.2.7 Update of Records

The records of the grievance register shall be updated every working week with the present status of the grievance. Once the grievance is resolved, and the same has been communicated to the grievant, the grievance shall be closed in the grievance register. The grievance register should also provide an understanding of the manner in which the grievance was resolved. These instances shall then serve as references for any future grievances of similar nature.

10.2.8 GBV (SEA/SH) GRM

There will be a separate reporting and documentation mechanisms for GBV (SEA and SH) cases that are discrete from the standard GRM, that will be utilized by survivors or their representatives, to ensure all GBV cases are reported and handled confidentially. PAPs and all workers/staff will be made aware of these mechanisms through awareness sessions and

staff inductions respectively. KETRACO's and Contractor's CLOs, supported by the KETRACO and contractors' Social Expert will be the focal points and will establish the system to handle these complaints that will include reference to confidentiality, safety, and survivor-centered approach. All registration of the data will be confidential and anonymized.

10.2.9 GRM Monitoring and Implementation

It is important to monitor GRM to ensure that the grievances are addressed and resolved. The monitoring of the GRM implementation will be undertaken on a monthly basis by the KETRACO team. Monitoring will include:

- Auditing the implementation of the GRM;
- Monitoring the formal and informal consultation activities conducted with the stakeholder groups with respect to GRM;
- Tracking feedback received from engagement activities;
- Recording and tracking commitments made to communities; and
- Assessing the efficacy of the engagement activities in terms of the desired outcomes and the participation of the stakeholder groups.

10.2.10 GRM Reporting

The performance of the GRM will be reviewed on a quarterly basis during the implementation period. For the purpose of review, the quarterly reports will be considered for analysis and discussion. Based on these reports, a Grievance Redressal Report will be prepared.

10.2.11 African Development Bank Grievances Redress Mechanism

An individual, a community of persons, an organization, association, society or other grouping of individuals) and/or by a qualified representative of the affected persons can seek the banks assistance when they feel that the project is adversely impacting on their environment and social well-being. The bank has a system of addressing aggrieved person's issues and ensures that issues of non-compliance are addressed thereby protecting the people's rights and interests

A request for compliance review/problem solving should have the following information:

- A reference to the project, stating all the relevant facts including the harm suffered by or threat to the affected parties;
- How the parties have been or are likely to be materially and adversely affected by the Bank Group's act or omission, and what rights or interests of the parties were directly affected;
- When requesting a compliance review, an explanation of how Bank Group policies, procedures or contractual documents were violated;
- An indication if there has been any previous communication between the affected parties and the Bank Group concerning the issue (s) raised in the request;
- In the case of requests relating to matters previously submitted to the BCRM, a statement specifying what new evidence or changed circumstances justify revisiting the issue; and
- If some of the above information cannot be provided, an explanation should be included.

In addition to this, documents that need to be attached to the request include:

- Relevant correspondence with Bank Group staff, if any;
- A description of the location of the affected parties or area affected by the project; and
- Any other evidence supporting the request.
- If some of the information listed above cannot be provided, an explanation should be included in the request.

There is however no specific format required for the request. The requestor is free to submit their requests orally or through writing with the help of BCRM. Foe request submitted in writing, they should be dated and signed by the requestor. They should also provide their names, contact addresses and an address to which correspondence shall be sent (if different from the Requestors' address (es)). The Requestors and any other interested persons may, however, request that their identities be kept confidential, and if so, the reasons for such confidentiality. Requests must be sent to the Director of the **Compliance Review and Mediation Unit (BCRM),** African Development Bank Group (AfDB) through:

Compliance Review and Mediation Unit (CRMU) - AfDB
BP 1387 Abidjan 01, Cote d'Ivoire
Immeuble du Centre de Commerce International d'Abidjan (CCIA) - Avenue Jean Paul II |, 14th Floor
BCRM_info@afdb.org(link sends e-mail)
Tel: +225 27 20 26 20 56 (CRMU Front Office)

10.3 Other Administrative Grievance Redress Mechanism

Kenya has is place institutions a justice system that provide grievance redress on environmental and land issues (including bio-physical and socio-economic) for which PAPs and stakeholders have a right to access at their own costs and at any time even without going through the internal, external GRM described in section 10.1.1 and 10.2 including World Bank GRM as described in 10.3.1 and 10.3.2. These include: -

10.3.1 Environment and Land Court

A superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to, land.

10.3.2 Land Acquisition Tribunal (The Tribunal)

A court of law that hears disputes related to the compulsory land acquisition process and in determining such disputes, confirm, vary, or quash the decision of the NLC. Tribunal has first instance jurisdiction to hear such disputes with the Environment and Land Court (ELC) exercising appellate jurisdiction.

10.3.3 Commission on Administrative Justice

The Commission on Administrative Justice (Ombudsman Office) is the formal feedback and complaints handling mechanism in Kenya. Its mandate is to receive and address complaints against public officers and public institutions to improve service delivery.

10.3.4 National Environmental Tribunal

The National Environmental Tribunal is a quasi-judicial tribunal established pursuant to the provisions of the Environmental Management and Co-ordination Act, 1999 (EMCA). Its mandate generally is to hear any disputes regarding the exercise of power by the National Environmental Management Authority (NEMA).

10.3.5 National Environmental Complaints Committee

The National Environmental Complaints Committee (NECC) was established under Section 31 of the Environmental Management and Co-ordination Act, 1999. It was formerly known as the Public Complaints Committee (PCC) but its name changed in the EMCA (Amendment) No. 5 of 2015). It is an important institution in the assessment of the condition of the environment in Kenya. It plays an important role in the facilitation of alternative dispute resolution mechanisms relating to environmental matters.

11 CONCLUSIONS

This report presents a comprehensive environmental and social impact assessment for the proposed 132 kV double circuit transmission line and proposed measures for mitigating the adverse impacts while enhancing the positive ones during the phases of pre-construction, construction, operation, and maintenance and decommissioning.

An evaluation of the possible alternatives for the project activities was also performed. The following conclusions have been arrived at regarding the proposed 132 kV double circuit Transmission line. The anticipated benefits of the construction and operation and maintenance of the Project are immense.

The project will provide a clean/green reliable supply of electricity to the region and the national grid, which comes along with many benefits. For the project components, which are suggested to be maintained and those where alternatives were provided, an evaluation of the positive and negative impacts was performed, and an Environmental and Social Monitoring Plan (ESMP) drawn. All negative impacts can be mitigated following the ESMP.

The negative impacts identified in this ESIA during the planning, construction, operation and decommissioning phase of the project, including waste generation, air pollution, noise pollution, occupational health and safety impacts, community health and safety impacts, traffic, labour influx and gender impacts will be limited to the transmission line ROW/wayleaves and can be mitigated using the measures proposed in the ESMP as well as the preparation and implementation of C-ESMPs including but not limited to:-

- ✓ *Health, Hygiene and Safety Plan*
- ✓ *Labour Management Plan*
- ✓ *Local Recruitment Plan*
- ✓ *Child Protection Strategy*
- ✓ *Grievances Redress Mechanism*
- ✓ *Waste Management Plan*
- ✓ *Contractors Code of Conduct, specific provisions for VAC, SEA and SH*
- ✓ *HIV/AIDS Prevention Strategy*
- ✓ *GBV (SEA/SH) Management Plan*
- ✓ *Stakeholder Engagement Plan*
- ✓ *Vulnerable and Marginalized Groups Plan*
- ✓ *CSR Plan (to be informed by the KETRACO CSR policy)*

Other plans to aid the implementation of the safe project implementation will be included as the project continues. The adverse impacts on the physical and natural environment will be "in sum total," not significant, and can be handled through the provided mitigation measures. There are incremental costs required to achieve these.

The contractor will be legally bound to implement this ESMP and any subsequent C-ESMP that will be developed during the construction process. This obligation will be explicitly

stated in the ToR, bidding documents and the final executed contract. Based on the immense project benefits of the clean energy generation/harvesting and transmission, which have been stated above, and the identified negative impacts which can be mitigated in the proposed ESMP, we strongly contend that NEMA will find this ESIA study satisfactory and the project environmentally and socially viable to be permitted to take off.

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13 ANNEXES

13.1 Annex A. Attendance lists

BARINGO COUNTY.

KETRACO
Kenya Electricity Transmission Co. Ltd.

EMC Consultants
ENVIRONMENTAL KNOWLEDGE IN PRACTISE

LIST OF ATTENDANCE –PREPARATION OF RESETTLEMENT ACTION PLAN (RAP), VULNERABLE AND MARGINALIZED GROUPS PLAN (VMGP), AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR 111KM 132KV KABARNET-RUMURUTI AND 70KM 132KV MENENGAI-OLKALAU RUMURUTI TRANSMISSION LINES

DATE 19/06/2019 VENUE DCC'S Office

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DATE 20/06/2017 VENUE Land Adjudication office – Kabarnet

NAME	PHONE NUMBER	DESIGNATION	SIGNATURE
PETER OBIERO	0720 655 364	EMC/RSS	
John O Laku	0722,484 763	PRINCIPAL ADJACATOR	
MERK Owondo	0720 320 543	EMC/RSS	

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DATE: 20/6/2017 VENUE: Kaprophita Chief's office

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-sgt.

DATE 20/06/2019 VENUE Mengat Deputy County Commissioner's office

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DATE 20/06/2019 VENUE Baringo County Chief Land Chief officer's office.

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DATE 24/06/2019 VENUE M'Eringait Location Chief's office.

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DATE---26/06/2014---VENUE---Laikipia County Commissioner's office.

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DATE 25/06/2019 VENUE Area Chief's office – Ilchamus/Eldume Location.

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DATE 25/06/2019 VENUE ILNGARUA CHIEF'S OFFICE

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Mark Owhoyo	0720320543 - Endless	
JONES L. OLGALAAMA	0724-023-119 - CHIEF	
JACOB LEIRO	0727 141 595 - Ass chief	

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LIST OF ATTENDANCE –PREPARATION OF RESETTLEMENT ACTION PLAN (RAP), VULNERABLE AND MARGINALIZED GROUPS PLAN (VMGP), AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR 111KM 132KV KABARNET-RUMURUTI AND 70KM 132KV MENENGAI-OLKALAU RUMURUTI TRANSMISSION LINES

DATE 25/06/2019 VENUE Logomgom Location-chief's office.

NAME	PHONE NUMBER	SIGNATURE
PETER OBIERO	0726658364 - EMC & RAS	
Ken Kateiya	0724127897 NPR) Police Reserve	
Joel Lechuta	0723 30168 Area Chief (Kisanian Location)	
Mark Omondo	0720320543 (EMC)	

RESEARCH SOUND SUPPORT CONSULTANTS

KETRACO
Kenya Electricity Transmission Co. Ltd.

BARINGO COUNTY

EMC Consultants
ENVIRONMENTAL KNOWLEDGE IN PRACTISE

LIST OF ATTENDANCE –PREPARATION OF RESETTLEMENT ACTION PLAN (RAP), VULNERABLE AND MARGINALIZED GROUPS PLAN (VMGP), AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR 111KM 132KV KABARNET-RUMURUTI AND 70KM 132KV MENENGAI-OLKALAU RUMURUTI TRANSMISSION LINES

DATE 24/06/2019 VENUE KFS office -Kabarnet & HEMA

NAME	PHONE NUMBER	DESIGNATION	SIGNATURE
Peter Obiero	0720615364	Emc/RSS	[signature]
Mark Owuondo	0720320543	EMC/RSS Consultant	[signature]
SAMMY N. NDERITU	0722756296	FORESTER/ADVISORY KBT.	[signature]
	HEMA		
Peter Obiero	0720615364	EMC & RSS	[signature]
Joyce Jepchirchir	0724915954		[signature]
MATHEW KIPLAGAT	0708341071		[signature]

RESEARCH SOUND SUPPORT CONSULTANTS

ARABAL & KABIELA LOCATIONS, BARINGO COUNTY

14-8-2019

NAME	PHONE NUMBER	SIGNATURE
JOSHUA KIPTANUI JOSEPH KIPLIMO	0701211810	
REUBEN LALITA	0703-682-806	
CHARLES M. KIPSOI	0710636971	
EDWARD CHEBILILEI	0743280245	
Benedene CHEBILILEI	"	
AMBROSE KANDAGOR	0716657267	
JOSEPH SIOPTOU	0712895126	
PAUL KABITET	—	
ROTICH CHEPKWONY	—	
CHRISPERS K. KOMEN	0703226031	
MAGDALINE KANDIE	0711528815	
PAULINE KOMEN		
MAGDALINE KOISUNGUR	0710413138	
GRACE GIMARU	0797201901	
MAGRATE KIPYESANG	0712438454	
JAMES KIPKWE	0726284871	
ROBBERT KOECH	0722170767	
JOHN CHESAINA	—	
JOHNSTON CHERUTICH	0728879734	
ROTICH RUTTO	—0717688657	
Wesley K Keitany	0729009797	
ANELIKA C. KANDIE	0724209451	
SYMON C. ROTICH	0704035730	
ROSE K. TERIKI	0701775402	
Ruto Dickson	0758 507 133	
Patrick Lodusi	0703285297	
Simon Sitale	0795 737 041	
ENOCK S. KANDIE	0719 103 706	
Rutto K Boniface	0726254916	
KEITANY DAVID CHEMASE	0709510402	

ARABAL & KABIELA LOCATIONS, BARINGO COUNTY

14-8-2019

NAME	PHONE NUMBER	SIGNATURE
ELIJHA KIBESA	0705521837	
TARKOK KOMUNA	0707496464	
Samuel Ruto	0718744724	
KiPavor KiPyamal	0723096218	
JOHN S KIMUNYAN	0718744638	
ELIJAH C. KIPLIMO	0726255098	
KANDIE S. WILLIAM	0728421419	
SAMUEL ROTICH	07	
JONATHAN C KANDIE		
GILBERT KIBESA	~~0729849637~~ 0729849637	
LINA KOMEN	0799005033	
SOTE ROTICH	07	
JANE CHEBOI	0719749420	
CYNTHIA CHEBOI	0792909462	
JOAN S. ICORIR	—	
SOTE KIPKTONY	—	
Sheila Lengei	0795735743	
NICHOLAS KOECH	0718409153	
KIPTIBAI KIMUNYAN	0796633582	
CALEB MANGO - KEIRACO	0721565359	
Mark Owuondo - RSC/BMC	0720320543	

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LIST OF ATTENDANCE –PREPARATION OF RESETTLEMENT ACTION PLAN (RAP), VULNERABLE AND MARGINALIZED GROUPS PLAN (VMGP), AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR 111KM 132KV KABARNET-RUMURUTI AND 70KM 132KV MENENGAI-OLKALAU RUMURUTI TRANSMISSION LINES

BARINGO COUNTY

DATE 16 AUGUST 2019 VENUE LOMOLWE DISPENSARY KAPKECHIR LOCATION

NAME	PHONE NUMBER	SIGNATURE
Linda Ochieng'	0727149459 EMC/RSS	
NICHOLAS ROTICH	0723137567 KETRACO	
CALEB MANGO	0721565359 KETRACO	
RICHARD TEGON	0700270542	
STEPHEN MOLOK LOBELES	0724542254	
JOSEPH SEURI TOO	0725201129	
SAMA CHESANG	0728808362	
Simeon Kiplagat	0726464719	
JOHN K CHESANG	0711919025	
Samuel maingog	0707449602	
BRIAN KIBET KEMANY	0745165372	
HOSEA KIPLAGAT KOHGA	0724094617	
CHARLES CHEPNGOREM ROTICH	0706242286	
SOLOMON KIRWA	0720662595	
JOSEPH BOTORIA	0702223877	
RICHARD CHEBOI	0748824202	
CHERONO BARKUTUH	0711624639	

RESEARCH SOUND SUPPORT CONSULTANTS

KAPKECHIR LOCATION, BARINGO COUNTY
16-8-2019.

NAME	PHONE NUMBER	SIGNATURE
Amos CHELIMO	0728 359 266	[signature]
David C Ngetich	0710464348	[signature]
DANIEL MUKE	0715905698	[signature]
SOLOMO KULTOS	0792132794	[signature]
CHARLES KOECH	0705929833	[signature]
JOSEPH MAIGONY		J.M.
EVANS KUMEN	0721207229	[signature]
Joseph Maigong		[signature]
JOHN CHIRCHIR	0759204811	[signature]
Sammy. K. KOTleny	0705805399.	[signature]
Elizabeth Kabon chemunda	0708662267	[signature]
Tarko Chebubut	0795736573	[signature]
JAMES NGETICH	0715314052	[signature]
Elya chelimo	0712611802	[signature]
Kimeli Koriya		[signature]
Kimeli Bokoria		[signature]
JOHN KIPTOO	0757967279	[signature]
CHARLES Reno	0700305096	[signature]
Collins KOSGEI	0727798 597.	[signature]
Raphael ngetich	0703986181	[signature]
SOLOMON KORIR	074219503	[signature]
JAMES KIPSEREM KIPKOECH	0722287660	[signature]
Mark Owuondo Resident	0720320592	[signature]

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Kenya Electricity Transmission Co. Ltd.

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ENVIRONMENTAL KNOWLEDGE IN PRACTISE

LIST OF ATTENDANCE –PREPARATION OF RESETTLEMENT ACTION PLAN (RAP), VULNERABLE AND MARGINALIZED GROUPS PLAN (VMGP), AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR 111KM 132KV KABARNET-RUMURUTI AND 70KM 132KV MENENGAI-OLKALAU RUMURUTI TRANSMISSION LINES

DATE- 15 August 2019 VENUE- MELHA LOCATION

LAIKIPIA COUNTY
LAIKIPIA WEST SUB COUNTY

NAME	PHONE NUMBER	SIGNATURE
Rufus K. Rono	0704475855 - KETRACO	
CALEB MANGO	0721565359 - KETRACO	
Linda Ochieng'	0727149459 - RSS/EMC	
Mark Owuondo	0720720543 - RSS/EMC	
[illegible]	0723137547 - KETRACO	
MARY W. NJOGO	0725771453 - ASS. CHIEF	
JOHN K. GATHECHA	0734559180 - ASS. CHIEF	
REV F.W. NDUNGU	0725391126 REV	
JOHN A KIMASWAI	0716454898 FARMER	
JOSEPH K. GATHENYA	0725-209849 FARMER	
BENARD MBUTHIA MACHIRA	0726201359 VET/FARMER	
DAVID MUGENYU	0726762499 FARMER	
PETER MAINA KABATA	0713026082 FARMER	
ISAAC MWANGI THUO	0728769258 FARMER	
Peter Macharia	0712553074 - Farmer	
JOSEPHAT KIMANI MUTHONI	0722249856 Farmer	
MARY MITUGO	0707762222 Farmer	

RESEARCH SOUND SUPPORT CONSULTANTS

15-8-2019

MELWA LOCATION LAIKIPIA WEST SUB COUNTY
LAIKIPIA COUNTY

NAME	PHONE NUMBER	SIGNATURE
CHARITY WANGECHI KARIUKI	0721572115	[illegible]
MARY WACUKA KARANJA	0717908968	[illegible]
Margaret Wangari Kanyari	0790428179	[illegible]
CATHERINE W GITHINJI	0725466909	ml
PETER MUGWIMI GATHUNGI	0795639890	Peter
MARGARET W. KABUCHU	0721986788	[illegible]
JANE WAIRIMU KARIMI	0722369949	[illegible]
PETER KIRIRO THEURI	0721618555	[illegible]
LUCY WANGARI MAINA	0718512986	[illegible]
ESTHER NYOKABI MATHU	0729645548	[illegible]
PATRICIAH WACHEKE ITABA	0723581124	[illegible]
ESTHER WAIRIMU WACHIRA	0728721516	[illegible]
DAVID KARUGA KABAI	0715220661	[illegible]
NDIMA TEA FACTORY (JOSEPH)	0725692764	[illegible]
NYAHURURU TALENTED GROUP (KAMAU)	0729900653	[illegible]
MUBARAK KIPROTICH BARNGO	0717867225	[illegible]
Francis Njuguna mutembei	0723008552	[illegible]
John Ndirdu Macharia	0729738787	[illegible]
Joseph Kipange Kipteo	0720125057	[illegible]
Peter Muragura Kiambugo	0725414485	[illegible]
Ruth Kiangori Maina	0721897010	[illegible]
John Gathiha Maina	0729460033	[illegible]
CHARLES NDIGIRIGI MUCHEMI	0722894164	[illegible]
mary wamuyu Karugu	0722212491	[illegible]
Festus Waweru Mwangi	0722698527	[illegible]
Stephen Mathia Gitau	0722895882	[illegible]
Jason Ndirangu	0728849931	[illegible]
PETER NJUGUNA NJENGA	0720789639	[illegible]
JOSEPH KINYANJUI		JK
Samuel Wahome Nderitu	0711504083	Wahome

RESEARCH SOUND SUPPORT CONSULTANTS

MELWA LOCATION, LAIKIPIA WEST SUB COUNTY 15-8-2019

LAIKIPIA COUNTY

NAME	PHONE NUMBER	SIGNATURE
CAESER KABUKI NJIRANGI	0712190537	
JULIUS KIPKOMOI KURII	0706409934	
JOHN TUMUTI KINGORI	0721351174	
JANE WAMBUI KUNGU	0725 799864	
GLADYS GATHONI WANJIKU	0723113472	
Veronicah Nyakundi	0717 106 286	
MOSES THEURI KAMUNDIA	0702537 360	
JOYCE WAIRIMU KAHONGE	0708193245	
FRANCIS MURITHI MUTHURA	0700016918 - Area Chief	

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DATE 15 AUG 2019 VENUE MUHOTETU CHIEF'S CAMP (MUHOTETU DIVISION)

LAIKIPIA COUNTY
LAIKIPIA WEST SUB-COUNTY

NAME	PHONE NUMBER	SIGNATURE
Linda Ochiong' - RSS/EMC	0727149459	
NICHOLAS ROTICH - KETRACO	0723837567 - KETRACO	
Ruth R. Rono - KETRACO	0704475855 - KETRACO	
CALEB MANGO - KETRACO	0721565359 - KETRACO	
JANE W. MWURI - CHIEF	0720224534 - AREA CHIEF	
ISAAC W. NDUNGU	0725690225 - ASST. CHIEF	
SUSAN MURIRA	0722558054	
SAMUEL MWIRIMI MACHARIA	0720959562 FARMER	
JOYCE W KIBOI	0706343981 FARMER	
MONICA N KIANGAI	0727606493 FAMER	
HARRIET W. KIRATHE	0722611335 B/WOMAN	
Joseph Gachichi Gaitho	0725548593 FARMER	
SAMUEL MUCHEMI KARIAMBURA	0727768554 FARMER	
LAWRENCE WACHIRA	0700627828	
Peninah Gaitho	0723006895	
MICHAEL GITAHI WAGURA	0724762626	
DUNCAN MGATIA WANGARI	0727522264	

PAGE 1 of 2

MUHOTETU LOCATION, LAIKIPIA WEST SUB-COUNTY 15-8-2019
LAIKIPIA COUNTY

NAME	PHONE NUMBER	SIGNATURE
Cheeshe Wanjiru Ndirangu	0708875580	
JOSEPH NDIRANGU KINYUANJOH	0725350389	
Stephen Gathachi Kamau	0721 792 924	
CHARLES KINGUCHI NGUYO	0721561467	
DAVID KINGORI W.	0716878199	
JOHN WAMBUGU/for Wahome	0723451206	
JOEL KIPRONO	0735327756	
JOSHUA KIRAGU	0722633712	
JOEL. GITONGA	0727522204	
David Githure Gathumu	0722895764	
David Ndirangu	0711402995	
Charles Wachira Kage	0723-983583	
Serah Wangari Mwangi	0707 586568	
Joseph Gitari Murithi	~~07~~	
Michael Karai Wahome	0712 056 876	
Isaac Boniface Mugereke	0740654228	
Robert Kabea Wanjohi	0721725904	
Richard Gachery Mathenge	0713528740	
WAMBUGU BENJAMIN	0727 091304 ASS. CHIEF.	
Lucy Mbogo	0728 823620	
ELIZABETH MUKAMI	0705 100661	
Daniel Wanjohi Wakanyi	0725456823	
Mark Owando	0720320543	

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LIST OF ATTENDANCE –PREPARATION OF RESETTLEMENT ACTION PLAN (RAP), VULNERABLE AND MARGINALIZED GROUPS PLAN (VMGP), AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR 111KM 132KV KABARNET-RUMURUTI AND 70KM 132KV MENENGAI-OLKALAU RUMURUTI TRANSMISSION LINES

DATE 16 August 2019 VENUE OLNGARUA PRIMARY SCHOOL THIGIO and KIAMBOGO LOCATIONS LAIKIPIA WEST SUB COUNTY, LAIKIPIA COUNTY.

NAME	PHONE NUMBER	SIGNATURE
Linda Ochieng	0727149459 EMC/RSS	[signature]
Mark Owido	0720320543 EMC/RSS	[signature]
NICHOLAS ROTICH	0723727567 KETRACO	[signature]
CALEB MANGO	0721565359 KETRACO	[signature]
JANE N. MUCHUI	0726 768 030 ASS-CHIEF	[signature]
SUSAN W. KANGERI	0725353860 ASS. CHIEF	[signature]
SIMON C. BARUSEI	0727470817 SRN CHIEF GITHAMBA	[signature]
David Kesenei	0739244446 Chief Kiambogo	[signature]
WILLIAM K. SANGA	0723029380 ELDER SIRIA	[signature]
STEPHEN .K. CHEBII	0725411010 KIAMBOGO	[signature]
PETER GICHANE	0713354518 THIGIO	[signature]
HARON GACHAGO	0721290718 THIGIO	[signature]
Annie Wangui Ndemange	0715066667 Thigio	[signature]
Monicah J. W. Kahiuki	0748423046 Thigio	[signature]
HENRY KAMAU KIBIKU	0722696394 KAHUKA	[signature]
martha wangui Ndongu	0726309894 Kahiga	[signature]
CLEMENT HARANJA	0715133629 NAHOKA	[signature]

RESEARCH SOUND SUPPORT CONSULTANTS

THIGIO & KIAMBOGO LOCATIONS, LAIKIPIA WEST SUBCOUNTY
LAIKIPIA COUNTY 16-8-2019

NAME	PHONE NUMBER	SIGNATURE
JACKSON NDERITU	0723810861	[signature]
CHARLES KIMUTAI	0741286697	[signature]
Elias Mutahi	0715659743	[signature]
Waweru Muchiri	0725645667	[signature]
Joseph Karuri Kagema	0729900598	[signature]
Samuel Kinyua Njuguna	0727447589	[signature]
William CHESIRE	0724264565	[signature]
Kiptoo Chesanga	0718102783	[signature]
Berek W. Manas	0790719572	[signature]
HASSAN GIKONYO	0704749791	[signature]
DAVID M. NDUMIA	0710804014	[signature]
PETER KANYUIRO MUGWE	0723460902	[signature]
Paul Muchemi	0710205956	[signature]
JANET WANJIKU	0726836408	[signature]
STEPHEN NJOROGE	0728850165	[signature]
Dominic Kimeli	0721812968	[signature]
Shadrack Kimeli	0743159872	[signature]
Esther Ndungu	0797201924	[signature]
ANNE NJOKI KURIA	0702605435	[signature]
HANNAH WANJIKU KOIGI	0718585170	[signature]
Simon Maina	0725-795968	
Philip K Ronoei	0728880154 SNR ASS-CHIEF	[signature]
NJERI KAHURO KARURI	0759900717	[signature]
SAMUEL K. NJUGUNA	0722216679	[signature]
James THEURI	0712912532	[signature]
Pharis Mwangi	0725851447	[signature]

9/12/2021

KETRACO

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

NUHOTETU LOCATION

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	Mary Wanjiru Muriba	Farmer	0720473332	3630763	[signature]
2.	Samuel Muchemi K	farmer	0727776854	5519527	[signature]
3.	Robert Kibor		078989598	37257755	[signature]
4.	Daniel Wakanyi	Farmer	0725456823	22169197	[signature]
5.	Joshua Kakiragu	Farmer	0722633733	3181280	[signature]
6.	Scurecoff Theuri		0720205916		
7.	FAITH WANJIRU NDIRANGU	FARMER	0711402995		[signature]
8.	Paul Gatheca		0722006895	1313406	[signature]
9.	Peter Kahiga	FARMER	0723 080 830	21874608	[signature]
10.	Joyce wangeci	Farmer	0729347190	2319391	[signature]
11.	DUNCAN NGATIA	farmer	0727522264	13685774	[signature]
12.	Ephraim Gathuma	Farmer	0723164004	11286333	[signature]
13.	CHARLES KINGORI	FARMER	0721561467	3340666	[signature]
14.	Joshua Wanjohi	farmer	0728823627	20285692	[signature]
15.	JOSEPHINE Wachuka	farmer	0725548593	10135389	[signature]
16.	GRACE MUTHONI	Farmer	0700620259	5871029	[signature]

No.	Name	Occupation	Telephone	ID. No	Signature
17.	Joseph Gitari	Farmer	0787453069	3337116	
18.	Lucy Mbogo	Farmer	0728823620	3329110	[signature]
19.	Stephen G. Kamau	Farmer	0721792924	20283492	[signature]
20.	FLORENCE NJOKI KAGA	Farmer	0727719504	1341010	[signature]
21.	NANCY WAMBUI GITAHI	Farmer	0714353310	13752004	[signature]
22.	SERAH WANGARI M.	Farmer	0707586568	24314024 6	[signature]
23.	RICHARD GACHERU	Farmer	0711352540	3259607	[signature]
24.	JOSEPH NGANGA	Farmer	0706220318	10135229	[signature]
25.	Lawrence Wachira	Farmer	07607828	6833059	[signature]
26.	Reuben Nguyo Gitonga	Farmer	0799517274	21020542	[signature]
27.	Francis Waichugo	Farmer	0711838644	5518446	[signature]
28.	SAMUEL MURIMI MACHARIA	Farmer	0720954562	4351933	[signature]
29.	MONICA NJOKI WANGA	FARMER	0727606493	3396505	[signature]
30.	ISAAC W. NDUNGU	ASST. CHIEF	0725639025	13134177	[signature]
31.	JANE W. MUTURI	chief	0720224584	[illegible]	[signature]
32.	STEPHEN MWANGI	Farmer	0722351849	5540301	[signature]
33.	Charles W. Mwangi	Farmer	0708275560	1206707	[signature]
34.	David Kinyori	Farmer	0716878199	3188319	[signature]
35.	Steven Munzyu	KETRACO	0721795420	11683270	[signature]
36.	ROBERT WANJOHI	Farmer	0721725904	2869702	[signature]
37.	CALEB MANGO	KETRACO	0721565359	11049130	[signature]
38.	FAUZIA BARAKA	KETRACO	0710110829	24608624	[signature]
39.					
40.					

7/12/2021

KETRACO

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

ARABAL LOCATION

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	JAMES KIPKWE	FARMER	0726284571	34535272	
2.	NORDIN KUMUKON	"		4539687	
3.	ESIHEN WENDOT	TR	0721463964	21407864	
4.	LOTUYA SERTOI	FARMER	0722170564	6631465	
5.	RAEL CHEBOH	FARMER	0790529238	39588546	
6.	STEPHEN KI CHEBET	TR	0723876538	20455300	
7.	SAMUEL RUTO	FARMER	0718-744-724	20107365	
8.	DAVIS KANDIR	FARMER	0708898471	39586650	
9.	Abednego Kiprop	Farmer	0717072733	38879653	
10.	Rotich Chepkwony	Farmer	0711750767	38879653	
11.	RAYMOND KIPKE	FARMER	0748053682	40050868	
12.	JOSEPH ROTICH	FARMER	0790050688	36703744	
13.	SAMSON CHESUT	FARMER	0718762709	11545073	
14.	JOSEPH KIPLIMO	"	0701211810	6596825	
15.	WILLIAM CHERUTICH	"	0705744373	64378645	
16.	JONATHAN K. CHEBET	"	0769027196	11428829	

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	FRANCIS KIPTOO	VG	0724059595	10081557	
18.	KOMEN KIPTIPAI	Farmer	0741655192	4553215	
19.	HELLEN KIPKIRUI	Farmer	0729935898	37401972	
20.	PAULINE SOTE KIPNGETICH	Farmer		11845046	
21.	EUNICE KIROITE	TR.	0707731383	28403500	
22.	LOICE CHEBUNGEI	Farmer	0799004975	36986307	
23.	JANE CHEBOI	"	0798794294	26913953	
24.	ROSE KIPROP	Farmer	0701775402	29041236	
25.	NANCY SEGON	"	0705340711	26779884	
26.	DAMARIS JEPKEMOI	"	0727279111	30229144	
27.	RERIMOI CHERUTICH	"	0703419073	6437843	
28.	EVALINE SOLIT	BUSINESSWOMAN	0703687052	28641648	
29.	SOLOMON KIPCHOIM	Resident	0721860474	20109206	
30.	AMBROSE LENGEI K.	Resident	0715657267	46538243	
31.	NOLTIONAL AMONGE LERAIYAN	Farmer		35605641	
32.	CHARLES M. KIPSOI	Resident	0710636971	25876278	
33.	WILLIAM KIMOECH	SNR CHIEF	0723457719	8893718	
34.	IDAN SEWUREI	TR	0700052569	28637602	
35.	FELISTA J. KIPKOECH	TR	0728635633	28601823	
36.	LINAH J KOMEN	Farmer	0757169377	35836840	
37.	PAUL KIBET	RESIDENT	0798816028	35001992	
38.	ISAAC KIPLAGAT	RESIDENT	0702830363	38779090	
39.					
40.					

14/12/2021

KETRACO

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KAPROPITA LOCATION

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	JAMES C. CHEMWENY	SNR. CHIEF	0721604467	0336231	[signature]
2.	ELIH J. CHELANGA	ASS CHIEF	0724014382	20246055	[signature]
3.	Richard K. Chesumo	farmer	0720734732	0358016	[signature]
4.	Andrew Kipsautet	〃	0712465306	0336447	[signature]
5.	Daniel Yator	farmer	0714481815	45553149	[signature]
6.	NELSON NGOBU	H/worker	0723-363623	21581049	[signature]
7.	William Cheplonya	farmer	0721676488	12831972	[signature]
8.	Gladys ~~Chebo~~ Rennoi	farmer	0710799738	30696235	[signature]
9.	JOSHUA KIBET KIPLIMO	farmer	0720 821 899	22159162	[signature]
10.	JAEROSES CHEROTICH		0715814603	27916483	[signature]
11.	JOSEPH K CHEMJOR	Self-Employed	0723721201	7077785	[signature]
12.	PAUL K ROTICH	farmer	0722956186	22062759	[signature]
13.	Winnie Chebor	farmer	0711381033	25232019	[signature]
14.	SIMEON C KIPKURUI	A/C.	0724302670	22879361	[signature]
15.	CLEMENT CHIRCHIR	farmer	0720788021	0336005	[signature]
16.	JUSTIN K. BEIMOK	Farmer	0724893847	7077909	[signature]

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	S SHABRACK KEMBOI	FARMER	0723464127	22295954	
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15/12/2021

LOCATION - CHEBINJINY
SUB-LOCATION - KASIELA
VILLAGES - KIPTORONGON - SINONI
- KASIELA - LOMULEL
- SERETION - KAPSIKWON
- CHEPNGANIAN - KORKORON

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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KASIELA

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	JULIUS K. TEGON	V. ELDER	0726009452	23416843	
2.	DANIEL NGENO	V. ELDER	0723132932	6436870	
3.	JOEL K. WENDOT	V. ELDER	0714061613	4536223	
4.	SIMON C NDARAWIT	V. ELDER	0704494013	27563325	
5.	DOUGLAS M. CHEPTOO	FARMER	0724838282	13071204	
6.	CHARLES KIPTOO	FARMER	0715905299	37412255	
7.	SILAS KIBOROR	Businessman	0740886606	28268297	
8.	PAUL KAROGO	Businessman	0705120001	34117653	
9.	GRANTON CHERSOI	farmer	0706757539	37293928	
10.	BISMARCK MERESI	farmer	0713617989	32886664	
11.	JUSTUS K. CHIRCHIR	Farmer	0715767677	30238687	
12.	ROGERS KANDAGOR	Farmer	0798739418	32886590	
13.	LABAN K KORIR	Farmer	0708307104	34879931	
14.	AMBROSE N. KORIN	Farmer	0704243460	34960267	
15.	EZEKIEL K. KORIR	Farmer	-	30546669	
16.	JOSEPH K. KORIR	Farmer	-	20168424	

No.	Name	Occupation	Telephone	ID No.	Signature
17.	William Changoony	farmer	0729326549	23616815	
18.	SAMUEL TALLAM	FARMER	0701270784	23323420	
19.	CHEMOSON C KIPSEBA	Farmer	-	4537592	
20.	PHILIP YATOR CHIRCHIR	Teacher	0797201822	22624439	
21.	Geofrey Barsiba Chelagat	Village Elder	0718025915	26334438	
22.	JOSEPH CHERUIICH KANDAGOR	Farmer	0720552477	23015650	
23.	WILSON SHEBEI	Farmer	-	-	
24.	NONDIN KIMUGON	farmer	-	4539687	
25.	FRANCIS KORIR	Farmer	0701825476	27745565	
26.	Oliver Keitany	farmer	0758843975	39038903	
27.	CHEPKOIK CHELAGAT	Farmer	-	4538264	
28.	ASTON KIBAREK	Farmer	0704738791	27316368	
29.	DANIEL KOECH	Farmer	-	12935518	
30.	HENRY CHEPSOI KIBAROK	farmer		39038778	
31.	JOHNSON K KANGOGO	farmer	0700089047	30053384	
32.	JOSEPH SIEBEI	farmer	-	6596211	
33.	CHARLES MERESI	Farmer	0725014193	23457899	
34.	BONFACE R. KANDAGOR	Farmer	0741962417	38349445	
35.	STANLEY KORIR	farmer	0795318873	30044447	
36.	JOSEPH LEBA	Farmer	0795736056	13071301	
37.	JAMES LOYOBO	Farmer	0724893352	11845080	
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10/12/2021

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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

LONGUMGUN SUB LOCATION, KISERIAN LOCATION.

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	SAMMY LESALAJA	ASS-CHIEF	0718413342	25595428	
2.	ANDREKI KORIR	MISSIONARY	0710 285 123	24018612	
3.	KENNEDY LEKIDOKIO	VILLAGE ELDER	0725254244	25887916	
4.	JOSPHAT LEYALE	FARMER	0726675996	25384715	
5.	WILLIAM LEKISEKER	VILLAGE ELDER	0719659229	22373097	
6.	RENSON LENAIKI	FARMER	0799692472	27659011	
7.	JACKSON K LESAKAMO	FARMER	0711707873	9493524	
8.	NICKOLAS LEMPAKANY	FARMER	0711255590	25600868	
9.	NAGORI BARSUBORE	FARMER	0713141319	45534021	
10.	DAVID B. LEKACHU	FARMER	0704606040078	29941339	
11.	DUNCAN L. LEKISEKER	FARMER	0706928028	31160952	
12.	Gerison Horison Koromo	Farmer	0700639561	28195514	
13.	JACKSON LEKIDOKIO	FARMER	0710968616	34254274	
14.	YOHANA MPAKANY	FARMER	0714461818	26896186	
15.	JACKSON SAIWELI	FMR	0724722058	28195595	
16.	BENEDICT LEKEYAI	FARMER	07051024138	24507011	

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	DAN SAUROKI	FARMER	0741445562	35858478	
18.	AGNES LECHUTA	FARMER	0724014486	22424578	
19.	SIMION LESUPEN	FARMER	0722855526	24695553	
20.	ZACHARY MPAKANY	VILLAGE ELDER	0726064203	27397697	
21.	Antony Olempia	farmer	0725137357	35558463	
22.	Tanza Henry lukapate	Farmer	0705929558	33513220	
23.	LEAH LENAIKI	ECDE Teacher	0712508185	22809274	
24.	MAGRET MERIGE	Farmer	0793615521	25636958	
25.	LINAH LEKURLE	Farmer	0791489125	20236309	
26.	Nickolas Letoole	〃	0799356952	29946889	
27.	Oscar Baria Lenatiya	Farmer	0797531818	33 820 779	
28.	Nachoki Lekitkul	Farmer	07	6436673	X X
29.	LAWRENCE LEKIDOGO	Farmer	0715154285	30497362	
30.	SAMUEL L. LEPARKITORE	Farmer	0726677070	AC 36 217	
31.	KENNEDY L. LEPARKITORE	Farmer	0719790979	28374685	
32.	Wilson O. leparkitore	Farmer	0723858177	23681236	
33.	HENRY LESAUROKI	FARMER	0712126466	27586140	
34.	Christine Sadalla	Farmer	0719108976	21876894	
35.	REHEMA LEMPAIRANY	Farmer	0723709918	11662975	
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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

ILNGARUA LOCATION (LONGEWAN SUB LOCATION) & ELCHAMUS LOCATION (ELDUME SUB LOCATION)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	JONES L. OLE LAANOI	CHIEF	0724-023-119	11845324	[signature]
2.	JOSHUA L. OLEKEIS	SNR ASSTCHIEF	0727715334	8893274	[signature]
3.	SAMSON N. OLESAGANA	ASST CHIEF	0726676398	23524975	[signature]
4.	WILSON LEDIANA	CHAIR G. RANCH	0721988881	A536698	[signature]
5.	JOSEPH LECHEMALL	FARMER	0712910590	24175112	[signature]
6.	DAVID MARKOKO	FARMER	0729123998	30882368	[signature]
7.	NTOTIKOI SOSIKO	FARMER	07105 2126	4539164	[signature]
8.	DEDE Lengerien	Farmer	07032 9498	5 6596322	[signature]
9.	Jackson Lekishon	Farmer	0746657563	30991948	[signature]
10.	Stephen Lendemo	Farmer		23196447	[signature]
11.	BENSON KATONYE	Tourism	0765335680	8537388	[signature]
12.	Pirisula Parsolach	farmer	0716313898	28981982	[signature]
13.	Miriam Opedo	farmer	0708276071	27671256	[signature]
14.	Nantesimi leriano	farmer		7169464	[signature]
15.	DAVID NAPIR	FARMING	0729166180	4530710	[signature]
16.	CHKOLE OLEWERI	FARMS	0700137089	4537952	[signature]

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	DICK LEKOULO	FARMER	0702216293	27137832	[signature]
18.	HARISON LEKESIO	FARMAR	0723898331	20848572	[signature]
19.	Daniel Lekesio	Teacher	0726612637	25839215	[signature]
20.	DAVIES LESEIYAN	FARMER	0703853550	32992488	[signature]
21.	JOSEPH TIYANW	FARMER	0743630451	37936611	[signature]
22.	Halifax RURUMPAN	Farmer	0710416333	37737771	[signature]
23.	Vinidg LEKONGO	Farmer	0114063122	34881935	[signature]
24.	LEPESO LAWERY	Farmer	0791933144	29771830	[signature]
25.	Dickson Lekesio	Farmer	0717242003	17701057	[signature]
26.	Jackson Lochomel	Farmer	0723726895	25384768	[signature]
27.	DAVID L. OLESOITLE	HERDSMAN	0726051381	13071094	[signature]
28.	Symon Porsalt	Farmer	0703897793	8893280	[signature]
29.	Thomas. L. oLGOHAI	HERDSMAN	0703446206	11843036	[signature]
30.	JOHANA L. LEARWARA	Farmer	0710438656	6596256	[signature]
31.	SHADRACK LENABORU	Farmer	0710833211	27149166	[signature]
32.	AMOS LENGOMBE	farmer	0798500434	35414735	[signature]
33.	CALEB MANGO	KETRACO	0721565359	11049130	[signature]
34.	FAWZIA NAMULANDA BARASA	KETRACO	0710110829	29608624	[signature]
35.	Steve Munzyu	"	0721795422	11623270	[signature]
36.	Gilbert Lekesio	Farmer	0723303321	38100837	[signature]
37.	Danfal Sululo	Farmer	0727309210	8893280	[signature]
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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

MARIGAT LOCATION (~~RABAI~~ & ~~KAMKONGO~~ YATOI SUB LOCATIONS)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	KIPROP K. CHESEREM	BUSINESSMAN	0722690940	4544562	
2.	PETER C. CHANGOLE	FARMER	0726337941	9777849	
3.	JOSEPH C. ROTICH	FARMER	0798132092	9493209	
4.	TINGO T. KIPKERIO	FARMER	0727621906	4536748	
5.	EUNICE J. TUITOEK	FARMER	0790418402	11379784	
6.	STEPHEN LUMET	FARMER	0720948446	10061522	
7.	PAULENA T. CHERUTICH	FARMER	0711921835	4536496	
8.	MUSA CHIRCHIR SERONEI	FARMER	0724107072	12936428	
9.	GRACE TARLONG	11	0748362447	4536983	
10.	JOHN NGINA CHEPKWONY	11	0727084632	22063969	
11.	WILSON CHESIRE	11	0759952009	32058992	
12.	PAULINE TUITOEK	11	0727621906	4536509	
13.	JOHN CHEPTOO	11	0718726139	4536027	
14.	HELLENA CHESEREM	11	0722690940	4544562	
15.	FRANCES KANDIE KIPSURWO	GROUP POLICE MEMBER		DESEASED	
16.	GLADYS KANDIE	FARMER	0113284225	22727995	

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	JACKSON KIPTAI CHANGORE	FARMER	0724965446	23015481	
18.	HARRINGTON KIPKURUI	FARMER	0748467918	20985583	
19.	DICSON KIPTOO	FARMER	0795310424	~~209~~ 28252628	
20.	EMMANUEL KIPROTICH	FARMER	0715545794	35752875	
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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KORIEMA / KIMALEL GROUP RANCH.

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	JEREMIAH KIPKURERE	Chairman	0741960130	4537385.	
2.	ANDREW LUMENYA	Retired Chief	0725310271	03384084	
3.	REUBEN KIGEN	CHIEF	0727692295	13063717	
4.	SOLOMAN KURUI	FARMER	0718679917	20202145	
5.	SAMUEL KURUI	FARMER	0703580945	30599348	
6.	MICHAEL CHEBOI	FARMER	0727646701	23031556	
7.	MUSA CHEROP	FARMER		26103513	
8.	Michael K. KURUI	FARMER	0728336754	25309742	
9.	Susan J Chebii	Farmer			
10.	Benjamin Kibet	Farmer	0724372586	20040184	
11.	Michael Rerimoi	FARMER		11428967	
12.	SAMUEL B. Cheget	Farmer	0722973611	13071223	
13.	Tunanga MK Micah	Farmer	0796453480	27862759	
14.	DAVID TUNANGA	FARMER	0710274989	04844702	
15.	HARON C. Chemlich	FARMER	0708535947	23212862	
16.	PETER K. CHEPNGOK	Farmer	0723177015	9777796	

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	SAMUEL · K'CHELIMO	TEACHING	0713963763	8893318	
18.	PETER KIPSANG		0705285582	20238894	
19.	Johnm KIPkoech	Chelogat	0797438388	10825714	
20.	ISAAC CHILONIE	CHESEREM	—	23433079	
21.	Joseph KIPSEREM	KIPSANG 0792847501	0792847501	6596328	
22.	GILBERT KANDUTO	CHEPTEE	0735447880	33300758	
23.	JOSEPH ROTTO	FARMER	0720786093	22087735	
24.	KIPROP CHESEREM	COMMITTEE [illegible]		4538927	
25.	JACKSON K. CHEBEI	Kimalel Ranch Secretary	0728401749	40184469	
26.	Kipkulei Chelimo	Farmer	—	2342842	
27.	Tarkok Chebor Kipkosgei	Farmer		4538970	
28.	Kiptui Chelagat	11	—	7261356	
29.	Kiptic J. Maryline	11	0743597532	36135427	
30.	William cheboi	11	0724576483	7809525	
31.	Esther Chiloni	mother	0710749402	20228932	
32.	Chiloni K. brigid	Farmer	0757010674	32615151	
33.	RONALD TOTOWO	FARMER	0724809-725	22506009	
34.	Hosea Kotut	Farmer	0718093153	36850792	
35.	PHILIP SEREM	Farmer	0715734096	24134742	
36.	Clement Kipop	Pharmacist	0729452642	27655021	
37.	Francis chemwiyat	Farmer	0706364535	0337515	
38.	MATHEW KIGEN	Drivers	0716277444	26212700	
39.	CHRISTINE KIBET	Farmer	0714424851	6457949	
40.	Margaret Cheboi	Farmer	—	9677011	

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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KIMALEL LOCATION (KORIEMA SUB LOCATION)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	SAMUEL C-KIPTURMET	TREASURER	0714300660	7145718	[signature]
2.	Wilfred Kenei	Kipchebis	0715155912	3330721	[signature]
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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KITURO LOCATION (KITURO & KIPRAECH SUB LOCATIONS)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	EDWIN K. TONNO	AH SUB CHIEF	0722108167	0338249	[signature]
2.	QUCH KIPSANG	CHIEF	0722983839	13062902	[signature]
3.	DANIEL KIPCHEPKOIS	ASS. CHIEF	0721347056	22168164	[signature]
4.	PIUS KIBIRIR	FARMER	0713068108	1098693	[signature]
5.	KIPCHUMBA CHEBON	FARMER	0715933796	5307914	[signature]
6.	RICHARD CHEBII	FARMER	0728206572	13067458	[signature]
7.	JOSEPH K. CHELAGAT	FARMER	0720782295 0721789220	008451	[signature]
8.	KIBET KIPKELELWA	,,		2342834	[signature]
9.	JOSEPH CHEPNGOK	,,	0723750177	6437943	[signature]
10.	TOWNO CHELIMO	,,	0720051288	1371910	[signature]
11.	SAMWEL KIPLAGAT CHEPNGETICH	,,	0740518595	1371698	[signature]
12.	Solomon Kipkurui	,,	0759553943	22068051	[signature]
13.	SIMON CHELIMO	,,	0757035389	10081851	[signature]
14.	John Chesire	,,	,,	2343013	[signature]
15.	Jonathan Chepchieng	,,	0749967810	32133151	[signature]
16.	Isaac Kipyegon	,,	0725328045	11378712	[signature]

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	SAMSON K. CHESIRE	FAMER.	0725175894	22099398	
18.	KIPKULEI K. SAMUEL	FARMER	0712114737	13071035	
19.	JULIUS C. CHESERER	TEACHER	0729938520	12850317	
20.	PHILEMON K KIGEN	FARMER	0715293656	25320586	
21.	Richard Chebotibin Cheserek	Carpenter	0727940407	21640707	
22.	John Chelagat	Teacher	0720741732	11428969	
23.	Kipyator Chelagat	Farmer	0' —	1371890	
24.	Chesire Arap Kemoi	Farmer	—	0335325	
25.	STEPHEN CHEMITEI	FARMER	0726132644	2342208	
26.	JULIUS CHEMJOR	" "	0722380890	9777881	
27.	MARK K. KIPROP	TEACHER	0723111016	7899613	
28.	Richard Komen	Farmer	0796725206	0985460	
29.	Solomon K. YEGON	"	0712534545	7898730	
30.	CHESANG C. KIPNGENGOI	"		2342134	
31.	KIBOINO C. REUBEN	"		1099214	
32.	Peter Wendot	"	0713386072	6105466	
33.	REBECCA CHEPKOR	FARMER	0795677433	13067147	
34.	MOSES Kiprop Cherogory	POLICE	0728444295	13067445	
35.	ROSE CHEBII	FARMER	0726327219	11427274	
36.	SALINA KIPSOI	"	0740733338	6597139	
37.	JENIFER TOTOLWO	"	0701113798	2343346	
38.	MAGDLINA T. LIMO	"	0724078040	2342505	
39.	TARGOK RUTTO	"		2342141	
40.	MONICAH RUTO	"	0728481523	13069633	

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PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KITURO LOCATION (KITURO & KIPKAECH SUB LOCATIONS)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	HELEN SOTE KIPKEMEI	FARMER	0708281658	1373857	
2.	ALBERTINE KIPKEMEI	PEASANT	0720580511	0263668	
3.	MARTH T. CHINCHIN	FARMER		2342232	MARTHA
4.	Rael Cheboo	farmer	0727845101	11427895	
5.	Josphine Cherono	Farmer	0792115290	20703295	
6.	Tingo Komen	Farmer	0704162058	1371865	T Komen
7.	MARGARET TUIYOT BUNDOTICH	FARMER	0707892612	0241048	M Bundotich
8.	Elphas K. Kaibos	Famer	0729357721	39870398	
9.	Albert Kimunyan	Teacher	0727251916	22021932	
10.	Joseph Kimuyan	Farmer	0715 135 816	22027719	
11.	Joseph Kibaliat Cheptoo	Farmer		13700181 1	
12.	Richard Chemjor	Farmer	0736d1609	22973844	
13.	Jeremiah Kangogo	Farmer	0714671298	11841985	
14.	Joseph Kemei	Farmer	07	1371735	
15.	JOSHUA KIPTUI	Farmer	0728401537	29913742	
16.	Dominic Kiplagat	Electrician	0741200147	35674871	

No.	Name	Occupation	Telephone	ID. No.	Signature
17.	JUSTUS Chirchir	farmer	0714404414	25462434	
18.	Emmanuel Sirma	farmer	0702534276	25148046	
19.	COSMAS SIAMA	PUBLIC SERVANT	0724294547	11766491	
20.	Komen Tarus chirchir	farmer	0718644280	45450688	
21.	Symon Kimutai Kiprotich	farmer	0741045759	20149446	
22.	Francis cheruiyot	Farmer	0706364535	0337515	
23.	Peter K. Chepngok	farmer	0723177015	9777796	
24.	KIPROTICH CHEBOIWO	farmer	0707044219	28824638	
25.	IGNITIOUS · K. KIPKAHA	farmer	0728934328	27471078	
26.	ELIUS ROTICH	Farmer	0722610616	37671114	
27.	JOHN C. KOMEN	Farmer	0720874985	3858539	
28.	MARIKO · K. CHEROP	Farmer	0727654452	10377889	
29.	Julius C KANGOGO	Farmer	0724929498	12852549	
30.	CHEPKOR CHEMJOR	FARMER	NA	10165511 05	CHEPK
31.	EZEKIEL · K. CHEMJOR.	Farmer	0740808589	28926924	
32.	NOAH KIPTENGI KERIMOI	HUSILER	0704378553	2850920	
33.	TITUS CHEBET	Farmer	0728723507	25246653	
34.	Stephen Ruto	Farmer	0726923363	86267712	
35.	Julius Kimui	farmer	0703182545	3648286	
36.	BRANSON KIBEI	Farmer	0746 226799	23483006	
37.	NICHOLAS KIPCHUMBA	farmer	0725713318	29463492	
38.	Kevin Kiprono	Hustler	0798998669	32299953	
39.	GREGORY KANDAGOR	Hustler	0720-752-732	25061823	
40.	SURGURA K. KIMOS	farmer	0702044912	10940358	
41	ESTHER KANGOGO	Farmer	0714860328	10081828	

9/12/2021

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

MELWA LOCATION (MURICHO & MELWA SUBLOCATIONS)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	MOTHORA MORITHE	SNR CHIEF	0700016918	10137561	[signature]
2.	MARY W. NJOGO	SNR ASST CHIEF	0725771453	20910512	[signature]
3.	Steve Tolunzyu	KETRACO	0721795422	11623270	[signature]
4.	FAWZIA NANUCANDA BARASA	KETRACO ENVIRONMENTALIST	0710110829	29608624	FBarasa
5.	DAVID M. NJUNGU	BUSINESS	0722773859	10876573	[signature]
6.	KELVIN WAWERU	BUSINESS	0724461834	31014716	[signature]
7.	GRACE WAMBUI	BUSINESS	0728080163	26206557	[signature]
8.	ESTHER NYOKABI	BUSINESS	0729645568		ESTHER
9.	ELIZABETH WAIRIMU	BUSINESS	0703759230	2030655	[signature]
10.	Veronican Nyakundi	Business	0717106286	13463980	[signature]
11.	Jane Wairimu Karimi	Business	0722369949	5338429	[signature]
12.	Gladys Gathoni	Business	0723113472	2941781	[signature]
13.	Margaret Kariuki	"	0725779864	5216466	[signature]
14.	Leah Ndungu	"	0725799861	2935785	Ndungu
15.	Dominic G. Mugwimi	"	0722610278	6104772	[signature]
16.	MARGARET KABUCHU	FARMER	0721986788	4669488	[signature]

No.	Name	Occupation	Telephone	ID. No	Signature
17.	Peter N. Njenga	Farmer	0720789639	0521668	
18.	John Nganga	"	0714678625	2020226	
19.	Samuel Wahome	Farmer	0711509085	3725597	
20.	Dickson Ndungu Kagiri	Farmer	0728361117	2314882	
21.	RICHARD KAARANGU KIARIRI	FARMER	0724267963	0943796	
22.	Jackson Githaiga Kingori	Farmer	0724836622	1427628	
23.	Julius L. Kuria	Farmer	0706409934	2339779	
24.	Kimani Muhindi	Farmer	0722249856	0438809	
25.	Zippora Mutunga	farmer	0707935896	0236087	
26.	Susan Mumbi	farmer	0721681954	22454144	
27.	charity karuki	farmer	072,572115	9810427	
28.	catherine Wachera	Farmer	0726949272	22322930	
29.	Mary Wachuka Karanja	Farmer	0717908968	66989868	
30.	Francis Ndamuthi	Farmer	0705588278	3131331	
31.	David Mwangi		0721459027	20405038	
32.	Jemimah Muthoni Maina	farmer	0729130665	31829734	
33.	Teresia Nyakinyua Nganga	Farmer	0725726688	1840007	
34.	Isaac Mwangi	farmer	0704400373		
35.	Muthoni Kinyanjui	farmer	0711222709	5171215	
36.	Margaret Kanyari	farmer	0790428179	9263878	
37.	PATRICIA THUO IKUBE	FARMER.	0723581124	1206971	
38.	CATHERINE WAMBUGA	Farmer	0722998114	10245693	
39.	JOSEPH MWANGI MAINA	FARMER	0720175496	1332489	
40.	DUNCAN THUKU	FARMER	0728751072	10317025	

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9/12/2021

KETRACO

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

MELWA LOCATION (MURICHO & MELWA SUB LOCATIONS)

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	SIMON MUBENYU THUTHWA	Farmer	0722741758	11261410	[signature]
2.	Zakayo Kamuki Merathi	Farmer	0717293108	11419581	[signature]
3.	PETER MACHARIA MAINA	FARMER	0728957272	11120232	[signature]
4.	Joseph Tumuti	FARMER	0721351174	6828866	[signature]
5.	Joel Kapkite Kiptoo		0712736943	9453734	[signature]
6.	John Michael Kiarie	farmer	0722-973614	16004010	[signature]
7.	JOHN BORE	FARMER	0716454898	5170383	[signature]
8.	Lucy Maina	PLoL	0718512986	10316377	[signature]
9.	Ruth Kiiraguri	Teacher	0721897040	24347277	[signature]
10.	Lucy NYAKIRIMA ITEGI	farmer	0725285677	5960424	Lucy
11.	Mary wamuyu	farmer	0722217491		[signature]
12.	CHARLES NDUNGU	FARMER	0111271706	3370127	[signature]
13.	JOSEPH KINYANJUI G.	FARMER	0700391118	22752198	JK
14.	MOSES MAINA THUKU	FARMER	0798 055 065	29465168	[signature]
15.	Joseph Kipunge Kiptoo	FAMER	0720125057	23714556	[signature]
16.	Peter MAINA KABATTA	Farmer	0713026082	13563247	[signature]

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No.	Name	Occupation	Telephone	ID. No	Signature	
17.	DAVID KORUGA	Famer	0715220661	7353192	[signature]	
18.	GITHIOMI Machari	Farmer	0711184904	4357836	[signature]	
19.	Fazan Ndungu	farmer	0725844931	0314362 7	[signature]	
20.	Nancy Muthoni		0718151073	10512244	[signature]	
21.	Jane Wairim Karimi	farmer	0722369949	5338429	[signature]	
22.	mary Chepkorir Kano	farmer	0720331167	5170218	[signature]	
23.	CHARLES MWANGI KAROKI	Farmer	0723 033 248	3183 027	[signature]	Nairobi
24.	Richard M. Wambugu	farmer	0722696848	5170822	[signature]	Nakuru
25.						
26.						
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8/12/2021

KETRACO

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

GITWAMBA LOCATION.

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	JANE N. MUCHUI	CHIEF GITWAMBA	0726 768 030	14561771	[signature]
2.	STEPHEN . W NDIRANGU	FARMER	0725985996	11419409	[signature]
3.	NEWTON G. MUIRU	TEACHER	0726337472	3041399	[signature]
4.	WAWERU MUCHIRI	FARMER	0725645667	1391564	[signature]
5.	Joseph Karuri	FARMER	0729900598	5172295	[signature]
6.	JULIUS K SAMOEI	PASTOR	0725572425	22600437	[signature]
7.	KIPTOO CHESANG	FARMER	0718102283	5173215	[signature]
8.	Simon Ndwaru	Farmer	0717591262	29514709	[signature]
9.	JOHN MUTITU KINGORI	PST	0700527 228	0543065	[signature]
10.	HASSAN Gikonyo	farmer	0704749791	24217494	[signature]
11.	FRANCIS Muriuki	Farmer	0721973277	20279981	[signature]
12.	Pharis Mwangi	Farmer	0725551447	1392296	[signature]
13.	SIMON Maina	Farmer	0725795964	6699724	[signature]
14.	PETER KANYUIRO	Mason	0723460902	23056634	[signature]
15.	David Kingori	Farmer	0792653931	21609597	[signature]
16.	Hannah Gathathu	Farmer	0711408304	3336309	[signature]

No.	Name	Occupation	Telephone	ID. No	Signature
17.	Samuel Kayanja	Farmer	0722216679	0342682	
18.	Veronicah Wambui Kinyori				
19.	Elkana K Kimuli		0112673099	25172523-9	
20.	JANET WANJIKU	FARMER	0726803640 8	9745875	
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KETRACO

Kenya Electricity Transmission Co. Ltd.

"Building a World Class National Grid"

PUBLIC CONSULTATION MEETING

ATTENDANCE SHEET

Project: Kabarnet - Rumuruti TL **Venue:** Rumuruti location **Date:** 8/12/2021

No.	Name	Designation	Telephone	Signature
1.	Francis Kimemi Mwangi		0726765532	[signature]
2.	Samuel Tituku		0720077083	[signature]
3.	DAVID WACHIRA		0714845477	[signature]
4.	Titus Munene		0703 586364	
5.	BENARD M KINGORI		0724534545	[signature]
6.	PIETRINA B. MURITHI		ID 03407TH 0724	1729670335 [signature]
7.	LUCY NYAGUTHII WACHIRA		0729308409	[signature]
8.	Joyce C. Rono		0726482914	[signature]
9.	John Gituma		0725026020	[signature]
10.	Joseph Kavaini		0711306233	[signature]
11.	ELIJAH NGUNYI WAGOGI		0720 909219	[signature]
12.	Simon Wachira			
13.	SIMON Muriithi	EMI		
14.	CHARLES MUTURI	ASS CHIEF	0726978243	[signature]
15.	JOSEPH WANDERI WAITERE		0722894013	[signature]
16.	FRANCIS Macharia		0794545868	[signature]

KETRACO

Kenya Electricity Transmission Co. Ltd.

"Building a World Class National Grid"

PUBLIC CONSULTATION MEETING

ATTENDANCE SHEET

Project: Kabarnet – Rumuruti TL ..... **Venue:** Rumuruti Location **Date** 8/12/2021

No.	Name	Designation	Telephone	Signature
1.	GEORGE KAMAU KARIUKI		0752044463	
2.	SIMON MURIITHI			
3.	clare ojode	SOCIO – ECONOMIST	0708353671	
4.	Jimmy Kimanda Njogu	Environmentalist	0706131329	
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KETRACO

PUBLIC CONSULTATION & SENSITISATION MEETING KABARNET - RUMURUTI TRANSMISSION LINE.

KIAMBOGO LOCATION, THIGIO SUB LOCATION.

LIST OF MEMBERS PRESENT (BARAZA).

No.	Name	Occupation	Telephone	ID. No.	Signature
1.	David Kebeni	Administrator	0728939699.	10512674	
2.	SUSAN W. KANGERI	Administration	0725353860	21808417	
3.	SAMUEL K. NJUGUNA	FARMER	0727447589	0341937	
4.	Paul K. Kiarie	Farmer	0727778211	21936717	
5.	HENRY KAMAU	Farmer	0722696394	12258791	
6.	PETER GICHANJE	Farmer	0713354518	0805662	
7.	Magdalina Wathaya	Farmer	0792704616	5960328	wathaya
8.	ANNIE NDEMANGE	Farmer	0715066667	0928824	Andemange
9.	REUBEN NGUNU	FARMER	0727386595	18868693	
10.	Steve Mlungu	KETRACO	0721795420	11623270	
11.	Caleb Mango	"	0721565359	11049130	
12.	Fauzia Baraza	"	0710110829	29608624	F.Baraza
13.					
14.					
15.					
16.					

13.2 Annex B. Minutes of Consultation Meetings

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT MUHOTETU-LOCATION, LAIKIPIA WEST SUB-COUNTY, KAIKIPIA COUNTY ON 15 AUGUST 2019.

VENUE: MUHOTETU CHIEF'S CAMP

IN ATTENDANCE

- Area Chief
- Assistant Chiefs Muhotetu Location
- Caleb Mango - Environment Expert KETRACO
- Nicholas Rotich - Social Economist KETRACO
- Rufus Rono - Valuer/Land Economist KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Community Members – As per attached attendance list

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1100 Hours with a word of prayer from one of the Community members and was chaired by the area Chief.

Min 1:

The area chief welcomed all in attendance and then gave the Community Members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Rono, the Valuer from KETRACO explained process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 5:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 6:

The project consultant, Mr. Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT MUHOTETU LOCATION

Questions/Comments	Responses
Why must we plant trees that will grow higher than 12m?	Trees taller than 12m would present safety concerns. For the safety of the community and land owners a height above 12m is discouraged.
We are told not to continue building or making any improvements on our land once the census	The consultants will undertake an inventory of affected assets as found. This will then be valued to enable drawing up a budget for

and inventory of affected assets has been done by the consultants. Why is this so?	compensation. If any further improvements are made, the PAH will not receive additional compensation hence the advice to stop further improvements.
How will plots be compensated?	Plots and any other asset affected will be compensated at full replacement cost.
Is the compensation for the wayleave going to be done on a yearly basis or once? Safaricom does its payments yearly.	This is a project seeking easement for a wayleave. For this reason, compensation will be a one-off package.
We have concern over conflicting land valuation figures by the different surveyors i.e. individual PAH surveyor and Ketraco valuation. How will you handle that?	As stated during the barasa, the consultant will undertake a valuation process at full replacement cost taking into account the prevailing market rates. This will ensure that PAHs get value for their property. Should they be dissatisfied, it is their right to acquire the services of an independent valuer the outcome of which will be compared to NLC valuation.
If I sell my land to someone else how will Ketraco ensure the new does not make improvements that may interfere with the wayleave?	As the title is transferred to the new owner, it will indicate that the plot has a wayleave. This will ensure that the owner does not build under the line or plant trees likely to grow over 12m.
Will compensation be done before the commencement of the project?	Yes, KETRACO will ensure that all affected PAHs are compensated before the project passes through their property. The project will also ensure that vulnerable households are given priority attention.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.

The valuer has stated that compensation rate will be at 30% of land value. What does this mean?	The 30% valuation is the least cost to be considered by Ketraco during valuation. It is worth noting and remembering that the project is not acquiring land outright, it is only seeking a wayleave. There will be no exchange of title hence this base figure of 30%.
Can I salvage any of my property before resettlement?	Yes, PAHs are at liberty to salvage any property they wish to have e.g. building materials, trees, crops etc. even after being compensated.
Will we have a grace period after compensation before we resettle?	Yes, the project will give PAHs a grace period of upto 6 months once they have received compensation.

The meeting ended at 1330 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT MELWA-LOCATION, LAIKIPIA WEST SUB-COUNTY, KAIKIPIA COUNTY ON 15 AUGUST 2019.

VENUE: MELWA CHIEF'S CAMP

IN ATTENDANCE

- Area Chief
- Assistant Chiefs Melwa Location
- Caleb Mango - Environment Expert KETRACO
- Nicholas Rotich - Social Economist KETRACO
- Rufus Rono - Valuer/Land Economist KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Community Members – As per attached attendance list

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1100 Hours with a word of prayer from one of the Community members and was chaired by the area Chief.

Min 1:

The area chief welcomed all in attendance and then gave the Community Members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Rono, the Valuer from KETRACO explained process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 5:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 6:

The project consultant, Mr. Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT MELWA LOCATION

Questions/Comments	Responses
Why must we plant trees that will grow higher than 12m?	Trees taller than 12m would present safety concerns. For the safety of the community and land owners a height above 12m is discouraged.
We are told not to continue building or making any improvements on our land once the census	The consultants will undertake an inventory of affected assets as found. This will then be valued to enable drawing up a budget for

and inventory of affected assets has been done by the consultants. Why is this so?	compensation. If any further improvements are made, the PAH will not receive additional compensation hence the advice to stop further improvements.
How will plots be compensated?	Plots and any other asset affected will be compensated at full replacement cost.
Is the compensation for the wayleave going to be done on a yearly basis or once? Safaricom does its payments yearly.	This is a project seeking easement for a wayleave. For this reason, compensation will be a one-off package.
We have concern over conflicting land valuation figures by the different surveyors i.e. individual PAH surveyor and Ketraco valuation. How will you handle that?	As stated during the barasa, the consultant will undertake a valuation process at full replacement cost taking into account the prevailing market rates. This will ensure that PAHs get value for their property. Should they be dissatisfied, it is their right to acquire the services of an independent valuer the outcome of which will be compared to NLC valuation.
Will I be compensated for my electricity and water connection?	Yes, the consultant will capture all information regarding affected assets and valued. Compensation package will reflect the assets affected.
Can Ketraco build for us houses i.e. those of us who will be affected?	The PAHs have an option to accept cash compensation or receive the compensation in kind. Those PAHs who wish to have their homes rebuilt for them will inform Ketraco who will then be obligated to get a contractor to undertake this work.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true? We are even told that cellphones go into 'charging' mode when one passes under such lines	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.

What are the stages and mode of compensation? Also review on compensation of trees as they grow perennially.	Compensation will be staggered with those losing structures being compensated first followed by land owners. Trees/crops will be compensated once the contractor is onsite and determines their working space. Compensation will only occur once.
Can I salvage any of my property before resettlement?	Yes, PAHs are at liberty to salvage any property they wish to have e.g. building materials, trees, crops etc. even after being compensated.
Will we have a grace period after compensation before we resettle?	Yes, the project will give PAHs a grace period of upto 6 months once they have received compensation.
Who will value the produce of our farms if affected? And how will boreholes be compensated for?	The consultant has valuation experts in his team. They will determine the value of affected produce as per prevailing market rates/full replacement cost while comparing the same with set prices by government agencies mandated to determine such pricing.

The meeting ended at 1645 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT MARIGAT-LOCATION, BARINGO SOUTHL SUB-COUNTY, BARINGO COUNTY ON 05 AUGUST 2019.

VENUE: RABAI PRIMARY SCHOOL

IN ATTENDANCE

- Area Chief – Marigat Location
- Area Chief – Illchamus Location
- Assistant Chiefs Marigat and Illchamus Locations
- Mark Owuondo – Environment Expert – EMC/RSS
- Peter Obiero – Socio-Economist – EMC/RSS
- Community Members – As per attached attendance list from Marigat and Illchamus locations

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1300 Hours with a word of prayer from one of the Community members and was chaired by the area Chief. The meeting had a combined attendance of community members from Marigat and Illchamus locations of Baringo South sub-county.

Min 1:

The area chief welcomed all in attendance and then gave the Community Members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Peter Obiero gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

The project consultant, Mr. Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT RABAI PRIMARY SCHOOL MARIGAT LOCATION

Questions/Comments	Responses
What rates will be used to compensate houses built with stone materials?	Each and every structure affected including houses built of stone, will be compensated at full replacement cost taking into account the prevailing market rates.
Some of us do not have title deeds. Can we be given time to process the same?	Yes, the consultant will undertake a RAP study to and will note down PAHs who have not yet processed their title deeds. As the project is expected to commence in the 2020-2021 FY, the community is expected to have adequate time to conclude processing of title deeds by the time compensation is ready.
Will the project compensate natural trees that will be affected?	Definitely, as long as a tree whether natural growing or planted is affected, the owner will be compensated.
Our land has not been legally adjudicated and is still under 1 title for each location as a group ranch i.e. Marigat and Illchamus group ranch. How will we be compensated for loss of use of land?	The consultants will measure each individually affected piece of land and compile a report with a qualification that the affected land is held under title by the group ranch. A further meeting will then be held between Ketraco,

	NLC, and the group ranch members to discuss compensation strategy.
Will we benefit from the power line by having our homes/households connected to the grid?	This is a high voltage power line cannot be connected directly to households. Ketraco will establish substations in strategic areas from where households can be connected to the grid through Kenya Power who is the distributing agency.
Is there a binding written agreement between Ketraco, funding partner and the community?	Ketraco has entered into an agreement with the World Bank. An agreement between Ketraco and PAHs will be concluded once this RAP is concluded, reviewed and verified.
What happens if a large percentage of my land is affected by the project rendering he remainder unviable?	All land and other affected assets will be compensated at full replacement cost. Where one's remaining portion is rendered unviable, the project will ensure that the PAH receives adequate compensation to enable it acquire an alternate land of same proportion and economic value.
Will compensation be done before the commencement of the project?	Yes, KETRACO will ensure that all affected PAHs are compensated before the project passes through their property. The project will also ensure that vulnerable households are given priority attention.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
Thank you for stating that local youth will be employed by the project.	Noted. Ketraco will ensure that contractors include local labour in their ranks.

Will my household improvements e.g. electricity connection be considered incase am affected and have to resettle elsewhere?	Yes, this will be taken into account during inventory of assets and appropriate valuation of the same included in the final budget for each individually affected household.
Some of us are vulnerable and we appreciate that the consultant has taken this into account during his presentation. Kindly ensure that our situation is considered carefully.	Noted. PAHs identified as vulnerable will be prioritized during the ESIA/RAP/VMG implementation process.

The meeting ended at 1510 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT LOGUMGUM LOCATION, BARINGO SOUTH SUB-COUNTY, BARINGO COUNTY ON 08 AUGUST 2019.

VENUE: LOGUMGUM PRIMARY CENTRE

IN ATTENDANCE

- Area Chief – Logumgum Location
- Area Chief – Illngarua Location
- Assistant Chiefs Logumgum and Illngarua Locations
- Caleb Mango – Environment Expert – KETRACO
- Nicholas Rotich - Socio- Economist – KETRACO
- Rufus Rono – Land Economist/ Valuer – KETRACO
- Petro Munyalo – Surveyor - KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Dickens Odeny – Surveyor and GIS Expert – EMC/RSS
- Community Members – As per attached attendance list from Logumgum and Illngarua locations

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impact that may arise during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1220 Hours with a word of prayer from one of the Community members and was chaired by the area Chief. The meeting had a combined attendance of community members from Logumgum and Illngarua locations of Baringo South sub-county.

Min 1:

The area chief welcomed all in attendance and then gave the community members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Rono, the Valuer from KETRACO explained the process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 5:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 6:

The project consultant, Mark Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT LOGUMGUM PRIMARY SCHOOL, LOGUMGUM LOCATION

Questions/Comments	Responses
We all know our boundaries but we don't have title deeds, how will we be compensated for land?	As it is, the land in the area is categorized as community land. The RAP consultant will enumerate all persons who present themselves as owners affected along the project route. Ketraco, NLC and the community will then have a meeting to finalize on compensation related to land.
How will the project handle the marginalized and minority groups affected by the project?	The consultant will identify the vulnerable, marginalized and minority groups during the census and inventory of affected assets. Once this is done, a report will be compiled with recommendations on how to handle such identified groupings.
Will the project compensate natural trees that will be affected?	Definitely, as long as a tree whether natural growing or planted is affected, the owner will be compensated.
Will all PAHs along the project routing be compensated?	Yes. All PAHs along the project route will be compensated. Compensation will be based on a compensation matrix that will be developed once the census and inventory of affected assets is completed and analyzed..
Will we benefit from the power line by having our homes/households connected to the grid?	This is a high voltage power line cannot be connected directly to households. Ketraco will establish substations in strategic areas from where households can be connected to the grid through Kenya Power who is the distributing agency.
Is there a binding written agreement between Ketraco, funding partner and the community?	Ketraco has entered into an agreement with the World Bank. An agreement between Ketraco and PAHs will be concluded once this RAP is concluded, reviewed and verified.
What happens if a large percentage of my land is affected by the project rendering he remainder unviable?	All land and other affected assets will be compensated at full replacement cost. Where one's remaining portion is rendered unviable, the project will ensure that the PAH receives adequate compensation to enable it acquire an alternate land of same proportion and economic value.
Will compensation be done before the commencement of the project?	Yes, KETRACO will ensure that all affected PAHs are compensated before the project

	passes through their property. The project will also ensure that vulnerable households are given priority attention.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
Thank you for stating that local youth will be employed by the project.	Noted.
Will my household improvements e.g. electricity connection be considered incase am affected and have to resettle elsewhere?	Yes, this will be taken into account during inventory of assets and appropriate valuation of the same included in the final budget for each individually affected household.
Some of us are vulnerable and we appreciate that the consultant has taken this into account during his presentation. Kindly ensure that our situation is considered carefully.	Noted. PAHs identified as vulnerable will be prioritized during the ESIA/RAP/VMG implementation process.

The meeting ended at 1420 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT LOGUMGUM LOCATION, BARINGO SOUTH SUB-COUNTY, BARINGO COUNTY ON 08 AUGUST 2019.

VENUE: LOGUMGUM PRIMARY CENTRE

IN ATTENDANCE

- Area Chief – Logumgum Location
- Area Chief – Illngarua Location
- Assistant Chiefs Logumgum and Illngarua Locations
- Caleb Mango – Environment Expert – KETRACO
- Nicholas Rotich - Socio- Economist – KETRACO
- Rufus Rono – Land Economist/ Valuer – KETRACO
- Petro Munyalo – Surveyor - KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Dickens Odeny – Surveyor and GIS Expert – EMC/RSS
- Community Members – As per attached attendance list from Logumgum and Illngarua locations

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impact that may arise during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1220 Hours with a word of prayer from one of the Community members and was chaired by the area Chief. The meeting had a combined attendance of community members from Logumgum and Illngarua locations of Baringo South sub-county.

Min 1:

The area chief welcomed all in attendance and then gave the community members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Rono, the Valuer from KETRACO explained the process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 5:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 6:

The project consultant, Mark Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT LOGUMGUM PRIMARY SCHOOL, LOGUMGUM LOCATION

Questions/Comments	Responses
We all know our boundaries but we don't have title deeds, how will we be compensated for land?	As it is, the land in the area is categorized as community land. The RAP consultant will enumerate all persons who present themselves as owners affected along the project route. Ketraco, NLC and the community will then have a meeting to finalize on compensation related to land.
How will the project handle the marginalized and minority groups affected by the project?	The consultant will identify the vulnerable, marginalized and minority groups during the census and inventory of affected assets. Once this is done, a report will be compiled with recommendations on how to handle such identified groupings.
Will the project compensate natural trees that will be affected?	Definitely, as long as a tree whether natural growing or planted is affected, the owner will be compensated.
Will all PAHs along the project routing be compensated?	Yes. All PAHs along the project route will be compensated. Compensation will be based on a compensation matrix that will be developed once the census and inventory of affected assets is completed and analyzed..
Will we benefit from the power line by having our homes/households connected to the grid?	This is a high voltage power line cannot be connected directly to households. Ketraco will establish substations in strategic areas from where households can be connected to the grid through Kenya Power who is the distributing agency.
Is there a binding written agreement between Ketraco, funding partner and the community?	Ketraco has entered into an agreement with the World Bank. An agreement between Ketraco and PAHs will be concluded once this RAP is concluded, reviewed and verified.
What happens if a large percentage of my land is affected by the project rendering he remainder unviable?	All land and other affected assets will be compensated at full replacement cost. Where one's remaining portion is rendered unviable, the project will ensure that the PAH receives adequate compensation to enable it acquire an alternate land of same proportion and economic value.
Will compensation be done before the commencement of the project?	Yes, KETRACO will ensure that all affected PAHs are compensated before the project

	passes through their property. The project will also ensure that vulnerable households are given priority attention.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
Thank you for stating that local youth will be employed by the project.	Noted.
Will my household improvements e.g. electricity connection be considered incase am affected and have to resettle elsewhere?	Yes, this will be taken into account during inventory of assets and appropriate valuation of the same included in the final budget for each individually affected household.
Some of us are vulnerable and we appreciate that the consultant has taken this into account during his presentation. Kindly ensure that our situation is considered carefully.	Noted. PAHs identified as vulnerable will be prioritized during the ESIA/RAP/VMG implementation process.

The meeting ended at 1420 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT KITURO LOCATION, BARINGO CENTRAL SUB-COUNTY, BARINGO COUNTY ON 09 AUGUST 2019.

VENUE: KITURO CHIEF'S CAMP/ DISPENSARY

IN ATTENDANCE

- Acting area Chief
- Assistant Chiefs Kituro and Kipkaech Sub-locations
- Caleb Mango - Environment Expert KETRACO
- Nicholas Rotich - Social Economist KETRACO
- Rufus Rono - Valuer/Land Economist KETRACO
- Petro Munyalo- Surveyor KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Peter Obiero – Socio-Economist – EMC/RSS
- Area M. P's Representative
- Community Members – As per attached attendance list

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1135 Hours with a word of prayer from one of the Community members and was chaired by the area Chief. The community members were from Kituro Location and Kipkaech sublocations.

Min 1:

The area chief welcomed all in attendance and then gave the Community Members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Peter Obiero gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Petro, the project surveyor (KETRACO) informed the gathering of the routing of proposed Line.

Min 5:

Mr. Rono, the Valuer from KETRACO explained the process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 6:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 7:

The project consultant, Mr. Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT KITURO DISPENSARY, KITURO LOCATION

Questions/Comments	Responses
Does the project have a component on CSR activities in our area?	No, there is no CSR component per se. The community is free to come up with CSR proposal and submit to Ketraco which will then be reviewed and where possibly assistance will be given.
How will the project handle/compensate PAHs with succession or pending transfer cases or issues?	The community is urged to commence or conclude land issues that are undergoing succession or transfer proceedings as early as possible. Be that as it may be, the RAP will note areas where these issues arise and incorporate in the consultant's report for ease of follow-up by Ketraco and NLC.
What happens if the whole portion of my land is taken by the project?	All assets affected will be compensated at full replacement cost. The project will calculate the percentage of land affected and replace accordingly.
Will we be compensated immediately the value of the land has been established because if it delays the money might not help us considering that land is appreciating at high rate in this area.	This is noted. The RAP consultants will undertake an inventory of affected assets inclusive of land where applicable. This will be valued at full replacement cost and submitted to Ketraco. Ketraco will be urged to ensure PAHs households are compensated at the earliest to reduce instances of inflation.
I am a farmer. In case my crops and trees will be affected, will I be compensated for such loss?	Yes. As stated by the consultant, an inventory of assets affected will be undertaken. This will include any trees or crops that will be identified on the project area of influence. This will be valued and compensated for before commencement of works.
Will valuation and compensation of land differ as per locations or region?	As stated by the consultant and Ketraco representatives, the valuation process will be done under the full replacement cost as per prevailing market rate maxim. There may be variances depending on the area affected vis a vis the prevailing market rate.
When is the projected expected to commence?	The project is expected to commence sometime in the 2020-2021 FY

We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
The area M.P's representative requested the project to consider hiring local work force especially the youth and women.	This was noted by both Ketraco and consultants. Assurances were given that this request would be considered especially in regards to activities that would not require highly specialized skills that may be unavailable in the locality.

The meeting ended at 1450 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT KASOIYO SUB-LOCATION, KAPROPITA LOCATION, BARINGO CENTRAL SUB-COUNTY, BARINGO COUNTY ON 07 AUGUST 2019.

VENUE: KASOIYO DISPENSARY

IN ATTENDANCE

- Area MCA
- Area M. P's Representative
- Area Chief
- Assistant Chiefs Kapropita Location
- Caleb Mango - Environment Expert KETRACO
- Nicholas Rotich - Social Economist KETRACO
- Ruffus Rono - Valuer/Land Economist KETRACO
- Petro Munyalo- Surveyor KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Peter Obiero – Socio-Economist – EMC/RSS
- Dickens Odeny – Surveyor and GIS Specialist – EMC/RSS
- Community Members – As per attached attendance list

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1058 Hours with a word of prayer from one of the Community members and was chaired by the area Chief.

Min 1:

The area chief welcomed all in attendance and then gave the Community Members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Peter Obiero gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Petro, the project surveyor (KETRACO) informed the gathering of the routing of proposed Line.

Min 5:

Mr. Rono, the Valuer from KETRACO explained process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 6:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 7:

The project consultant, Mr. Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT KASOIYO SUBLOCATION

Questions/Comments	Responses
Will I be compensated for a wall fence in case it is hit by the line?	Every structure that will be affected will be affected by Ketraco line will be compensated for.
Why can't compensation for affected land be thrice its value so as to benefit the next generations because the usage of land will be limited?	Valuation of affected assets including land will be done at full replacement cost. Ketraco expounded further that there will be no outright acquisition of land, the project is only seeking a wayleave hence compensation for land is one off.
The first phase, Lessos-Kabarnet still has complaints over land compensation/payment. What are you going to do about that?	This is misconstrued. Compensation for the aforesaid line is still on process and will be deemed complete when all affected households have been compensated. Basically, compensation is an on-going process.
Will we be compensated immediately the value of the land has been established because if it delays the money might not help us considering that land is appreciating at high rate in this area.	This is noted. The RAP consultants will undertake an inventory of affected assets inclusive of land where applicable. This will be valued at full replacement cost and submitted to Ketraco. Ketraco will be urged to ensure PAHs households are compensated at the earliest to reduce instances of inflation.
We have concern over conflicting land valuation figures by the different surveyors i.e. individual PAH surveyor and Ketraco valuation. How will you handle that?	As stated during the barasa, the consultant will undertake a valuation process at full replacement cost taking into account the prevailing market rates. This will ensure that PAHs get value for their property. Should they be dissatisfied, it is their right to acquire the services of an independent valuer the outcome of which will be compared to NLC valuation.
Why can't the power pass through the forest instead through peoples plots?	Ketraco has tried as much as is reasonably possible to ensure that project does not affect people's property. Unfortunately, it is not possible to route the whole project in forest areas and thus a number of households will be affected. It is due to this that a RAP is being undertaken.
Will compensation be done before the commencement of the project?	Yes, KETRACO will ensure that all affected PAHs are compensated before the project

	passes through their property. The project will also ensure that vulnerable households are given priority attention.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
The area M.P representative talked of CSR as far as the project is concerned. He requested KETRACO to assist in equipping schools, hospitals etc.	This was noted by Ketraco representatives in attendance.
The Area MCA urged Ketraco to finish compensation of the first phase (Lessos-Kabarnet) before commencing the Kabarnet Rumuruti.	This was noted. KETRACO responded by reiterating that compensation is an on-going process and would be deemed complete only once all PAHs were fully compensated.
Can you tell us the extent of the wayleave corridor as proposed for the project?	The width of the proposed project is 30 meters. The length is estimated to be 110km.

The meeting ended at 1350 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT KARANDI LOCATION, LAIKIPIA WEST SUB-COUNTY, LAIKIPIA COUNTY ON 16 AUGUST 2019.

VENUE: OLN'GARUA PRIMARY SCHOOL

IN ATTENDANCE

- Area Chief – Karandi Location
- Area Chief – Kiambogo location
- Assistant Chiefs Karandi and Kiambogo Sub-locations
- Caleb Mango - Environment Expert KETRACO
- Nicholas Rotich - Social Economist KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Community Members – As per attached attendance list

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1130 Hours with a word of prayer from one of the Community members and was chaired by the area Chief. The community members were from Karandi location and Kiambogo location.

Min 1:

The area chief welcomed all in attendance and then gave the Community Members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 5:

The project consultant, Mr. Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT OLN'GARUA PRIMARY SCHOOL, KARANDI LOCATION

Questions/Comments	Responses
Will a PAH that will have a pylon erected in its land be compensated differently from others that don't have the pylon ?	No. Compensation will be uniform. As it is, the RAP will not be able to determine where pylons will be erected. That will be left to the contractor.
What happens if the whole portion of my land is taken by the project?	All assets affected will be compensated at full replacement cost. The project will calculate the percentage of land affected and replace accordingly.
Will we be compensated immediately the value of the land has been established because if it delays the money might not help us	This is noted. The RAP consultants will undertake an inventory of affected assets inclusive of land where applicable. This will be

considering that land is appreciating at high rate in this area.	valued at full replacement cost and submitted to Ketraco. Ketraco will be urged to ensure PAHs households are compensated at the earliest to reduce instances of inflation.
I am a farmer. In case my crops and trees will be affected, will I be compensated for such loss?	Yes. As stated by the consultant, an inventory of assets affected will be undertaken. This will include any trees or crops that will be identified on the project area of influence. This will be valued and compensated for before commencement of works.
Will valuation and compensation of land differ as per locations or region?	As stated by the consultant and Ketraco representatives, the valuation process will be done under the full replacement cost as per prevailing market rate maxim. There may be variances depending on the area affected vis a vis the prevailing market rate.
When is the projected expected to commence?	The project is expected to commence sometime in the 2020-2021 FY
Will the power from this project help us in our homes? Some of us have no electricity in our dwellings	No. This will be a high voltage line that cannot be utilized domestically. The power will first be transmitted to Rumuruti substation and then prospective clients can request for connection from Kenya Power.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
Is a procedure for channeling any grievances that we may have?	The consultant will incorporate a GRM system in the reports to be compiled. This will give a guide line on the procedure to follow in order to resolve any disputes or grievances that may occur during project implementation.

The meeting ended at 1330 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT KAPKECHIR LOCATION, BARINGO SOUTH SUB-COUNTY, BARINGO COUNTY ON 16 AUGUST 2019.

VENUE: LOMOIWE DISPENSARY GROUNDS

IN ATTENDANCE

- Assistant Chief Kapkechir sub location
- Caleb Mango – Environment Expert – KETRACO
- Nicholas Rotich - Socio- Economist – KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Community Members – As per attached attendance list

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1520 Hours with a word of prayer from one of the Community members and was chaired by the area assistant chief.

Min 1:

The area assistant chief welcomed all in attendance and then gave the community members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 7:

The project consultant, Mark Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT LOMOIWE DISPENSARY, KAPKECHIR LOCATION

Questions/Comments	Responses
Will compensation be done once or in bits?	Compensation will be staggered, with those losing structures being compensated first. Land, crops and trees will follow in that order.
Will people that will have pylons erected in their land have a higher compensation?	At this point of census and inventory of affected assets, the consultant does not know where the pylons will be erected. As such, compensation will be uniform.
What will be the distance between one pylon to the next?	As in the answer given above, the consultant is not privy to the distance between pylons. The contractor will determine that during construction.

During the feasibility study by KETRACO, some people had their names captured as possible PAHs. This was erroneous since that is not their land. What happens in such situations?	The consultant will undertake a totally new study and data collection with the assistance of the community. This will ensure that only genuine PAHs are captured.
Will we benefit from the power line by having our homes/households connected to the grid?	This is a high voltage power line cannot be connected directly to households. Ketraco will establish substations in strategic areas from where households can be connected to the grid through Kenya Power who is the distributing agency.
What happens if a large percentage of my land is affected by the project rendering he remainder unviable?	All land and other affected assets will be compensated at full replacement cost. Where one's remaining portion is rendered unviable, the project will ensure that the PAH receives adequate compensation to enable it acquire an alternate land of same proportion and economic value.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
We hope that the contractor hired will have a well-disciplined work force that will not bring a negative impact to our community	Noted. The contractor and their staff will be expected to sign a code of ethics and adhere to the same.
Some of us are vulnerable and we appreciate that the consultant has taken this into account during his presentation. Kindly ensure that our situation is considered carefully.	Noted. PAHs identified as vulnerable will be prioritized during the ESIA/RAP/VMG implementation process.

The meeting ended at 1645 Hours with a closing word of prayer from one of the community members.

CONSULTATION MEETING WITH COMMUNITY MEMBERS AT ARABAL LOCATION, BARINGO SOUTH SUB-COUNTY, BARINGO COUNTY ON 14 AUGUST 2019.

VENUE: CHEMORONGION CENTRE

IN ATTENDANCE

- Area Chief – Arabal Location
- Assistant Chiefs Arabal and Kasiela Locations
- Caleb Mango – Environment Expert – KETRACO
- Nicholas Rotich - Socio- Economist – KETRACO
- Rufus Rono – Land Economist/ Valuer – KETRACO
- Mark Owuondo – Environment Expert – EMC/RSS
- Community Members – As per attached attendance list from Logumgum and Illngarua locations

AGENDA

1. Community Consultation on proposed KETRACO Project.
2. Sensitization of the community regarding Environmental and Social impacts that may occur during implementation of the project.
3. Explaining Resettlement Action Plan process to the Community.

MINUTES

The meeting officially began at 1220 Hours with a word of prayer from one of the Community members and was chaired by the area Chief. The meeting had a combined attendance of community members from Arabal and Kasiela locations of Baringo South sub-county.

Min 1:

The area chief welcomed all in attendance and then gave the community members a brief overview of the public baraza before introducing the Consultants.

Min 2:

The Consultants through Mark Owuondo gave a brief introduction of the EMC Consultants and RSS, expanded on the agenda of the meeting and thereafter introduced the project proponent KETRACO to the Community.

Min 3:

Mr. Rotich, the Socio-Economist from KETRACO then gave a brief background of KETRACO. This was done to sensitize the community about KETRACO as a state corporation, its mandate, and the Kabarnet – Rumuruti component of the Project.

Min 4:

Mr. Rono, the Valuer from KETRACO explained the process of valuation and compensation. He emphasized that all PAHs would be compensated before commencement of civil works.

Min 5:

Mr. Mango, the environment expert (KETRACO) then outlined the positive and negative impacts of the project. He went ahead and expounded on the likely mitigation measures that would be applied to curb the negative/adverse impacts to ensure the project would be environmentally sound.

Min 7:

The project consultant, Mark Owuondo then explained to the gathering the whole process that entails ESIA, RAP and VMGF, from initial public/stakeholder consultation to project implementation. He gave a step by step schedule on how the process would be undertaken. The gathering was informed that a socio-economic survey would be done as well as a census and inventory of assets owned by PAHs. The data gathered would be analyzed and valued. The consultants would then compile reports of findings and submit to KETRACO.

The consultant handed the meeting back to the area chief who promptly requested/urged the community to present their questions, views and comments on the foregoing. A summary of the issues/comments raised by the public is presented in the table below.

SUMMARY OF QUESTIONS, VIEWS, COMMENTS ARISING FROM THE PUBLIC CONSULTATION MEETING HELD AT CHEMORONGION CENTRE ARABAL LOCATION

Questions/Comments	Responses

We all know our boundaries but we don't have title deeds, how will we be compensated for land?	As it is, the land in the area is categorized as community land. The RAP consultant will enumerate all persons who present themselves as owners affected along the project route. Ketraco, NLC and the community will then have a meeting to finalize on compensation related to land.
How will the project handle the marginalized and minority groups affected by the project?	The consultant will identify the vulnerable, marginalized and minority groups during the census and inventory of affected assets. Once this is done, a report will be compiled with recommendations on how to handle such identified groupings.
Will the project compensate natural trees that will be affected?	Definitely, as long as a tree whether natural growing or planted is affected, the owner will be compensated.
Will all PAHs along the project routing be compensated?	Yes. All PAHs along the project route will be compensated. Compensation will be based on a compensation matrix that will be developed once the census and inventory of affected assets is completed and analyzed..
Will we benefit from the power line by having our homes/households connected to the grid?	This is a high voltage power line cannot be connected directly to households. Ketraco will establish substations in strategic areas from where households can be connected to the grid through Kenya Power who is the distributing agency.
Is there a binding written agreement between Ketraco, funding partner and the community?	Ketraco has entered into an agreement with the World Bank. An agreement between Ketraco and PAHs will be concluded once this RAP is concluded, reviewed and verified.
What happens if a large percentage of my land is affected by the project rendering he remainder unviable?	All land and other affected assets will be compensated at full replacement cost. Where one's remaining portion is rendered unviable, the project will ensure that the PAH receives adequate compensation to enable it acquire an alternate land of same proportion and economic value.
Will compensation be done before the commencement of the project?	Yes, KETRACO will ensure that all affected PAHs are compensated before the project passes through their property. The project will

	also ensure that vulnerable households are given priority attention.
We hear that the high voltage power line can cause cancer or miscarriage in expectant women. Is this true?	Scientific evidence has ruled out such negative impacts occurring. The line is safe with no radioactive emissions that could lead to such adverse impacts.
Can I continue with my activities after the consultants have recorded what will be affected on my land?	Once an inventory of affected assets is conducted, the PAH can continue with any activity that was being performed on the affected land with two (2) exceptions i.e. do not build or continue building on the affected area and do not plant any tree that has the potential to grow to a height of 12 meters and above.
Thank you for stating that local youth will be employed by the project.	Noted.
Will my household improvements e.g. electricity connection be considered incase am affected and have to resettle elsewhere?	Yes, this will be taken into account during inventory of assets and appropriate valuation of the same included in the final budget for each individually affected household.
Some of us are vulnerable and we appreciate that the consultant has taken this into account during his presentation. Kindly ensure that our situation is considered carefully.	Noted. PAHs identified as vulnerable will be prioritized during the ESIA/RAP/VMG implementation process.

The meeting ended at 1345 Hours with a closing word of prayer from one of the community members.

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE

PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CENTRE MOJA KASIELA- CHEBINYINY LOCATION (KASIELA SUB LOCATION)
DATE AND TIME OF MEETING: 15TH / 12/ 2021 from 1.03PM – 3.00PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 1.03pm and began with a word of prayer. The area Village elder welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.

ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.

iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

The team noted that the area residents of Chebininy location are predominantly the Endorois people who are a marginalized population with no title deeds despite the informal land subdivisions amongst themselves. Plans to resolve this was however underway.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.

ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.

iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Aston Kibarek) is compensation of houses standard or dependent on the type of house?	House compensation is dependent on the house value.
(Aston Kibarek) will compensation benefit all villages or just the village the line passes?	Land compensation will be held in trust by the county government and together they will decide on how best the funds will benefit the community and who will benefit.
(Simon Ndarawit) I recently bought land and the line passes right through the land therefore I will be displaced. What will I do?	If no title deed, only the house will be compensated. Work on obtaining the title deed.
(Simon Ndarawit) Is there compensation for beehives?	There will be relocation facilitation for beehives on trees that will be cut down during construction.
(Philip Chirchir) What qualifications should one have for the possible job opportunities that may arise?	Wayleave officer jobs require some level of education and ability to speak in the native language. The unskilled jobs only require able bodied men.
(William Changowony) What is the width of the tower?	Tower legs are 10m apart but the wayleave is a total width of 30m.
(William Changowony) Is there compensation for towers passing overhead above my land?	There is no discrimination in compensation when it comes to the metallic towers and the overhead conductors.
(Geoffrey Chelegat) How long will it be before compensation begins? We need to know if there is time to sort out title deeds issues.	Compensation begins in 2022 and it will start with houses. You therefore have time to sort out the title deeds issues.
(Geoffrey Chelegat) Will there be compensation for injuries that occur during construction?	The contractor is mandated to have an insurance plan for all its workers that will cover any accidents that may occur.
(Daniel Ng'eno) What qualifications should one have for the possible job opportunities that may arise?	Wayleave officer jobs require some level of education and ability to speak in the native language. The unskilled jobs only require able bodied men.
(Aston Kibarek) What happens when I had plans to construct but now suddenly the line passes through my land?	There will be no compensation for future/missed investments. Any construction done after valuation will not be compensated. However, one can construct outside the wayleave.
(Musa Kiptoo) Are there any health impacts of the towers on us?	There no associated health impacts of the towers and conductors. The lowest hanging conductor is 8m above the ground posing no risk to humans.
(Musa Kiptoo) If I get a title deed and my land ceases to be a community land, will I be compensated?	If you obtain a title deed, land compensation will be given to you.
(Musa Kiptoo) Is payment done once or in phases?	Payment is one-off.

Closing Remarks

1. The area Village elder thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 3.00 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Chebininyi location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP &ESIA UPDATE

PUBLIC CONSULTATION AND SENSITIZATION MEETING

VENUE: CHIEF'S OFFICE- MUHOTETU LOCATION

DATE AND TIME OF MEETING: 9TH / 12/ 2021 from 2.45PM – 5.00PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 2.45Pm and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. She briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. She then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and

regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.

ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.

iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised at the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will

specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Reuben Gitonga) What happens when the tower legs lands on dfferent lands for different people?	Every land will be compensated individually depending on the degree of impact
(Steven Kamau) After compensation does the title deed go with KETRACO or the land owner? What delays payment?	KETRACO only compensates for loss of use and doesn't buy land hence title deed is returned to owner.
(Samuel Muchemi) If a plot can't be used due to total loss, who helps the old in looking for new shambaz?	The old people can be assisted by the chief.
(Steven Mwangi) The disturbance allowance for relocation of a house should be 40% and not the 15% based on costs of everything in the market. Can this be revised?	40% is not factual and 15% has proved to be rather sufficient
(Steven Mwangi) Can the shamba owner use the cut down protected trees that were on his shamba?	Prior to the clearing exercise, a NEMA license will be obtained that will allow for KETRACO to cut down trees and for the land owners to use them
(Steven Mwangi) Is there a grievance redress mechanism that can be used during the construction phase?	The first grievance redress mechanism on the ground is through the Chief and the KETRACO officers on the ground (Wayleave officer for instance) that serve to ensure that the contractor is EHS compliant.
(Mary Wanjiru) Why are original title deeds being taken and not their copies?	The original title deed is taken to lands registry for production of an easement that is the attached to the original deed to show future buyers that there was compensation previously done on the land.
(Daniel Wakanyi) We are currently working on succession with no disputes. What happens when compensation begins when we haven't completed the process?	There is enough time to complete succession before compensation begins. If at all this wouldn't have been resolved by the time compensation begins, the money will be held in trust on a separate account till the issue is resolved.
(Daniel Wakanyi) Is compensation done before or after construction?	Payment done at different times depending on the submission of complete documents.

(Daniel Wakanyi)) Will there be any jobs for the youth and how will they be distributed?	The contractor will work with the chief to avail unskilled jobs to the locals depending on the number of opportunities available.
(Daniel Wakanyi) Do we have rights to legal representation in case we deem fit?	Yes. Any aggrieved PAP can engage legal representation at whatever stage they want.
(Richard Gacheru) When will compensation begin?	Compensation is set to start in 2022.
(Steven Kamau) Will there be compensation for the lost opportunity to invest on our lands since in 2019 we were advised not to do any developments on our lands and the project/compensation has since not started?	Unfortunately, every project has some negative impacts that cannot be avoided such as these unforeseen challenges. We cannot quantify missed/forgone investments, aspirations.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. She highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. She pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 5.00 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature: FNBarasa.....

Date: 10/01/2022

Confirmed by Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....12/01/2022

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....10/01/2022

CC: **Chief- Muhotetu location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- KIAMBOGO LOCATION (THIGIO SUB LOCATION)
DATE AND TIME OF MEETING: 7TH / 12/ 2021 from 3.35PM – 5.30PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 3.35pm and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Henry Kamau) When is compensation being done?	Compensation for: • Structures (before relocation but after valuation) • Crops (after the damage and not before) • Trees (after cutting and not before) • Beehives (relocation facilitation) • Land (Upon producing title deeds after valuation)
(Reuben Ngunu) What is being compensated?	Compensation will be done for affected Structures, Crops, Trees, Beehives translocation and land.
(Reuben Ngunu) Will valuation for my trees be dependent on their sizes/age?	Tree compensates rates are obtained from KFS and it is dependent on the life stage/age of tree the time of valuation.
(Paul Karanja) What is the rate at which compensation is done?	Compensation is done at a rate of 30% of the current land value. It is dependent on the degree of impact. A small plot will have a higher degree of impact moving the rate above 30% and most times leads to total compensation.
(Paul Karanja) What is the impact of tower location on boreholes?	The contractor can make a decision to move a tower before or after the borehole. There is no impact on boreholes that are below the line. Compensation for relocating a borehole is done only when a house is to be demolished thereby rendering the use of the borehole as null.
(Annie Ndemange) How soon will the project commence?	Pre-construction activities such as survey, soil testing and compensation of structures are set to begin in 2022 and construction thereafter.
(Annie Ndemange) Will PAPs be compensated for houses before the house is demolished? Is there room for negotiation?	Compensation for Structures is done before relocation but after valuation. Compensation is done at the current market value of the house materials and all its components.
(Magdalene Wathaya) I have given my son land and he has his title deed. Who will be compensated?	Compensation is done against a title deed so your son will be the one to be compensated.
(Samuel Kinyua) Will there be compensation for fences?	Fences that are destroyed during construction will be compensated.
(Annie Ndemange) I have not completed on succession rites? Will this affect compensation?	Succession takes 6 months to be completed. There will be time to complete such procedures before compensation begins.
(Annie Ndemange) For a house, what do you value?	Materials, electricity, water and all other amenities are valued.
(Annie Ndemange) Is compensation for land where towers are to be constructed different that those where just the conductors are passing overhead?	There is no discrimination in compensation in the two scenarios.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 5.30 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....F.N Barasa.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Kiambogo location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- RUMURUTI LOCATION
DATE AND TIME OF MEETING: 8TH / 12/ 2021 from 10.30AM – 12:30PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 10.30am and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questioners and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTIONS	ANSWERS
(Elijah Ngunyi Wagogi) Where exactly does the line pass since I want to start construction on my land?	The surveyor will confirm where the line traverses on his land.
(Elijah Ngunyi Wagogi) some of the PAPs have no power in their homes, can ketraco put power for them?	KETRACO only transmits high voltage power to the substation where the power is stepped down so that KPLC can do the distribution.
(Joyce Rono) Is one compensated when overhead cables and a tower pass through your land?	KETRACO will compensate the way leave corridor.
(Joyce Rono) What will happen when a tower passes through a burial site? Will we have to exhume the bodies and will we be compensated?	We do not interfere with burial sites. Contractor will be notified of any burial sites in order to move some few meters away from it.
(Francis Kimenyi) How is the land and structures compensated?	Structures are compensated in two installments. First 70% then 30% after demolition and 15% disturbance allowance is added to the whole amount, and its paid according to the current market value. Land is compensated to the PAPs who have tittle deed and its usually paid in one installment.
(Francis Kimenyi) How comes people in Naivasha were seen on television protesting over non-payment by KETRACO?	Payments can be delayed due to a number of reasons such as family wrangles and court cases. In those cases, KETRACO will hold the payments until the family agree and the court cases are over.
(Joyce Rono) Are payments uniform? Will I know how much my neighbor is compensated?	The offer letters are confidential. Parcels of land are affected differently therefore the compensation amount will be different to each individual.
(George Kamau) Why were my documents not collected and I was notified that the line is passing through my land?	At this stage, we are not collecting any documents but capturing the structures affected by the line and the census of PAPs.
(Elijah Ngunyi Wagogi) What is the expected date of commencing construction?	Preliminary stages have started. Physical construction will start later.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 12.30 pm with a word of prayer.

Minutes prepared by:

Name: Jimmy Njogu

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Rumuruti location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- GITUAMBA LOCATION
DATE AND TIME OF MEETING: 8TH / 12/ 2021 from 11.24AM – 1:30PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 11.24am and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.

ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.

iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.

ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.

iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(David Kifafa) For compensation of land, will you require a copy or the original title deed?	The original title deed will be required to conduct a search and provide the easement at the lands registry and returned thereafter.
(David Kifafa) Why is land compensation done via bank accounts and not cash to provide receipts as proof?	After easement is complete, an offer letter is provided which is proof enough.
(John King'ori) If the wayleave passes right at the middle of my land, what would be the compensation rate?	Compensation is done at a rate of 30% of the current land value and it is dependent on the degree of impact. A small plot will have a higher degree of impact moving the rate above 30% and most times leads to total compensation.
(Newton Gacheru) Is valuation for land based on the price I bought it at or the current land rates?	Compensation is done at the current land value.
(Newton Gacheru) Is there compensation for boreholes?	If there is no impact on boreholes below the line, there is no compensation. Compensation for relocating a borehole is done only when a house is to be demolished thereby rendering the use of the borehole as null.
(Newton Gacheru) In 2019, KETRACO officials collected our tree data which has since changed. Will you use the previous data?	The purpose of the assignment at hand is to update such records.
(Peter Kanyuiro) My dad passed on and succession not yet completed? What will be the impact on compensation?	Succession takes 6 months to be completed. There will be time to complete such procedures before compensation begins.
(Chief Jane) Will the contractor give jobs to the locals or people from outside as we have seen in the past contractors?	The contractor will liaise with the area chief in distributing the available job opportunities to the residents.
(Newton Gacheru) When will construction begin?	Pre-construction activities such as survey, soil testing and compensation of structures are set to begin in 2022 and construction thereafter.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 1.30 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Gituamba location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- MELWA LOCATION (MELWA & MURICHO SUB LOCATIONS)
DATE AND TIME OF MEETING: 9TH / 12/ 2021 from 11.20AM – 2:00PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 11.20am and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Peter Njuguna) For compensation of land, can I give out my title deed after compensation for security purposes?	The PAP is offered an offer letter with a consent section that shows the size of land affected and how much will be paid prior to the title deed being taken to the lands registry.
(John Kiarie) Can you put beacons to mark land that will be affected & can we get a list of the affected PAPs.	PAPs will be showed the extent of land that will be affected and maps provided. We are compensating land and are not planning on making any changes to it. A list can be provided upon request.
(Dickson Ndung'u) Line passes right through our land. Division of land has been done informally and title is unavailable. Will this affect compensation?	An original title deed is required for compensation to be effected. A compensation of less than Ksh. 500, 000 however can be done with the support of a chief's letter. Sourcing for title deeds and subsequent succession should be however prioritized.
(Peter Kavata) Will you take into account the valuation of trees done in 2019 or the new one?	We are currently doing a fresh evaluation and compensation will be based on this.
(David Karuga) My land is being affected by the line and I don't have a title deed but an agreement. Will this affect compensation? Is there compensation for stalled development that resulted from us stopping development on our land after initial highlighting of our land as wayleave in 2019?	An original title deed is required for compensation to be effected. There is time to get your affairs in order before compensation begins. There is no compensation for stalled development.
(Nyambura Warui) After compensation is the land mine or Ketraco's? Can I resell it later when I deem fit?	Compensation is done for loss of use and not as purchase of any land. After title deed is taken to lands registry, an easement is processed and attached to the deed to show future buyers that there was compensation previously done on the land
(Lucy Wangare) I have 2 small plots with one title deed and the line is passing through one plot. During compensation, will it be taken as one separate plot or one large shamba?	Compensation will consider that land as one because they are under one title deed.
(Moses Maina) Is the valuation of land and houses done as one?	Valuation and consequent compensation of structures, land, crops and trees are all independent of each other.
(David Ndung'u) What will happen when compensation has begun and succession is not yet complete?	There is enough time to complete succession before compensation begins. If at all this wouldn't have been resolved by the time compensation begins, the money will be held in trust on a separate account till the issue is resolved.
(Richard Karagu) Will compensation amount cover the costs of me acquiring new land in the case where the line cuts across my land diagonally rendering it impossible to construct a house on?	Degree of impact will be assessed during valuation and if significant compensation amount will be of total loss.
(Kimani Mureithi) Can we get maps that show ius where the line is passing?	There is a team on the ground that is showing land owners the extend by which their land is affected.
(Elizabeth Nyaguthie) The line is passing through my house on my small plot. What will happen?	For small plots, land and the house will be valued separately and compensation for both done.
(Muthoni Kinyanjui) The line realignment has now made me a PAP. Will he initial 2019 list be updated?	The current exercise is updating the list.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 2.00 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....F Barasa.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Melwa location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP &ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: KITURO HEALTH CENTRE- KITURO LOCATION (KIPKAECH AND KITURO SUB LOCATIONS)
DATE AND TIME OF MEETING: 13TH / 12/ 2021 from 11.18AM – 2.43PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 11.20am and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any

KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Samuel Kiplagat- Vulnerable person, Special needs) Can I be compensated without a title deed? Succession is still underway.	An original title deed is required for compensation to be effected. A compensation of less than Ksh. 500, 000 however can be done with the support of a chief's letter. Sourcing for title deeds and subsequent succession should be however prioritized.
(Isaac Kipyegon) Is compensation done once or in phases?	Payment is done once provided that all documents are in order and there no disputes.
(Isaac Kipyegon) I completed succession after valuation was already completed. Will this affect my compensation?	No. Title deeds will be required at a later stage thus you are still on track for compensation.
(Pius Biriny)Is compensation based on the ongoing valuation?	Yes, it is.
(Pius Biriny) Some structures and indigenous trees were not captured before in 2019. Why?	We are currently doing a fresh evaluation and compensation will be based on this. Everything that is affected by the line will be captured.
(Pius Biriny) I have subdivided my land amongst my sons but I want the compensation money. Will this be possible?	Compensation will be paid to the title deed owner.
(Julius Kurui) I lost my title deed. Will this affect compensation?	An original title deed is required for compensation to be effected. There is time to obtain a replacement before compensation begins.
(Julius Kangongo) Will there be compensation for beehives?	For cut down trees that had beehives, there will be a relocation facilitation.
(Julius Chepchor) Is compensation on beehives done on current use or future loss of use too?	For cut down trees that had beehives, there will be a relocation facilitation.
(Julius Chepchor) Does compensation for trees and crops consider loss of future yield?	Compensation is for current value and that of the time it takes before one gets yield from the crops or trees again.
(Jennifer Chemutai) Is compensation for land on which tower will be constructed same as that over which overhead cables will pass?	There is no discrimination of the wayleave so payment will be the same regardless of whether the tower lands on your land or not as long as you are om the wayleave.
(Kibei Kipkelelwa) What happens to the previously collected valuation data?	We are currently doing a fresh evaluation and compensation will be based on this. Everything that is affected by the line will be captured. Previous data will be disregarded.
(Kibei Kipkelelwa) What happens when there is a grave along the line?	The grave will be left undisturbed and incase it is at the location of a tower, the tower position will be adjusted to before or after the grave.
(Kibei Kipkelelwa) The land is mine, I have the title deed but my neighbor has built structures and farmed on my	Compensation for land will be paid to the title deed owner. That of structures and crops will be paid to your neighbor.

land without knowing. How will compensation be effected?	
(Kibei Kipkelelwa) When valuing land, will the rates be the same irrespective of the land's location for instance those found in the interior vis a vis that which is found close to the town center?	Land value at different places is different and the value at the place of interest will be used.
(John Komen) The line is passing through the good side of my land where I wanted to build my house. The remaining land is sloppy and not suitable for construction. What happens to me?	If the unaffected line is unsuitable for construction, this is considered during compensation. Compensation that will ensure that a PAP is not negatively impacted.
(John Komen) My house has all the amenities installed such as electricity and water. Will these be considered during compensation?	All amenities in the house will be compensated together with the house structure.
(Chebush Rotich) We have a small shamba subdivided between my kids and we all don't want the project. Do we have the right to reject it?	Government projects are meant to benefit all thus the PAPs should embrace the project.
(Chebush Rotich) I heard that some of the negative impacts include the lost ability to get kids. Is this true?	This is just some of the myths associated with our projects and they are all not true. The government can't intentionally harm its people.
(Steven Chemutai) Why the line realignment?	Many factors are considered during route selection such as avoiding markets and settlements and a route of least impact is chosen.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 2.43 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Kituro location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- KIMALEL LOCATION (KORIEMA SUB LOCATION)
DATE AND TIME OF MEETING: 11TH / 12/ 2021 from 2.45PM – 5.00PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 2.45pm and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.
The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.
The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.
After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.
The team further noted that the area was characterized by group ranches ownership. Issuance of title deeds has however begun.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Philip Tunanga) Can we be compensated individually given that we all know our lands?	By law, compensation is strictly done to a title deed owner thus the group ranch will be given the compensation funds.
(Philip Tunanga) Is there compensation for beehives?	For cut down trees that had beehives, there will be a relocation facilitation.
(Andrew Rumenya) Can we be compensated individually given that we all know our lands and we are the ranch with the least land disputes in the region?	Compensation is strictly done to a title deed owner thus the group ranch will be given the compensation funds.
(Andrew Rumenya) Will there be a CSR project?	The group ranch together with the community an decide on a project that will benefit the locals using the compensation money.
(Andrew Rumenya) Is the 30% compensation standard for all land sizes?	Compensation is based on the degree of impact and 30% is the least amount we pay regardless of the degree of impact. For small plots however, compensation is usually up to 100% due to the great loss of use.
(Peter Kipsang) Why is the group ranch benefitting and not us?	By law, compensation for land is done to the title deed owner in this case, the group ranch.
(Benjamin Kibet) I have bought land but I haven't gotten the title deed yet? Will I be compensated?	By law, compensation for land is done to the title deed.
(Samuel Kurui) We are all part of the group ranch but line affects some of us. Is it really fair that some will be affected yet compensation goes to everyone?	By law, compensation for land is done to the title deed owner in this case, the group ranch. A CSR project will however benefit all.
(Andrew Rumenya) What happens to me when my whole plot is affected by the line and I do not have the money to look elsewhere for land since compensation goes to the ranch?	The community can come to an agreement with the group ranch on how to best deal with such issues independently of KETRACO. You can also hasten the process of obtaining title deeds.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 5.00 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Kimalel location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- MARIGAT LOCATION (YATOI SUB LOCATION)
DATE AND TIME OF MEETING: 11TH / 12/ 2021 from 12.30PM – 1:45PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 12.30pm and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

The team further noted that the area was characterized by group ranches ownership. Issuance of title deeds have however begun.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any

KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Joseph Rotich) During initial survey/valuation, some people were not captured. Why?	New valuation is currently underway and every PAP will be captured.
(Steven Lumek) Issuance of titles is still ongoing. Can this affect compensation?	Compensation for land is done to the title deed owner in this case, the group ranch. However, you have time to obtain your title deeds before compensation begins.
(Paulina Cherutich) Will I be compensated if I do not have a title deed? And do I reserve the right to reject the line from passing through my land if I will not be compensated directly?	Compensation for land is done to the title deed owner in this case, the group ranch. In case of disputes one can go to court but this is a development project that stands to benefit every local resident thus can't really be stopped.
(Kiprop Cheserem) Is there a way for KETRACO to clarify land owners just to put a check on impersonators?	We have an intense verification process and payment is only done after this.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 1.45 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....F.N.Barasa.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Marigat location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE

PUBLIC CONSULTATION AND SENSITIZATION MEETING

VENUE: MURDA NURSERY SCHOOL- ILNG'ARUA LOCATION (LONGEWAN AND ELDUME SUB LOCATIONS)

DATE AND TIME OF MEETING: 10TH / 12/ 2021 from 2.40PM – 5.05PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 2.40pm and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and

RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.

ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.

iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

The team further noted that the land in the area was community land and there were no title deeds for owners despite the informal subdivisions that the locals have done. Plans to resolve this was however underway.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.

ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.

iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Nelson Ole Matilo) For compensation of structures, will it be separate from that of the community land?	The PAP will be compensated for structures as an individual.
(Chief Jones Ole Laanot) Will I be compensated for indigenous trees on my land?	For community lands, indigenous trees are also compensated but held in trust by the county government in a joint community fund.
(Chief Jones Ole Laanot) Will you pay for my house and land if on wayleave?	We will compensate houses on wayleave to individuals but not community lands.
(Chief Jones Ole Laanot) Is it possible to divide the money in the joint community land account amongst the PAPs instead of a CSR project?	If the community comes to an agreement with the county government to do so then you are free to do so. As for us we will follow the law and disburse the funds in an account held in trust by the county for the community.
(Chief Jones Ole Laanot) Can we be the ones to decide on a CSR project?	The community together with the county can jointly decide on a CSR project
(Chief Jones Ole Laanot) Will the trees that will be cut down compensated?	For community lands, indigenous trees will be compensated but held in trust by the county government. Planted trees that will be cut down will be compensated to the owners.
(Dick Lekoko) Is valuation still ongoing?	Yes it is currently ongoing.
(Wilson Leriana) For those who moved and demolished their houses in 2019, will they be compensated?	No. One should never move or demolish their house before they have been compensated.
(Samson Kagana) Is it one community joint account per location or it is one for all locations?	Yes it is one community joint account per location.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 5.05 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Ilng'arua & Elchamis location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE
PUBLIC CONSULTATION AND SENSITIZATION MEETING
VENUE: CHIEF'S OFFICE- KISERIAN LOCATION (LONGUMGUM SUB LOCATION)
DATE AND TIME OF MEETING: 10TH / 12/ 2021 from 11.50AM – 2:00PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 11.50am and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.

The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.

The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.

After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

The team further noted that the land in the area was community land and there were no title deeds for owners despite the informal subdivisions that the locals have done. Plans to resolve this was however underway. The area is predominantly inhabited by the Njemps.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Nelson Ole Matilo) For compensation of structures, will it be separate from that of the community land?	The PAP will be compensated for structures as an individual.
(Jackson Ole kidogo) If the line cuts through a significant proportion of my land and I am required to move, where will I go when compensation is not effected individually.	The county government holds the compensation money in trust and should look into benefiting all the residents and resolving such issues.
(Simeon Lesupe) What distance from the line is compensation being done?	A 30m wayleave is being considered for compensation.
(Simeon Lesupe) What happens when compensation for crops is effected during the dry season when there is no farming?	Compensation only done for crops that are growing at the time.
(Ken Lekidogo) Can KETRACO kindly consider paying people individually because among us we have clear land subdivisions?	We are guided by the law and the Compensation Land Act of 2016 states that any compensation for community land is held in trust by the county government of the area and the money should be put to use for the benefit of the entire community.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 2.00 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature.....

Date:20/12/2021

Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....22/12/2021.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....22/12/2021.....

CC: **Chief – Kiserian location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE

PUBLIC CONSULTATION AND SENSITIZATION MEETING

VENUE: KASOIYO DISPENSARY- KAPROPITA LOCATION (KASOIYO SUB LOCATION)
DATE AND TIME OF MEETING: 14TH / 12/ 2021 from 3.10PM – 5.30PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 3:10pm and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting was to re-sensitize the community of the proposed transmission line and the need to conduct an ESIA and RAP update since 2 years have elapsed from when the initial ESIA and RAP were conducted between the months of July and September in 2019; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that

projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.
The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.
The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.
After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The

contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Richard Cherono) How much time is a PAP given to move from his house if it has been marked to be demolished?	A PAP is given a period of 3 months from when they are compensated.
(Richard Cherono) When will valuation be done?	Valuation is currently ongoing.
(Nelson Ngobu) How is the yield from fruit trees valued and is there compensation for loss of future yield?	We compensate for the current yield plus the current yield times the number of years till the trees starts reproducing again.
(Nelson Ngobu) What if I am not willing to sell my land?	We are not buying land instead we are just compensating for loss of use.
(Nelson Ngobu) Does the Ministry of Agriculture have an updated price list for fruits that will give an accurate yield price?	The Ministry of Agriculture constantly updates its list.
(Nelson Ngobu) Are there any health hazards beyond the 30m wayleave?	30m is a buffer zone beyond which there no health hazards.
(Clement Chirchir) We are two people on one land but only one person's name appears on the list. Why?	When it comes to compensation, only the title deed owner is compensated.
(Justin Kiprotich) I have informally done land sub divisions amongst my grandchildren. Will they be compensated?	Compensation for land will be paid to the title deed owner.
(Simon Kipkirui) Is compensation done once?	Payment is done once provided that all documents are in order and there no land disputes.
(Simon Kipkirui) Will my fence/perimeter wall on wayleave be demolished?	The fence will probably be demolished and compensation done for rebuilding.
(William Cheptoma) Land is not mine but the house is mine. Who will be compensated for the land?	Land compensation will be done to the title deed owner but you will be compensated for the house.

Closing Remarks

1. The Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 5:30 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature: ..F.Nbarasa.....

Date: 10/01/2022

Confirmed by Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....10/01/2022

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....10/01/2022

CC: **Chief- Kapropita location**

KABARNET- RUMURUTI 132KV TRANSMISSION LINE RAP & ESIA UPDATE

PUBLIC CONSULTATION AND SENSITIZATION MEETING

VENUE: CHIEF'S OFFICE- ARABAL LOCATION

DATE AND TIME OF MEETING: 7TH / 12/ 2021 from 11.00AM – 1:30PM

- **Members Present**

Refer to the signed attendance list attached

Meeting Objective:

- Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP study updates and the essence of undertaking the updates.
- Implementation Plan for the ESIA and RAP Study updates of the Proposed TL.
- Implementation Plan for the proposed Transmission Line.
- Question and Answer Session.
- AOBs

Introduction

The meeting was called to order at 11:00am and began with a word of prayer. The area Chief welcomed everyone in attendance and thanked them for finding time to attend the meeting. He briefed the community of KETRACO's agenda for the meeting and encouraged the stakeholders and the community members present to actively engage in the discussions. He then welcomed KETRACO staff to introduce themselves.

Agenda

1. Preliminaries
2. KETRACO's mandate
3. ESIA and RAP update justification
4. Project impacts
5. Plenary discussion
6. Close of meeting.

Minute 01: Project brief on the Kabarnet- Rumuruti Transmission Line ESIA and RAP Study updates

The team explained that KETRACO is a 100% government owned company. Its mandate is to plan, design, construct, own, operate and maintain the country's high voltage electricity grid and regional power interconnectors. This is with a vision to provide reliable, efficient and effective electricity transmission and promote power trade for sustainable socio-economic development. The purpose of convening the meeting is to notify the community of the realignment of the TL and a lapse of 2 years since the initial ESIA and RAP were conducted in August 2019, thereby necessitating an ESIA and RAP update; the need to describe the anticipated positive and negative impacts of implementing the project; and to explore, with the community's input, mitigation measures against adverse effects.

The team explained that the proposed 132kV Kabarnet- Rumuruti transmission line will extend over a distance of approximately 95km from Kabarnet to Rumuruti. The project will have a wayleave corridor of 30 metres.

KETRACO explained to the community that the Kabarnet- Rumuruti Transmission Line will be constructed solely to ensure a reliable and efficient power supply thereby leading to possible cropping up of industries and the general development in the counties. The emphasis was that as KETRACO continues building transmission lines, they are also committed to ensuring that projects are implemented in an environmental and socially sound manner hence the need to carry out an Environmental and Social Impact Assessment and Resettlement Action Plan (RAP) studies.

Minute 02: Implementation Plan for ESIA and RAP Study updates of the Proposed TL

The team told the community that the ESIA and RAP Study updates will be along the 30m wide and 95km long corridor of the 132 kV transmission line. This will involve:

i. Sensitization of community members who will be directly or indirectly affected by the project.
ii. Carrying out a census to determine the Project Affected Persons (PAPs) and to identify vulnerable PAPs through Household Questionnaires. This is undertaken by the PIT present.
iii. Carrying out asset inventory surveys will be done by the Land Economist.

The KETRACO team sensitized the locals on the possible environmental, social and economic benefits and negative impacts that may result from implementing the project and the possible mitigation measures to these issues.
The team also emphasized on ensuring that the contractor adheres to all Environmental health and Safety requirements pertaining the work environment once construction works begin. For instance, the contractor would be required to provide complete PPEs for his workers.
The KETRACO team had already commenced the physical visitation of PAPs on their parcels during the RAP study and they will be surveying the parcel of land, answering questions and physically taking the measurement of the structures in their parcel of land. The community was also warned that after the RAP exercise which would take place with the area chief and village elders, KETRACO would have zero tolerance of opportunistic PAPs encroaching on the TL after the cut-off date given to the PAPs. A firm warning was given that those who would attempt this would not be paid and their structures would be cleared to enable construction work.
After the completion of the census and asset inventory surveys, data analysis and data compilation, they will be informed of the various categories of affected assets and their entitlement for each category and projected timeframe for compensation.

Minute 03: Implementation Plan for the proposed Transmission Line

Other activities to be undertaken by KETRACO during construction of the TL include:

a. Compensation

KETRACO compensates PAPs based on 3 categories of assets:

i. Land – based on the degree of impact of the project on the land traversed by the TL.
ii. Structures – based on the current replacement value of the house and an additional 15% disturbance allowance. However, KETRACO generally avoids public institutions like schools, hospitals and churches.
iii. Crops and trees– based only on crops or trees that have already been damaged during construction. Current compensation rates are obtained from KFS (trees) and the Ministry of Agriculture (crops). For community lands, indigenous trees are also compensated but held in trust by the county government.

b. Employment Opportunities

The team also explained that the project will create employment for skilled and unskilled labour in the affected community. The skilled labour will be on the wayleave officers whose job opportunity will be advertised through the chief's camp offices because they are our main point stakeholders in the ground. Unskilled labour will happen during construction period. The contractor is under obligation to employ casual labourers from the location through which the TL will traverse. This will take place with the help of local administration offices. The contractor will specify the number of people needed and the wages. Locals were encouraged to take advantage of these opportunities.

c. Dispute Resolution Strategy

In case of any disputes or disagreements, KETRACO would consult with the elders and the local administration with the help of other community members, no family dispute will be sorted by any KETRACO officer, if family conflicts are beyond resolution KETACO will pend any payments in case of disputes.

Minute 04: Question and Answer Session

QUESTION	ANSWERS
(Samson Chesut) Is the CSR meant to only benefit the people directly affected by the lines?	The essence of the CSR is to benefit the entire local area.
(Esther Wendot) Is compensation done once or is there a payment scheme?	One-off payment is implemented during compensation.
(Esther Wendot) How does KETRACO handle compensation in cases where the line passes between bordering land parcels?	KETRACO compensates on the basis of degree of impact on an individual person basis.
(Esther wendot) Can you please give us examples of CSR projects we can suggest for our area?	KETRACO encourages the locals, led by the area chief, to collectively decide on a project of choice that will best address the area needs.
(Solomon Kipchoim) How will the distribution of jobs that will arise be done?	The contractor will liaise with the area chief in distributing the available job opportunities to the residents.
(Solomon Kipchoim) Is compensation done for structures that came up after valuation?	No, compensation is only done on structures that were valued at the time of the exercise.
(Solomon Kipchoim) How will KETRACO issues of land owners with no titles during compensation?	Compensation is done against title deeds thus affected land owner are encouraged to work on obtaining them prior to compensation.
(Eunice Kiroite) Can we have more than one CSR projects in a location but at different areas?	Financial constraints and our core mandate limit us to providing only one CSR project for the entire location.
(Samson Chesut) Will there be favoritism in jobs distribution?	The Chief will ensure the process is fair but abled youth will be targeted due to the nature of the work. Women will also be encouraged to apply for opportunities. KETRACO, through a fair process will employ a Wayleave officer from the local area who will work closely with the Contractor and the locals. The contractor will however come with skilled labor.
(Francis Kiptoo) When will the project start?	Pre-construction activities such as survey, soil testing and compensation of structures will probably begin in 2022.
(Solomon Kipchoim) What happens when the line cuts across a whole shamba but cuts cross a small section of a plot in terms of compensation?	Compensation is done at a rate of 30% of the current land value and it is dependent on the degree of impact. A small plot will have a higher degree of impact moving the rate above 30% and most times leads to total compensation.
(Solomon Kipchoim) Is there compensation on beehives?	Trees found along the wayleave will be cut down and if there were beehives on them, the affected person will be given a relocation facilitation.

Closing Remarks

1. The Senior Chief thanked the members present and the KETRACO team
2. He highlighted that she was thankful to the Government for the project, for it would spur growth in the area
3. He pointed out that together with the community members they would decide on the necessary projects that would be beneficial to all, and submit proposals to KETRACO

Minute 05: AOBs

There being no other business, the meeting ended at 1:30 pm with a word of prayer.

Minutes prepared by:

Name: Fawzia Namulanda Barasa

Signature: F.N.Barasa.....

Date: 10/01/2022

Confirmed by Confirmed by:

Name: Caleb Mango

Designation: Senior Environmentalist

Signature.....

Date.....

Name: Steve Munzyu

Designation: Senior Socio-economist

Signature.....

Date.....10/01/2022.....

CC: **Chief- Arabal location**

13.3 Annex C. Selected Photographs

SAMPLE FIELD PHOTOS

BARINGO COUNTY

	
Consultation with members of Kimalel Group Ranch	**Assistant Chief of the rea addressing the meeting**
	
Kimalel Group Ranch Chairman addressing the members of ranch at the meeting	**Public Consultation in Kituro Location**
	
An FGD Session with Women in Kituro Location	**An FGD Session with the Men at Kimalel Location**

	
A section of Koriema market in Kimalel location	**A picture showing Koriema Market in Kimalel Location**
	
A Picture of PAP who will be affected by the project in Kituro Location	**A sample picture of a structure that will be affected by the project**
	
An a sample of a high end settlement that will be affected by the project	**Farming activities in Kipkaech, Baringo County**

LAIKIPIA COUNTY

	
KETRACO Environmentalist Mr. Mango explaining the project to the public and Muhotetu, Laikipia County	A **participant in Muhotetu contributing in the consultation meeting**
	
An FGD with the men in Muhotetu on going	**KETRACO sociologist, Mr. Rotich responding to a question from a participant in Muhotetu, Laikipia County**
	
An FGD session with the men in Melwa Location, Laikipia County	**A chief in Melwa Location, Laikipia County addressing the participants**

	
Participants at Melwa location public meeting, Laikipia County	

13.4 Annex D. Key Informant questionnaires

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KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUMURUTI 132kV T.L

Please complete and return to either of the addresses above

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 Government of Kenya through KETRACO plans to construct and commission a 111km 132kV double circuit transmission line linking Kabarnet and Rumuruti towns. The proposed project seeks to establish a more reliable power supply with improved voltage profiles via the establishment of a line linking the Kabarnet substation to Laikipia county at Rumuruti substation.

To ensure that the project is implemented in an environmentally and socially sound manner, the Proponent (KETRACO) is conducting an update of the Environmental and Social Impact Assessment (ESIA). In August 2019, EMC Consultants conducted ESIA and RAP for the proposed Kabarnet - Rumuruti 132KV transmission line. Two years has elapsed since then and it is anticipated baseline data and property values has changed. This has necessitated the need to validate the data by updating the ESIA and RAP studies. This will help us obtain information that will be used to identify potential 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 Impact Assessment and Coordination 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?

- If the clean energy will be available to the community then,
- there will be less use of wood for fuelwood thereby increasing tree cover and health environment
- community will venture industrialized activities eg. welding to earn a living
- There will be reduced infections as a result of clean energy.

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

- Reduced tree cover/vegetation as a result of wayleave clearance.
- Displacement of people settled on the proposed wayleave.
- Business on the wayleave will be displaced

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- Proper resettlement/compensation of the affected citizens
- Facilitation of tree planting away from the wayleave to replace the felled trees.

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

If YES/NO, why?

Yes, as it will open up the area/community both economically and socially, through industrialization and affordable energy to all.

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

It's good that the team has brought on board many stakeholders hence will avoid many complaints during and after work.

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

Name:	ELPHAS WEFOMPIA	Sector/Organisation:	KFS.
Telephone & Address:	0712935205 BOX 54 Kakamega.		
Signature		Stamp	OFFICER IN-CHARGE FOREST MANAGEMENT AND ADVISORY SERVICES
Date	1/12/2024		

Thank you for your participation

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KEY INFORMANT QUESTIONNAIRE

PROJECT: KABARNET – RUMURUTI 132KV 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?

✓ Wildlife / Bird corridors movement Route will be affected.
✓ Change of Vegetation / Environmental issue
- Effect on cultural change.
✓ Land use practices - Agriculture, grazing change
✓ Grazing field for wildlife areas and
✓ Human wildlife conflict due disturbance of Vegetation / Habitat place.
✓ International threaten like, world Heritage site, Ramsar & IBA

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

✓ Improve in infrastructure development
- Since of Employment opportunities to the Local communities
✓ Interms of tourism - It will act as part of tourism attraction and also for Local people purpose.
✓ Attract other government development

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- Instalation of the Friendly pole / Electric wires with wild life
- More Sensitization to the Stakeholders.
✓ Development of MOUs with Relevant Institution for the Sustainability of the Project.

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

If YES/NO, why?

✓ As part of Government Agenda to improve infrastructure development in the country

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

✓ In cooperation with International Investors/Actors in the process of initiation of the project. - ~~World~~ Focal point for World Heritage Site, Ramsar Site, Geopark & IBA.

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

Name:	James Kimaru	Sector/Organisation:	Tourism & Wildlife
Telephone & Address:	Lake Bogoria National Reserve P.O Box 64 Marigat Email: lakebogoriareserve@gmail.com or jamkimaru@gmail.com Tel: 0724446262		
Signature		Stamp	GAME WARDEN - LAKE BOGORIA NATIONAL RESERVE 16 DEC 2021 BARINGO COUNTY GOVERNMENT P.O. Box 64
Date	16/12/2021		

Thank you for your participation

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KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUMURUTI 132 kV TL

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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?

This line that will cater into the national Grid:
- will provide electricity connectivity to homes for lighting, heating and cooking.
- It will connect electricity to institutions, factories and industries that will spur industrial economic growth.
- It will influence internet connectivity for digital learning.

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

Environmental negatives:
- Pollution of water if towers are erected on riparian land zones or on wet lands.
- If solid and liquid wastes are disposed near or in water bodies and pollutes the water.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- The Proponent should avoid erecting line towers in riparian land areas or in wetlands.
- The Proponent should find designated points of disposing liquid and (greases, oils) and solid wastes during construction phase.

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?

It goes with the idea of connectivity in Kenya for speedy socio-economic growth. The project should continue as planned.

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

Name:	David Ruto	Sector/Organisation:	WRA
Telephone & Address:	0716 047770		
Signature		Stamp	SUB-REGIONAL MANAGER WATER RESOURCES AUTHORITY BARRINGO SUB-REGION P.O. BOX 544-30400, KABARNET
Date	2/12/2021		

Thank you for your participation

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KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET- RUMURUTI 132KV TL

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KETRACO intends to construct 400/220 kV substation at Lessos, parcel No. Nandi/Songoliet/523,588 and 212, neighbouring existing KPLC substation and KETRACO substation under construction.

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). This will help us obtain information that will be used to identify potential impacts of the proposed project and hence propose adequate mitigation measures to be adhered to during project implementation.

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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?
   - The project will support county and national development agendas and economic growth that has a multiplier effect.
   - Increasing connectivity to the power grid and promotion of renewable energy that is climate friendly

2. In your opinion, what **Environmental, Social and Economic negative impacts** do you think will result from the proposed project?
   - Felling of trees along the line
   - Wildlife habitat disrupted and reduced including birds
   - Disrupted local developments

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?
   - Support tree nurseries and tree planting, pasture production in rangelands areas with livestock
   - Assist to map wildlife corridors or habitat and ensure the power line adheres to environmental and safety codes of conduct, conductions required such as within potential conservancies such as Eldume among others, especially migratory routes.
   - Support socio-economic activities practiced by the community bee keeping, wildlife, livestock and improved breeds
   - Compensate the land and the affected resources and help the community to efficiently utilise the funds for suitability purposes and inclusivity

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

   If YES/NO, why?

   YES, the project will support county and national development agendas and economic growth that has a multiplier effect.

5. Do you have any other comments regarding this project?
   - Support to tree nurseries and tree planting by communities around with be helpful in restoring tree cover
   - CSR activities to directly benefit community groups is important such as roads, water supply

- Discounting or Incentivising power connection to residents living along the power line

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

Name:	Susan Niki Jepkemoi	Sector/Organisation:	Baringo County Conservancies Association
Telephone & Address:	P.O Box 134-30400, Kabarnet		
Signature		Stamp	
Date	23/12/2021		

Thank you for your participation

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2

KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: KABARNET – RUMURUTI 132 KV T.L

Please complete and return to either of the addresses above

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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?

1. Trees cleaning
2. Power supply improvement in learning institutions
2. Growth of trading centres
3. Agriculture
4. Tourism

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

1. Cleaning of trees.
2. Displacement of people
3. Soil erosion
4. Increased traffic during construction
5. Loss of pasture during construction
6. Trees continous pruning

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

1. Support agroforestry

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

If YES/NO, why?

Yes.
Drives development.

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

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

Name:	Kipkorir D (	Sector/Organisation:	KWS
Telephone & Address:	0733291914		
Signature		Stamp	COUNTY WARDEN KENYA WILDLIFE SERVICE BARINGO COUNTY P.O.Box 23 - 30400, KABARNET
Date	21/12/2020		

Thank you for your participation

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KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: KABARNET – RUMURUTI K·V TRANSMISSION LIN

Please complete and return to either of the addresses above

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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?

- the very important benefit to Community
it will create job opportunity for the Youth and Women in the Society.
- and it will improve poverty lutox and livelihood.

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

- The impact that the Community will face that some of them will be relocated from where they were living to else where.
- and some will experience food crises in the society.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- those who will be paid, misuse will arise and misunderstanding amongst the Community.
- They will experience alot of noize during the processes.
-

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

If YES/NO, why?

The community will be given ~~for~~ sensitization on awareness so that they could understand internally that the work yet to start.

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

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

Name:	REUBEN KIGEN	Sector/Organisation:	Chief
Telephone & Address:	0727692295		
Signature		Stamp	
Date	11/12/2021		

Thank you for your participation

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KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: _____

Please complete and return to either of the addresses above

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The Government of Kenya through KETRACO plans to construct and commission a 111km 132kV double circuit transmission line linking Kabarnet and Rumuruti towns. The proposed project seeks to establish a more reliable power supply with improved voltage profiles via the establishment of a line linking the Kabarnet substation to Laikipia county at Rumuruti substation.

To ensure that the project is implemented in an environmentally and socially sound manner, the Proponent (KETRACO) is conducting an update of the Environmental and Social Impact Assessment (ESIA). In August 2019, EMC Consultants conducted ESIA and RAP for the proposed Kabarnet - Rumuruti 132KV transmission line. Two years has elapsed since then and it is anticipated baseline data and property values has changed. This has necessitated the need to validate the data by updating the ESIA and RAP studies. This will help us obtain information that will be used to identify potential impacts of the proposed project and hence propose adequate mitigation measures to be adhered to during project implementation.

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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?

Business will go up due to
ay hrs business in the near
by towns.
- Security improvement
- Employment will be available.

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

people will not be in ~~their~~ their
Normal position in their farms
are in land conflicts
and boundary problems.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

engage the community in conflict
management & resolution.
boundary resolutions will be
made in the gazetted and
proper Mobilization.

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

If YES/NO, why?

To improve the live standard of the people at Kenya and also near by people to the line

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

It also provide employment eg Bussiness improvement security, Education, we support the project.

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

Name:	MARTHA CHEGE	Sector/Organisation:	ASS/CHIEF
Telephone & Address:	0725762430 P.O BOX 14 MARIGAT.		
Signature		Stamp	ASST. CHIEF PERKERRA SUB-LOCATION P.O. BOX 1-30403 MARIGAT
Date	11/12/2021		

Thank you for your participation

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p. O. Box 34942 – 00100, Nairobi
Phone: 020 4956000, 0719018000, 0732128000
Web: www.ketraco.co.ke • email: info@ketraco.co.ke

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

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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?

i) provide reliable power/energy throughout
ii) development of companies
iii) encourage investors
iv) create employments
v)

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

i) displacements of houses affected along the powerline
ii) deforestation/ cutting down of trees
iii) lack of employment as many duties are done by machines runned by the electricity
iv)

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

i) proper consultations with community leaders
ii) public awareness be made over the same
iii)

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

If YES/NO, why?

→ Improve the livelihood of the community
→ Improve the economic status of the people.

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

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

Name:	SAMSON OKISAGANA	Sector/Organisation:	O.P
Telephone & Address:	0726676398		
Signature		Stamp	ASSISTANT CHIEF ELDUME SUB-LOCATION P.O. Box 115-30403, MARIGAT Date: 10/12/21
Date	10/12/21		

Thank you for your participation

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KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132KV TL

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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?

⇒ Supply of the power will very simple.
⇒ The power
The community uplift their life hood and the money will sorted in the community
⇒ Casual labour our youth and women will get money.
and they establish the life.

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

⇒ The new people may the disease.
⇒ different people will came in and our natural forest will be destroyed.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

The project is very Important to us as a community at large.
may be after this a very important mach came in.

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

If YES/NO, why?

Yes The community will get power easily.

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

The community will compensated in time also the community should be in time or in need (a title) because right now according to community our people are suffering in compensation due to title problem.

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

Name:	Jones L. Olelaana	Sector/Organisation:	O.O.P
Telephone & Address:	0724-023-119 P.O. Box 72 MARIGAT		
Signature	Paan	Stamp	CHIEF ILNG'ARUA ... P.O. Box 72-30403, Date.............. Sign. Paa
Date	10/12/2021		

Thank you for your participation

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KEY INFORMANT QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

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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?

(1) Electricity flow will be quiet improve in comparison with its others one (Kenya power) because it flows to and from eg Rumuruti to Kabarnet or Kabarnet to ~~Rumuruti~~ Rumuruti Therefore no ~~back~~ black ~~gone~~ out arise ~~or~~ or it will rare cases and economy will ~~rise~~ go up.

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

(1) accident

(2) settlements displacement

(3) forest destruction along the line

(4) environment hazard

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

(1) Wananchi needs civic education on KENTRACO ~~area~~ machineries terms and condition of it to limit accident for instance nuisance of machinery environment contamination and air pollution

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

If YES/NO, why?

Yes because it improve the standard of the living of the local resident in terms of job creation eg watchmens workers amongst other benefits like construction of roads & schools and also bonds placed to accounts communities joint accounts

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

we urge your as marginalise and vulnerable community to consider us in terms of development of schools Guiding, Grants, Hospitals, Roads Vocational amongst Trainning institutes amongst also individuals to be considered

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

Name:	SAMMY LESALAJA	Sector/Organisation:	C.O.P (ASS-CHIEF)
Telephone & Address:	0718491942		
Signature		Stamp	ASSISTANT - CHIEF COBUMGUM SUB-LOCATION P.O BOX 2 MARIGAT DATE 10/12/2021
Date	10/12/2021		

Thank you for your participation

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KET/ENV/F/02

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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?

- The environmental factors will be negatively affected but upon compensation, The individual will transfer plantations to another position.
- The social factors will be enhanced and resourceful during the payment because people affected will get Money and other materials which was not in plan.
- Economic benefits will be land prices will hike and Movement of urbanization due to Modernism of compensations and Accessibility to Roads network

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

- Environmental degradation, desertification and bad drainage of water due to cutting of vegetation in the place of project
- Social life will be highly affected because there will be Movement of Machineries and employees Mixed with locals, thus affecting social norms of life.
- Economic There may cause economic impact due because the local land lost to move to side where project will be done thus affecting people not to work as normal.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- During the project time we need Public participation and Sensitization of locals to understand the real situation on the ground and accept the project.
- Employing faith in assistance of Making the Environment Clean.

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

If YES/NO, why?

Yes because the project is important to Our Country ad assist the government ad It's people.

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

I Comment that the project should comtinue without wasting time. I Support it 100%.

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

Name:	DANIEL KIPCHILIS KANDIE	Sector/Organisation:	ASS. CHIEF KIPKAECH
Telephone & Address:	0721 347 056 PO Box 312 KABARNET		
Signature		Stamp	ASST. CHIEF KIPKAECH SUB-LOCATION P.O. Box 312,KABARNET Date:.....Sign..... 13/12/2021
Date	13/12/2021		

Thank you for your participation

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KET/ENV/F/02

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COMMENTS (please use separate sheets if you wish)

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(1) The public will benefit from supply of electricity or power supply.
(2) The project will create employment
(3) The project will reduce power shortage or rationing

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

(1) It will displace several households
(2) farming will be restricted
(3) It will increase pollution

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

(1) The project should pass less populated areas
(2) The safety of the people should be considered.
(3) Relocation of people affected should be done in advance

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

If YES/NO, why?

the benefit are more than the disadvantages.

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

the project should be done without delay to curb Power challenges experienced that is frequent Power black out.

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

Name:	Ruth Kipsang	Sector/Organisation:	O.O.P.
Telephone & Address:	307 Kabarnet		
Signature		Stamp	CHIEF KITUR
Date	13/12/2021		

Thank you for your participation

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KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUMURUTI 132 KV TL.

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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?

The project is a power distribution and Enhancement of power in our area and will improve on power reliability. By supplying reliable energy to our people will improve on their economic empowerment and save power.

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

Definately people will have to give our portions of their land and others may relocate their homes. Others will have to cut their valued trees and fruits; which will affect their income.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

By compensating the affected persons will definately be a reprieve to them. This will enable them adjust accordingly.

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

If YES/NO, why?

Yes. This will improve on the economic, social welfare of our people.

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

I appreciate the government effort to improve on electricity supply and reliability for greater development of our people

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

Name:	EDWIN K. TOMNO	Sector/Organisation:	Resident
Telephone & Address:	0722 108167 P.O BOX 10 KABARNET 30400		
Signature		Stamp	CHIEF KITURO
Date	13.12.2021		

Thank you for your participation

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KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET-RUMURUTI 132KV TL

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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?

Environmental - benefits - There with be no benefit in connection with the project. It with degrade the environment.

Social benefit - The social benefit of the project is that the community members with be happy of the government development.

Economic benefit - The people with benefit economically after the payment their living standard with be improved.

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

The biggest negative impact of the proposed project is the degradation of the environment due to the cutting of the trees.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

The community members should be advised on how to use the money acquired wisely and meaningfully

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

If YES/NO, why?

The project will assist in the connectivity of the electricity in the republic

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

The project should be fast tracked and avoid delay meant i.e taking too long from being implemented.

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

Name:	ISAAC MWANGEKA	Sector/Organisation:	ASST. CHIEF
Telephone & Address:	0725639025		
Signature		Stamp	SENIOR ASSISTANT CHIEF KHUNG'UTI SUB-LOCATION SIGN
Date	9/12/2021		

Thank you for your participation

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Web: www.ketraco.co.ke • email: info@ketraco.co.ke

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUMURUTI 132KV TL

Please complete and return to either of the addresses above

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 Government of Kenya through KETRACO plans to construct and commission a 111km 132kV double circuit transmission line linking Kabarnet and Rumuruti towns. The proposed project seeks to establish a more reliable power supply with improved voltage profiles via the establishment of a line linking the Kabarnet substation to Laikipia county at Rumuruti substation.

To ensure that the project is implemented in an environmentally and socially sound manner, the Proponent (KETRACO) is conducting an update of the Environmental and Social Impact Assessment (ESIA). In August 2019, EMC Consultants conducted ESIA and RAP for the proposed Kabarnet - Rumuruti 132KV transmission line. Two years has elapsed since then and it is anticipated baseline data and property values has changed. This has necessitated the need to validate the data by updating the ESIA and RAP studies. This will help us obtain information that will be used to identify potential impacts of the proposed project and hence propose adequate mitigation measures to be adhered to during project implementation.

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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?

Power Supply will be available easily.
The farmer will get money for Compensation and still the corridor remains his.
Those who will be compensated for a house will might get a better residence than before

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

The felling of trees within the corridor will reduce the tree cues in the area.
Soil erosion due to clearing of the trees
The farmer will be loss for he was not ready to harvest all trees at once
The pinch of relocating to other places will be felt.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

The farmers can be advised on better usage of the corridor.

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

If YES/NO, why?

This is a government project which is beneficial to each and every member in the county

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

I concur with the implementation of the project and will at add value to the farms and

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

Name:	JANE W. MUTURI	Sector/Organisation:	CHIEF MUHOTETU
Telephone & Address:	0720224534 20-2032		
Signature		Stamp	
Date	09.12.2021		

Thank you for your participation

KETRACO
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KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: KABARNET RUMURUTI

Please complete and return to either of the addresses above

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To ensure that the project is implemented in an environmentally and socially sound manner, the Proponent (KETRACO) is conducting an update of the Environmental and Social Impact Assessment (ESIA). In August 2019, EMC Consultants conducted ESIA and RAP for the proposed Kabarnet - Rumuruti 132KV transmission line. Two years has elapsed since then and it is anticipated baseline data and property values has changed. This has necessitated the need to validate the data by updating the ESIA and RAP studies. This will help us obtain information that will be used to identify potential impacts of the proposed project and hence propose adequate mitigation measures to be adhered to during project implementation.

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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?

Since environmental Impact assessment has been done, I think the project is fit to be undertaken as it will improve the living standards of the resident especially those affected and compansated.
There will be sufficient supply of electricity for both domestic and comercial use.

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

There will be a misplacement of people thus affecting them Mentally.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

Yes those affected should be counselled on the impact and be made to accept their movements.

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

If YES/NO, why?

yes - To get sufficient supply of electricity

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

I support its implementation

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

Name:	EMM CHELANGA	Sector/Organisation:	OFFICE OF THE PRESIDENT;
Telephone & Address:	P.O Box 33 KABARNET;		
Signature		Stamp	ASST. CHIEF KINYO SUB-LOCATION P. O. BOX 33-30400, KABARNET DATE:
Date	14/12/21		

Thank you for your participation

KETRACO
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Web: www.ketraco.co.ke • email: info@ketraco.co.ke

KEY INFORMANT QUESTIONNAIRE

PROJECT: KABARNET -

Please complete and return to either of the addresses above

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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?

- Environmental Assessment done and no effects
- People will benefit in getting supply of electricity for their domestics and commercial benefits
- They will be compensated for their development

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

- might be the displacement from the affected area.
-

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

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

If YES/NO, why?

The project will ~~the~~ benefits the community

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

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

Name:	JAMES CHEMWENG	Sector/Organisation:	ADMINISTRATION
Telephone & Address:	0721604454		
Signature		Stamp	CHIEF KAPROPITA LOCATION P.O. BOX 426-30400, KABARNET
Date	14/12/2021		

Thank you for your participation

KETRACO
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"Building a World Class National Grid"

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6

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUMURUTI 132KV TL

Please complete and return to either of the addresses above

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To ensure that the project is implemented in an environmentally and socially sound manner, the Proponent (KETRACO) is conducting an update of the Environmental and Social Impact Assessment (ESIA). In August 2019, EMC Consultants conducted ESIA and RAP for the proposed Kabarnet - Rumuruti 132KV transmission line. Two years has elapsed since then and it is anticipated baseline data and property values has changed. This has necessitated the need to validate the data by updating the ESIA and RAP studies. This will help us obtain information that will be used to identify potential impacts of the proposed project and hence propose adequate mitigation measures to be adhered to during project implementation.

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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?

- No power Blackout
- Improve the economy balance of payment
- Community welfare for all the people
-

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

- Noisy

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- Helmets, Earplugs

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

If YES/NO, why?

- To benefit the community
- To avoid Plug ouch
- Payment to those to power line

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

- The project is very welcomed when we remove the economy of this area.

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

Name:	WILLIAM L. KIPKOECH	Sector/Organisation:	SNR CHIEF ARABAL LOCATION
Telephone & Address:	P.O BOX 126, MARIGAT 0723405719		
Signature		Stamp	CHIEF ARABAL LOCATION
Date	7/12/2024		

Thank you for your participation

KETRACO
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KET/ENV/F/02

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUMURUTI 132kV TL

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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?

- Environmental benefit is that some clearance of bushes.
- The proposed project will help raise the standard of living for those affected since some will build better houses.
- Economically jobs will be created and business will improve.

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

- There will be felling of trees which would not be necessary thus affecting environment negatively.
- Socially when there will be increase of money circulation there might be drunkeness or even marriage breakages.
- Some affected people might misuse money paid.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- It is good to have capacity building before this process takes over.
- The community in that area should be educated on how to embrace this change.

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

If YES/NO, why?

It has been benefits or merits than dimerits

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

We are ready to embrall this project for the development of our county.

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

Name:	SUSAN W. KANGERI	Sector/Organisation:	ADMINISTRATION
Telephone & Address:	0725353860		
Signature		Stamp	ASSISTANT CHIEF THIGIO SUB-LOCATION
Date	7/12/2021		

Thank you for your participation

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Web: www.ketraco.co.ke • email: info@ketraco.co.ke

8

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUMURUTI 132KV TL

Please complete and return to either of the addresses above

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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?

The project has many social economic and environmental benefits. such Modern housing, Rental houses, with power hence more income people will have better earning therefore their welfare will Improve.
After earning Cash from projects initiated people can plant trees

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

- destruction of trees,
- Infection of Aids and Unwanted pregnancies
- Alcoholism
- Noise pollution

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

- workers should be ~~talk~~ taught on how to manage funds and use the for planned purposes
- Noise should be reduced

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?

NONE

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

Name:	DAVID ICEBEVER	Sector/Organisation:	Administration
Telephone & Address:	0739244909/ 0728939699		
Signature		Stamp	CHIEF KIAMBOGO LOCATION P.O. Box 10, KINAMBA. Date.....Sign.....
Date	7/12/2024		

Thank you for your participation

KETRACO
Kenya Electricity Transmission Co. Ltd.

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KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUMURUTI 132KV TL

Please complete and return to either of the addresses above

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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?

1. Job creation
2. Economic growth - since the materials used for the project will be locally bought.

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

1. Noise pollution
2. Air pollution
3. Infrastructure where line will pass through will be destroyed though it will be compensated
4. Delocalization to those affected where they settle.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

→ Strategies plans to be laid done to avoid the afore negatives.

→ If in the structures they will have dug holes/pits after departure the be covered e.g toilets.

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

If YES/NO, why?

Its a development project.

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

The casual labourers to be employed in the area be from locals.

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

Name:	MARY HOGO	Sector/Organisation:	INTERIOR. DEPARTMENT
Telephone & Address:	0725771253		
Signature		Stamp	ASST. CHIEF MELWA SUB-LOC
Date	09/12/2021		

Thank you for your participation

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9

KEY INFORMANT QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUMURUTI 132KV TL

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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?

1. BUSSINESS EXPANSION
2. JOB OPPORTUNITY.
3. PROVISION OF COMPENSATED FUNDS.
4

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

1. LAND ISTERRUPTIONS.
2. LESSENING UTILIZABLE LAND.
3. Relocating of houses already settled.
4. Relocating of other essential structure in the affected area.
5. Family disagreement due to interest of compensated funds.
6. Possible misappropriation of the paid funds.

3. Do you have any suggestions of measures to mitigate problems identified in question 2 above?

1. On funds: KenyaCo May ensure the funds are paid to identified land/plot seller in the event the affected person has to relocate else planed.
2. Prior sensitization upon getting the compensation.
3. Workshop needed to prepare them psychologically.

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

If YES/NO, why?

1. Its government project and has economical gain

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

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

Name:	MUTHURA MURIITHI	Sector/Organisation:	
Telephone & Address:	0700016918		
Signature		Stamp	CHIEF MELWA LOCATION
Date	09/12/2021		

Thank you for your participation

13.5 Annex E. Community questionnaires

KETRACO
KENYA ELECTRICITY TRANSMISSION CO. LTD.

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COMMUNITY QUESTIONNAIRE

PROJECT: (Proposed) KABARNET - RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- Increased power supply in the area.
- Increased business opportunities.

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

- NONE

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

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

If YES/NO, why?

.....

- Expansion of business opportunities
- Creation of employment " "
- Lighting of the area.

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

.....

.....

.....

.....

NAME	MARGARET KARIUKI	LOCATION	MELUK
EMAIL		OCCUPATION	FARMER
ID NO.	5210466	TEL NO	0725779864
SIGNATURE		DATE	9/12/2021

Thank you for your participation

KETRACO
KENYA ELECTRICITY TRANSMISSION CO. LTD.

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POPO LANE. OFF RED CROSS ROAD. SOUTH C.
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Web: www.ketraco.co.ke • email: info@ketraco.co.ke

COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- To generate power to rural areas
- To increase the cost/value of land
- Will improve security in the area due to more power generated/distributed.

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

- May affect people mentally if not paid or compensated on time.
- Will affect the climate of the area due to cutting of trees.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

- They should compensate affected people on time.
- Should give free trees in every affected personel to beutify the environment.

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

If YES/NO, why?

YES
To distribute power to all areas.

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

- All land owers affected by the project should be supplied free electricity for a period of years.

NAME	MOSES MAINA THUKU	LOCATION	MELWA
EMAIL	MOSE294IP@gmail.com	OCCUPATION	FARMER
ID NO.	29465168	TEL NO	0798055065
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUMURUTI 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

To add or Generate more Power in our area. when we have enough Power, we have to improve more economically

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

As indicated above, I don't see any negative impact

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

N/A

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

If YES/NO, why?

The Project Should be implemented because of the above Statement in question 1

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

N/A

NAME	CHARLES NJUNGU	LOCATION	MELWA
EMAIL		OCCUPATION	FARMER
ID NO.	3370127	TEL NO	0111271706
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET - RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

To generate power to rural areas

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

many affected people mentally if not part can time.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

They should pay compensate affected people on the time

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

If YES/NO, why?

Yes To distribute power to all areas

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

All owner affected by the project should be supplies free electricity for a period of 4 years

NAME	Joseph Kimani	LOCATION	Mutwa
EMAIL		OCCUPATION	Farmers
ID NO.	5946468	TEL NO	0725409849
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL.

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- Will increase power output
- ~~be~~ Creat jobs as power will be introduced now and then.
- Enhance security

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

- Displacement of People in their small plots.
- No development in the affected areas (wayleave)

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

People should be well compensated inorder to look for alternative land.

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?

Avoid brokers while making Payments.

NAME	Peter N. Njenga	LOCATION	Mewa
EMAIL	Peternjenga53@gmail	OCCUPATION	Farmer
ID NO.	08216605	TEL NO	0720759639
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

Yes
- We benefit from the Power
- Our children will have Job

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

Many people will be affected from moving from their Places

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

.....

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.....

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

If YES/NO, why?

.....

Our Children will benefit from Job

.....

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

Land owners affected

.....

.....

.....

NAME	Jemimah Mawniki	LOCATION	Merwa
EMAIL		OCCUPATION	Farmer
ID NO.	31829934	TEL NO	0729130665
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET - RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

Environmental - ~~peop~~ we will gain by getting electricity
Social - Security of the light
Economic - Russiness

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

~~be~~ Change from your land to another one.
Payment is poor and delaying

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

Adding Payment
Paying on Right time

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?

Adding value to our Lands

NAME	Lucy Maina	LOCATION	Melwa
EMAIL		OCCUPATION	Bussiness
ID NO.	10316377	TEL NO	0718512986
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUNYENJES 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

The project will be having Economic benefits as along the line Power Supply will be in constant Supply & Has given Economic Opportunities. Security will be enhanced. The compensation will contribute to the economic well being for those affected.

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

- People with small holder plots will be displaced.
- Along the line Tree cover will be affected since no more Vegetation is encouraged
- Mass Movement of people along the line.
- Possible radiation problems.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

- Possibly the line Should be Elected along the Main Road networks
- Compensation Should be well Calculated.

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

If YES/NO, why?

Yes, the future of our Nation depends on these Massive projects that will be of economic benefits
Possibly land rates will rise in the course.

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

The project is of big value source it will stimulate local industrial development.

NAME	DOMINIC G. MUGWIMI	LOCATION	MELWA
EMAIL	gimcoc@gmail.com	OCCUPATION	BUSINESSMAN
ID NO.	6104772	TEL NO	0722610278
SIGNATURE		DATE	9/12/021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- Improvement in business related activities
- Increased electricity supply
- Increased development in the area

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

- Health risks - e.g. electricity shocks
- Electricity is foreign in the area & may take time to adjust to it

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

- Proper installation of all equipement to prevent health risks.

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

If YES/NO, why?

Increased developments
Many benefits

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

NAME	GITHIOMI MACHARIA	LOCATION	MELWA
EMAIL		OCCUPATION	FARMER
ID NO.	4351836	TEL NO	0711184904
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET - RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- increased development in the area
- Creation of employment
- Cropping of industries

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

- Poor planning by KETRACO will disrupt lives

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

- Proper planning & installation to prevent accidents

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

If YES/NO, why?

Brings in development

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

NAME	JASEN NYARANGU	LOCATION	MELINK
EMAIL		OCCUPATION	FARMER
ID NO.	0343627	TEL NO	0728849931
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

The project will open job opportunities Security & development to our area Once the area is electrified.

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

People will loose land although a little compensation.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

the project should increase the payment from 30% to 70%.

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

If YES/NO, why?

It will increase the Grid % of Electrification of our country

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

just recomending for its Continuation.

NAME	Richard M. Wambugu	LOCATION	Mlwa
EMAIL	richardwambugu@rocketmail.com	OCCUPATION	farmer
ID NO.	5170822	TEL NO	0722696848
SIGNATURE	Richard	DATE	9/12/21

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUNYENJI 132 TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- Increased business opportunities
- Cropping up of industries

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

- Health risks & possible loss of lives due to accident caused by improper setting up of towers & conductors

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

- Proper planning & installation of equipement

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

If YES/NO, why?

Increased development in the area

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

NAME	PETER MATUTHIA	LOCATION	MELWA
EMAIL		OCCUPATION	FARMER
ID NO.	11120232	TEL NO	0728957272
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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KET/ENV/F/01

COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

1: Kwa maoni yangu upande wa environment mtuangalia wenye kusimamia hiyo ujenzi wawe watu displine juu watafitia manyumbani
2: waste product ya materials inafaa langalwe mamboma isiwe compost.
3: upande ya economic benefits itatusadia kupata pesa na hata kasi itapatikana.

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

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

Imfaa wenye kusimamia ujenzi wawe makini sana.

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?

Ikafusadia kupata pesa na tuta kwa na maendeleo upande upande ya mwanga

NAME	peter maina kabata	LOCATION	MELWA
EMAIL	KEPAMA.75.a@c	OCCUPATION	mumichu
ID NO.	13543247	TEL NO	0713026082
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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KET/ENV/F/01

COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL.

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

1. Kwa maoni yangu upande wa envilomenti mtabuangalia wenye kusimamia hiyo ujensi wawe watu displine juu watapitia manyumbani.
2. waste product ya materials inafaa iangaliwe mambo ma isiwe compost. iwekwe na ja inafaa.

3. upande ya economic benefits itatusadia kupata pesa na hata kasi itapatikana.

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

1.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

Inafaa Wenye Kusimamia Ujenzi wowe makini Sana

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?

Itakusaidia Kupata Pesa na Kutakua na maendeleo upande ya mwangaza

NAME	David Kuruga	LOCATION	Melwa
EMAIL		OCCUPATION	Gatundu
ID NO.	7353192	TEL NO	0715220661
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUNUBUTI 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

Provision of adequate power
Job creation

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

Controlled development

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

Ketraco should go through the compulsory acquisition process or Rent the land annually

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

If YES/NO, why?

This is part of National development to provide enough power

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

PART ~~PARCE~~ OF THE LAND SEEMED TO BE NOT DEVELOPED

NAME	JOSEPH MWANGI MAINA	LOCATION	MELUA
EMAIL	N/A	OCCUPATION	FARMER
ID NO.	1332489	TEL NO	0720175496
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED ~~KABARNET~~ – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

- Project will enhance development
ie 1. Industries
2. Employment
3. Security Empowerment

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

- Migration of people from one place to another.
-

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

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

If YES/NO, why?

Yes.
Social community will benefit from this project

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

NAME	Dickson Ndungu Kagiri	LOCATION	Mwelma location
EMAIL		OCCUPATION	farmer
ID NO.	2314882	TEL NO	07283611?
SIGNATURE	[signature]	DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET - RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

   Maendeleo Na Makazi Kupatikana

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

   Sioni

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

La

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?

Kasi iendelee

NAME	Joseph Kipkurgat Kiptoo	LOCATION	MCLWA
EMAIL	0720125057	OCCUPATION	FAMEA
ID NO.	23714556	TEL NO	0720125057
SIGNATURE	JK	DATE	09-12-2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET - RUMURUTI 132 KV TL.

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

(1) Job oppunities to youths
(2) Economic growth.

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

- Sound pollution
- Air pollution due to dust

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

i. Strategic plans be laid to minimize that

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

If YES/NO, why?

YES

Its has more positives than negatives

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

NAME	Teresia Nyakinyua Ngonga	LOCATION	Melwa
EMAIL		OCCUPATION	Farmer
ID NO.	18400604	TEL NO	0725726688
SIGNATURE	Teresia	DATE	

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET – RUKURUTI 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

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

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3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

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

If YES/NO, why?

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

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NAME	JULIUS K. KURUI	LOCATION	MGLWA
EMAIL		OCCUPATION	FARMER
ID NO.	2339779	TEL NO	0706409934
SIGNATURE		DATE	9/17/2021

Thank you for your participation

KETRACO
KENYA ELECTRICITY TRANSMISSION CO. LTD.

KAWI COMPLEX. BLOCK B.
POPO LANE. OFF RED CROSS ROAD. SOUTH C.
P. O. Box 34942 – 00100, NAIROBI
Phone: 020 4956000, 0719018000, 0732128000
Web: www.ketraco.co.ke • email: info@ketraco.co.ke

COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 kV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

The project will bring Economic progress to the citizens. Some of the people will benefit by being compensated after their properties paid.

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

The project will have negative result by being made to change their plans of their developments. Some will fail to spend the money in proper ways to help their families.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

The ~~cop~~ compensation should be paid without interference of brokers who should come between the beneficiary. The company KENTRACO should make sure that the ~~p~~ beneficiaries gets the right share.

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

If YES/NO, why?

It will bring some ways of progress and growth of industries. To help the people in country.

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

We all wish you well and look forward for your compensation.

NAME	JACKSON G. KINGORI	LOCATION	MELWA
EMAIL		OCCUPATION	Farmer
ID NO.	1427628	TEL NO	0724836627
SIGNATURE		DATE	9th Dec. 2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

N.o benefits so far the area was measured) will not use so my Longer.

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

30% of the amount to be paid by Company is small. My opinion is 58%

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

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

If YES/NO, why?

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

No comments so far the Company will have completed the agreements between me and the company

NAME	Margaret Kanyari	LOCATION	Melwa
EMAIL	P.O.Box 32 Maimuret	OCCUPATION	Muricho
ID NO.	9263878	TEL NO	0790428179
SIGNATURE	M.W.K	DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET- RUNYRUTI 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

actually there is no benefit to the environment but Socially the society will benefit direct and indirect employement, payment of their land, houses, trees and crops.
2. Its parts of the countrys commitment for industrialisation

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

The environment and community will be Naturally be effected. Natural beauty of the environment will cease.
2. Destruction of trees, plants and houses to give a ways of electrical wires will have an negative effect on the area.

control measures

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

The wires need to be insulated ~~effe~~ avoid the dangers of losing lives of animals such as birds and large plants.

2. Those cables be insulated and be laid ~~a~~ under the ground to ~~effe~~ avoid the ugly features above the ground

3. Or be piped in one thick pipe and be supported by one strong pole rather than the metalic derrick.

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

If YES/NO, why?

Though the project will affect to small areas by cutting down the trees, there is the long term benefits in the country for the provision of clean form of energy needed in the country for industrialisation.

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

AFC in All Man ~~Keep~~ Keeps on changing the face of the ~~f~~ Earth.

NAME	Richard Karangu	LOCATION	MELWA
EMAIL		OCCUPATION	FARMER
ID NO.	0943796	TEL NO	0724267963
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUMURUTI 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

the project will add value of the area and also upgrade it has created job opportunities

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

the land will lose value and also no permanet buildings and plants.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

You can consider the plot owner who have been affected by giving them jobs.

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?

If the company can concider the youths who has done any courss of electricity

NAME	Catherine Taiku	LOCATION	Melwa
EMAIL	Catherine Taiku ii@Gmail	OCCUPATION	Muricku
ID NO.	27322930	TEL NO	07-26 949 272
SIGNATURE		DATE	9/12/21

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET - RUNYURUTI 132 kV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

We will be having enough electricity in our area, so we will be having many Projects

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

There will be some people who will be removed from their home areas.
- Air Pollution
- Environment Problem
- Much noises

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

I don't have other suggestion me I am okey

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?

NO

NAME	Charity Kariuki	LOCATION	Mewa
EMAIL		OCCUPATION	merchant
ID NO.	9510 429	TEL NO	0721572115
SIGNATURE		DATE	

Thank you for your participation

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COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KARARNET – RUMURUTI 139 KM TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

Development will be abit up graded.

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

30% of what the Company have said for Compensition is ~~little~~ too small. At least the Compensition should rise up to 50% of the value.

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

The government should add the compensation value at least from 50% and above.

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

If YES/NO, why?

Yes. reason. We need more development in our country.

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

To do quick compensation so that you may assist the affected.

NAME	Zipporah Mutuga	LOCATION	Marwa
EMAIL		OCCUPATION	BUSINESSWOMAN
ID NO.	0236887	TEL NO	0707535896
SIGNATURE		DATE	9/12/2021

Thank you for your participation

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KET/ENV/F/01

COMMUNITY QUESTIONNAIRE

PROJECT: PROPOSED KABARNET -RUMURUTI 132KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

(a) if this project will pay good payment.
(b) To get many project.
(C) The area will grow with many project.

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

A) pollution of air
(b) The plantation which will take place will not grow.
(C)

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

(a) Yes: because you will move from that place to another.

(b) The place where you get replacement of land you cannot access electricity farmer security

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?

Yes the campay can cosinder young route to get position of job.

NAME	mary c ckang.	LOCATION	MGLWA
EMAIL		OCCUPATION	farmer
ID NO.	5170218	TEL NO	0720331167
SIGNATURE		DATE	09/12/2021

Thank you for your participation

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KET/ENV/F/01

COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

   – Tutanaufaika na stima na pia kibiashara

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

   Shida ya bei ya shamba

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

Tuongeze pesa mashamba ama Plot

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

If YES/NO, why?

Ili location yetu mutaike na maendeleo

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

Watu watapata pa kazi.

NAME	Grace Wambui	LOCATION	Mtwapa
EMAIL		OCCUPATION	farmer
ID NO.	26206557	TEL NO	0728080163
SIGNATURE		DATE	9/11/2021

Thank you for your participation

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KET/ENV/F/01

COMMUNITY QUESTIONNAIRE

PROJECT: Proposed KABARNET – RUMURUTI 132 KV TL.

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

   – Bishara Hawangeteka
   Watu wengi watatumwa na kazi na

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

   Ni watu kuwahamisha Kukaa Mahali Pake Kwenda kungine

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

kuji.Pus kapura Kuhemea

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

If YES/NO, why?

Yes

Ita saidia watu wengi kupata Zitima

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

Watu wengi watapata kazi

NAME	Veronica Maroungoli	LOCATION	Melwa
EMAIL		OCCUPATION	Business
ID NO.	13463980	TEL NO	0717106286
SIGNATURE	[signature]	DATE	9/12/21

Thank you for your participation

KETRACO

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KET/ENV/F/01

COMMUNITY QUESTIONNAIRE

PROJECT: RUMURUTI - KABARNET POWER TRANSMISSION

Please complete and return to either of the addresses above

COMMENTS (please use separate sheets if you wish) Do you prefer to have the question as far and wide broad?

1. In your opinion, what **Environmental, Social and Economic benefits** do you think will arise from the proposed project?

Environmental: Shall enhance lighting in the area leading to a more healthy ~~envi~~ clean environment.

Social/Economic: Shall spur medium and SMEs growth, more so coz' of proximity to Rumuruti. —Light industries likely to sprout around. —Shall open up the region and reduce conflicts among communities.

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

— Clearing of forests / cutting of trees is quite negative.
— Social disorder to land acquisitions / subdivisions.
— Loss of indigenous trees.
—

3. Do you have any suggestions of **measures to mitigate problems identified** in question 2 above?

In order to attain good demarcation process, design should follow main tar major roads or simply KENHA Road reserves.

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

If YES/NO, why?

It will certainly open up this area and link it up with Rumruti of Baringo.

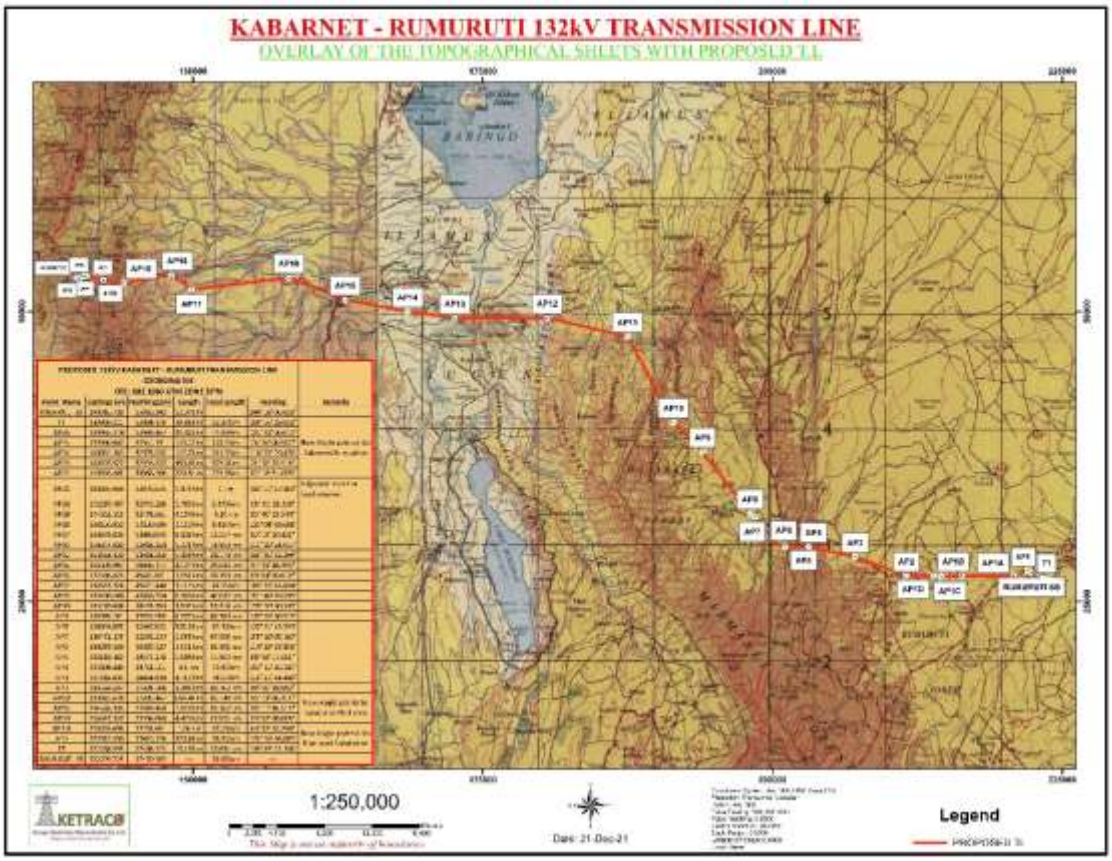
5. Do you have any other comments regarding this project?

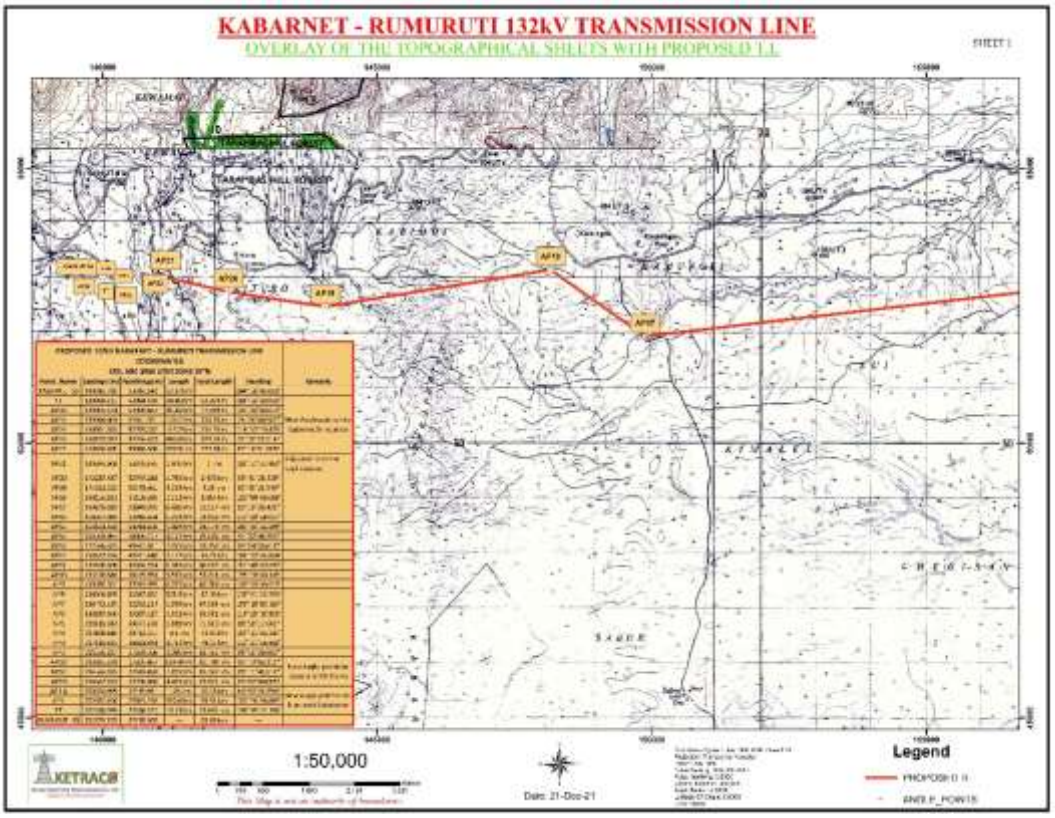
Kindly post the map/route of the proposed line together with LR Nos. on your website.

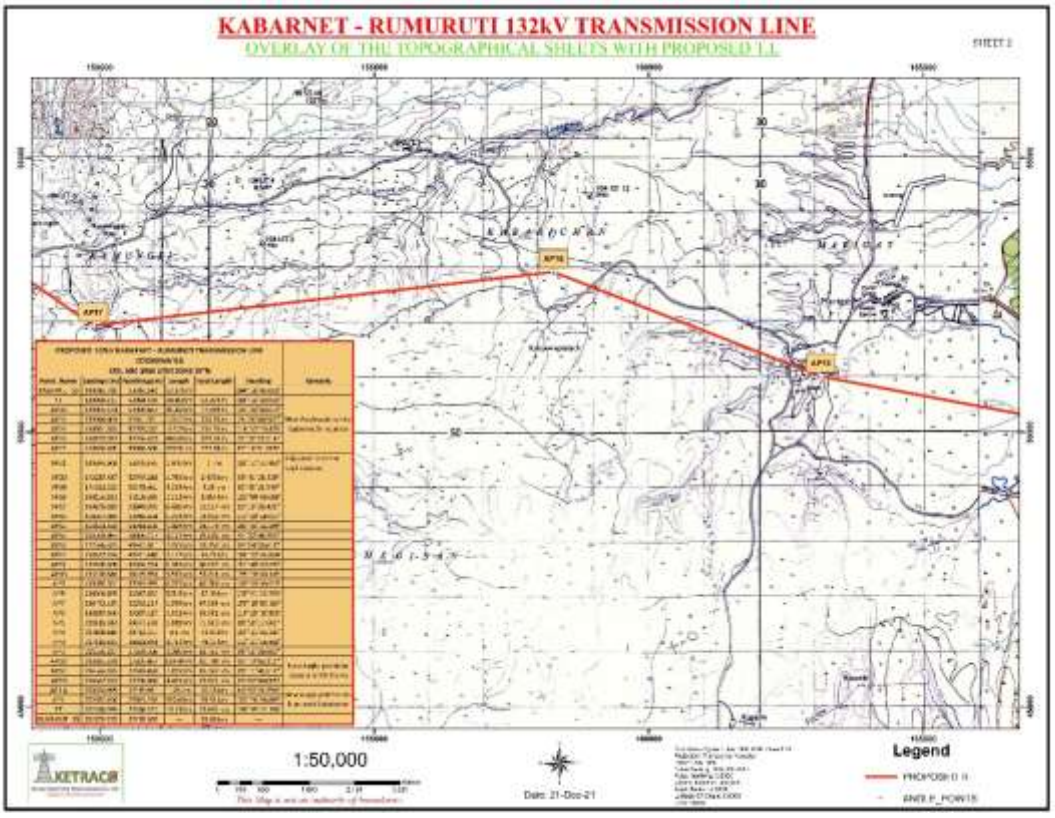
NAME	David Ndungu	LOCATION	MELWA
EMAIL	4winds14@gmail.com	OCCUPATION	BUSINESS
ID NO.	10876573	TEL NO	0722 773859
SIGNATURE	[signature]	DATE	9/12/2021

Thank you for your participation

13.6 Maps of TL Route




KABARNET - RUMURUTI 132kV TRANSMISSION LINE
OVERLAY OF THU TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
SHEET 1
1:50,000
Legend
Date: 21-Dec-21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OVERLAY OF THU TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
SHEET 2
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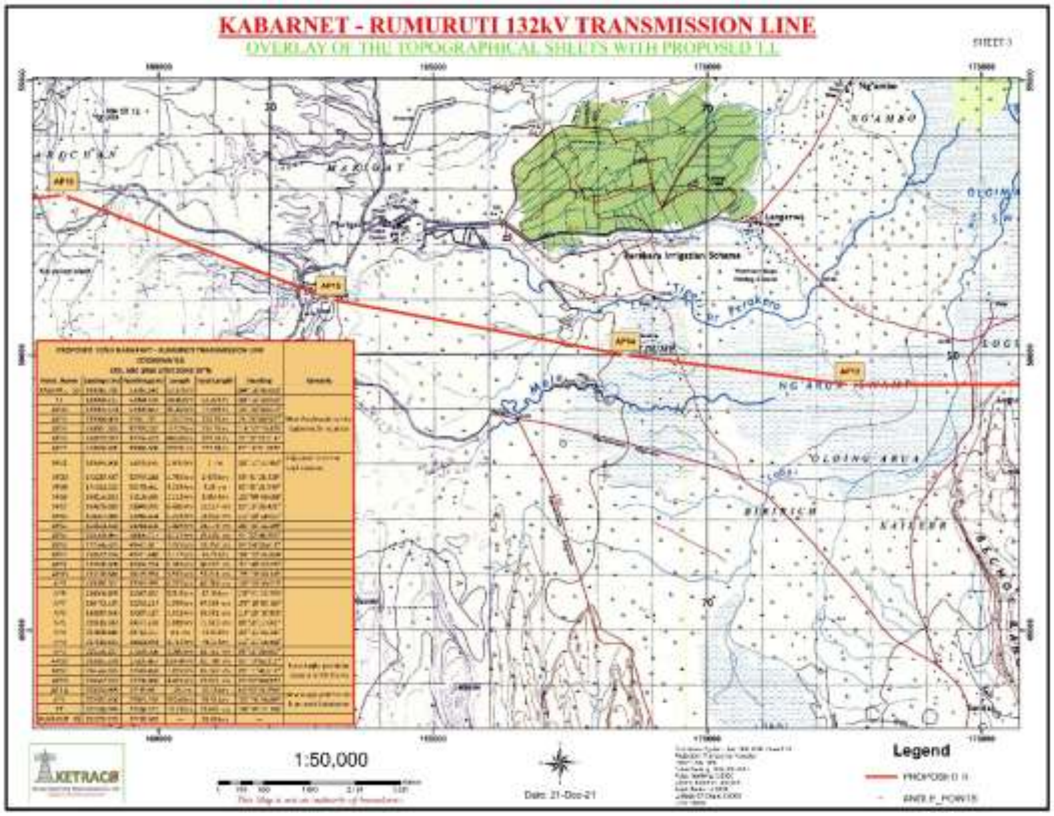
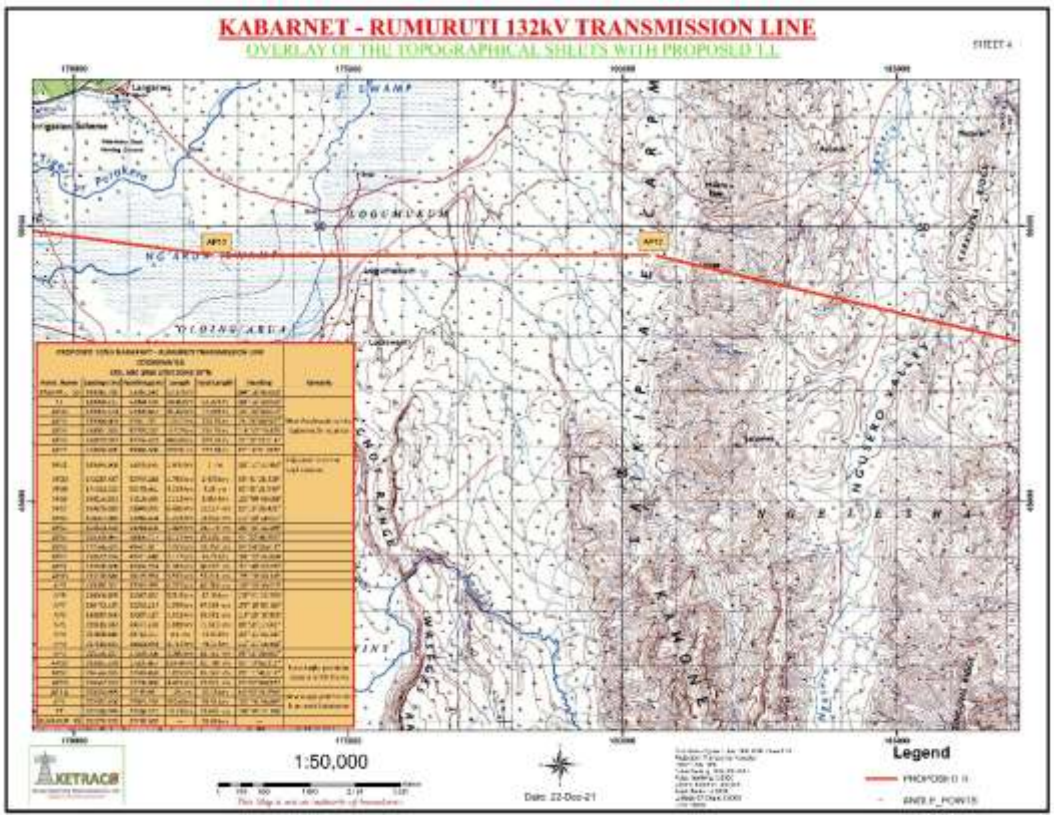
Date: 21-Dec-21


KABARNET - RUMURUTI 132kV TRANSMISSION LINE
OVERLAY OF THE TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
SHEET 3
KETRACO
1:50,000
Date: 21-Dec-21
Legend
PROPOSED tl
ANGLE_POINTS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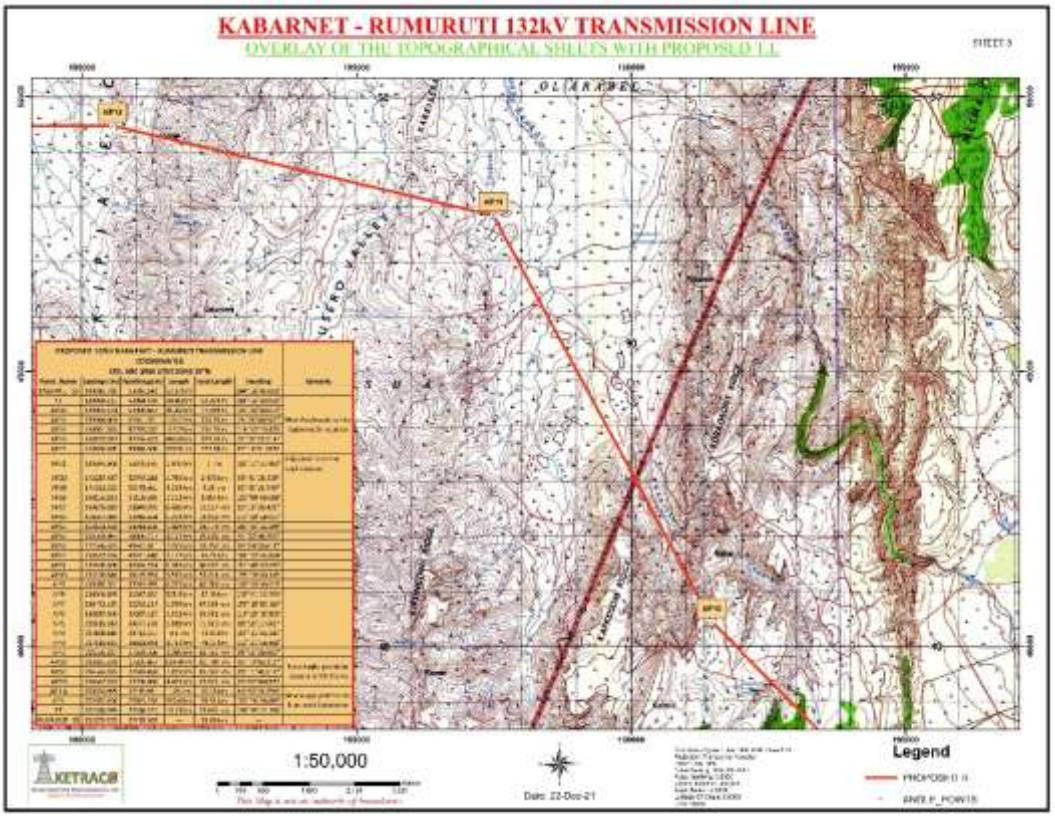
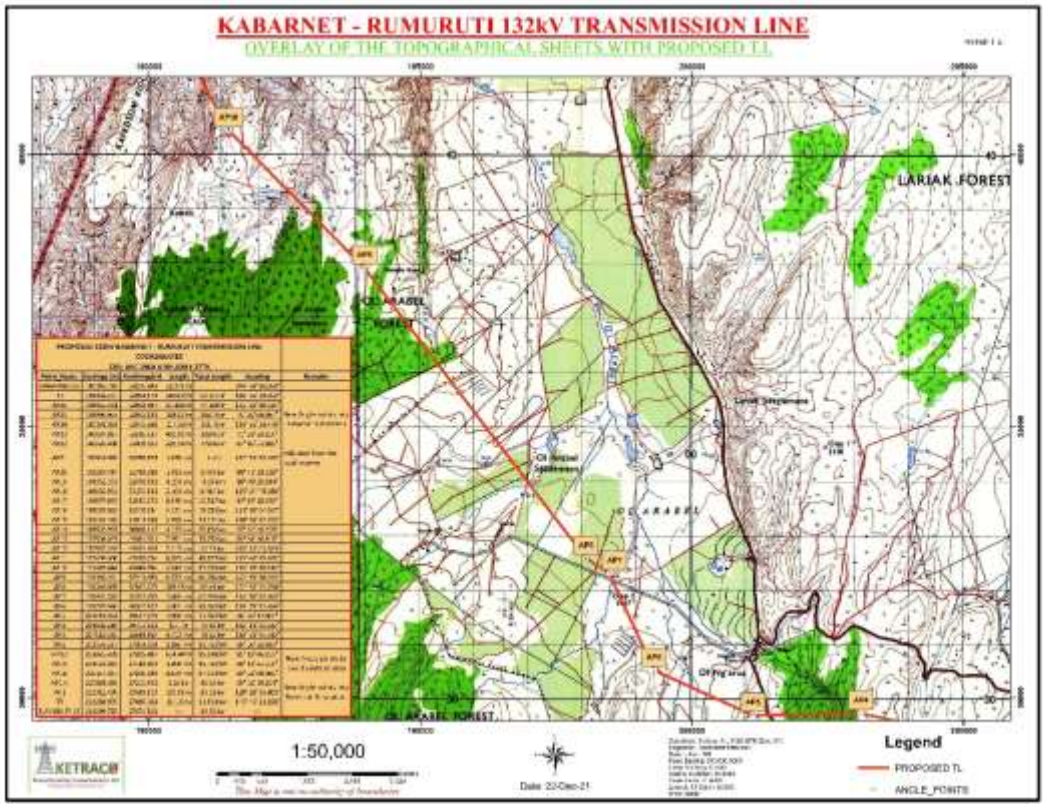
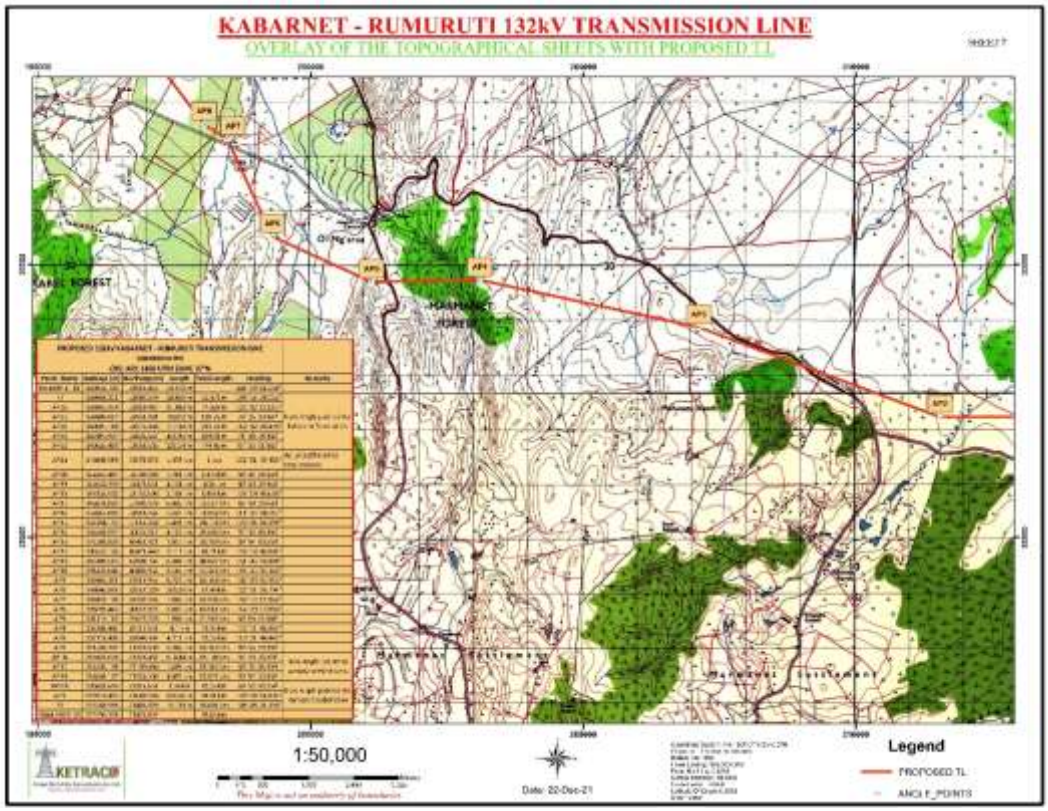
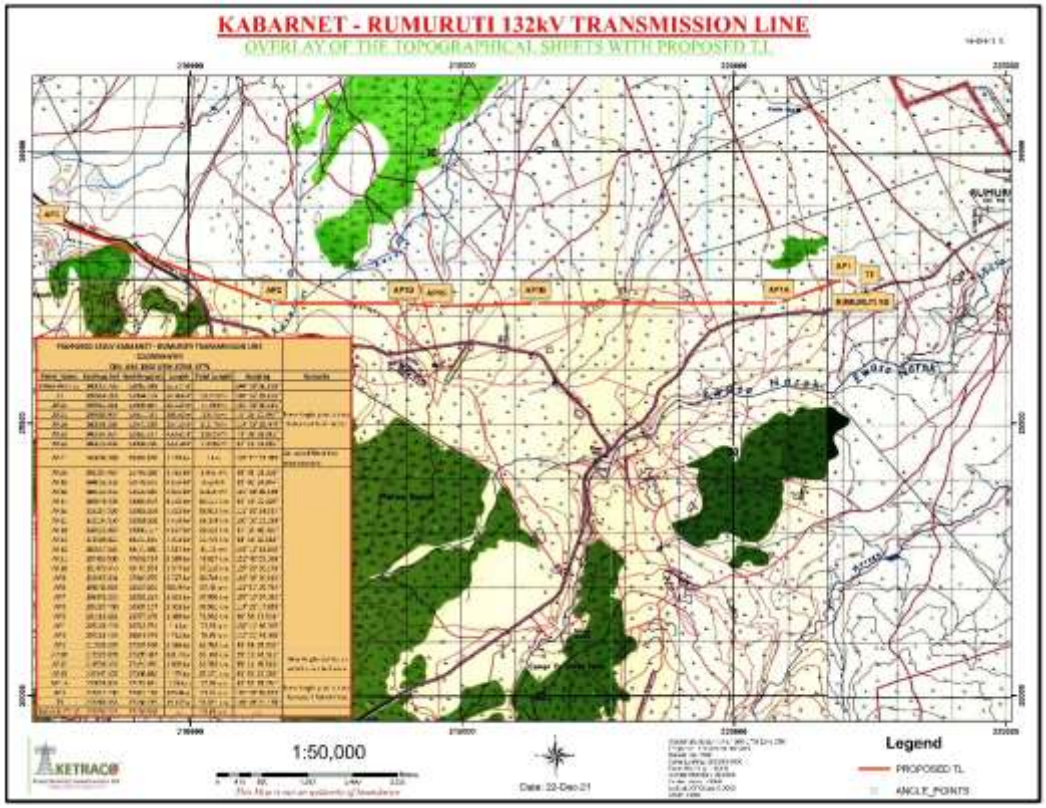
OVERLAY OF THE TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
SHEET 4
KETRACO
1:50,000
Date: 22-Dec-21
Legend
PROPOSED tl
ANGLE_POINTS


KABARNET - RUMURUTI 132kV TRANSMISSION LINE
OVERLAY OF THE TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
1:50,000
Legend
PROPOSED TL
ANGLE_POINTS


KABARNET - RUMURUTI 132kV TRANSMISSION LINE
OVERLAY OF THE TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
LARIAK FOREST
1:50,000
Legend
PROPOSED TL
ANGLE_POINTS


KABARNET - RUMURUTI 132kV TRANSMISSION LINE
OVERLAY OF THE TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
1:50,000
Date: 22-Dec-21
Legend
PROPOSED TL
ANGLE_POINTS


KABARNET - RUMURUTI 132kV TRANSMISSION LINE
OVERLAY OF THE TOPOGRAPHICAL SHEETS WITH PROPOSED T.L
1:50,000
Date: 22-Dec-21
Legend
PROPOSED TL
ANGLE_POINTS

13.7 Annex E. Bird Species in Lake Baringo

Critically Endangered Endangered Vulnerable Near Threatened

Ostriches: *Struthionidae*		
1	Common Ostrich	*Struthio camelus*
Ducks: *Anatidae*		
2	White-faced Whistling-Duck	*Dendrocygna viduata*
3	Fulvous Whistling-Duck	*Dendrocygna bicolor*
4	White-backed Duck	*Thalassornis leuconotus*
5	Knob-billed Duck	*Sarkidiornis melanotos*
6	Egyptian Goose	*Alopochen aegyptiaca*
7	Spur-winged Goose	*Plectropterus gambensis*
8	African Pygmy-Goose	*Nettapus auritus*
9	Garganey	*Spatula querquedula*
10	Hottentot Teal	*Spatula hottentota*
11	Northern Shoveler	*Spatula clypeata*
12	Eurasian Wigeon	*Mareca penelope*
13	Yellow-billed Duck	*Anas undulata*
14	Cape Teal	*Anas capensis*
15	Red-billed Duck	*Anas erythrorhyncha*
16	Northern Pintail	*Anas acuta*
17	Eurasian Teal	*Anas crecca*
18	\Southern Pochard\	*Netta erythrophthalma*
19	Tufted Duck	*Aythya fuligula*
20	Maccoa Duck	*Oxyura maccoa*
Guineafowl: *Numididae*		
21	Helmeted Guineafowl	*Numida meleagris*
Pheasants, Grouse, and Allies: *Phasianidae*		
22	Harlequin Quail	*Coturnix delegorguei*
23	Hildebrandt's Francolin	*Pternistis hildebrandti*
24	Yellow-necked Francolin	*Pternistis leucoscepus*
25	Crested Francolin	*Dendroperdix sephaena*
Flamingos: *Phoenicopteridae*		
26	Greater Flamingo	*Phoenicopterus roseus*
27	Lesser Flamingo	*Phoenicoparrus minor*
Grebes: *Podicipedidae*		
28	Little Grebe	*Tachybaptus ruficollis*
29	Great Crested Grebe	*Podiceps cristatus*
Pigeons and Doves: *Columbidae*		
30	Rock Pigeon	*Columba livia*
31	Speckled Pigeon	*Columba guinea*

32	Dusky Turtle-Dove	*Streptopelia lugens*
33	Mourning Collared-Dove	*Streptopelia decipiens*
34	Ring-necked Dove	*Streptopelia capicola*
35	Laughing Dove	*Streptopelia senegalensis*
36	Emerald-spotted Wood-Dove	*Turtur chalcospilos*
37	Namaqua Dove	*Oena capensis*
38	African Green-Pigeon	*Treron calvus*
Bustards: *Otididae*		
39	Kori Bustard	*Ardeotis kori*
Sandgrouse: *Pteroclidae*		
40	Chestnut-bellied Sandgrouse	*Pterocles exustus*
41	Lichtenstein's Sandgrouse	*Pterocles lichtensteinii*
Bustards: *Otididae*		
42	Black-bellied Bustard	*Lissotis melanogaster*
Turacos: *Musophagidae*		
43	White-crested Turaco	*Tauraco leucolophus*
44	White-bellied Go-away-bird	*Corythaixoides leucogaster*
Cuckoos: *Cuculidae*		
45	Red-chested Cuckoo	*Cuculus solitarius*
46	Black Cuckoo	*Cuculus clamosus*
47	Common Cuckoo	*Cuculus canorus*
48	African Cuckoo	*Cuculus gularis*
49	Black Coucal	*Centropus grillii*
50	White-browed Coucal	*Centropus superciliosus*
51	Pied Cuckoo	*Clamator jacobinus*
52	Levaillant's Cuckoo	*Clamator levaillantii*
53	Great Spotted Cuckoo	*Clamator glandarius*
54	Klaas's Cuckoo	*Chrysococcyx klaas*
55	African Emerald Cuckoo	*Chrysococcyx cupreus*
56	Dideric Cuckoo	*Chrysococcyx caprius*
Nightjars and Allies: *Caprimulgidae*		
57	Standard-winged Nightjar	*Caprimulgus longipennis*
58	Eurasian Nightjar	*Caprimulgus europaeus*
59	Sombre Nightjar	*Caprimulgus fraenatus*
60	Donaldson-Smith's Nightjar	*Caprimulgus donaldsoni*
61	Swamp Nightjar	*Caprimulgus natalensis*
62	Plain Nightjar	*Caprimulgus inornatus*
63	Star-spotted Nightjar	*Caprimulgus stellatus*
64	Freckled Nightjar	*Caprimulgus tristigma*

65	Slender-tailed Nightjar	*Caprimulgus clarus*
Swifts: *Apodidae*		
66	Scarce Swift	*Schoutedenapus myoptilus*
67	Alpine Swift	*Apus melba*
68	Mottled Swift	*Apus aequatorialis*
69	|Common Swift|	*Apus apus*
70	Nyanza Swift	*Apus niansae*
71	African Swift	*Apus barbatus*
72	Little Swift	*Apus affinis*
73	Horus Swift	*Apus horus*
74	White-rumped Swift	*Apus caffer*
75	African Palm-Swift	*Cypsiurus parvus*
Rails, Gallinules, and Coots: *Rallidae*		
76	African Rail	*Rallus caerulescens*
77	African Crake	*Crex egregia*
78	Lesser Moorhen	*Gallinula angulata*
79	Eurasian Moorhen	*Gallinula chloropus*
80	Red-knobbed Coot	*Fulica cristata*
81	Allen's Gallinule	*Porphyrio alleni*
82	African Swamphen	*Porphyrio madagascariensis*
83	\Striped Crake\	*Amaurornis marginalis*
84	Black Crake	*Zapornia flavirostra*
85	Baillon's Crake	*Zapornia pusilla*
Cranes: *Gruidae*		
86	Black Crowned-Crane	*Balearica pavonina*
Thick-knees: *Burhinidae*		
87	Water Thick-knee	*Burhinus vermiculatus*
88	Eurasian Thick-knee	*Burhinus oedicnemus*
89	Senegal Thick-knee	*Burhinus senegalensis*
90	Spotted Thick-knee	*Burhinus capensis*
Stilts and Avocets: *Recurvirostridae*		
91	Black-winged Stilt	*Himantopus himantopus*
92	Pied Avocet	*Recurvirostra avosetta*
Plovers and Lapwings: *Charadriidae*		
93	Black-bellied Plover	*Pluvialis squatarola*
94	Long-toed Lapwing	*Vanellus crassirostris*
95	Blacksmith Lapwing	*Vanellus armatus*
96	Spur-winged Lapwing	*Vanellus spinosus*
97	Black-headed Lapwing	*Vanellus tectus*

98	Senegal Lapwing	*Vanellus lugubris*
99	Black-winged Lapwing	*Vanellus melanopterus*
100	Crowned Lapwing	*Vanellus coronatus*
101	Wattled Lapwing	*Vanellus senegallus*
102	Lesser Sand-Plover	*Charadrius mongolus*
103	Greater Sand-Plover	*Charadrius leschenaultii*
104	Caspian Plover	*Charadrius asiaticus*
105	Kittlitz's Plover	*Charadrius pecuarius*
106	Common Ringed Plover	*Charadrius hiaticula*
107	Little Ringed Plover	*Charadrius dubius*
108	Three-banded Plover	*Charadrius tricollaris*
Painted-Snipes: *Rostratulidae*		
109	Greater Painted-Snipe	*Rostratula benghalensis*
Jacanas: *Jacanidae*		
110	African Jacana	*Actophilornis africanus*
Sandpipers and Allies: *Scolopacidae*		
111	Whimbrel	*Numenius phaeopus*
112	Bar-tailed Godwit	*Limosa lapponica*
113	Black-tailed Godwit	*Limosa limosa*
114	Ruddy Turnstone	*Arenaria interpres*
115	Ruff	*Calidris pugnax*
116	Curlew Sandpiper	*Calidris ferruginea*
117	Temminck's Stint	*Calidris temminckii*
118	Sanderling	*Calidris alba*
119	Little Stint	*Calidris minuta*
120	Jack Snipe	*Lymnocryptes minimus*
121	Terek Sandpiper	*Xenus cinereus*
122	Great Snipe	*Gallinago media*
123	Common Snipe	*Gallinago gallinago*
124	African Snipe	*Gallinago nigripennis*
125	Common Sandpiper	*Actitis hypoleucos*
126	Green Sandpiper	*Tringa ochropus*
127	Spotted Redshank	*Tringa erythropus*
128	Common Greenshank	*Tringa nebularia*
129	Marsh Sandpiper	*Tringa stagnatilis*
130	Wood Sandpiper	*Tringa glareola*
131	Common Redshank	*Tringa totanus*
Pratincoles and Coursers: *Glareolidae*		
132	Temminck's Courser	*Cursorius temminckii*
133	Three-banded Courser	*Rhinoptilus cinctus*

134	Collared Pratincole	*Glareola pratincola*
135	Black-winged Pratincole	*Glareola nordmanni*
Gulls, Terns, and Skimmers: *Laridae*		
136	Gray-hooded Gull	*Chroicocephalus cirrocephalus*
137	Black-headed Gull	*Chroicocephalus ridibundus*
138	Pallas's Gull	*Ichthyaetus ichthyaetus*
139	Lesser Black-backed Gull	*Larus fuscus*
140	Little Tern	*Sternula albifrons*
141	Gull-billed Tern	*Gelochelidon nilotica*
142	Caspian Tern	*Hydroprogne caspia*
143	White-winged Tern	*Chlidonias leucopterus*
144	Whiskered Tern	*Chlidonias hybrida*
145	Common Tern	*Sterna hirundo*
146	African Skimmer	*Rynchops flavirostris*
Storks: *Ciconiidae*		
147	African Openbill	*Anastomus lamelligerus*
148	Black Stork	*Ciconia nigra*
149	Abdim's Stork	*Ciconia abdimii*
150	Woolly-necked Stork	*Ciconia episcopus*
151	White Stork	*Ciconia ciconia*
152	Saddle-billed Stork	*Ephippiorhynchus senegalensis*
153	Marabou Stork	*Leptoptilos crumenifer*
154	Yellow-billed Stork	*Mycteria ibis*
Anhingas: *Anhingidae*		
155	African Darter	*Anhinga rufa*
Cormorants and Shags: *Phalacrocoracidae*		
156	Long-tailed Cormorant	*Microcarbo africanus*
157	Great Cormorant	*Phalacrocorax carbo*
Pelicans: *Pelecanidae*		
158	Great White Pelican	*Pelecanus onocrotalus*
159	Pink-backed Pelican	*Pelecanus rufescens*
Hamerkop: *Scopidae*		
160	Hamerkop	*Scopus umbretta*
Herons, Egrets, and Bitterns: *Ardeidae*		
161	Little Bittern	*Ixobrychus minutus*
162	Dwarf Bittern	*Ixobrychus sturmii*
163	Gray Heron	*Ardea cinerea*
164	Black-headed Heron	*Ardea melanocephala*
165	Goliath Heron	*Ardea goliath*

166	Purple Heron	*Ardea purpurea*
167	Great Egret	*Ardea alba*
168	Intermediate Egret	*Ardea intermedia*
169	Little Egret	*Egretta garzetta*
170	Western Reef-Heron	*Egretta gularis*
171	Black Heron	*Egretta ardesiaca*
172	Cattle Egret	*Bubulcus ibis*
173	Squacco Heron	*Ardeola ralloides*
174	\Madagascar Pond-Heron\	*Ardeola idae*
175	Striated Heron	*Butorides striata*
176	Black-crowned Night-Heron	*Nycticorax nycticorax*
Ibises and Spoonbills: *Threskiornithidae*		
177	Glossy Ibis	*Plegadis falcinellus*
178	African Sacred Ibis	*Threskiornis aethiopicus*
179	Hadada Ibis	*Bostrychia hagedash*
180	African Spoonbill	*Platalea alba*
Osprey: *Pandionidae*		
181	Osprey	*Pandion haliaetus*
Hawks, Eagles, and Kites: *Accipitridae*		
182	Black-winged Kite	*Elanus caeruleus*
183	Scissor-tailed Kite	*Chelictinia riocourii*
184	African Harrier-Hawk	*Polyboroides typus*
185	Egyptian Vulture	*Neophron percnopterus*
186	European Honey-buzzard	*Pernis apivorus*
187	White-headed Vulture	*Trigonoceps occipitalis*
188	Lappet-faced Vulture	*Torgos tracheliotos*
189	Hooded Vulture	*Necrosyrtes monachus*
190	White-backed Vulture	*Gyps africanus*
191	Rueppell's Griffon	*Gyps rueppelli*
192	Bateleur	*Terathopius ecaudatus*
193	Short-toed Snake-Eagle	*Circaetus gallicus*
194	Brown Snake-Eagle	*Circaetus cinereus*
195	Bat Hawk	*Macheiramphus alcinus*
196	Martial Eagle	*Polemaetus bellicosus*
197	Long-crested Eagle	*Lophaetus occipitalis*
198	Lesser Spotted Eagle	*Clanga pomarina*
199	Wahlberg's Eagle	*Hieraaetus wahlbergi*
200	Booted Eagle	*Hieraaetus pennatus*
201	Tawny Eagle	*Aquila rapax*
202	Steppe Eagle	*Aquila nipalensis*
203	Imperial Eagle	*Aquila heliaca*

204	Verreaux's Eagle	*Aquila verreauxii*
205	African Hawk-Eagle	*Aquila spilogaster*
206	Dark Chanting-Goshawk	*Melierax metabates*
207	Gabar Goshawk	*Micronisus gabar*
208	Grasshopper Buzzard	*Butastur rufipennis*
209	Eurasian Marsh-Harrier	*Circus aeruginosus*
210	African Marsh-Harrier	*Circus ranivorus*
211	Pallid Harrier	*Circus macrourus*
212	Montagu's Harrier	*Circus pygargus*
213	African Goshawk	*Accipiter tachiro*
214	Shikra	*Accipiter badius*
215	Levant Sparrowhawk	*Accipiter brevipes*
216	Eurasian Sparrowhawk	*Accipiter nisus*
217	Black Kite	*Milvus migrans*
218	African Fish-Eagle	*Haliaeetus vocifer*
219	|Common Buzzard|	*Buteo buteo*
220	Augur Buzzard	*Buteo augur*
Barn-Owls: *Tytonidae*		
221	Barn Owl	*Tyto alba*
Owls: *Strigidae*		
222	African Scops-Owl	*Otus senegalensis*
223	Northern White-faced Owl	*Ptilopsis leucotis*
224	Spotted Eagle-Owl	*Bubo africanus*
225	Verreaux's Eagle-Owl	*Bubo lacteus*
226	Pearl-spotted Owlet	*Glaucidium perlatum*
Mousebirds: *Coliidae*		
227	Speckled Mousebird	*Colius striatus*
228	Blue-naped Mousebird	*Urocolius macrourus*
Trogons: *Trogonidae*		
229	Narina Trogon	*Apaloderma narina*
Hoopoes: *Upupidae*		
230	Eurasian Hoopoe	*Upupa epops*
Woodhoopoes and Scimitarbills: *Phoeniculidae*		
231	Green Woodhoopoe	*Phoeniculus purpureus*
232	Violet Woodhoopoe	*Phoeniculus damarensis*
233	Common Scimitarbill	*Rhinopomastus cyanomelas*
234	Abyssinian Scimitarbill	*Rhinopomastus minor*
Hornbills: *Bucerotidae*		
235	Northern Ground-Hornbill (Abyssinian Ground-Hornbill)	*Bucorvus abyssinicus*
236	Crowned Hornbill	*Lophoceros alboterminatus*

237	Hemprich's Hornbill	*Lophoceros hemprichii*
238	African Gray Hornbill	*Lophoceros nasutus*
239	Northern Red-billed Hornbill	*Tockus erythrorhynchus*
240	Eastern Yellow-billed Hornbill	*Tockus flavirostris*
241	Jackson's Hornbill	*Tockus jacksoni*
Kingfishers: *Alcedinidae*		
242	Malachite Kingfisher	*Corythornis cristatus*
243	African Pygmy-Kingfisher	*Ispidina picta*
244	Gray-headed Kingfisher	*Halcyon leucocephala*
245	Woodland Kingfisher	*Halcyon senegalensis*
246	Brown-hooded Kingfisher	*Halcyon albiventris*
247	Striped Kingfisher	*Halcyon chelicuti*
248	Giant Kingfisher	*Megaceryle maxima*
249	Pied Kingfisher	*Ceryle rudis*
Bee-eaters: *Meropidae*		
250	White-fronted Bee-eater	*Merops bullockoides*
251	Little Bee-eater	*Merops pusillus*
252	White-throated Bee-eater	*Merops albicollis*
253	Blue-cheeked Bee-eater	*Merops persicus*
254	\Madagascar Bee-eater\	*Merops superciliosus*
255	|European Bee-eater|	*Merops apiaster*
256	Northern Carmine Bee-eater	*Merops nubicus*
Rollers: *Coraciidae*		
257	European Roller	*Coracias garrulus*
258	Abyssinian Roller	*Coracias abyssinicus*
259	Lilac-breasted Roller	*Coracias caudatus*
260	Rufous-crowned Roller	*Coracias naevius*
261	Broad-billed Roller	*Eurystomus glaucurus*
African Barbets: *Lybiidae*		
262	Red-and-yellow Barbet	*Trachyphonus erythrocephalus*
263	D'Arnaud's Barbet	*Trachyphonus darnaudii*
264	Red-fronted Tinkerbird	*Pogoniulus pusillus*
265	Red-fronted Barbet	*Tricholaema diademata*
266	Spot-flanked Barbet	*Tricholaema lacrymosa*
267	Black-throated Barbet	*Tricholaema melanocephala*
268	White-headed Barbet	*Lybius leucocephalus*
Honeyguides: *Indicatoridae*		
269	Lesser Honeyguide	*Indicator minor*
270	Scaly-throated Honeyguide	*Indicator variegatus*
271	Greater Honeyguide	*Indicator indicator*
Woodpeckers: *Picidae*		

272	Cardinal Woodpecker	*Chloropicus fuscescens*
273	Bearded Woodpecker	*Chloropicus namaquus*
274	Mountain Gray Woodpecker	*Chloropicus spodocephalus*
275	Nubian Woodpecker	*Campethera nubica*
276	Golden-tailed Woodpecker	*Campethera abingoni*
Falcons and Caracaras: *Falconidae*		
277	Pygmy Falcon	*Polihierax semitorquatus*
278	Lesser Kestrel	*Falco naumanni*
279	Eurasian Kestrel	*Falco tinnunculus*
280	Greater Kestrel	*Falco rupicoloides*
281	Fox Kestrel	*Falco alopex*
282	Gray Kestrel	*Falco ardosiaceus*
283	Red-necked Falcon	*Falco chicquera*
284	|Amur Falcon|	*Falco amurensis*
285	|Eleonora's Falcon|	*Falco eleonorae*
286	|Sooty Falcon|	*Falco concolor*
287	Eurasian Hobby	*Falco subbuteo*
288	African Hobby	*Falco cuvierii*
289	Lanner Falcon	*Falco biarmicus*
290	Peregrine Falcon	*Falco peregrinus*
291	Taita Falcon	*Falco fasciinucha*
Parrots: *Psittacidae*		
292	Meyer's Parrot	*Poicephalus meyeri*
Cuckooshrikes: *Campephagidae*		
293	Black Cuckooshrike	*Campephaga flava*
Old World Orioles: *Oriolidae*		
294	Eurasian Golden Oriole	*Oriolus oriolus*
295	(African Golden Oriole)	*Oriolus auratus*
296	African Black-headed Oriole	*Oriolus larvatus*
Wattle-eyes and Batises: *Platysteiridae*		
297	Chinspot Batis	*Batis molitor*
298	Gray-headed Batis	*Batis orientalis*
299	Pygmy Batis	*Batis perkeo*
Vangas, Helmetshrikes and Allies: *Vangidae*		
300	White Helmetshrike	*Prionops plumatus*
Bushshrikes: *Malaconotidae*		
301	Brubru	*Nilaus afer*
302	Northern Puffback	*Dryoscopus gambensis*
303	Brown-crowned Tchagra	*Tchagra australis*
304	Three-streaked Tchagra	*Tchagra jamesi*
305	Tropical Boubou	*Laniarius major*

306	Black-headed Gonolek	*Laniarius erythrogaster*
307	Slate-colored Boubou	*Laniarius funebris*
308	Sulphur-breasted Bushshrike	*Telophorus sulfureopectus*
309	Gray-headed Bushshrike	*Malaconotus blanchoti*
Drongos: *Dicruridae*		
310	Fork-tailed Drongo	*Dicrurus adsimilis*
Monarch Flycatchers: *Monarchidae*		
311	African Paradise-Flycatcher	*Terpsiphone viridis*
Shrikes: *Laniidae*		
312	Red-backed Shrike	*Lanius collurio*
313	Isabelline Shrike	*Lanius isabellinus*
314	|Lesser Gray Shrike|	*Lanius minor*
315	Gray-backed Fiscal	*Lanius excubitoroides*
316	Somali Fiscal	*Lanius somalicus*
317	Northern Fiscal	*Lanius humeralis*
318	Masked Shrike	*Lanius nubicus*
319	Woodchat Shrike	*Lanius senator*
320	White-rumped Shrike	*Eurocephalus ruppelli*
Crows, Jays, and Magpies: *Corvidae*		
321	Pied Crow	*Corvus albus*
322	Fan-tailed Raven	*Corvus rhipidurus*
323	White-necked Raven	*Corvus albicollis*
Tits, Chickadees, and Titmice: *Paridae*		
324	Somali Tit	*Melaniparus thruppi*
Penduline-Tits: *Remizidae*		
325	Mouse-colored Penduline-Tit	*Anthoscopus musculus*
326	African Penduline-Tit	*Anthoscopus caroli*
Larks: *Alaudidae*		
327	Fischer's Sparrow-Lark	*Eremopterix leucopareia*
328	Pink-breasted Lark	*Calendulauda poecilosterna*
329	Singing Bushlark	*Mirafra cantillans*
African Warblers: *Macrosphenidae*		
330	Northern Crombec	*Sylvietta brachyura*
331	Red-faced Crombec	*Sylvietta whytii*
Cisticolas and Allies: *Cisticolidae*		
332	Yellow-bellied Eremomela	*Eremomela icteropygialis*
333	Gray Wren-Warbler	*Calamonastes simplex*
334	Gray-backed Camaroptera**	*Camaroptera brevicaudata*
335	Buff-bellied Warbler	*Phyllolais pulchella*
336	Brown-tailed Apalis**	*Apalis viridiceps*
337	Tawny-flanked Prinia	*Prinia subflava*

338	Pale Prinia	*Prinia somalica*
339	Red-fronted Warbler	*Prinia rufifrons*
340	Rattling Cisticola	*Cisticola chiniana*
341	Winding Cisticola**	*Cisticola marginatus*
342	Zitting Cisticola	*Cisticola juncidis*
Reed Warblers and Allies: *Acrocephalidae*		
343	Eastern Olivaceous Warbler	*Iduna pallida*
344	Upcher's Warbler	*Hippolais languida*
345	|Olive-tree Warbler|	*Hippolais olivetorum*
346	Sedge Warbler	*Acrocephalus schoenobaenus*
347	Marsh Warbler	*Acrocephalus palustris*
348	Eurasian Reed Warbler	*Acrocephalus scirpaceus*
349	Basra Reed Warbler	*Acrocephalus griseldis*
350	Lesser Swamp Warbler	*Acrocephalus gracilirostris*
351	Great Reed Warbler	*Acrocephalus arundinaceus*
Grassbirds and Allies: *Locustellidae*		
352	Little Rush-Warbler	*Bradypterus baboecala*
Swallows: *Hirundinidae*		
353	Plain Martin	*Riparia paludicola*
354	Bank Swallow	*Riparia riparia*
355	Banded Martin	*Riparia cincta*
356	Rock Martin	*Ptyonoprogne fuligula*
357	Barn Swallow	*Hirundo rustica*
358	Ethiopian Swallow	*Hirundo aethiopica*
359	Wire-tailed Swallow	*Hirundo smithii*
360	Red-rumped Swallow	*Cecropis daurica*
361	Lesser Striped Swallow	*Cecropis abyssinica*
362	Common House-Martin	*Delichon urbicum*
Bulbuls: *Pycnonotidae*		
363	Northern Brownbul	*Phyllastrephus strepitans*
364	Common Bulbul	*Pycnonotus barbatus*
Leaf Warblers: *Phylloscopidae*		
365	Willow Warbler	*Phylloscopus trochilus*
Sylviid Warblers, Parrotbills, and Allies: *Sylviidae*		
366	Eurasian Blackcap	*Sylvia atricapilla*
367	Garden Warbler	*Sylvia borin*
368	Barred Warbler	*Sylvia nisoria*
369	Brown Parisoma	*Sylvia lugens*
370	Greater Whitethroat	*Sylvia communis*
White-eyes, Yuhinas, and Allies: *Zosteropidae*		
371	Pale White-eye	*Zosterops abyssinicus*

372	African Yellow White-eye	*Zosterops senegalensis*
Laughingthrushes and Allies: *Leiothrichidae*		
373	Rufous Chatterer	*Turdoides rubiginosa*
374	Brown Babbler	*Turdoides plebejus*
Oxpeckers: *Buphagidae*		
375	Red-billed Oxpecker	*Buphagus erythrorynchus*
376	Yellow-billed Oxpecker	*Buphagus africanus*
Starlings: *Sturnidae*		
377	Wattled Starling	*Creatophora cinerea*
378	Violet-backed Starling	*Cinnyricinclus leucogaster*
379	Red-winged Starling	*Onychognathus morio*
380	Bristle-crowned Starling	*Onychognathus salvadorii*
381	Magpie Starling	*Speculipastor bicolor*
382	Rueppell's Starling	*Lamprotornis purpuroptera*
383	Superb Starling	*Lamprotornis superbus*
384	Lesser Blue-eared Starling	*Lamprotornis chloropterus*
385	Greater Blue-eared Starling	*Lamprotornis chalybaeus*
Thrushes and Allies: *Turdidae*		
386	African Thrush	*Turdus pelios*
Old World Flycatchers: *Muscicapidae*		
387	|Spotted Flycatcher|	*Muscicapa striata*
388	African Gray Flycatcher	*Bradornis microrhynchus*
389	Pale Flycatcher	*Agricola pallidus*
390	Gray Tit-Flycatcher	*Fraseria plumbeus*
391	Ashy Flycatcher	*Fraseria caerulescens*
392	Silverbird	*Melaenornis semipartitus*
393	Rufous-tailed Scrub-Robin	*Cercotrichas galactotes*
394	Red-backed Scrub-Robin	*Cercotrichas leucophrys*
395	White-browed Robin-Chat	*Cossypha heuglini*
396	Spotted Morning-Thrush	*Cichladusa guttata*
397	White-throated Robin	*Irania gutturalis*
398	|Thrush Nightingale|	*Luscinia luscinia*
399	Common Nightingale	*Luscinia megarhynchos*
400	Common Redstart	*Phoenicurus phoenicurus*
401	Rufous-tailed Rock-Thrush	*Monticola saxatilis*
402	Whinchat	*Saxicola rubetra*
403	African Stonechat	*Saxicola torquatus*
404	Mocking Cliff-Chat	*Thamnolaea cinnamomeiventris*
405	Northern Wheatear	*Oenanthe oenanthe*
406	Capped Wheatear	*Oenanthe pileata*
407	Isabelline Wheatear	*Oenanthe isabellina*

408	Pied Wheatear	*Oenanthe pleschanka*
409	Familiar Chat	*Oenanthe familiaris*
410	Brown-tailed Chat	*Oenanthe scotocerca*
411	Abyssinian Wheatear	*Oenanthe lugubris*
Sunbirds and Spiderhunters: *Nectariniidae*		
412	Eastern Violet-backed Sunbird	*Anthreptes orientalis*
413	Pygmy Sunbird	*Hedydipna platura*
414	Hunter's Sunbird	*Chalcomitra hunteri*
415	Bronze Sunbird	*Nectarinia kilimensis*
416	Golden-winged Sunbird	*Drepanorhynchus reichenowi*
417	Beautiful Sunbird	*Cinnyris pulchellus*
418	Shining Sunbird	*Cinnyris habessinicus*
419	Variable Sunbird	*Cinnyris venustus*
Weavers and Allies: *Ploceidae*		
420	White-billed Buffalo-Weaver	*Bubalornis albirostris*
421	White-headed Buffalo-Weaver	*Dinemellia dinemelli*
422	Speckle-fronted Weaver	*Sporopipes frontalis*
423	White-browed Sparrow-Weaver	*Plocepasser mahali*
424	Gray-headed Social-Weaver	*Pseudonigrita arnaudi*
425	Red-headed Weaver	*Anaplectes rubriceps*
426	Little Weaver	*Ploceus luteolus*
427	Spectacled Weaver	*Ploceus ocularis*
428	Northern Masked-Weaver	*Ploceus taeniopterus*
429	Lesser Masked-Weaver	*Ploceus intermedius*
430	Southern Masked-Weaver	*Ploceus velatus*
431	Vitelline Masked-Weaver	*Ploceus vitellinus*
432	Village Weaver	*Ploceus cucullatus*
433	Black-headed Weaver	*Ploceus melanocephalus*
434	Golden-backed Weaver	*Ploceus jacksoni*
435	Chestnut Weaver	*Ploceus rubiginosus*
436	Cardinal Quelea	*Quelea cardinalis*
437	Red-billed Quelea	*Quelea quelea*
438	Northern Red Bishop	*Euplectes franciscanus*
439	Yellow-crowned Bishop	*Euplectes afer*
440	Fire-fronted Bishop	*Euplectes diadematus*
441	White-winged Widowbird	*Euplectes albonotatus*
442	Fan-tailed Widowbird	*Euplectes axillaris*
Waxbills and Allies: *Estrildidae*		
443	Crimson-rumped Waxbill	*Estrilda rhodopyga*
444	Common Waxbill	*Estrilda astrild*

445	Black-faced Waxbill	*Estrilda erythronotos*
446	Black-cheeked Waxbill	*Estrilda charmosyna*
447	Red-cheeked Cordonbleu	*Uraeginthus bengalus*
448	Blue-capped Cordonbleu	*Uraeginthus cyanocephalus*
449	Purple Grenadier	*Granatina ianthinogaster*
450	Green-winged Pytilia	*Pytilia melba*
451	Red-billed Firefinch	*Lagonosticta senegala*
452	African Firefinch	*Lagonosticta rubricata*
453	Cut-throat	*Amadina fasciata*
454	Quailfinch	*Ortygospiza atricollis*
455	Gray-headed Silverbill	*Odontospiza griseicapilla*
456	Bronze Mannikin	*Spermestes cucullata*
457	African Silverbill	*Euodice cantans*
Indigobirds: *Viduidae*		
458	Pin-tailed Whydah	*Vidua macroura*
459	Eastern Paradise-Whydah	*Vidua paradisaea*
460	Steel-blue Whydah	*Vidua hypocherina*
461	Straw-tailed Whydah	*Vidua fischeri*
462	Village Indigobird	*Vidua chalybeata*
463	Purple Indigobird	*Vidua purpurascens*
Old World Sparrows: *Passeridae*		
464	House Sparrow	*Passer domesticus*
465	Northern Gray-headed Sparrow	*Passer griseus*
466	Parrot-billed Sparrow	*Passer gongonensis*
467	Chestnut Sparrow	*Passer eminibey*
468	Yellow-spotted Bush Sparrow	*Gymnornis pyrgita*
Wagtails and Pipits: *Motacillidae*		
469	Western Yellow Wagtail	*Motacilla flava*
470	African Pied Wagtail	*Motacilla aguimp*
471	White Wagtail	*Motacilla alba*
472	African Pipit	*Anthus cinnamomeus*
473	Long-billed Pipit	*Anthus similis*
474	Tawny Pipit	*Anthus campestris*
475	Tree Pipit	*Anthus trivialis*
476	Red-throated Pipit	*Anthus cervinus*
477	Golden Pipit	*Tmetothylacus tenellus*
478	Rosy-throated Longclaw	*Macronyx ameliae*
Finches, Euphonias, and Allies: *Fringillidae*		
479	Yellow-fronted Canary	*Crithagra mozambicus*
480	African Citril	*Crithagra citrinelloides*
481	Black-throated Canary	*Crithagra atrogularis*

482	White-bellied Canary	*Crithagra dorsostriatus*
483	Northern Grosbeak-Canary	*Crithagra donaldsoni*
Old World Buntings: *Emberizidae*		
484	Ortolan Bunting	*Emberiza hortulana*
485	Cinnamon-breasted Bunting	*Emberiza tahapisi*
486	Golden-breasted Bunting	*Emberiza flaviventris*
487	Somali Bunting	*Emberiza poliopleura*