

KENYA ELECTRICITY SYSTEMS IMPROVEMENTS PROJECT (KESIP)
AN ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT STUDY REPORT
FOR 76KM 220KV MALINDI-KILIFI DOUBLE CIRCUIT LINE; A NEW
220/132KV SUBSTATION AT KILIFI AND INSTALLATION OF 1X23 MVA
132/33KV TRANSFORMER AT THE EXISTING MALINDI SUBSTATION IN
KILIFI COUNTY

CONTRACT REFERENCE NO. (KE-KETRACO-66986-CS-QCBS) - PACKAGE 3

FINAL REPORT



PROPONENT

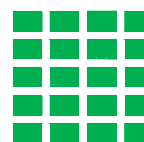


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PROJECT

KENYA ELECTRICITY SYSTEMS IMPROVEMENTS PROJECT (KESIP)

CONSULTANCY SERVICES FOR PREPARATION OF RESETTLEMENT ACTION PLAN, VULNERABLE AND MARGINALIZED GROUPS PLAN AND ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT 80KM 132 KV MACHAKOS-MWALA-EKALAKALA AND 76KM 220 KV MALINDI-KILIFI TRANSMISSION LINES AND SUBSTATION EXTENSION AT KYENI, MWINGI AND MALINDI.

CONTRACT REFERENCE NO. KE-KETRACO-66986-CS-QCBS)

Package 3

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DOCUMENT CONTROL

This document and its contents have been prepared by Africa Waste and Environment Management Centre (AWEMAC) and are intended solely for Kenya Electricity Transmission Company (KETRACO) information and use in relation to Environmental & Social Impact Assessment Study Report for the proposed 76KM, 220KV Malindi-Kilifi Double Circuit Line, a new 220/132KV Substation at Kilifi and installation of 1X23 MVA 132/33KV Transformer at existing Malindi Substation. Contract Reference No. Ke-KETRACO-66986-CS-QCBS) - Package 3

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DECLARATION PAGE

ENVIRONMENTAL CONSULTANT

I, **Prof. Jacob K. Kibwage** on behalf of Africa Waste and Environment Management Centre (AWEMAC) submit this Integrated Environmental and Social Impact Assessment study report for the proposed 76KM, 220KV Malindi-Kilifi Double Circuit Line, a new 220/132KV Substation at Kilifi and installation of 1X23 MVA 132/33KV Transformer at existing Malindi Substation. To the best of my knowledge, all information contained in this report is an accurate and truthful representation of all findings as relating to the proposed project as per project information provided by proponent.

Signed in Nairobi on thisday of, 2021

Signature:

*Designation: **Lead Environmental Consultant. NEMA Lead Expert Reg. No. 0126***

PROJECT PROPONENT

I,....., on behalf of Kenya Electricity Transmission Company (KETRACO) submit this Integrated Environmental and Social Impact Assessment study report for the proposed 76KM, 220KV Malindi-Kilifi Double Circuit Line, a new 220/132KV Substation at Kilifi and installation of 1X23 MVA 132/33KV Transformer at existing Malindi Substation. To my knowledge, all information contained in this report is an accurate and truthful representation of all findings as relating to the proposed project.

Signed at on this.....day of, 2021

Signature:

Designation:

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LIST OF ACRONYMS AND ABBREVIATIONS

AEZ	Agro-Ecological Zones
AIDS	Acquired Immunodeficiency Syndrome
AP	Angle Points
ASFADA	Arabuko Sokoke Forest Adjacent Dwellers Association
AWEMAC	Africa Waste and Environment Centre
BP	Bank Procedure
CAC	Catchment Advisory Committee
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CIA	Cumulative Impact Assessment
CIDP	County Integrated Development Plan
CSR	Corporate Social Responsibility
CT	Cash Transfer
EA	Environmental Assessment
ECD	Early Childhood Development
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
EMF	Electro-Magnetic Field
ERC	Energy Regulatory Commission
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESSA	Environmental and Social Safeguard Assessment
FGD	Focused Group Discussion
GCD	Geothermal Development Company
GDP	Gross Domestic Product
GIS	Geographical Information System
GoK	Government of Kenya
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
ICSC	International Chemical Safety Cards
ICT	Information Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
IDA	International Development Association
IESIA	Integrated Environmental and Social Impact Assessment
IFC	International Finance Cooperation
IP	Indigenous People
IWRM	Integrated Water Resources Management
KCAA	Kenya Civil Aviation Authority

KEFRI	Kenya Forestry Research Institute
KeNHA	Kenya National Roads Authority
KeRRA	Kenya Rural Road Authority
KESIP	Kenya Electricity Systems Improvement Project
KETRACO	Kenya Electricity Transmission Company Limited
KFS	Kenya Forest Service
KIMAWASCO	Kilifi Mariakani Water and Sewerage Company
KM	Kilometre
KNBS	Kenya National Bureau of Statistics
KPLC	Kenya Power and Lightening Company
KURA	Kenya Urban Roads Authority
KV	Kilovolts
KWS	Kenya Wildlife Service
LCPDP	Least Cost Power Development Plan
MAWASCO	Malindi Water and Sewerage Company
MEA	Multi-lateral Environmental Agreement
MoEP	Ministry of Energy and Petroleum
MoLPP	Ministry of Lands and Physical Planning
MSDS	Materials Safety Data Sheets
MTP	Medium Term Plan
MVA	Mega Volt Amp
NBSAP	National Biodiversity Strategy and Action Plan
NCCRS	National Climate Change Response Strategy
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NLC	National Land Commission
NMK	National Museums of Kenya
NPGD	National Policy on Gender and Development
OP	Operational Policy
OVC	Orphans and Vulnerable Children
PAPs	Project Affected Persons
PCB	Polychlorinated Biphenyls
PDO	Project Development Objective
FPIC	Free Prior Informed Consultation
PIT	Project Implementation Team
PLWD	People Living with Disabilities
PPE	Personal Protective Equipment
PPP	Public Private Partnership
RAP	Resettlement Action Plan
REA	Rural Electrification Authority
RoW	Right of Way
RPF	Resettlement Policy Framework
SDGs	Sustainable Development Goals

SEP	Stakeholder Engagement Plan
SIA	Social Impact Assessment
SID	Society for International Development
STIs	Sexually Transmitted Infection
ToR	Terms of Reference
VIP	Ventilated Improved Pit latrine
VMGF	Vulnerable and Marginalized Groups Framework
WASREB	Water Services Regulatory Board
WB	World Bank
WHO	World Health Organization
WRA	Water Resources Authority

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EXECUTIVE SUMMARY

Introduction

The country's long-term development blueprint, the Vision 2030, aims at transforming Kenya into a globally competitive, newly industrialized, middle income and prosperous country. The electricity sub-sector has adopted a 20-year rolling plan that will align the sector with the Vision targets. As part of the plan to achieve this target, the Government of the Republic of Kenya is seeking the financial support of US\$370 million from the World Bank for the Kenya Electricity System Improvement Project (KESIP). The project would aim to improve the power systems and electricity access and reliability, in line with the Kenya Growth and Development Strategy. The Project will be coordinated by The Ministry of Energy (MOE) and implemented by Kenya Electricity Transmission Company (KETRACO) and Kenya Power and Lightning Company (KPLC). The project comprises of three focused components but KETRACO will be involved in component 2 dealing with transmission network expansion and strengthening (Approximately US\$120 million equivalent). The component is expected to introduce high voltage network to areas that have been serviced by long medium voltage lines to reduce technical losses and reinforce the existing medium voltage networks. The component will also increase transmission adequacy for interconnecting different regions of the country and improve reliability of power transmission and ensure compliance with N-1 contingency criteria. KETRACO has identified 6 sub-projects involving 132 kV and 220 kV transmission lines and associated substations and construction of three new 400/220kV substations estimated at US\$298 million.

Under the Least Cost Power Development Planning process and through feasibility studies, Kenya Electricity Transmission Company - KETRACO (the Proponent) has identified priority projects for implementation. The transmission projects will provide reliability, enhance security of power supply to the existing demand hubs in the country; expand electricity transmission capacity necessary to enhance electrification initiatives and reduce technical losses in areas currently served by long medium voltage lines. The Proponent plans to conduct detailed design, environmental and social studies on selected priority projects for development. The transmission lines and substation have been divided into three separate packages (Package 1, 2 and 3) for ease of work execution. This Environmental and Social Impact Assessment (ESIA) study was undertaken by Africa Waste and Environment Management Centre (AWEMAC) is specifically for 76KM, 220 kV Malindi –Kilifi Transmission line and associated substations under the main project's Package 3.

Objective of the Environmental and Social Impact Assessment

The main objective of the Environmental and Social Impact Assessment (ESIA) was to highlight the potential positive and negative environmental and social impacts expected during the establishment and operation of the proposed 76km, 220kv Malindi-Kilifi double circuit line; a new 220/132kv substation at Kilifi and installation of 1x23 MVA 132/33kv transformer at the existing Malindi substation in Kilifi county, with the aim of proposing appropriate mitigation measures. This was in line with ensuring that such a development does not negatively impact the environment and social aspects such as; human health and safety and physical (land, water, plants and animals) state of the project area. The study identified the possible environmental and social impacts during the implementation, operational and decommissioning phases of the project. The exercise was carried out in accordance with the World Bank Operational Policies triggered for this project, i.e. Environmental Assessment (OP4.01), Natural Habitats (OP4.04), Forestry (OP 4.36), Indigenous Peoples (OP4.10), Involuntary Resettlement (OP 4.12) and Physical Cultural Resources (OP4.11) together with relevant Kenyan environmental legislation and regulations that includes Environmental Management and Coordination Act (EMCA) Cap 387, and the Constitution of Kenya, 2010. The KETRACO Environmental and Social Management Framework (ESMF) was vital in undertaking the environmental and social

assessment whereas the Resettlement Policy Framework (RPF) was key in the resettlement action plan (RAP). The Vulnerable and Marginalized Groups Framework (VMGF) was critical during the social assessment.

Overall Scope of the Work

The Consultant undertook investigations on social aspects, economic activities, and conservation of natural resources, historical and anthropological heritages, public consultations and disclosures. The “Integrated Environmental Assessment,” which is a more holistic approach to the evaluation of the proposed project was used by encompassing: Environmental Impact Assessment; Archaeological Assessment; Social Impact Assessment; Biodiversity Impact Assessment; Health Impact Assessment; Cultural Impact Assessment; Visual Impact Assessment and Cumulative Impact Assessment. Given the scale and the complexity of the proposed project, a full environmental and social impact assessment study was undertaken to ensure comprehensiveness and completeness of the assessment process. The general steps followed during the assessment included:

- Environmental screening, in which the project was identified as a high risk project requiring Environmental Impact Assessment study under Amendment of the Second Schedule of EMCA 1999 (30th April 2019), and the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019. As per WB OP 4.01 the proposed project was classified as Category A since it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented.
- Environmental scoping that provided the key environmental issues, desktop studies and interviews
- Physical inspection of the proposed route and surrounding areas
- Public participation using public meetings, participant observations, questionnaires and interviews.

Project description

As noted, this ESIA study report has been prepared under Package three (3) sub-project and specifically for the 76km 220kV Malindi-Kilifi double circuit line and the new 220/132kV substation at Kilifi. The 220kV Malindi to Kilifi double circuit line is approximately 76 kilometres long with a wayleave of 40 meters – 20 meters on both sides from the centre line. The 16 angle points (AP) for Malindi-Kilifi 220KV. The 220KV double circuit transmission line is planned to be constructed off the existing 220/33KV substation at Malindi to the proposed switch station at Weru. The components of the sub-project will include construction of 220 kV double circuit line from Weru (switch station) to Kilifi; establishment of a 220/132 kV substation at Kilifi and construction of 220 kV switch station at Weru. This will also include the 132-kV link from the proposed 220/132kV sub-station at Kilifi to the existing 132kV system.

Baseline information

The transmission line is proposed to begin at Malindi Substation, Kakuyuni in Goshi location traversing through the following locations: Goshi, Jilore, Lango Baya, Vitengeni, Dida, Sokoke and terminating at the Kilifi Substation, Kilifi North Township Location. The line has avoided townships and densely populated residential areas. It also veers off to avoid Arabuko Sokoke forest [AP6 (1.85km) to the East, AP12 (287m), AP13 (275) and AP16 (465m) to the South]. At the North West of Vitengeni between AP5-AP10, the line deviates from the densely populated area of Kilifi. The estimated capital cost of this sub-component project is estimated at USD 79.86 million. Based on the economic analysis contained in the feasibility study report, the economic benefits of supply will outweigh the costs.

The Consultant assembled, evaluated and presented baseline data on the relevant environmental and socio-economic characteristics of the transmission routes, the substations

and surrounding areas of influence during the full ESIA study. In brief, baseline information captured the physical environment – topography, landforms, geology, soils, climate and meteorology, air quality, hydrology; biological environment - i.e. flora and fauna types and diversity, endangered species, sensitive habitats, wildlife within protected areas and other dispersal areas; social and cultural environment (including present and projected, where appropriate) - i.e., population, land use, planned development activities within the sub-project area, community structure, employment and labour market, sources and distribution of income, cultural properties, among others. Data is organized and presented based on a three-tier approach; the footprint/way-leave for each transmission line, the buffer area of 1 km around the line and associated facilities, and area of influence.

At the starting point of the transmission route, is the existing Malindi substation which the proponent intends to install a 1X23 MVA 132/33kV transformer. The transformer will be installed within the existing Malindi substation bay that is complete with associated switchgear and protection. Other notable features at the site include, office blocks, a manned 24hour security gate, an electric perimeter fence configured with automated security alarm with closed-circuit television system, piped water, sanitary facilities, storm drainage management systems, pavements and a well maintained access road. The existing substation site is well drained, surrounded by open grassland with minimal vegetation. The area is sparsely inhabited with the nearest household being approximately 500 metres away from the station. The earmarked site for a new 220/132kV substation lays within the existing Kilifi substation which is served by key support utilities including Lees Road – a gravel access road which links up with the tarmacked B8 Road (Mombasa–Garissa Road, composed of the Mombasa–Malindi Road and the Malindi–Garissa Road). The existing Kilifi substation neighbours Pwani University to the Northern boundary, Sea Horse Village to the east and south whereas Kilifi town is to the Western side. The site is also well drained with storm drainage management system and a tarmacked access road. The nearest household settlements are at AP1 near Sea Horse Village approximately 500metres from the Kilifi substation.

The main wildlife likely to be found within the project RoW includes rabbits and baboons and they are mainly found in Arabuko-Sokoke forest environs / dispersion areas. Other mammals known to inhabit this area include African Civet, Caracal, Syke’s Monkeys, Yellow Baboons and Lesser Galago (or bushbaby). Some of Kenya’s rarest mammals are found within the Arabuko Sokoke Forest, including the Golden-rumped Elephant-shrew, Sokoke Bushy-tailed Mongoose and Ader’s Duiker. Large mammals such as the African Elephant, and African Buffalo were observed notably within the fenced Arabuko Sokoke forest. As earlier noted, the Project transmission route has veered off to avoid Arabuko-Sokoke forest. The 420Km² Arabuko - Sokoke is the largest remaining coastal forest in East Africa, and is a globally recognized biodiversity hotspot. The forest has been designated as an IBA (Important Bird Area). The Kilifi Creek located to the South West, approximately 400 metres from the closest point to the transmission line along AP1 to AP4 is also rich in biodiversity. It has a high diversity of mangrove species that provides refuge to a variety of both resident and migrant birds. The creek provides various habitat types and niched that are colonized by diverse array of organisms for feeding, breeding and sheltering. Biodiversity that have been recorded within the creek include about 95 species of fish.

Most of the people residing along the transmission route come from the Mijikenda ethnic community with a significant proportion being Agiriamas. Other Mijikenda tribes in the project area are Chonyi, Kauma, and Rabai. The Agiriamas mainly practice mixed farming. The main crops grown include maize, cashew nuts and beans. They also rear livestock such as cows and goats. The project area has a significant number of persons such as widows, orphans, People Living with Disabilities (PLWDs), the elderly and pregnant women. There were 16 elderly, 70+ years, disabled persons were 7, orphans 47(26 boys and 21 girls), 18 widowed, and 15 pregnant women noted during the ESIA exercise.

The ESIA study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line and substation. Parcels of land traversed by the proposed RoW range in various sizes of private land, and public land. It was noted that approximately 603 registered landowners will also be affected. Further, it is estimated approximately 1,083 structures which include permanent (136), semi-permanent (71), temporary (793), services (watering points) (51), burial sites (24) and dug open pits meant for pit latrines (8) will be affected. The displacements will occur throughout the ROW with significant impact on structures likely to be experienced in the densely populated Jilore Location and Kilifi Township location. An approximate 22 business structures mainly retail shops owned by households ranging from four (4) permanent, four (4) semi-permanent, and fourteen (14) temporary are also affected by the RoW.

Further, some physical cultural resources such as a baobab tree in Konjora and an approximate total of 24 graveyards were observed. The graves were distributed along the RoW as follows; (14) in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location. The highlighted social -cultural and economic issues underpins the need for a comprehensive resettlement action plan (RAP) that would ensure compensation and livelihood restorations for projected affected persons.

Applicable Policy, Legal and Institutional Frameworks

Key documents for the assessment were reviewed, these included; the nature of the proposed activities, project documents, designs policy and legislative framework as well as the environmental setting of Kilifi County among others. Some of the key documents that were reviewed included: -

- World Bank's Operational Policy on Environmental Assessment (OP4.01);
- World Bank's Operational Policy on Natural Habitats (OP4.04);
- World Bank's Operational Policy on Physical Cultural Resources (OP4.11);
- World Bank's Operational Policy on Forestry (OP 4.36)
- World Bank's Operational Policy on Indigenous Peoples (OP4.10)
- World Bank's Operational Policy on Involuntary Resettlement (OP 4.12)
- World Bank Environment Health and Safety (EHS) Guidelines;
- KETRACO -Kenya Electricity Systems Improvements Project (KESIP)Environmental and Socio Management Framework (ESMF); Resettlement Policy Framework (RPF); and Vulnerable and Marginalized Groups Framework (VMGF)
- Applicable Multilateral Environment Agreements (MEAs);
- Project designs.

The Consultant reviewed key policies, plans, legislation and institutions relevant to the energy sector in Kenya. Some of these are:

Policies:

- Big four Agenda, 2017
- Kenya Vision 2030
- The National Land Use Policy (Sessional Paper No.1 of 2017)
- National Environment Policy, 2013
- National Water Policy, 2012
- The National Climate Change Response Strategy (NCCRS), 2010
- Kenya National Policy on Gender and Development (NPGD), 2019
- The National Biodiversity Strategy and Action Plan (NBSAP) 2000
- National Forest Policy, 2014
- HIV/AIDS Policy of 2009

Plans:

- Kilifi County Integrated Development Plan, 2018-2022
- Least Cost Power Development Plan, 2017-2037

The Consultant reviewed the following key pieces of legislation in Kenya relevant to the proposed project: -

- The Constitution of Kenya, 2010;
- Environmental Management and Coordination Act (EMCA, Cap 387) and relevant subsidiary legislation;
 - Environmental Impact Assessment and Audit Regulations, 2003, amended 2019
 - Water Quality Regulations, 2006
 - Waste Management Regulations, 2006
 - Air Quality Regulations, 2009
 - Biodiversity Regulations,
 - Noise Regulations, 2009
- Building Code, 2000;
- Civil Aviation Act No. 21 of 2013;
- Energy Act, 2019;
- Forest Conservation and Management Act, No. 34 of 2016;
- Kenya Roads Act, 2007;
- Land Act, 2012;
- Land Registration Act, 2012;
- National Museums and Heritage Act, No. 6 of 2006;
- National Land Commission Act, No. 5 of 2012;
- Occupational Safety and Health Act, No. 15 of 2007;
- Penal Code Act (Cap 63);
- Physical and Land Use Planning Act, 2019;
- Public Health Act (Cap 242);
- Public Roads and Roads of Access Act (Cap 399);
- Climate Change Act, 2016;
- County Governments Act, No. 17 of 2012; together with its Amended Act, 2016
- Employment Act, No 11, 2007;
- Water Act, 2016;
- HIV and AIDS Prevention and Control Act, 2006;
- National Authority for the Campaign Against Alcohol and Drug Abuse Act, 2012;
- Occupiers' Liability Act (Cap 34);
- Persons with Disabilities Act, 2003;
- Protection of Traditional Knowledge and Cultural Expressions Act, 2016;
- Sexual Offences Act, 2006;
- Standards Act (Cap 496);
- Work Injury Benefits Act, 2007;
- Way-leaves Act (Cap 292);
- Wildlife Conservation and Management Act, No. 47 of 2013.
- Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012,

Data Analysis, Reporting and Documentation

The Environmental and Social Impact Assessment (ESIA) Study Report was compiled from the field work findings in accordance with the World Bank Environmental and Social Safeguards guidelines, KETRACO Environmental and Social Management Framework, Resettlement Policy Framework, Vulnerable and Marginalized Groups Framework; and guidelines issued by NEMA for such works and; be prepared and submitted by the proponent for consideration and approval.

Consultation and Public Participation

The Consultation and Public Participation (CPP) process is a key requirement by the Government of Kenya and a mandatory procedure as stipulated by EMCA (Cap 387) section 58, on ESIA for achieving the fundamental principles of sustainable development. The World Bank

also requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project. To ensure effective stakeholders' consultation and public participation, stakeholders' mapping was conducted, and a database created consisting of likely interested, affected individuals and relevant Institutions. The key stakeholders were mapped based on the legal mandates of various institutions, assessment of the different interests of the stakeholders. The database was later divided into key stakeholders based on their interests in the project. Various methods and instruments have been identified for effective and efficient public consultation and participation. These methods include;

- *Use of questionnaires-* Various stakeholders were engaged through in-person consultations and interviews. A total of one hundred and forty-four (140) ESIA questionnaires were administered during the consultative public participation exercise. Sample questionnaires administered are attached as appendices to this report. Among the stakeholders who were consulted during the ESIA study included project affected persons (PAPs), and local community members neighbouring the proposed transmission line and substation.
- *ESIA Public Meetings-* A total of five (5) ESIA public community meetings were held at Goshi Location, Jilore Locations, Lango-Baya Location, Kilifi North Township Location, and Sokoke Location. Public meeting notices were delivered to respective persons, local leaders/elders, local community members, organisations and/or institutions seven (7) days prior to the commencement of the public meetings. The venues' selection was based on ease of site accessibility, population, and renown venues for holding meetings in the respective project alignment.
- *Baraza's / meetings targeting PAPs-* As per the draft RAP report for Malindi -Kilifi, a total of 8 Baraza's targeting the Project Affected Persons (PAPs) were held, attracting a total of 866 attendants. The Baraza's were held in the following areas: Mongotini, Jilore, LangoBaya, Malanga, Sokoke, Konjora, Fumbini, and Dida. The objectives of the Baraza's were to gather comments, suggestions and concerns of project affected persons (PAPs) and include them in both the ESIA and RAP reports, elaborate on the procedures and requirements for valuation, compensation and resettlement action plan (RAP); finalize the mechanisms for addressing grievances from project affected persons by constituting locational Grievances Resolution Committee (GRC). The selection of the meeting venues was done in consultation with the local leadership including village elders, assistant chiefs and Senior chiefs. Further, the eight (8) venues' selection were based on ease of accessibility by PAPs, PAPs population in the respective areas – sublocation and location, and renown venues for holding meetings in the respective project areas. All the key locations, sublocations and villages with high concentration of settlements and households clusters along proposed line were covered during the PAPs consultation meetings.
- *Vulnerable Individuals and Households Vulnerable individuals and households meetings:* A total of six (6) meetings targeting vulnerable persons were also held along the proposed transmission alignment. The meetings were held at; Chief's Office Grounds in Jilore Location, Chief's Office/DO's Grounds in Longobaya Location, Mgandini Football Grounds (Fumbini Primary School) in Kilifi Township Location, Malanga sub-chiefs' Grounds - Malanga sublocation -Lango Baya Location, Dida Primary School – Dida Location and in Sub Chiefs' Camp in Mongotini Sublocation – Goshi Location. Local chiefs, village managers were used to inform the vulnerable groups of the planned meetings as well as the venues. In addition, ESIA Public meetings and RAP PAPs meetings had been used to communicate information to the target Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households. Amongst those in attendance were various Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households such as people living with disabilities, elderly, and widows.

- *Key stakeholders meeting and consultations-* A key stakeholders' meeting was convened on 8th August 2019 in Kilifi town at Hotel Mnarani Beach Club. A total of 38 participants attended. This was carried out in form of a workshop in order to engage; those who are affected, have a direct interest in, or somehow involved with some of the problems identified during the ESIA study. Further, key stakeholder consultations were conducted to incorporate views from key government institution such as the County Government, amongst others as described into detail in chapter five of this report. Interview questions aimed to obtain information on animal biodiversity in the areas, water resources in the areas and likely impacts of electricity transmission line and substation on biodiversity and water resources.
- *Key informant interviews .* The key informant interviews targeted the following 5 main organizations involved in biodiversity conservation within the Malindi – Kilifi area: KEFRI, Nature Kenya, KWS, KFS and Arabuko – Sokoke Forest Adjacent Dwellers Association (ASFADA).

Environmental and Social Management and Monitoring Plan

The proponent of the proposed project acknowledges that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public, and socio-economic wellbeing of the residents. Thus, the focus was on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a continuous improvement programme. Continuous observations and assessments have been essential for identification of impacts unforeseen during the ESIA exercise. Monitoring parameters/indicators were identified and programmes developed for their observation and action. When developing the monitoring programme the following were considered:

- Frequency of monitoring
- Required personnel -monitoring should be conducted by trained personnel
- Methods of record keeping
- Availability of calibrated and maintained equipment
- Existence of baseline information
- Data analysis and review

Table below highlights some of the possible key impacts and respective mitigation measures.

Table 0-1 Possible key impacts and mitigation measures

Possible impacts	Proposed mitigation measures
Environmental Impacts	
Terrestrial habitat alteration	<ul style="list-style-type: none"> ▪ Use of existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible: to avoid habitat alteration ▪ Undertaking selective clearance by removing tall woody species leaving saplings, for quick regeneration of vegetation along the wayleave; ▪ Installing transmission lines above existing vegetation to avoid land clearing especially between Konjora and Sokoke location by tower span variations; ▪ Avoiding construction activities during the breeding season and other sensitive seasons or times of day especially at AP16, AP15, AP13 and AP6; ▪ Management of construction site activities by limiting access road gradients to reduce runoff-induced erosion and providing adequate road drainage based on road width, surface material, compaction, and maintenance ▪ Re-vegetation of disturbed areas with native / indigenous plant species; ▪ Working in close coordination with pertinent agencies (KWS and KFS) when undertaking construction of towers especially in the outskirts of Arabuko Sokoke Forest: AP16, AP15, AP13 and AP6.
Loss of vegetation cover and biodiversity	<ul style="list-style-type: none"> ▪ Provide adequate protection against scour and erosion; and consider the onset of the rainy season with respect to construction schedules. ▪ Minimize clearing of indigenous plant species and ensure replanting of indigenous plant species in disturbed areas by liaising with experts from Kenya Forest Services (KFS). ▪ Employ vegetation rehabilitation techniques to recover lost land cover such as planting indigenous grass species in areas where the RoW will traverse. ▪ Ensure proper demarcation and delineation of the project area to be affected by construction works; ▪ Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage; ▪ Designate access routes and parking within the site; ▪ Implement a landscaping programme for the substation site; ▪ Consider to support community initiatives in tree planting initiatives such as in surrounding primary schools as part of CSR and for reforestation purposes.

<p>Avian (Bird) collisions and electrocutions</p>	<ul style="list-style-type: none"> ▪ Engineering solutions including installing visibility enhancement objects such as wire marker balls, bird perch deterrents, or diverters; especially at Arabuko Sokoke environs AP16, AP15, AP13 and AP6 locations including Kilifi Creek environs AP 2 -AP 3 to alert birds to the presence of power line, allowing them time to avoid the collision; ▪ Building raptors platforms on top of towers for roosting and nesting; ▪ Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware ; ▪ Insulation through covering energised parts and/or covering grounded parts with materials appropriate for providing incidental contact protection to birds. It is best to use suspended insulators and vertical disconnectors, if upright insulators or horizontal disconnectors are present, these should be covered; ▪ Installing elevated perches, insulating jumper loops, placing obstructive perch deterrents (e.g. insulated “V’s”) on the transmission line. ▪ Working with line agencies such as NMK, KWS and relevant NGOs such as Birdlife International and Nature Kenya for expert opinion and specialized monitoring studies (ornithological studies). ▪ The proponent design team to consider a wider berth to the ASF boundary than currently proposed since birds are not confined to buffer zones.
<p>Impacts on Mammals including bats collisions and electrocutions</p>	<p>The following should be undertaken mainly within the Arabuko Sokoke Forest evirons [AP6 (1.85km) to the East, AP12 (287m), AP13 (275) and AP16 (465m) to the South] where mammals and bats are likely to be found. Worth noting, echolocating bats are less likely to fall victim of crushing / collisions into overhead cables.</p> <ul style="list-style-type: none"> ▪ Implementation of an integrated vegetation management approach (IVM) during repairs and maintenance of RoW. The selective removal of tall-growing tree species and the encouragement of low-growing grasses and bushes to avoid alteration and disturbance to critical natural habitats such as bat foraging corridors, roosting and breeding areas. ▪ Provision of engineering solutions such as wire-marking through installing visibility enhancement objects such as marker balls ▪ Ensuring towers / pylons are insulated to act as bats roosting places. ▪ Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware; ▪ Insulation: covering energised parts and/or covering grounded parts with materials appropriate for providing incidental contact protection to bats. It is best to use suspended insulators and vertical disconnectors, if upright insulators or horizontal disconnectors are present, these should be covered; ▪ Work with line agencies such as KWS and relevant NGOs such as Nature Kenya for expert opinion and specialized bat survey. The data acquired may inform other studies in future and document which bat species exist in the area.
<p>Increased generation of solid waste</p>	<ul style="list-style-type: none"> ▪ Use of an integrated solid waste management system i.e. the 3 R’s: 1. Reduction at source 2. Reuse 3. Recycle; ▪ Accurate estimation of the dimensions and quantities of materials required; ▪ Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time;

	<ul style="list-style-type: none"> ▪ Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage; ▪ Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste; ▪ Reuse packaging materials such as cartons, cement bags, empty metal and plastic containers to reduce waste at site; ▪ Waste collection bins to be provided at designated points on all active sites; ▪ Dispose waste more responsibly by contracting a NEMA registered waste handler who will dispose the waste at designated sites or landfills only and in accordance with the existing laws. ▪ Composting of vegetation waste for reuse as a landscaping fertilizer. ▪ Develop and implement a Construction Waste Management Plan before start of the project. ▪ Comply with provisions of the Environmental Management and Co-ordination, Waste Management Regulations 2006.
<p>Increased discharge of Waste water / Sewage</p>	<ul style="list-style-type: none"> • Provide means for handling sewage generated at the construction site; • Provision of mobile toilets at every active site for transmission line and substation construction; • Monitor effluent quality on quaterly basis to ensure that the stipulated discharge standard as per Environmental Management and Co-ordination (Water quality) Regulations 2006 are not violated.
<p>Occupational Health and Safety</p>	
<p>Electrocution from live power lines during construction and operation</p>	<ul style="list-style-type: none"> ▪ Deactivating and properly grounding live power distribution lines before work is performed on, or in proximity, to the lines; ▪ Allowing only trained and certified workers to install, maintain, or repair electrical equipment; Qualified or trained employees working on transmission or distribution systems should be able to achieve the following- <ul style="list-style-type: none"> ➢ Distinguish live parts from other parts of the electrical system ➢ Determine the voltage of live parts ➢ Understand the minimum approach distances outlined for specific live line voltages ➢ Ensure proper use of special safety equipment and procedures when working near or on exposed energized parts of an electrical system ▪ Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards. ▪ Ensuring workers do not approach an exposed energized or conductive part even if properly trained unless the worker is: properly insulated from the energized part with gloves or other approved insulation; the energized part is properly insulated from the worker and any other conductive object; the worker is properly isolated and insulated from any other conductive object. ▪ Ensuring workers not directly associated with power transmission and distribution activities adhere to local legislation, standards, and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities; ▪ Adopt and implement the Occupational, Health and Safety Management Plan (OHSMP) – <i>Annex 14 -section 3.14</i>
<p>Working at heights on</p>	<ul style="list-style-type: none"> ▪ Testing structures for integrity prior to undertaking work;

<p>pylons and structures</p>	<ul style="list-style-type: none"> ▪ Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; The fall protection system should be appropriate for the tower structure and necessary movements, including ascent, descent, and moving from point to point; ▪ Inspection, maintenance, and replacement of fall protection equipment; ▪ Installation of fixtures on tower components to facilitate fall protection systems; ▪ Provision of an adequate work-positioning device system for workers. Connectors on positioning systems should be compatible with the tower components to which they are attached; ▪ Hoisting equipment should be properly rated and maintained and hoist operators properly trained; ▪ An approved tool bag should be used for raising or lowering tools or materials to workers on structures; ▪ Use of helmets and other protective devices will mitigate against scratches, bruises, punctures, lacerations and head injuries due to dropping objects; ▪ Ensuring all rope safety belts are replaced before signs of aging or fraying of fibers show up; ▪ When operating power tools at height, workers should use a second (backup) safety strap. ▪ Signs and other obstructions should be removed from pylons or structures prior to undertaking work; ▪ No drunk worker should be allowed on site to reduce risk falling from height and ensuring proper communication on site. ▪
<p>Exposure of electric magnetic fields to workers</p>	<ul style="list-style-type: none"> ▪ Identifying potential exposure levels in the workplace; ▪ Training workers in the identification of occupational EMF levels and hazards; ▪ Establishing safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers; ▪ Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials.
<p>Exposure to chemicals</p>	<ul style="list-style-type: none"> ▪ Implementation of engineering and administrative control measures to avoid or minimize the release of hazardous substances into the work environment keeping the level of exposure below internationally established or recognized limits; ▪ Keeping the number of employees exposed, or likely to become exposed, to a minimum; ▪ Communicating chemical hazards to workers through labeling and marking according to national and internationally recognized requirements and standards, including the International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS), or equivalent. Any means of written communication should be in an easily understood language and be readily available to exposed workers and first-aid personnel; ▪ Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE.
<p>Risk of occupational incidents, accidents and dangerous occurrences</p>	<ul style="list-style-type: none"> ▪ Set up a health and safety committee and periodic site inspections, training and annual safety audits; ▪ Provide appropriate PPEs to workers and visitors to the proposed route; ▪ Adhere to the provisions of the occupational Health and Safety Act of 2007;

and diseases/physical hazards	<ul style="list-style-type: none"> ▪ Have a qualified EHS Officer; first aider/ medic on site. ▪ Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction and operation is as per prescribed forms obtainable from the local Occupational Safety and Health Office are in place.
Ergonomics, Repetitive Motion, Manual Handling	<ul style="list-style-type: none"> ▪ Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds . ▪ Selecting and designing tools that reduce force requirements and holding times, and improve postures ▪ Providing user adjustable workstations ▪ Incorporating rest and stretch breaks into work processes, and conducting job rotation ▪ Implementing quality control and maintenance programs that reduce unnecessary forces and exertions ▪ Taking into consideration additional special conditions such as left-handed persons
Cumulative Impacts	<ul style="list-style-type: none"> ▪ Make deliberate efforts to reduce or prevent emission of greenhouse gases throughout the project that can cumulatively exacerbate climate change impacts. This can be attained by adopting new technologies and renewable energies including use of low and zero carbon emitting project machinery, vehicles and equipment. ▪ Ensure the project route is retained as it or any designs alterations avoids towns and market centres. ▪ Ensure construction including RoW clearing and maintenance works are scheduled to avoid rainy seasons. ▪ KETRACO to ensure regional mitigation or offset management engagement strategies such as regional liaising with other government line agencies including KFS, Kilifi County Government and local community to participate in tree replanting program activities (plant in alternative public places such as schools, water towers in Kenya, promotion of livelihood restoration activities such as agroforestry to PAP) ▪ Adaptive management approaches to project mitigation including: using existing utility transport corridors for transmission and distribution as much as possible to reduce on habitat alteration; undertaking selective clearance by removing tall woody species leaving saplings, for quick regeneration of vegetation along the wayleave; installing transmission lines above existing vegetation to avoid land clearing; re-vegetation of disturbed areas with native plant species; reduce proliferation of the invasive species through active periodic way leave management ▪ Ensure adequate project impacts monitoring to assess efficacy of management efforts.
Social Impacts	
HIV/AIDS and other Sexually transmitted diseases	<ul style="list-style-type: none"> ▪ Review activities of the proposed electric power transmission and distribution project to integrate with HIV/AIDS campaigns. ▪ Develop appropriate training, awareness content and implement awareness sessions for communities and workers on HIV/AIDs and other STDs, as well as GBV-SEA and sexual harassment at workplaces. ▪ Support HIV/AIDS and STD awareness and education. This can be done through the use of educative posters, offering free HIV/AIDS testing services and HIV/AIDS counselling in main towns situated along the RoW. ▪ Ensure an adequate and accessible provision of condoms to workers both male and female. ▪ Providing health services (treatment through standard case management in on-site or community health clinic). ▪ Promoting collaboration with local authorities to enhance access of workers families and the community to public health services. ▪ Liaise with relevant health agencies both at national and County level (Kilifi County) (Ministry of Health, National AIDS Control Council (NACC)), including NGOS (AHF Kenya), and CBOs (youth, men, and women groups) on awareness

	<p>creation</p> <ul style="list-style-type: none"> ▪ Periodic sensitization forums for workers on ethics, morals; general good behaviour and the need for the project to co-exist with the neighbours. ▪ Ensure sensitization of workers and communities on HIV/AIDs and other STDs including ethics, morals; general good behaviour in accordance to the Stakeholder Engagement Plan (SEP) <i>Annex 14 section 3.14</i> prepared under this project. COVID 19 prevention strategies in place during information disclosure (Hand washing facilities, physical distancing, use of masks, adherence to government restrictions) ▪ Adhere to and implement the HIV and AIDS Prevention and Control Act, 2006 and the Sexual Offences Act, 2006 and its amendment 2012. ▪ Contractors to develop a code of conduct and ensure its signed by all workers with physical presence on site as well as within the project area. The code of conduct will address worker and community interactions considering risks of GBV-SEA and sexual harassment in workplaces, HIV/AIDs and other STDs resulting from population/labour influx. Labour influx impacts will be managed through a Labour influx Management Plan (LIMP)– <i>Annex 14 section 3.13</i>. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from the PAPs and host community.
<p>Displacement of households and loss of businesses</p>	<ul style="list-style-type: none"> ▪ Resettlement and compensation of PAPs to align to the RPF developed under this project. ▪ Apply RAP compensation procedures in a transparent and consistent way to all persons affected by the project. ▪ Provide compensation at full replacement cost in accordance to project RPF; ▪ Where possible, avoid involuntary resettlement; and where avoidance is not possible, minimize involuntary resettlement ▪ Carry out timely-before project commencement, fair and adequate compensation as per Kenyan law, WB guidelines and provide assistance as appropriate, (allowances and livelihood restoration programs) to PAPs until such a time that their livelihoods and incomes are restored to pre-project levels or better; ▪ Implement internal and external monitoring to ensure the RAP is implemented appropriately; ▪ Identify individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status including women household heads, minority groups, OVCs, widows, and PLWD, and put measures in place to ensure they have equal access to project benefits and opportunities; ▪ Apart from cash compensation, consider other alternatives such as in-kind or land to land compensation especially for vulnerable people. ▪ Provide a choice of options to affected persons and consult with communities over their assets and resources; ▪ Provide opportunities to displaced communities and persons to derive development benefits from the project; ▪ Provide transitional support for a reasonable period of the time to enable PAPs whose livelihoods have been affected, to restore their income-earning capacity, production levels, and standards of living; ▪ Ensure displaced persons are informed of their full rights and entitlement to e.g. their right to compensation and compensation options, GRM <i>Annex 14 chapter 7</i>. ▪ Engage host communities as well, in addition to PAPs where appropriate.

	<ul style="list-style-type: none"> ▪ In addition to land owners, with formal rights the project identified squatters, absentee landlords, tenants, and those without formal land rights in the project area, and their compensation will align to the RPF developed under this project. ▪ A grievance redress mechanism (e.g. establishment of Grievance Committee) should be put in place to address all emerging complaints and grievances from the PAPs and project area community. ▪ Ensure that the displaced persons are: <ol style="list-style-type: none"> a) Informed about their options and rights pertaining resettlement and compensation b) Consulted on, offered choices among, and provided with alternatives; c) Provided prompt, adequate and effective compensation at full replacement cost for losses of assets attributable directly to the project in accordance to project RPF. d) Offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living; e) Provided with development assistance in addition to compensation measures
<p>Land acquisition (way-leave) and resettlement conflicts</p>	<ul style="list-style-type: none"> ▪ Resettlement and compensation of PAPs to align to the RPF developed under this project. ▪ A project Grievances Redress Mechanism (<i>GRM: Annex 14 in chapter 7</i>) including a GRM committee to be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level, to address all emerging complaints and grievances from the PAPs and project area community. ▪ If the Locational Grievance Redress Committee is not able to reach a resolution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters. ▪ Loss of land and crops will be compensated; the amount of compensation to be paid for private land will be as per the Kilifi County land registry rates provided by National Land Commission (NLC). However, the rates must be in line with the RPF developed for the project. ▪ A Resettlement Action Plan (RAP) study has been commissioned for the proposed project. The RAP has been carried out in accordance with the legal framework of the Government of Kenya, the requirements of the World Bank's OP 4.12 (Involuntary Resettlement) and RPF developed for this project for compensation purposes. ▪ Surveys have been conducted to establish which properties (land and buildings) lie within the RoW for compensation of PAPs. ▪ The exact number of PAPs affected and the types of properties affected should be determined for compensation. ▪ In addition, potential sites for the relocation of the PAPs should be identified, and an estimation of the total cost for the RAP obtained for compensation. <p>Where possible avoid involuntary resettlement and where avoidance is not possible, minimize impacts on people/households and livelihoods.</p>
<p>Agricultural produce loss / economic impacts</p>	<ul style="list-style-type: none"> ▪ Compensation to align to RPF developed under this project. ▪ Enumeration of destroyed crops through a Crop destruction Register in the presence of crop owner for compensation purposes ▪ Identify, address, and document concerns before construction begins. ▪ Use transmission structures with longer spans to avoid clearing the agricultural fields. ▪ Avoid or minimize access of construction materials through sensitive farmland by using existing roads or lanes utilized

	<p>by the farm owner.</p> <ul style="list-style-type: none"> ▪ Avoiding construction and maintenance activities during times when soils are saturated. ▪ Ensuring construction is scheduled after crop harvesting (when farms are largely with no produce).
<p>Land and property disputes exacerbated by the project / related to the project</p>	<ul style="list-style-type: none"> ▪ Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project. ▪ Where possible, avoid involuntary resettlement; and where avoidance is not possible, minimize impacts on people/households and livelihoods. Carry out timely (before project commencement), fair / just and adequate compensation as per the provisions in the RPF developed under this project,. Implement internal and external monitoring in collaboration with PAPs and other stakeholders e.g. county, local leadership, local NGOs etc to ensure the RAP is implemented appropriately; ▪ Map vulnerable households and individuals in the project area and implement specific interventions as appropriate to ensure equal benefits sharing. ▪ Proponent to engage local persons as Wayleave Officers to work with the contractor, to ensure the project is implemented smoothly. ▪ KETRACO to engage affected persons as outlined in the Stakeholder Engagement Plan (SEP) (Annex 14 section 3.16 – SEP). ▪ Where there are land disputes and lack of land ownership documents, which might delay compensation of PAPs. KETRACO should deposit compensation monies on an interest earning escrow account until such cases are resolved. The proponent will ensure that information regarding interest earning escrow account is timely disseminated to all PAPs in subsequent consultation forums, to avoid project delays and compensation disputes. ▪ Ensure relocation and compensation is in accordance to provisions within RPF developed under this project. ▪ Stakeholder engagement as per Stakeholders Engagement Plan (SEP) (Annex 14 section 3.14) and full information disclosure to PAPs as well as host communities where appropriate. Information disclosure should be done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive. ▪ A project Grievances Redress Mechanism (GRM: Annex 14 in chapter 7) including a Grievance Redress Committees. to be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level by Community Liaison Officers (CLOs), to address all emerging complaints and grievances from the PAPs and project area community. ▪ If the Grievance Redress Committee is not able to provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters. ▪ Acquisition of land for contractor's camp and worker accommodation, will require a land use and restoration agreement between community and contractor.
<p>Cultural impacts</p>	<ul style="list-style-type: none"> ▪ Avoid constructing substations or tower spotting by transmission line design changes in areas of archaeological or cultural heritage importance; in this case are a baobab tree in Konjora and approximate of 24 graveyards within the proposed RoW. Fourteen (14) graves in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location.

- Avoid spotting towers by changing transmission line design specifically on the three (3) churches grounds: Word Celebration Centre Church in Jilore Location, Sokoke PEFA Church in Nyari Location, and Barikiwani Church in Konjora location including any other areas of cultural or religious importance.
- Work together with local elders to identify and map any other physical cultural resource and other areas of cultural heritage importance, not identified during the ESIA process.
- Avoid any interference with all existing graves through design changes of the tower spans or using other appropriate alternative access routes during construction works or clearing access routes, since the graves hold cultural values and social ties to the bereaved.
- Use existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible.
- Work in close liaison with national agencies that deal with areas of archaeological and cultural importance such as the National Museums of Kenya (NMK) to offer guidance in chance finds procedure if unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication in relation to cultural resources with the host community.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from host community.

Conclusion and recommendation

The ESIA study has established that the proposed transmission line and substations are a worthwhile investment. The project will contribute significantly to the power stability, provide reliability, enhance security of supply to the existing demand hubs in Kilifi County and country at large which by extension will spur economic development; expand transmission capacity necessary to enhance electrification initiatives and reduce technical losses in areas currently served by long medium voltage lines.

The water quality analysis carried out from a sample point in River Sabaki near AP12 portrayed it does not conform to EMCA (Water Quality) Regulations, of 2006 standards for domestic water due to high suspended solids and presence of *Escherichia coli*. Presence of E-coli could be attributed to traces of untreated sewer finding its way into the river. During the baseline study and survey conducted, there were no significant noise polluting activities within the proposed project area. The highest reading recorded during the noise survey conducted along the proposed project area was at Kakoneni Village which had Leq of 51.9 dB(A). This was attributed to the village being adjacent to C103 Road hence the noise recorded could have been as a result of vehicular movement. The lowest measurements were recorded at Mpirani Primary School and Kafitsoni Village in Dida. The areas were generally silent with Kafitsoni in Dida recording Lmin of 35.3 dB(A).

The ESIA study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line and substation. The ESIA study identified approximately 603 registered landowners and 1083 structures will be affected along the Right of Way (ROW) of the proposed transmission line and and substation. In addition, an approximate 22 business structures mainly retail shops owned by households are also affected by the RoW. Further, some physical cultural resources such as a baobab tree in Konjora, and an approximate total of 24 graveyards were observed. The highlighted social -cultural and economic issues underpins the need for a comprehensive resettlement action plan (RAP) that would ensure compensation and livelihood restorations for projected affected persons.

The vicinity of the proposed Malindi – Kilifi high voltage transmission line include the high biodiversity Arabuko – Sokoke forest and the estuary of the Galana river. In these areas, migratory bird species including palaeartic, Madagascan and intra-African migrants which move sporadically across the continent have been recorded. Nonetheless, the proposed transmission line avoids the North Eastern side of Arabuko Sokoke Forest which has several migratory routes. However, of concern should be the route on the North Western side across Lango-baya location; used by birds migrating to and from the Tsavo-Taita Hills including Lake Jilore. Comprehensive mitigation measures have been suggested including provision of engineering solutions such as installations of bird diverters especially in identified migratory routes, installing visibility enhancement objects such as marker balls, bird deterrents, or diverters; building raptors platforms on top of towers for roosting and nesting; and maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, insulating energized parts and hardware. It is also recommended that the proponent should work with line agencies such as NMK, KWS and relevant NGOs such as Birdlife International and Nature Kenya for expert opinion and specialized studies (ornithological studies and bat survey).

Its worth to note that the proposed project is especially designed to veer off and avoid the Arabuko Sokoke forest with various distances at different intervals [AP6 (1.85km) to the East within Sokoke Location, AP12 (287m), AP13 (275m) and AP16 (465m) to the South]. The variance is due to the line avoiding other key areas such as migratory routes, Kilifi creek, densely populated areas, towns, and market centres. In addition, the proposed transmission route also follows existing roads as closely as possible. These design measures minimises

negative environmental, social and economic impacts. Nonetheless it is recommended that the proponent design team consider a wider berth to the ASF boundary than currently proposed since birds are not confined to buffer zones.

The ESIA study has established detailed environmental and social management plan (ESMP); and a comprehensive environmental and social monitoring plan(ESMmP); including standalone management plans for various aspects with mitigation measures for the anticipated impacts. The ESIA has recommended the need to ensure stakeholder engagement and grievances management is undertaken post ESIA (applicable to the pre-construction, construction, operations, and decommissioning phases). This should be attained through full implementation of the SEP (Annex 14 -section 3.16 SEP) and GRM (Annex 14 - chapter 7-GRM) which provides aspects post the ESIA, including principles, processes, and procedures to guide the project in engaging stakeholders and managing grievances throughout the project cycle. This ESIA also recommends that the proponent to disseminates the correct information on KETRACO's CSR policy and the cap for trees and crops allowed under the RoW guided by the RPF provisions to PAPs in consecutive stakeholder engagement sessions e.g., during the disclosure of the RAP and ESIA. An approximate budget to implement the ESMP and ESMmP has been calculated at Ksh 748,509,562.42. Some of the management plans are as follows;

- Atmospheric Emissions Management Plan
- Hazardous Substances Management Plan
- Spill Prevention and Countermeasures Management Plan
- Fire Risk Management Plan
- Noise Management Plan
- Surface Water Management Plan
- Waste Management Plan
- Biodiversity Management Plan
- Occupational Health and Safety Management Plan
- Emergency Preparedness and Response Management Plan
- Labour Management Plan
- Labour influx management plan
- Local Recruitment Plan
- Associated Facilities Management Plan
- GBV-SEA/SH management plan
- Stakeholder Engagement Plan
- Grievance Redress Mechanism
- CSR plan.
- Resettlement Action Plan
- Livelihood Restoration Plan
- Gender mainstreaming plan
- Chance Finds Procedure
- Resource Efficiency and Pollution Prevention and Control Plan
- External Communication Mechanism on Environmental Issues
- Community Health and Safety Plan

KETRACO has established a dedicated Project Implementation Team (PIT) to implement the Project. The PIT will include a project engineer, three site managers, one civil engineer, one accountant, one procurement expert, one socio-economist and one environmentalist. The PIT will be assisted by a consultant with experience in undertaking similar projects in the region. The PIT reports to the KETRACO Board Committee that will oversee project implementation, including the review of annual work plans and budgets. The consultant will prepare the technical specification and draft bid documents for transmission lines and substations. KETRACO will at all times remain responsible for the overall performance of all ESMPs.

Currently, KETRACO has 7 NEMA and Environmental Institute of Kenya (EIK) registered professionals, 12 socio-economists, 14 land surveyors, 3 safety officers and 14 land valuers/economists. The Environmental and Social division of KETRACO will monitor compliance of the project to applicable environmental and social standards whereas the KETRACO safety unit ensure safe work management and support the E&S unit to carry out contractor inductions. Its worth, noting that the KETRACO E&S department is well trained and capable to ensure monitoring of the project. From the consultant perspective KETRACO has the capacity to monitor implementation of the Environmental and Social Management Plan (ESMP) and Environmental and Social Monitoring Plan (ESMnP) developed for the project. The department also has the capacity to undertake training and build the capacity of the contractor to implement both the ESMP and ESMnP.

The proponent is committed to putting in place the proposed measures to mitigate the potential negative environmental, safety, health and social impacts associated with the life cycle of the proposed project. Taking into cognizant the anticipated project benefits to the Country on power stability, reliability and spur on economy; and the adequate mitigation measures provided for the impacts, it is within our expert opinion that the project be approved with full implementation of the established ESMP, ESMmP and respective management plans.

1 CHAPTER ONE: INTRODUCTION

1.1 Project Background information

The country's long-term development blueprint, the Vision 2030, aims at transforming Kenya into a globally competitive, newly industrialized, middle income and prosperous country. The growth objectives underpinning the Vision 2030 require a sustainable annual economic growth rate of more than 10% supported by industry, agriculture and services. Efficient, accessible and reliable infrastructure has been identified as an enabler for achieving sustained economic growth, development and poverty reduction by lowering cost of doing business and improving the country's global competitiveness.

The electricity sub-sector has adopted a 20-year rolling plan that will align the sector with the Vision targets. The plan provides the road map to meet the estimated power demand. Power generation sequence, necessary network upgrades and expansions required to adequately evacuate the generated power and efficiently meet the demand is proposed.

As part of the plan to achieve this target, the Government of the Republic of Kenya is seeking the financial support of US\$370 million from the World Bank for the Kenya Electricity System Improvement Project (KESIP). The proposed implementation period is 5 years, from 2019 to 2024. The project would aim to improve the power systems and electricity access and reliability, in line with the Kenya Growth and Development Strategy. The Project will be coordinated by The Ministry of Energy (MOE) and implemented by Kenya Electricity Transmission Company (KETRACO) and Kenya Power and Lightning Company (KPLC).

Project Development Objectives

The proposed project development objectives (PDOs) are:

- To increase the capacity of the transmission system and
- To increase access to electricity.

The achievement of development objectives will be assessed using the following key outcome indicators:

- Increase in nominal transmission capacity (MVA)
- People provided with new or improved electricity service (number)

Project Components

There are two implementing agencies for the project. KPLC, a public limited company listed on the Nairobi Stock Exchange will be responsible for implementation of the distribution network investment and associated technical assistance activities. KETRACO, a public sector company, will be responsible for implementation of the transmission line investment and associated technical assistance activities. MOE will be responsible for implementing the technical assistance component while also coordinating overall project activities.

The project comprises of three focused components but KETRACO will be involved in component 2 only. The various components have been elaborated below:

Component 1- Access Expansion and Distribution Network Strengthening (approximately US\$ 235 million equivalent): The proposed project will aim to support mostly grid densification and intensification and some grid expansion to reach about 120,000 new connections benefiting about 450,000 people. The exact lines and substations to be supported under the component will be determined during project implementation. The component has three sub components: (i) new medium and low voltage infrastructure to help address system bottlenecks for reducing losses, improving reliability, and create capacity to support last mile electrification (US\$85 million); ii) connections of new consumers through Last Mile electrification (US\$130 million); and (iii) Slum Electrification to connect consumers living in informal settlements (US\$20 million). The component will be implemented by KPLC.

Component 2: Transmission Network Expansion and Strengthening (Approximately US\$120 million equivalent): This component will be implemented by Kenya Electricity Transmission Company Limited (KETRACO). The component is expected to introduce high voltage network to areas that have been serviced by long medium voltage lines to reduce technical losses and reinforce the existing medium voltage networks. The component will also increase transmission adequacy for interconnecting different regions of the country and improve reliability of power transmission and ensure compliance with N-1 contingency criteria. KETRACO has identified 6 sub-projects involving 132 kV and 220 kV transmission lines and associated substations and construction of three new 400/220kV substations estimated at US\$298 million. The exact lines and substations that can be supported within the funding allocation for this category under the proposed Project will be determined later based on priority, readiness, and environmental and social screening and assessment. The component is also expected to support an owner's engineer (firm), which will help KETRACO with preparation of design, bidding documents, bid evaluation, and project supervision during implementation phase. The funding requirement for the six (6) transmission lines and three (3) substations is around US\$298 million. With the funding allocation available (US\$120 million), only 2 or 3 lines and 1 or 2 substations can be supported under the Project.

Component 3: Technical Assistance and Capacity Building: (Approximately US\$15 million equivalent): The component will support KETRACO to carry out a detailed feasibility study in accordance with the Public Private Partnership (PPP) law to determine the technical, financial, legal, social and environmental feasibility of piloting development of some identified transmission lines under PPP arrangements, including establishing the value for money for PPP. The initial phase of the feasibility study will start soon with support from an on-going International Development Association (IDA) credit (Eastern Electricity Highway Project, P126579) while the second phase will be supported under the proposed Project. Implementation of the public-private partnership (PPP) pilot will be supported by Africa50 and International Finance Corporation (IFC) Advisory who are currently in discussion with KETRACO. The feasibility study will be supervised by IFC on behalf of KETRACO and closely coordinated with Africa50 to ensure a consistent approach for all the 5 lines included in the pilot PPP. The preparation of the relevant feasibility-stage safeguard instruments (ESIA and RAP, as appropriate) will also be supported under the Project.

The component will also include sector studies, capacity building, and training activities to help sustain and enhance the policy, institutional and regulatory arrangements and reforms of the Government of Kenya (GoK) as well as gender and citizen engagement. Some of the studies to be supported under the component will include optimal power market design, system operation and dispatch guidelines for the Energy and Petroleum Regulatory Authority (EPRA) successor for Energy Regulatory Commission (ERC) under the Energy Act, 2019. The capacity building will also include training and activities to strengthen governance, management, technical and operation capacity of the sector agencies including the KPLC, KETRACO, EPRA (*former ERC*), KenGen, Geothermal Development Company (GDC), and Rural Electrification and Renewable Energy Corporation (*former Rural Electrification Authority (REA)*). The Ministry of Energy (MOE) will implement this component in coordination with the sector agencies.

Project Beneficiaries

Project beneficiaries include households and businesses that will be connected to the electricity network for the first time and whose use of electricity will replace consumption of kerosene and other fuels for lighting and will enable productive activities thus contributing to economic growth. A second group of beneficiaries will be the existing electricity consumers, including business customers of KPLC for whom the quality and reliability of electricity service will improve. Businesses suffer loss of sales, damage to equipment, and additional cost of electricity supply from standby generators when grid electricity supply is unstable. By providing public financing for the last mile electrification, the project will help KPLC maintain its commercial viability while meeting the GoK social objective of universal access to electricity. By building capacity for KETRACO in PPPs and developing a cost reflective tariff initially for the PPP

payments, and later for a gradual transition to full cost-recovery tariff, the project will help KETRACO on its path towards a state-of-the art transmission company able to leverage commercial financing for developing transmission infrastructure in Kenya. Leveraging private sector investment in the development of transmission assets through PPPs arrangement will benefit GoK by releasing the scarce public resources for investments in other priority areas including the social sectors where opportunities for attracting private financing is limited.

The client planned to conduct detailed design, environmental and social studies on selected priority projects for development. The transmission lines and substation were divided into three separate packages (elaborated in chapter 2) for ease of work execution. This Environmental and Social Impact Assessment (ESIA) study was undertaken by Africa Waste and Environment Management Centre (AWEMAC) is specifically for 76KM, 220 kV Malindi –Kilifi Transmission line and associated substations under the main project’s Package 3.

1.2 Objective of the ESIA Study

The principal objective was to identify the potential positive and negative environmental and social impacts expected during the establishment and operation of the proposed power transmission project with the aim of proposing the possible mitigation measures. This was done to ensure that such a development does not negatively impact the environment in terms of social aspects; human health and safety; and physical (land, water, plants and animals) state of the area.

The exercise was carried out in accordance with the World Bank Operational policies triggered under this project, I.e. Environmental Assessment (OP4.01), Natural Habitats (OP4.04), Forestry (OP 4.36), Indigenous Peoples (OP4.10), Involuntary Resettlement (OP 4.12) and Physical Cultural Resources (OP4.11) together with relevant Kenyan environmental legislation and regulations that includes Environmental Management and Coordination Act (EMCA) Cap 387, and the Constitution of Kenya, 2010. KETRACO’s Environmental and Socio Management Framework (ESMF) was also key in undertaking of the Environmental and Social Impact Assessment (ESIA) study whereas the Resettlement Policy Framework (RPF) was key in the resettlement action plan (RAP). The Vulnerable and Marginalized Groups Framework (VMGF) was critical during the social assessment.

In brief, the specific objectives of carrying out the Environmental and Social Impact Assessment (ESIA) for the proposed Malindi-Kilifi 220kV TL and associated substation in Kilifi were to:

- i. Describe the proposed project (construction, operations and decommissioning), including the technology to be used, the location of towers (transmission lines) or layout (substations), offsite facilities, geographic location and areas of traverse and construction timelines
- ii. Discuss the policy, legal, and administrative frameworks within which the ESIA is carried out. Most particularly review; Government of Kenya (GoK) requirements and procedures for the management of environmental and social issues, including labour, health and safety requirement; World Bank Safeguards Policies, KETRACO policies and analyse the gap between the applicable World Bank Safeguards Policies and Kenyans laws.
- iii. Collect, collate and present baseline information (Physical environment; Biological environment and Socioeconomic and cultural environment) on the existing environmental and socioeconomic characteristics of, within and around the project site/area of influence.
- iv. Analyse and describe all significant deviations from the environmental and socioeconomic baseline that might be caused by the project, including environmental and social impacts, both positive and negative, the direct, indirect, cumulative, irreversible, short-term and long-term effects anticipated; and identify mitigation measures and any residual negative impacts that cannot be mitigated.
- v. Undertake analysis of alternatives by systematically comparing feasible alternatives to the proposed transmission lines and associated and substation facilities, such as alignment,

- technology, design, and operation including project site, design and technologies and reasons for preferring the proposed site, design and technologies;
- vi. Carry out public participation and consultations to collect the concerns, expectations, and opinions of affected, concerned and interested stakeholders. In addition ensure disclosure of the ESIA report in a manner, form, and language that is understandable, and accessible, to enable full public participation.
 - vii. Prepare a comprehensive Environmental and Social Management Plan (ESMP) that consists a set of mitigation, monitoring, and institutional measures to be taken during implementation and operation to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.
 - viii. Establish a technical summary of the proposed project, its environmental setting, and highlight key findings, recommended mitigation measures, and monitoring procedures

The role ESIA study was to identify significant environmental and social impacts associated with the proposed power transmission project projects and recommend appropriate mitigation measures for integration in all phases of the projects cycle including project planning, design, implementation (construction and operation) and follow-up (monitoring). The ESIA generated an ESMP that described in detail the mitigation measures to be carried out, costing, scheduling and responsibility of such measures, and a detailed monitoring process and its schedule.

1.3 Overall Scope of Work

The consultant undertook investigations on social aspects, economic activities, and conservation of natural resources, historical and anthropological heritages, public consultations and disclosures. The “Integrated Environmental Assessment” entailed the following:

- **Environmental Impact Assessment:** This involved an examination, analysis and assessment of planned activities with a view to ensure environmentally sound and sustainable development. It entailed evaluation of the proposed project's potential environmental risks and impacts in its area of influence; examination of project alternatives; identification of ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and included the process of mitigating and managing adverse environmental impacts throughout project implementation.
- **Archaeological Assessment:** This included inventory collection and evaluation of archaeological resources, and the assessment of potential impacts from the proposed power transmission project.
- **Social Impact Assessment:** This entailed analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of the proposed project and any social change processes invoked by those interventions.
- **Biodiversity Impact Assessment:** involved identifying, measuring, quantifying, valuing and internalizing the unintended impacts (on biodiversity) of development interventions.
- **Health Impact Assessment:** This involved a combination of procedures, methods, and tools to assess the potential health impacts of the proposed project on nearby populations, in order to recommend mitigation measures.
- **Cultural Impact Assessment:** This entailed a full inventory of the cultural heritage resources; analysis of alternative sites, route and designs that would eliminate or reduce the adverse impacts; and development of a plan to mitigate damages and manage the cultural heritage.
- **Visual Impact Assessment:** This included analysis of the potential visual impacts to the landscape and landscape views resulting from the proposed development and

proposing mitigations to the negative effects. Visual components that were analysed include appearances and scenes. The visual impacts depended on how the new development will relate to the surrounding landscape with regards to form, line, colour, texture, variety, intensity, perceptions, and associated factors.

- **Cumulative Impact Assessment:** This entailed analysing the potential impacts and risks of proposed power developments in the context of the potential effects of other human activities and natural environmental and social external drivers on the chosen valued environmental and social components over time; and proposing concrete measures to avoid, reduce, or mitigate such cumulative impacts and risk to the extent possible.

These analyses also included reviews of the respective relevant existing rules and procedures to manage the environmental and social aspects affected by the proposed project. The scope of the assessment covered impacts directly or indirectly associated with the construction and operation /routine maintenance activities of the proposed project, supply of construction materials and other accessories. The consultant used both conventional and participatory approaches in identifying the potential environmental and social impacts and mitigating measures for the proposed project. In pursuing the exercise in accordance to the Environmental (Impact Assessment and Audit) Regulations, 2003, the consultant:

- a) Identified the anticipated environmental impacts of the project and the scale of the impacts;
- b) Identified and analysed alternatives to the proposed project;
- c) Proposed mitigation measures to be taken during and after the implementation of the project; and
- d) Developed an environmental and social management plan (ESMP) with mechanisms for monitoring and evaluating the compliance and environmental performance which shall include the cost of mitigation measures and the time frame of implementing the measures.

1.4 Purpose and Terms of Reference

The purpose and terms of reference developed for this project were to assess the environmental and social impacts that may arise during the construction, operational and decommissioning phase of the proposed 76KM, 220kV Malindi-Kilifi double circuit line and new 220/132kV substation at Kilifi. Africa Waste and Environment Management Centre (AWEMAC), herein referred to as the, 'the consultant', on behalf of the proponent / client, KETRACO conducted the ESIA study.

1.5 Kick-off meetings and Commencement Date

KETRACO organized the Kick-off meeting for the assignment on 9th May 2019. This served as a platform for the team of experts to meet the client and outline working arrangements and key factors for success. It served as an avenue to establishing synergies for the assignment. The meeting was also used to discuss the general scope of the assignment based on the terms of references (TOR). The avenue was also used to seek and request for the project documents, information and contact persons' details needed to undertake the assignment. The consultant also enquired on the project timelines, deliverables and program.

An inception meeting was also conducted with the World Bank on 13th May 2019. The meeting was used to address expectation of the World Bank on the deliverables of the assignment. The consultant also used the avenue to emphasize on data required to commence the project. The commencement letter was issued by the client on 16th May 2019.

1.6 Methodology for the study

Given the scale and the complexity of the proposed project, a full Environmental and Social Impact Assessment study was undertaken to ensure comprehensiveness and completeness of the assessment. The study was conducted as guided by the Environmental Impact Assessment/ Audit Regulations of 2003. The general steps that were followed during the assessment included:

- Environmental screening, in which the project was identified as a high risk project requiring Environmental Impact Assessment study under Amendment of the Second Schedule of EMCA 1999 (30th April 2019), and the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019. As per WB OP 4.01 the proposed project was classified as Category A since it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented.
- Environmental scoping that provided the key environmental issues, desktop studies and interviews.
- Physical inspection of the proposed right of way and surrounding areas
- ESIA Public participation and stakeholder consultation via the use of public meetings, key stakeholders meeting, household interviews, questionnaires and Baraza's targeting PAPs.
- Data analysis; and
- Report preparation.

The report approach has been structured based on two key areas; Environmental impact assessment (EIA) section 1.7 and Social impact assessment (SIA) in section 1.8.

1.7 Environmental Impact Assessment (EIA)

The environmental assessment aimed at examining, analysing and assessing the proposed project activities with a view to ensuring environmentally sound and sustainable development systems.

1.7.1 Environmental Screening

A screening exercise was conducted in the period of May to June 2019 to determine whether an environmental impact assessment would be required and what level of assessment was necessary. This was done in line with the requirements of the EMCA (Cap 387), specifically the second schedule which categorizes projects into; Low Risk Projects; Medium Risk Projects and High-Risk Projects. The World Bank *Operational Policy 4.01, Environmental Assessment*, which uses four categories (A, B, C, or FI) for its projects depending on the type, location, sensitivity and scale of the proposed project; as well as the nature and magnitude of its potential impacts was also considered.

The screening exercise identified that the project is listed in the *Amendment of the Second Schedule of EMCA 1999 (30th April 2019)*, and *the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019* as a High Risk Project in power and infrastructure projects, specifically article (a) *high voltage electrical transmission lines*; for which an Integrated Environmental and Social Impact Assessment study report is prepared. As per WB OP 4.01 the proposed project is classified as *Category A* since it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may also affect an area broader than the sites or facilities subject to physical works.

1.7.2 Environmental Scoping

The scoping exercise was carried out during the months of June 2019 to August 2019 where key issues identified during screening were further investigated through desktop analysis and key stakeholders' engagement to ascertain whether additional information was needed to evaluate baseline conditions and potential impacts within the proposed project corridor. The desktop evaluation included reviewing applicable environmental and social data collected from external sources with published information. In addition to desktop review, primary data was collected by field studies conducted by environmental and social experts. The key objectives for the Scoping phase were: -

- To identify stakeholders and inform them of the proposed project and the ESIA process;
- To provide stakeholders with the opportunity to identify any issues and concerns associated with the proposed project;
- To identify areas of likely impact and environmental and social issues that may require further investigation in an ESIA (including the initial results of the screening phase);

- To determine the Terms of Reference (ToR) for specialist baseline and impact assessment studies in response to initial stakeholder input.

The following were the key environmental and social issues identified during the scoping exercise within the proposed project transmission route:

a) Environmental Issues

The Project corridor has some indigenous and exotic tree species, especially at AP1, just at the outskirts of the nearby homesteads at Kwa Mchina. The proposed line will traverse a marshy wetland (flood zone for River Galana/Sabaki) at AP 12 in Mongotini village, off the Athi-Galana-Sabaki River.

The key wildlife along the project corridor include rabbits and baboons mainly found in Arabuko-Sokoke forest and its dispersion areas within the Loop in, Loop out section of the project corridor. There is a demarcated land owned by Weru Group Ranch for the proposed Malindi Solar Park adjacent to the loop section. The solar park project has had issues of ownership; hence, it hasn't taken off.

The Project transmission route is also adjacent to Arabuko-Sokoke forest at AP 14 and AP 15. The forest has about 240 bird species, 261 butterflies, 79 amphibians, 52 mammals and 600 recorded plant species. The Clarke's Weaver is completely endemic to the forest and the Dakatcha Woodlands to its north west, while the Sokoke Scops Owl is endemic to the Forest. The Sokoke Pipit, and East Coast Akalat, Amani Sunbird and Spotted Ground Thrush are found in the Forest and are rare and/or globally threatened. These mammals are also endangered species: Aders Duiker, Sokoke Bushy Tailed Mongoose, and Golden-rumped Elephant Shrew. Therefore, precaution is essential during the design and construction to ensure that the potential impacts of the project to the Forest and its surroundings are minimized or mitigated.

a) Social Issues

The scoping exercise established that the proposed project would result to displacement of people, and property (including businesses) and lead to habitat alteration along the project corridor. It was noted that most of the people residing along the transmission route were from the Mijikenda ethnic community with a significant proportion being Agiriamas. Other Mijikenda tribes in the project area are Chonyi, Kauma, and Rabai. The Agiriamas mainly practice mixed farming. Some of the crops grown include maize, cashew nuts and beans. They also rear livestock such cows and goats. The residents also practice some small-scale trading in commodities such as petrol, onions, tomatoes, and cabbages. The community living in Sosoni and Mitsedzini village, adjacent to the loop section and AP 7&8 abstract water from a community water project that was supported by ActionAid running from Baricho area to Kwa Dadu area. Most of the settlements/residential areas along the proposed transmission line corridor and substation get water from Kilifi-Mariakani Water and Sewerage Company (KIMAWASCO) and established community water points.

Consultations and interviews were held with key stakeholders including governmental agencies and officials (NEMA, Ministry of Energy, County government of Kilifi, Department of Lands, Kenya Forest Service (KFS), Kenya Wildlife Service (KWS), Kenya Forest Research Institute (KEFRI), Non-Governmental Organisations (NGOs) such as Nature Kenya, Friend of Arabuko Sokoke, managers (Dodoma Technical Institute), design engineers and representatives of local communities (chiefs, assistant chiefs, village elders), to discuss the scope of the proposed studies including alternatives, the criteria for the impact assessment and determine if additional baseline data would be required for a comprehensive analysis.

The scoping exercise established the need for an ESIA study to be undertaken as a result of the environmental and social issues that required further assessment and mitigation measures. This prompted drafting of the proposed transmission line's and substation Terms of Reference (ToR). The ToR was prepared as guided by the Environmental (Impact Assessment and Audit) Regulations, 2003. It was submitted to Authority in the prescribed form on 17th July 2019 and approved by NEMA on 19th July 2019 allowing for public engagements with the stakeholders and

Project Affected Persons (PAPs).

1.7.3 Desktop Study

Key documents for the assessment were reviewed, these included; the nature of the proposed activities, project documents, designs policy and legislative framework as well as the environmental setting of Kilifi County among others. Some of the key documents that were reviewed included: -

- World Bank's Operational Policy on Environmental Assessment (OP4.01);
- World Bank's Operational Policy on Natural Habitats (OP4.04);
- World Bank's Operational Policy on Physical Cultural Resources (OP4.11);
- World Bank's Operational Policy on Forestry (OP 4.36)
- World Bank's Operational Policy on Indigenous Peoples (OP4.10)
- World Bank's Operational Policy on Involuntary Resettlement (OP 4.12)
- World Bank Environment Health and Safety (EHS) Guidelines;
- KETRACO -Kenya Electricity Systems Improvements Project (KESIP) Environmental and Socio Management Framework (ESMF); Resettlement Policy Framework (RPF); and Vulnerable and Marginalized Groups Framework (VMGF)
- Applicable Multilateral Environment Agreements (MEAs);
- Project designs.

The Consultant also reviewed key policies, plans, legislation and institutions relevant to the energy sector in Kenya. Some of these are:

a) Policies:

- Big four Agenda, 2017
- Kenya Vision 2030
- The National Land Use Policy (Sessional Paper No.1 of 2017)
- National Environment Policy, 2013
- National Water Policy, 2012
- The National Climate Change Response Strategy (NCCRS), 2010
- Kenya National Policy on Gender and Development (NPGD), 2019
- The National Biodiversity Strategy and Action Plan (NBSAP) 2000
- National Forest Policy, 2014
- HIV/AIDS Policy of 2009

b) Plans:

- Kilifi County Integrated Development Plan, 2018-2022
- Least Cost Power Development Plan, 2017-2037

c) Legislations:

- The Constitution of Kenya, 2010;
- Environmental Management and Coordination Act (EMCA, Cap 387) and relevant subsidiary legislation;
 - Environmental Impact Assessment and Audit Regulations, 2003, amended 2019
 - Water Quality Regulations, 2006
 - Waste Management Regulations, 2006
 - Air Quality Regulations, 2009
 - Biodiversity Regulations,
- Climate Change Act, 2016;
- County Governments Act, No. 17 of 2012; together with its Amended Act, 2016
- Employment Act, No 11, 2007;
- Water Act, 2016;
- HIV and AIDS Prevention and Control Act, 2006;
- National Authority for the Campaign Against Alcohol and Drug Abuse Act, 2012;
- Occupiers' Liability Act (Cap 34);
- Persons with Disabilities Act, 2003;

- Noise Regulations, 2009
- Building Code, 2000;
- Civil Aviation Act No. 21 of 2013;
- Energy Act, 2019;
- Forest Conservation and Management Act, No. 34 of 2016;
- Kenya Roads Act, 2007;
- Land Act, 2012;
- Land Registration Act, 2012;
- National Museums and Heritage Act, No. 6 of 2006;
- National Land Commission Act, No. 5 of 2012;
- Occupational Safety and Health Act, No. 15 of 2007;
- Penal Code Act (Cap 63);
- Physical and Land Use Planning Act, 2019;
- Public Health Act (Cap 242);
- Public Roads and Roads of Access Act (Cap 399);
- Protection of Traditional Knowledge and Cultural Expressions Act, 2016;
- Sexual Offences Act, 2006;
- Standards Act (Cap 496);
- Work Injury Benefits Act, 2007;
- Way-leaves Act (Cap 292);
- Wildlife Conservation and Management Act, No. 47 of 2013.
- Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012,

1.7.4 Household to Household / Village to Village Visits

Household to Household / Village to Village visits were conducted with the key objective being to create sensitization and awareness about the proposed project. The household to household visits targeted the local community along the proposed right of way (RoW). Village to Village targeted the village elders, and leaders under jurisdiction of every 10 households popularly known as ‘*Wazee wa Nyumba Kumi*’. This ensured all the villages along which the RoW had traversed were briefed of the proposed project and impending public awareness and consultations.

1.7.5 Project Route Site Assessment

Transect walks along the RoW were undertaken with the key objective meant for physical inspections of the project route characteristics and the environmental status of the surrounding areas to determine the anticipated impacts. This was achieved by walking along the project route to collate baseline information such as ecological assessment and undertake sampling of key environmental parameters. An ESIA checklist was developed to capture all the environmental and social issues that were studied into detail (Annex 1).

1.7.6 Stakeholder Engagement and Public Participation

To ensure adequate public participation in the ESIA process, questionnaires were administered to the project route neighbours and the information gathered was subsequently synthesized and incorporated into the ESIA Study Report. In order to ensure full public participation, ESIA public meetings, key stakeholders meeting, baraza meetings targeting PAPs and meetings with Vulnerable Persons were further convened. This was done in order to incorporate the concerns and views of all individuals in the project neighbourhood.

The ESIA Public meetings: A total of five (5) ESIA public meetings were held as follows: at Mongotini Secondary School Ground’s in Goshi Location, Chief’s Office Grounds / Camp in Jilore Location, DO’s/Chief’s Office Grounds Bao Lala in Lango-Baya Location, Mgadini Football Grounds (near Fumbini Primary School) and Konjora Primary School Grounds both in Kilifi Township Location. The venues’ selection was also based on ease of site accessibility, population, and renown venues for holding meetings in the respective project alignment. Public meeting notices were delivered to respective persons, local leaders/elders, local community members, organisations and/or institutions seven (7) in advance. The participants at the meeting were briefly

sensitized about the PAPs compensation procedures and encouraged to attend the scheduled RAP meetings for detailed information.

Baraza meetings with PAPs: As per the draft RAP report for Malindi Kilifi, eight (8) meetings targeting the PAPs were held attracting a total of 866 attendants. The meetings with PAPs were held in the following areas: Jilore Chiefs Office Camp in Jilore Location; Lango Baya Chiefs Camp – Makobeni Sublocation and Assistant Chiefs Office Grounds – Malanga Sublocation both in Lango Baya Location; Mgandini Football Grounds (near Fumbini primary school) – Konjora Sublocation and Konjora primary school– Konjora Sublocation both in Kilifi North Location; Dida Primary School in Dida Location and Mongotini primary school in Goshi Location. The selection of the meeting venues was done in consultation with the local leadership including village elders, assistant chiefs and Senior chiefs. Further, the eight (8) venues’ selection were based on ease of accessibility by PAPs, PAPs population in the respective areas – sublocation and location, and renown venues for holding meetings in the respective project areas. All the key locations, sublocations and villages with high concentration of settlements and households clusters along proposed line were covered during the PAPs consultation meetings.

Vulnerable Individuals and Households: Vulnerable individuals and households meetings: A total of six (6) meetings targeting vulnerable persons were also held along the proposed transmission alignment. The meetings were held at; Chief’s Office Grounds in Jilore Location, Chief’s Office/DO’s Grounds in Longobaya Location, Mgandini Football Grounds (Fumbini Primary School) in Kilifi Township Location, Malanga sub-chiefs’ Grounds - Malanga sublocation -Lango Baya Location, Dida Primary School – Dida Location and in Sub Chiefs’ Camp in Mongotini Sublocation – Goshi Location. Local chiefs, village managers were used to inform the vulnerable groups of the planned meetings as well as the venues. In addition, ESIA Public meetings and RAP PAPs meetings had been used to communicate information to the target Vulnerable Individuals and Households. Vulnerable individuals and households. Amongst those in attendance were various Vulnerable Individuals and Households. Vulnerable individuals and households. Vulnerable individuals and households such as people living with disabilities, elderly, and widows.

A key stakeholders meeting was also undertaken in Kilifi County at Mnarani Beach Club. The meetings held have been described into details including their tabular presentations in chapter five of this report. Further, key stakeholder consultations were conducted to incorporate views from key government institution such as the County Government, amongst others as described into detail in chapter five of this report. Interview questions aimed to obtain information on animal biodiversity in the areas, water resources in the areas and likely impacts of electricity transmission line and substation on biodiversity and water resources. Key informant interviews targeted the following 5 main organizations involved in biodiversity conservation within the Malindi – Kilifi area: KEFRI, Nature Kenya, KWS, KFS and Arabuko – Sokoke Forest Adjacent Dwellers Association (ASFADA).

1.7.7 Environmental Impacts

During the ESIA study the following impacts were analysed in accordance and addition to OP 4.01 - Environmental Assessment guidelines. Key impacts assessment included; Biodiversity Impact Assessment; Archaeological Impact Assessment; Visual Impact Assessment; and Cumulative Impact Assessment (CIA)

The ESIA study also covered into detail the key environmental parameters which included; Air Quality Assessment; Water Quality Assessment and Noise Level Assessment

1.8 Social Impact Assessment (SIA)

The Social Impact Assessment (SIA) was informed by the need to systematically integrate social issues in the planning and implementation of the proposed Malindi – Kilifi electricity transmission line and substation project. It aimed to improve the quality and sustainability of the proposed project, support and strengthen national requirements, and enhance project acceptance and local ownership. Undertaking the SIA helped to identify and manage potential adverse social impacts

of the proposed project that may cause or contribute to project delay, and to maximize benefits to local communities and other groups. Further, the SIA assisted to analyse and assess the anticipated social impacts of the project and develop a framework for stakeholder participation in the design and implementation of the project.

The SIA provided a framework for prioritizing, gathering, analysing, and incorporating social information and participation into the design and delivery of the proposed power transmission project. The SIA ensured that the proposed project interventions; are informed and consider the key relevant social issues and; incorporate a participation strategy for involving a wide range of stakeholders.

1.8.1 Goals and Objectives

The goal of the SIA exercise was to incorporate an analysis of social issues and develop a framework for stakeholder participation in the design and implementation of the Malindi-Kilifi electricity transmission line and substation projects.

The objectives were to:

- i. Identify and map project stakeholders;
- ii. Identify and prioritize social issues associated with the project;
- iii. Mitigate negative impacts on communities or individuals;
- iv. Enhance benefits to those affected;
- v. Avoid delays and obstruction in gaining development approval;
- vi. Act as a precautionary measure to avoid costly errors in the future and;
- vii. Build trust and cooperation between community and stakeholders and the developer that is necessary for successful implementation of the proposed project and its sustainability.

1.8.2 Methodology for Social Impact Assessment

A triangulated methodological approach was used in the collection of data and engagement with sub project stakeholders. Qualitative and quantitative approaches were utilized in a participatory way. Data collection incorporated both primary and secondary sources. Secondary data were obtained through document reviews, while primary data were collected through socio-economic survey in the project area, stakeholders and public meeting consultations, key informants, and focused group discussions as well as field observations were undertaken. SIA adopted mixed methods (qualitative and quantitative) data gathering and analyses as follows:

- Desktop/document reviews and analyses;
- Social vulnerability mapping (group level information analyses based on census block and county integrated development plans (CIDPs));
- Socio-economic surveys (Key informant interviews, household surveys, focus group discussions);
- Social vulnerability analysis (SVA) [Low income/poverty; Elderly/very young; Disabled; Female-Headed Households; Minorities, Occupants of temporary structures/renters; and Transient/Homeless/Landless populations;
- Social Impact Analyses (community impacts, cultural impacts, health impacts, lifestyle impacts, quality of life impacts); and
- Public consultations/participatory methodologies

1.8.2.1 Desktop/document reviews

Secondary data was obtained from relevant documents such as relevant social policy and legal framework in Kenya. Some of the documents reviewed comprised of; Constitution of Kenya (2010), Kenya Vision 2030, National Social Protection Policy (2011), Gender Policy (2011), Kenya National Youth Policy (2016), National Land Policy (2017), National Policy for Older Persons and Ageing (2009), the draft disability policy, and the Household Economic Survey (2018). Other documents included: NSNP Environmental and Social Safeguards Assessment (ESSA), VMGF for

Cash Transfer for Orphans and Vulnerable Children (CT-OVC) Program and Kilifi County Integrated Development Plan 2018-2022.

1.8.2.2 Project Route and Substation Area Assessment

Field visits were undertaken to conduct physical inspections of the social characteristics and the social status of the surrounding community and determine the anticipated impacts along the proposed transmission line route and substation. A comprehensive ESIA checklist was developed to capture all the environmental and social issues that were studied into detail (Annex 1).

1.8.2.3 Socio-economic Survey

A household social impact assessment questionnaire was administered to household heads and business owners in the project area. The questionnaire generated quantitative information on various aspects of social life in the project area. It captured information, particularly: administrative location, household characteristics, sources of livelihood, types of housing and ownership, economic activities, religion, sanitation, education, priorities among others. A team of enumerators were trained to administer the social-economic survey questionnaires (See annex 2 for the sample socio-economic survey questionnaire).

1.8.2.4 Stakeholders engagement , Consultation and Public Participation

Stakeholder engagement and consultations were undertaken to fully inform the communities about the proposed project. The objectives were aimed to:

- Establish a participatory process for identifying potential impacts and benefits of the project;
- Accord the locals in a fair and culturally appropriate way, a chance to be engaged and determine how they wish to be involved throughout the project phase;
- Solicit the support of the communities from the proposed project area;
- Determine the nature of the local power structure and document the procedures for the entry and access into the community.
- Obtain accurate and detailed data on local livelihoods, customs and historical traditions for information to project partner agencies and agents.
- Determine through careful consultation with the community members the preferred mechanisms for information provision and consultations and representatives in decision making.

In order to ensure adequate public participation in SIA, questionnaires were administered to the proposed project route neighbours. The information gathered was subsequently synthesized and incorporated into the ESIA Study Report.

The Public baraza meetings (chapter 5) were done in order to incorporate the concerns and views of all individuals in the project neighbourhood. Further, key stakeholder consultations were conducted to incorporate views from key institutions such as the County Government of Kilifi; Local Community Based Organisations (CBOs)/Non-governmental Organisations (NGOs); School Heads and Local Administration (Chiefs and Assistant-Chiefs).

1.8.3 Social impacts

The main types of social impacts anticipated by the proposed transmission line and substation were grouped into five overlapping categories as follows:

- *Lifestyle Impacts* – on the way people behave and relate to family, friends and cohorts on a day-to-day basis;
- *Cultural Impacts*– on shared customs, obligations, values, language, religious belief and other elements which make a social or ethnic group distinct; this included: determining whether the proposed project passes near physical cultural resource sites recognized by the National Museums of Kenya (NMK).
- *Community Impacts* – on infrastructure, services, voluntary organizations, activity networks and cohesion;

- *Quality of life Impacts* – on sense of place, aesthetics and heritage, perception of belonging, security and livability, and aspirations for the future;
- *Health Impacts* – on mental, physical and social well-being. This also entailed project-related activities that may directly, indirectly, and even cumulatively change community exposures to environment-based health risks, such as annoyance and noise and Electric and Magnetic Fields (EMF), and exposure to hazardous materials or conditions.

1.9 Data Analysis, Reporting and Documentation

Upon data collection, potential environmental and social impacts (both positive and adverse) were predicted based mainly on concerns raised by the public, stakeholders and expert observations on the ground and available tools. The magnitude, significance, and acceptability of predicted impacts were evaluated with a view to determine whether observed adverse impacts were significant enough to warrant mitigation. Impacts were further screened for occurrence and significance of residual (those which cannot be mitigated satisfactorily) and cumulative impacts with a view to provide a basis of making recommendations on the way forward for the project.

The ESIA study report compilation was a continuous exercise throughout the process until final submission. The study report was compiled from the field work and desktop review findings in accordance with the World Bank Environmental and Social Safeguards guidelines, KETRACO Environmental and Social Management Framework, relevant legislations and guidelines issued by NEMA for such works.

1.10 ESIA Organization and Structure

The Team Leader coordinated the day-to-day functions and other related institutional support matters. The organogram of the study team and team structure was as presented below:

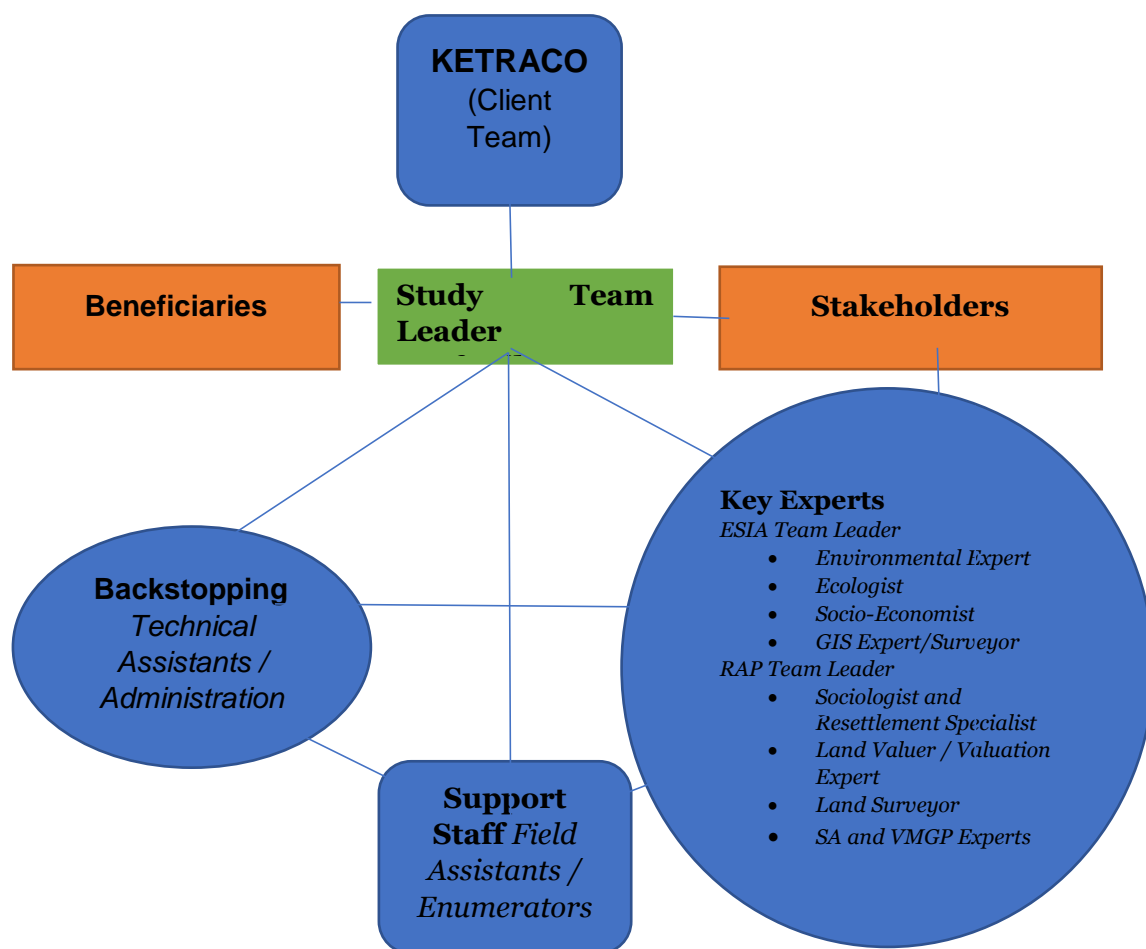


Figure 1-1 The Study team structure
Source – AWEMAC

1.11 The ESIA report structure

The ESIA report is concise and limited to significant environmental and social issues. The main text focuses on findings, conclusions and recommended actions, supported by annexed summaries of the data collected and citations for any references used in interpreting those data. Detailed or un-interpreted data has been presented in annexes. The ESIA study is as outlined below;

- Chapter 1: Gives Background Information to the Study Describing the Objectives and the Terms of Reference and Methodology for the Study
- Chapter 2: Project Description.
- Chapter 3: Outlines the Baseline Information of the Study Area.
- Chapter 4: Gives the Policy, Legal and Regulatory Framework Policy, Legal, Institutional and Administrative Framework.
- Chapter 5: Summarizes the outcome of the Stakeholder Engagement and Public Consultations process.
- Chapter 6: Identification of Environmental Impacts of the Project.
- Chapter 7: Identification of Social Impacts of the Project.
- Chapter 8: Proposed mitigation measures for a) Environmental Impacts and b) Social Impacts of the Project.
- Chapter 9: An analysis of Alternatives to the Project.
- Chapter 10: Environmental and Social Management Plan (ESMP).
- Chapter 11: Environmental and Social Monitoring Plan (ESMnP).
- Chapter 12: Concludes the findings and recaps the main recommendations.

2 CHAPTER TWO: PROJECT DESCRIPTION

2.1 Introduction

Kenya Electricity Transmission Company - KETRACO (the Proponent) has identified priority projects under the Least Cost Power Development Planning process and through feasibility studies. The transmission projects will provide reliability, enhance security of supply to the existing demand hubs in the country; expand transmission capacity necessary to enhance electrification initiatives and reduce technical losses in areas currently served by long medium voltage lines. The client plans to conduct detailed design, environmental and social studies on selected priority projects for development. The transmission lines and substation have been divided into three separate packages for ease of work execution. The three packages and sub-components are as shown below;

Package 1

1. Approximately 140km 132kV Rumuruti-Maralal double circuit line and new substation at Maralal
2. Approximately 40km 132kV Kilgoris -Kehancha double circuit line and new 132/33kV substation at Kehancha
3. Installation of 1X23 MVA 132/33kV transformers at the existing Narok and Bomet substations.

Package 2

1. Approximately 111km 132kV Kabarnet-Rumuruti double circuit and associated substation extensions
2. Approximately 70km 132kV Menengai-Olkalou-Rumuruti double circuit line and new 132/33kV substation at Olkalou
3. Installation of a 1X110 MVA 220/132kV transformer at the existing Kitale substation

Package 3

1. Approximately 76KM 220kV Malindi-Kilifi double circuit line and new 220/132kV substation at Kilifi
2. Approximately 80km 132kV Machakos-Mwala-Ekalakala double circuit line and new 132/33kV substation at Mwala and Ekalakala
3. Installation of 1X23 MVA 132/33kV transformers at existing Kyeni, Mwingi and Malindi substations.

The Government of Kenya (GoK) is seeking financial support of US \$ 370 million from the World Bank (WB) for the Kenya Electricity System Improvement Project (KESIP). This project is for a proposed implementation period of 5 years, from 2019 to 2024. The project aims to improve the power systems and electricity access and reliability in line with the Kenya Growth and Development Strategy. Under the Least Cost Power Development Plan (LCPDP) process and through feasibility studies, the Kenya Electricity Transmission Company Limited (KETRACO) and Kenya Power have identified priority projects for implementation through WB financing.

2.2 About Package 3

Package 3 sub components are as outlined in section 2.1. The map below shows the exact location of the proposed transmission lines and substation under package 3.

PROPOSED WORLD BANK PROJECTS

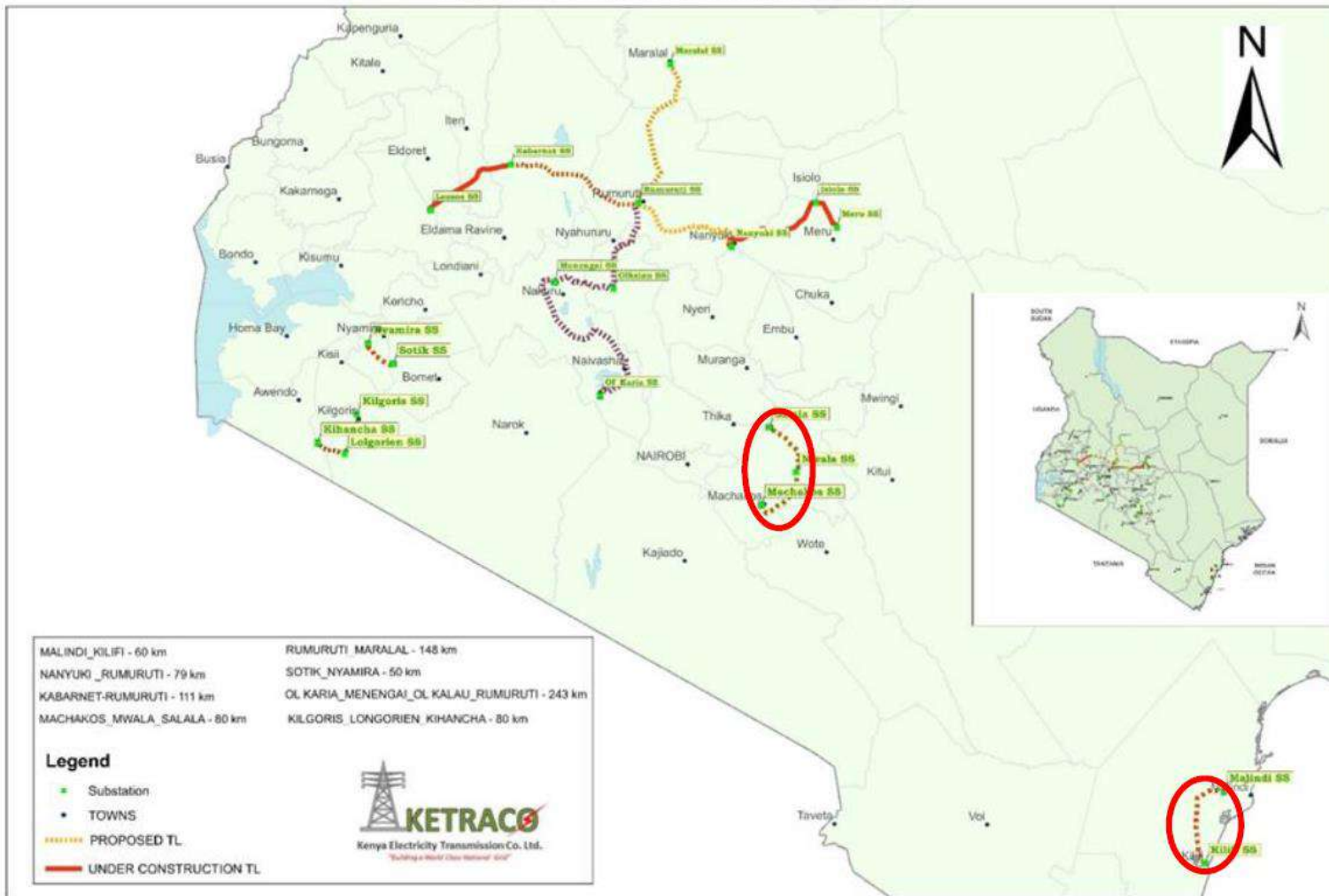


Figure 2-1 Approximate location of the two transmission lines and substation under Package 3 circled in red

Source – KESIP TOR

2.3 Approximately 76KM 220kV Malindi-Kilifi double circuit line and new 220/132kV substation at Kilifi.

The 220kV Malindi to Kilifi double circuit line measures approximately 76 kilometres with a wayleave of 40 meters – 20 meters on both sides from the centre line. The 16 angle points (AP) for Malindi-Kilifi 220kV are as outlined in table 2-1 below (From Malindi Substation to Kilifi Substation). The 220kV single circuit transmission line is planned to be constructed off the existing 220/33kV substation at Malindi to the proposed switch station at Weru. In components of the sub-project will include construction of 220KV double circuit line from Weru (switch station) to Kilifi, establishment of a 220/132KV substation at Kilifi and construction of 220KV switch station at Weru. This will also include 132KV link from the proposed 220/132kV SS at Kilifi to the existing 132kV Kilifi Substation.

The transmission line is proposed to begin at Malindi Substation, Kakuyuni in Goshi location traversing through the following locations: Goshi, Jilore, Lango Baya, Vitengeni, Dida, Sokoke, and terminating at the Kilifi Substation, in Kilifi North Township. The line has avoided densely populated townships and residential areas. It also veers off to avoid Arabuko Sokoke Forest (Figure 2-2). At North West of Vetengeni between AP5-AP10, the line deviates the densely populated area of Kilifi (Figure 2-3).

The estimated capital cost of this sub-component project is estimated at USD 79.86 million. Based on the economic analysis contained in the feasibility study report, the economic benefits of supply will outweigh the costs.

Table 2-1 Malindi-Kilifi 220kv final Angle Point Coordinates

Name	East	North	Chain (M)
TT- MALINDI	608515.769	9645649.961	75916.623
AP16	607796.736	9645681.785	75196.887
AP15	605819.157	9646170.211	73159.884
AP14	604978.841	9646717.324	72157.157
AP13	603195.073	9646521.139	70362.633
AP12	602873.151	9646541.563	70040.064
AP11	595180.966	9649288.701	61872.048
AP10	592312.812	9649000.379	58989.439
AP9	589125.403	9647979.834	55642.637
AP8	584848.403	9646168.834	50998.021
LOOP IN AT WERU	582679.000	9645981.000	48820.501
LOOP OUT AT WERU	582630.000	9645960.000	48767.191
AP7	583020.748	9645492.926	48158.223
AP6	588127.443	9623385.576	25468.726
AP5	589816.183	9605455.279	7459.079
AP4	591181.163	9601872.954	3625.514
AP3	591981.957	9601029.505	2462.467
AP2	593441.693	9600252.393	808.765
AP1	593592.435	9599807.590	339.113
KILIFI SS	593909.000	9599686.000	0.000

Source KETRACO, 2019

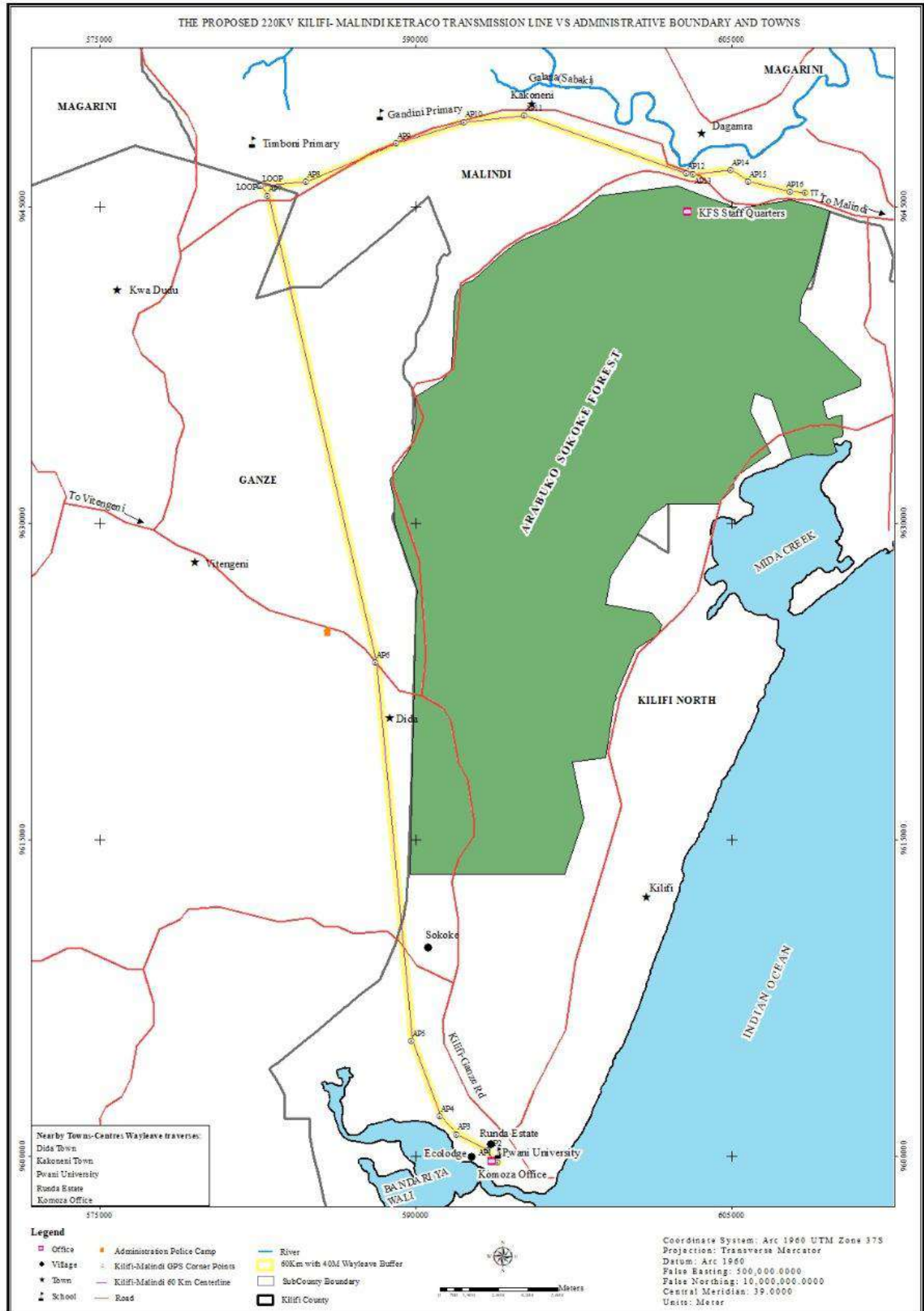


Figure 2-2 Proposed Malindi Kilifi Transmission line showing Sub-counties and nearby Towns
 Source - AWEMAC GIS

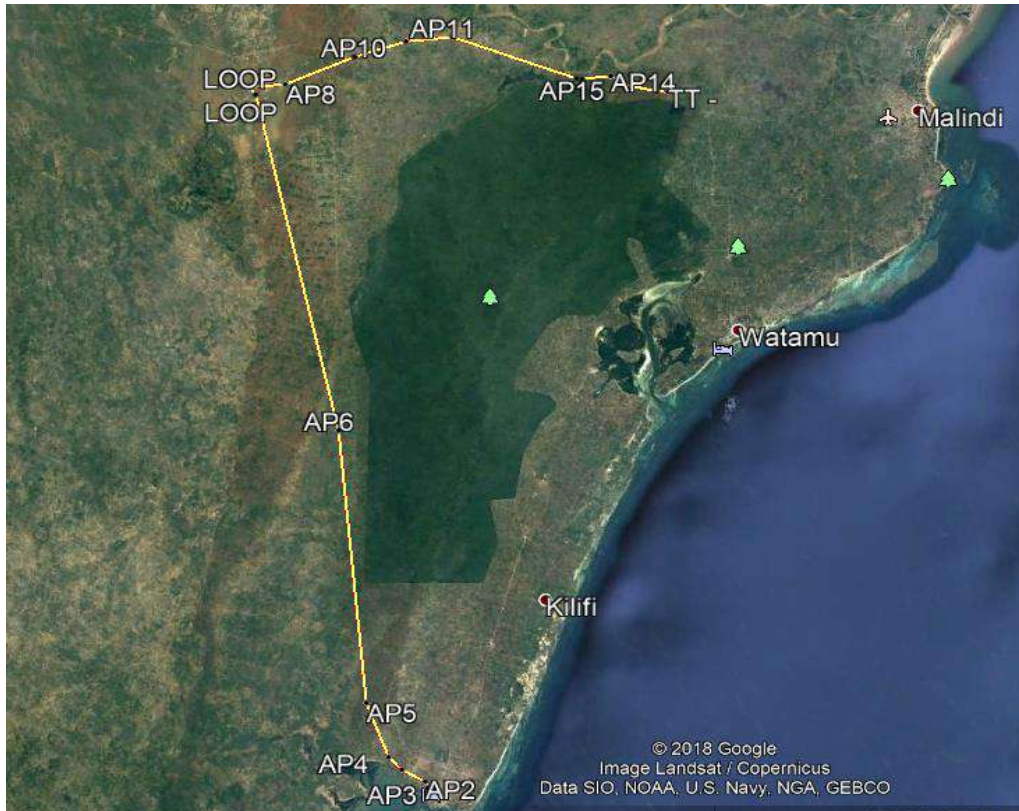


Figure 2-3 Overview: 76KM of Kilifi- Malindi (near Arabuko) 220KV Powerline Source –Google Earth (AWEMAC GIS)

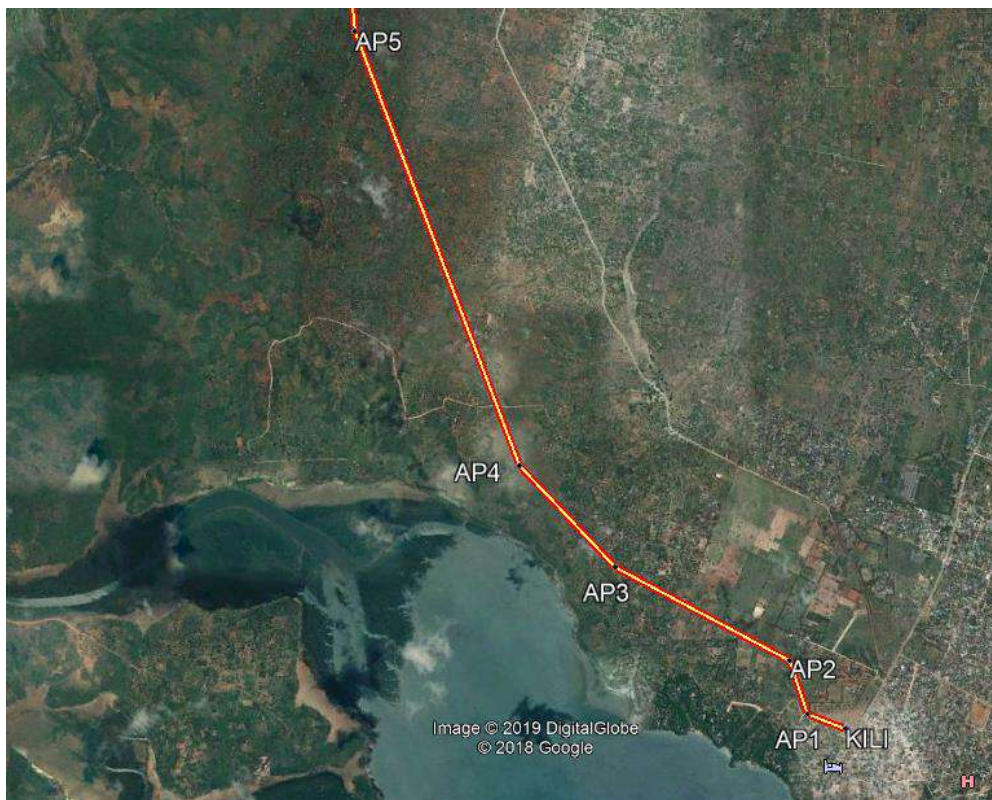


Figure 2-4 76KM 220Kv Kilifi- Malindi 220KV deviates the densely populated area of Kilifi Source – Google Earth (AWEMAC GIS)

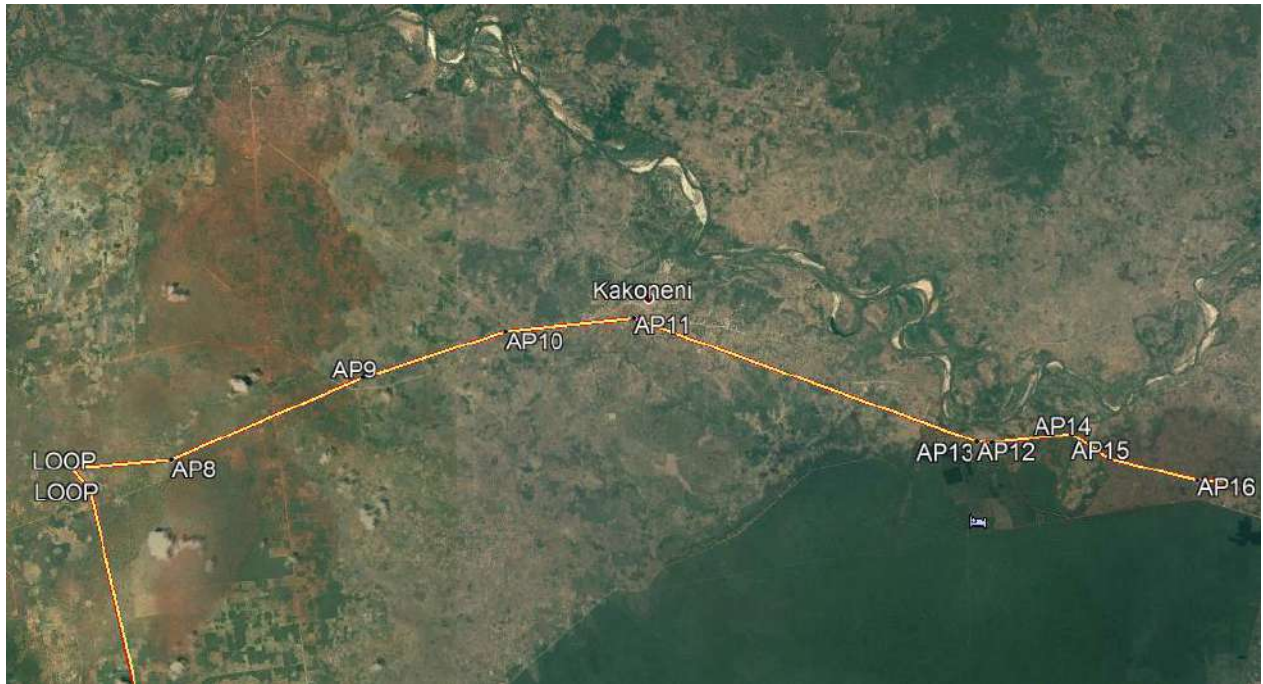


Figure 2-5 North of the Arabuko Sokoke Forest – AP 9 – AP 16
Source – Google Earth (AWEMAC GIS)



Figure 2-6 Overview between AP11 -AP 12 vis-a- vis River Galana
Source – Google Earth (AWEMAC GIS)



Figure 2-7 The Marshy wetland along the River Galana/Sabaki AP 12 – AP 13 - AP 14
Source – Google Earth (AWEMAC GIS)

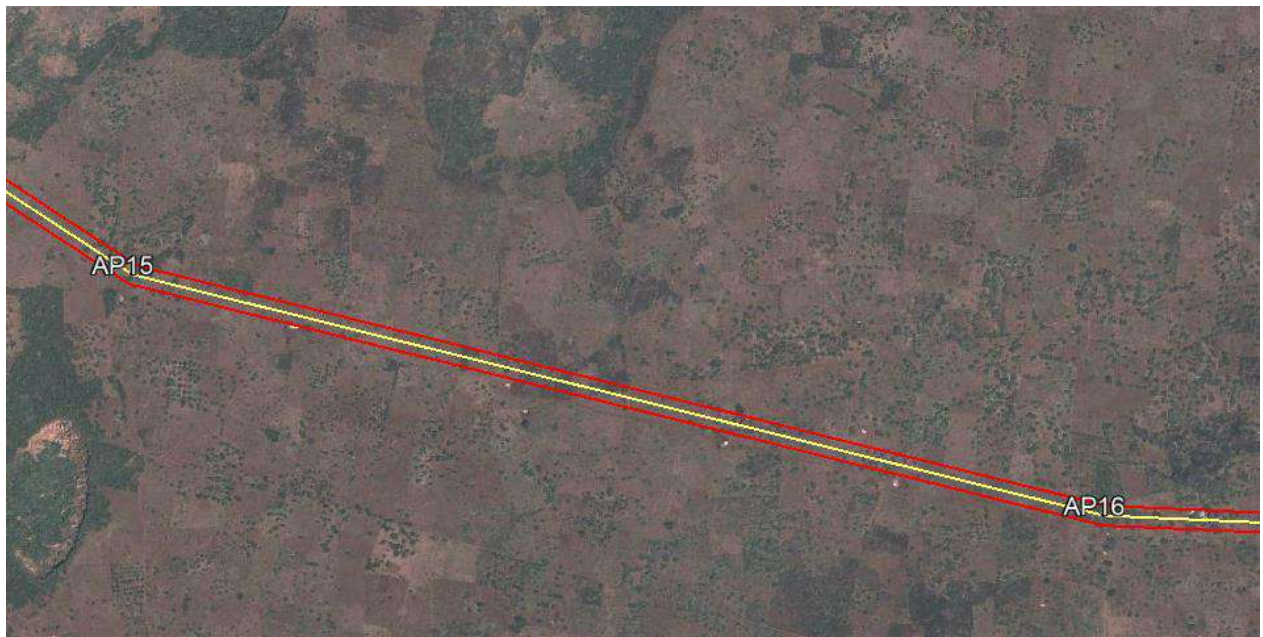


Figure 2-8 Overview of AP 15 to AP 16 on the Northern part of Arabuko Sokoke Forest
Source – Google Earth (AWEMAC GIS)

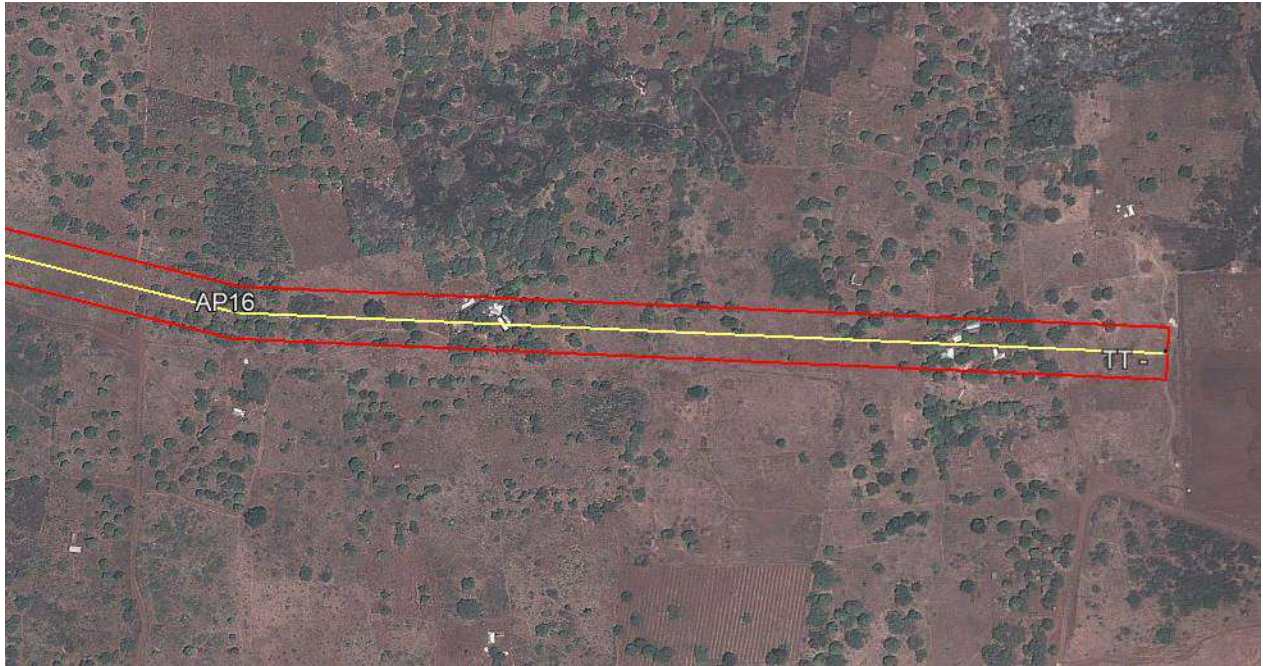


Figure 2-9 Overview of AP 16 to Malindi Substation (commencement point)

Source – Google Earth (AWEMAC GIS)

2.4 Geographic Location of the Project

The proposed sub-projects - 76KM 220kV Malindi-Kilifi double circuit line and 220/132kV substation at Kilifi - are located within Kilifi County, coastal region in Kenya.

The County lies between latitude 2°20" and 4°0" south, and between longitude 39°05" and 40°14" East. Kilifi County borders Kwale County to the South West, Taita Taveta County to the West, Tana River County to the North, Mombasa County to the South and Indian Ocean to the East. The county covers an area of 12,370.8km². Kilifi County has seven sub counties namely: Kilifi North, Kilifi South, Ganze, Malindi, Magarini, Rabai and Kaloleni. It has 35 wards, 54 locations, and 165 sub locations as shown in the Table 2.2.



Figure 2-10 Map of Kilifi County in the National context
Source - Kilifi CIDP 2018 -2022

Table 2-2 Kilifi County Administrative Units by Area

Kilifi County Administrative Units by Area Sub County	Area (Km2)	No. of wards	No. of location	No. of Sub locations
Kilifi North	530.3	7	7	22
Kilifi South	400	5	7	16
Ganze	2,941.6	3	14	48
Malindi	627.2	5	8	18
Magarini	6,979.4	6	8	28
Kaloleni	686.4	4	11	21
Rabai	205.9	4	7	12
Total	12,370.8	35	62	165

Source - Kilifi CIDP 2018 -2022

The transmission line specifically traverses Malindi Sub-County, Kilifi North Sub-County and Ganze Sub County. Table 2-3 gives a highlight of the locations, sub-locations and villages traversed by the proposed transmission alignment.

Table 2-3 Locations, sub-locations and villages traversed by the proposed transmission line

SN.	Location	Sublocation	Village
1.	Goshi	Kakuyuni	Kalia Papo -A, Kalia Papo -B, Mifundani, Kwa hisia
		Mongotini	

2.	Jilore	Jilore	Kibao Kuche, Jilore A, Kebelengani/,Madumadu, Vitongoni C, Vitongoni A, Sosoni B, Sosonio A, Za Mkono, Pii Village, Majengo B, Kakoneni, Kakoneni, Kakoneni
		Kakoneni	
3.	Lango-Baya	Lango-Baya	Vikwatani, Pishi Mwenga, Baolala, Lango-Baya, Mitsedzini, Chagani
		Makobeni	
		Malanga	
4.	Mwahera		Mwahera,
5.	Sokoke	Nyari	Dida, Nyari 2, Nyari 1, Kasava / Angaza
		Dida	
6.	Kilifi North Township	Konjora	Konjora 3, Konjora 1, Galilaya, Fumbini, Sea Horse
		Fumbini	

Source – AWEMAC

2.5 Brief description of the transmission Route and substation area

Table 2-4 Observations along the proposed transmission route and substation area

Route /Village	Range	**TL route (distance from the Kilifi)	Observation
Kalia Papo village, Mifundani village, Kwa hisia village in Goshi Location		AP 14 to AP 16	Existence of vegetation and potential of wildlife dispersal zones from Arabuko Sokoke Forest High concentration of households / settlements Village settlements and residential houses exists along the proposed transmission route
Kibao Village in Mungotini sublocation in Goshi Location	Kuche in	AP 12 to AP 13	The proposed line traverses a marshy wetland off the Athi-Galana-Sabaki river Mixed farming mainly maize crop High concentration of households / settlements
Kakoneni trading centre in Jilore Location		AP 11	Semi urban area with small scale business activities High concentration of households / settlements
Weru Group Ranch in Lango Baya Location		Loop In - Loop Out to AP 8, AP 9 and AP 10	Sparsely populated / Low concentration of households / settlements Grassland vegetation depicting livestock rearing
Parts of Dida area in Sokoke Location Parts of Matano Manne Village in Vitengeni Location Mwahera Location		AP 6 up to Loop In - Loop Out	Existence of shrubs and vegetation potential of wildlife dispersal zones from Arabuko Sokoke Forest Low concentration of households / settlements
Angaza Village, Kasava Nyari 1 and		AP 4, AP 5 up to AP 6	Existence of mixed farming consisting of crops mainly maize and livestock (cattle)

Route /Village	Range	**TL route (distance from the Kilifi)	Observation
2 in Sokoke Location			Existence of bushland and thick vegetation showing potential of wildlife dispersal zones from Arabuko Sokoke Forest Middle concentration of households / settlements
Kilifi Substation at Sea Horse Village; Fumbini Galilaya Konjora 1; and Konjora 3 village in Kilifi Township Location		AP 1, AP 2 AP 3 up to AP 4	Squatters within Sea Horse Village Existence of mixed farming consisting of crops (maize, cashew nuts, mango trees) and livestock rearing (cattle). High concentration of households / settlements

Source – AWEMAC Field Survey

***Worth noting; The Angel points (AP) were officially denoted in reverse - from Kilifi to Malindi - hence Malindi which ideally is the commencement point is denoted as AP 16 whereas Kilifi the end point is AP1.*

Table 2-4 gives a tabular description of the proposed transmission route vis-à-vis the traversed villages, the angle points (Aps) and key observations / features along the transmission route.

The proposed transmission line and substations project commences / starts at Malindi substation, Kakuyuni in Goshi location. At the starting point, is the existing Malindi substation which the proponent intends to install a 1X23 MVA 132/33kV transformer. The transformer will be installed within the existing Malindi substation bay that is complete with associated switchgear and protection. Other notable features at the site include, office blocks, a manned 24hour security gate, an electric perimeter fence configured with automated security alarm with closed-circuit television system, piped water, sanitary facilities, storm drainage management systems, pavements and a well maintained access road. The existing substation site is well drained, surrounded by open grassland with minimal vegetation. The area is sparsely inhabited with the nearest household being approximately 500 metres away from the station.

The proposed transmission route runs from the Malindi station past Madunguni Forest, which is reserved by Kenya Forest Service towards Jilore location. Villages in Goshi location affected by the project include; Kaliapapo A, Kaliapapo B, Kwa Saleh, Mongotini and Kibao Kiche. The area has a rural setup. The main economic land use is agriculture with presence of low density single-unit residential houses. The area is largely dominated by informal settlements, with mostly semi-permanent and temporary structures. Generally, houses in the area are not connected to the power grid. Majority of the residents reside along Athi-Galana-Sabaki River with presence of small-scale household irrigation. Soils are mainly a mixture of sand and loam soils with the topography being fairly level. The area around the substation is clear with the existing Malindi substation and transmission lines. Between AP 16 to AP15 are some residential households noted to be along the Right of Way (RoW). At AP 12 the proposed line traverses a marsh wetland in Mongotini village, off the Athi-Galana-Sabaki River. Marshy/wetlands are known to play critical ecological and economic roles. They act as habitats for aquatic animals, take up storm/flood waters, remove pollutants, and recharge rivers amongst others.



Figure 2-11 Illustration for River Galana/ Sabaki Riparian / Wetland (in white) verses Proposed TL (in red) within AP 12 – AP 15

Source – Google Earth (AWEMAC GIS)

The proposed transmission traverses through Jilore location; running parallel the existing Rabai-Malindi 220kV transmission line and runs past AIC Mission Church land. Villages in Jilore location affected by the project include; Sosoni A and Sosoni B, Mwareni, Majengo A and Majengo B and Kakoneni. The main economic land use is agriculture and improved settlements, with mostly permanent and semi-permanent houses. Generally, houses in the area are connected to the power grid and mains water supply from Malindi Water and Sewerage Company. Lango Baya Location starts after Kakoneni Sub-location (AP 10, AP 11). The proposed transmission line traverses Weru Group Ranch, Viriko and Vitengeni/Madamani, Kilifi/Mwahera A and Mwahera C localities. Villages in Lango Baya include Chagani, Makobeni, and Malanga.

The household's concentration declines as the proposed project line crosses Weru Group Ranch and Sokoke area (AP8 – AP6). Sokoke/Nyari Location starts at Nyari depression and runs towards Sokoke Rare and Sokoke Dida localities, which are due West of Arabuko Sokoke Forest. Sokoke location in Kilifi (AP6 to AP5) highlighted existence of deep bushy vegetation and potential of wildlife dispersal zones from Arabuko Sokoke. Notably there was high concentration of households along the right of way between AP6 to AP2 (figure 2 -5) which could be attributed to the proximity to Kilifi Town – an urban area.

The proposed project transmission route has also been designed to avoid crossing the Arabuko-Sokoke forest by avoiding the forest from AP4, AP 5 up to AP 6. The proposed transmission line avoids the forest all the way up to AP 16 (Malindi station). The proposed line is closest to the forest at AP6 (1.85km), AP12 (287m), AP13 (275m) and AP16 (465m). The 420Km² Arabuko - Sokoke coastal dry forest and its adjoining habitats is a globally recognized biodiversity hotspot. The region has been designated IBA (Important Bird Area) and is home to the globally endangered birds including Clarke's Weaver, Sokoke pipit, Amani Sunbird, Spotted Ground Thrush and Sokoke Scops Owl. However, the ESIA has provided innovative and cost-effective mitigation measures to ensure sustainable interaction of the project with the neighboring Arabuko Sokoke IBA area.

The proposed transmission route runs through Tezo/Kilifi North Township Location at Pwani University in Kilifi Township and traversers towards Sea Horse Village; Fumbini, Galilaya, Konjora 1; and Konjora 3. As the proposed transmission line approaches AP 3 and AP 2 it avoids the Kilifi Creek, which is located to the South West, approximately 400 metres from the closest point to the transmission line. At AP1, is Sea Horse Village; located just behind the Kilifi

substation. The transmission line runs along the northern boundary of Pwani University before terminating at Kilifi substation.

The proponent plans to establish a new 220/132kV substation within the existing Kilifi substation. The existing Kilifi substation neighbours Pwani University to the Northern boundary, Sea Horse Village to the east and south whereas Kilifi town is to the Western side (figure 2-6). The earmarked site for a new 220/132kV substation is served by key support utilities including Lees Road – a gravel access road which links up with the tarmacked B8 Road (Mombasa–Garissa Road, composed of the Mombasa–Malindi Road and the Malindi–Garissa Road). The Kilifi substation is complete with associated switchgear and protection. Notable features at the station include, an office, a manned 24hour security gate, a perimeter wall configured with automated security alarm with closed-circuit television system, and sanitary facilities. The site is well drained with storm drainage management system and a tarmacked access road. The nearest household settlements are along the proposed transmission route, at AP1 near Sea Horse Village approximately 500metres from the Kilifi substation. Some of the Sea Horse Village settlements / households near the existing Kilifi substation were noted to be within the road reserve. The key economic activity for the households includes cattle keeping (cows, goats and chicken) and poultry farming.

Notably, most of the people residing along the transmission route come from the Mijikenda ethnic community with a significant proportion being Agiriamas. Other Mijikenda tribes in the project area are Chonyi, Kauma, and Rabai. They mainly practice mixed farming through crop farming (maize, cashew nuts and beans), and livestock keeping (cows and goats). The residents also practice small-scale trading in commodities such as petrol, onions, tomatoes, cabbage.

The ESIA study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line. Parcels of land traversed by the proposed RoW range in various sizes of private land, and public land. It was estimated that approximately 603 registered landowners will also be affected. Further, it is estimated approximately 1,083 diverse structures which include permanent (136), semi-permanent (71), temporary (793), services (watering points) (51), burial sites (24) and dug open pits meant for pit latrines (8) will be affected. These also includes business structures approximately; four (4) permanent, four (4) semi-permanent, and fourteen (14) temporary business enterprises mainly retail shops owned by households.

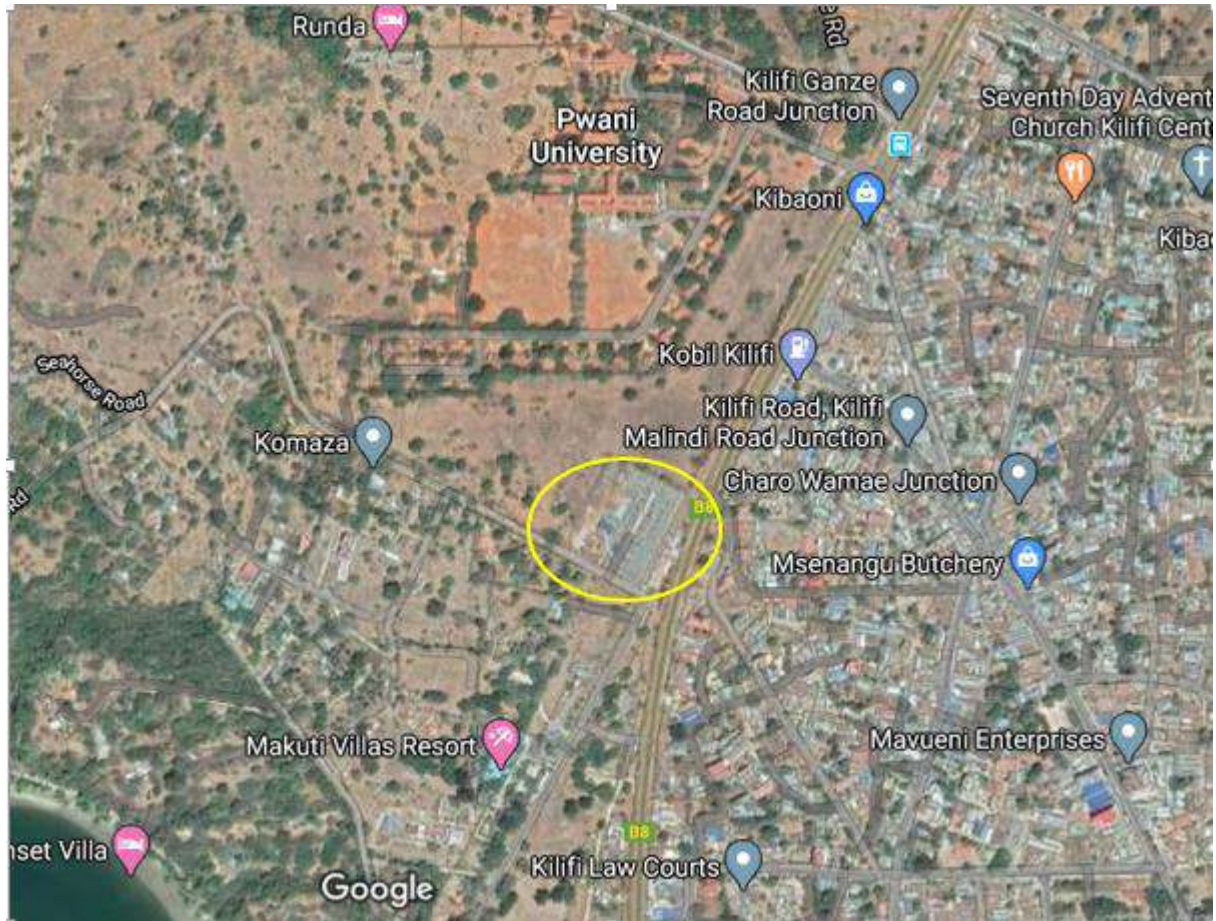


Figure 2-12 The proposed site for the New 220/132kV substation at Kilifi denoted by the yellow circular line. The site hosts an existing Kilifi substation

Source Google Maps.

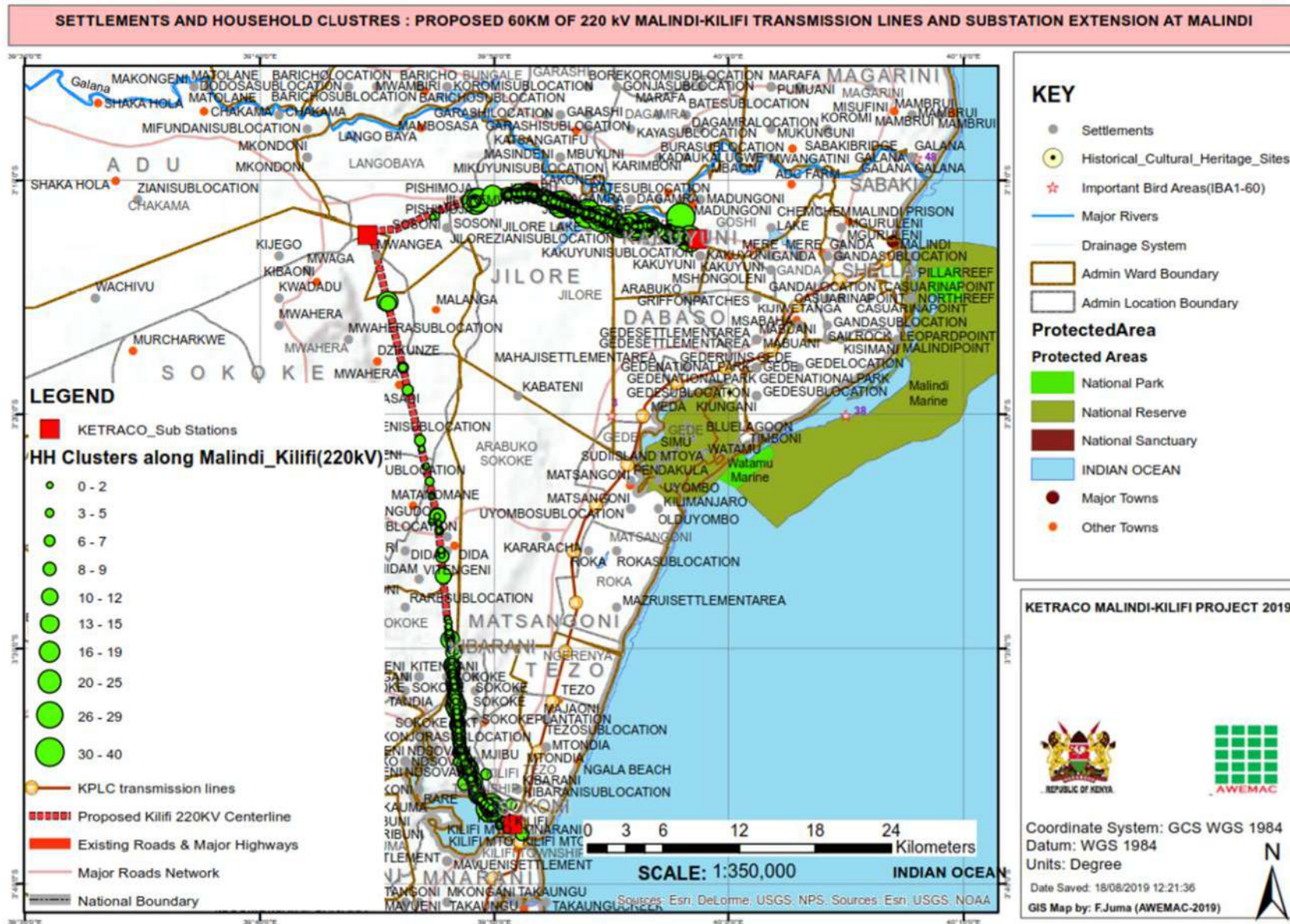


Figure 2-13 settlements and households clusters along the proposed project RoW
 Source - AWEMAC GIS

2.6 Major activities, Inputs and Outputs

The major activities involved in laying down the power transmission line and substation in the construction, operation and decommissioning phases of the project are as highlighted in table below.

Table 2-5 Major Activities Inputs and Outputs for the project

Phase	Inputs / Products	Key Activities	Outputs / By products
Construction	<ul style="list-style-type: none"> A construction labour force (of skilled, semi-skilled and unskilled workers). General(Raw construction materials e.g. sand, cement, natural building stone blocks, hard core, gravel, concrete among others; Timber (e.g. doors and frames, fixed furniture, etc.) for substations, Paints, solvents, white wash, etc.) Land (Substation site and Row) Construction materials (Electrical Power transformers; Instrument transformers; Conductors& Insulators; Isolators; Power control equipment; Lightning arresters; Circuit breakers; Capacitor banks and miscellaneous equipment) Transmission Line (Transmission tower / Pylons; Circuits; Insulators Conductors; Bundled conductors; Insulated conductors and cable) 	<ul style="list-style-type: none"> Construction of sub-station: These involve clearing and excavation of soil layer to create a stable stratum for the transformers. Vegetation on the sites would be cleared. Delivery of construction materials and fittings to the construction site Manual and mechanical excavation at project site Temporary stockpiling of soils, sub-soils and stones Delivery of material for bedding of concrete joints and associated steel(e.g. sand, cement, and concrete) 	<ul style="list-style-type: none"> Liquid Waste (Hazardous Waste, Sewage) Solid Waste (Metallic, Steel, packaging Materials, Food waste, Organic / vegetation Waste) Emissions from vehicles include CO, NOx, SO2, and VOCs.
		<ul style="list-style-type: none"> Construction of Right-of-Way (ROW) (Way leave): clearing of tall vegetation is undertaken along designated RoW. Relocation of households and land Easements Grading of the landscape might be done to allow vehicles to drop equipment along the power line. Vegetation would be destroyed along the proposed power line and access roads. 	
		<ul style="list-style-type: none"> Anchoring of pylons: excavation of corner holes for anchoring pylons is done throughout the proposed power line. Areas where pylons will be anchored would be affected through removal of vegetation and soils. Operation of vehicles and other construction machinery: transportation of equipment and material to site 	
Operation	<ul style="list-style-type: none"> An Operation and Maintenance labour force 	<ul style="list-style-type: none"> Repair and maintenance of the transmission line and substation 	<ul style="list-style-type: none"> Energy Transmission

Phase	Inputs / Products	Key Activities	Outputs / By products
	<p>(of both skilled, semi-skilled and unskilled workers).</p> <ul style="list-style-type: none"> • Maintenance materials Transmission tower / Pylons; Circuits; Insulators Conductors; Bundled conductors; Insulated conductors and cable) 	<ul style="list-style-type: none"> • Bush and vegetation clearing along RoW • Control of human population encroachment along the RoW • Repair of damaged pylons and conductors • Operation of substation and power transmission lines: 	<ul style="list-style-type: none"> • Solid Waste Liquid Waste (Hazardous Waste, Sewage) • Solid Waste (Metallic, Steel, packaging Materials, Food waste, Organic / vegetation Waste) • Emissions from vehicles include CO, NO_x, SO₂, and VOCs
Decommissioning	<ul style="list-style-type: none"> • Skilled, semi-skilled and Non-skilled Labour • Decommissioning materials 	<ul style="list-style-type: none"> • Excavation works • Temporary stockpiling of soils, sub-soils and stones along the trenches • Demolition of concrete joints and other civil works • Transportation of removed conductors • Removal of solid wastes (i.e. earth material and civil wastes) from the RoW • Rehabilitation of the RoW 	<ul style="list-style-type: none"> • Solid Waste Liquid Waste (Hazardous Waste, Sewage) • Solid Waste (Metallic, Steel, packaging Materials, Food waste, Organic / vegetation Waste) • Emissions from vehicles include CO, NO_x, SO₂, and VOCs • Demolition wastes; Excavated soils and vegetation; Construction equipment maintenance wastes; Dusts; Packaging materials, etc.

Source - AWEMAC

3 CHAPTER THREE: BASELINE INFORMATION

3.1 Introduction

This chapter describes the current bio-physical and socio-economic setting along the transmission route and substation. The information presented here has been obtained from primary and secondary sources. The Consultant has assembled, evaluated and presented baseline data on the relevant environmental and socio-economic characteristics of the transmission routes and surrounding areas of influence. In brief the chapter is outlined as follows;

- Social and cultural environment (including present and projected, where appropriate) - i.e., population, land use, planned development activities within the subproject area, community structure, employment and labour market, sources and distribution of income, cultural properties etc.
- Physical Environment – topography, landforms geology, soils climate and meteorology, air quality, hydrology etc.;
- Biological Environment - i.e. flora and fauna types and diversity, endangered species, sensitive habitats, wildlife within protected areas and other dispersal areas.

The data has been organized and presented based on a three-tier approach; the general area of influence within the County, the buffer area of two kilometers around the line and associated facilities, and lastly the footprint/right of way for the project.

3.2 Social environment

The various social economic and cultural aspects (demography, economic conditions, land acquisition, infrastructure, sanitation, agricultural activities, social protection and cultural issues) of the baseline survey were integral to the study and aimed to inform in the proposed project planning and implementation. The obtained quantitative and qualitative data was analysed and applied in different contexts and settings to reach informed decisions. This assisted to build on local knowledge and participatory processes.

Demographic data on ethnic presentation gave a highlight of the expected cultural values and norms whereas marital status, gender and age underlined the need for equal opportunity based on vulnerability status, inclusion, and sustainability in the project setting. Religion and cultural analysis helped to inform the beliefs, norms of the locals and character in Kilifi County, their socialization and potential to reinforce protective influences and resilience. This also aided to reflect on diversity in culture and values held by locals within the project alignment. Education analysis gave a synopsis of the local capacity, empowerment and social capital. It helped to inform on the availability of key aspects such as local labour ranging from both skilled, semi-skilled and non-skilled.

Land acquisition assessment helped to understand the existing land ownership, social ties as well as inform on risks and opportunities relating to acquisition land parcels for the right-of-way (RoW) in the proposed project alignment. The infrastructure development assessment aimed to understand the existing support facilities for the project such as key access roads, and existing communication & technologies. An assessment of the housing infrastructure informed on the expected typologies of housing along the proposed project alignment. Analysis of social protection issues gave an understanding of vulnerable population that would be important to enhance respect and promote human rights during the project planning and implementation.

3.2.1 Distribution of Sample Population

Human settlement patterns in Kilifi County vary from town to town due to various reasons, which include socio-cultural basis, topographic characteristics, and economic output of the area. Linear Settlements along lines such as major access roads are common mainly in suburban areas. People tend to cluster within town centres while rural areas are sparsely populated.

Stratified random sampling or stratification, was used to collect the sample along the proposed transmission line and substation area on the buffer area of two kilometers around the line (a radius of approximately one (1) kilometre each end from the centre of the line). This was further subdivided to strata / groups Malindi Sub-County, Kilifi North Sub-County and Ganze Sub County (table 3-1) traversed by the proposed line. To this end, a total of 250 household heads were interviewed in the project alignment.

Table 3-1: Household Distribution based on Sub-county

Sub-county	Number of PAPs household heads interviewed	Percent (%)	**Total Number of PAPs
Malindi	121	48	2,046
Kilifi North	88	35	1,117
Ganze	41	17	491
Total	250	100%	3,654

Source - AWEMAC field Survey

**Total Number of PAPs has been obtained from the draft RAP report for Malindi - Kilifi

3.2.2 Demographics

3.2.2.1 Ethnic Presentation

Most respondents, 94.8%, are affiliated to Mijikenda ethnic community. The other 5.2% are from other communities (Taita 1.8%, Kamba, 1.2%. Kikuyu, Bajun, and Arab are 0.4% respectively).

A significant proportion (86.6%) of the Mijikenda ethnic community are Giriamas. Other Mijikenda tribes in the project area are Chonyi 4.4%, Kauma, and Rabai 2.4% respectively, while Jibana are 0.4%.

3.2.2.2 Gender and Age

The respondents comprised male 55% and female 45%. In terms of age, most respondents are adults between 45-54 years. The minimum and maximum age of a household head captured are 19 years and 89 years respectively.

3.2.2.3 Marital Status

Marital status of the respondent was as follows: married monogamous 67%, married polygamous 12%. Those that are divorced or separated are 3%, while never married are 9%. Though, a substantial proportion 8% are widowed.

3.2.2.4 Religion

Most of the respondents were Christians of the protestant faith 51.6%, Catholic 6.4%, and Muslim 5.6%, as displayed in Figure 3-1.

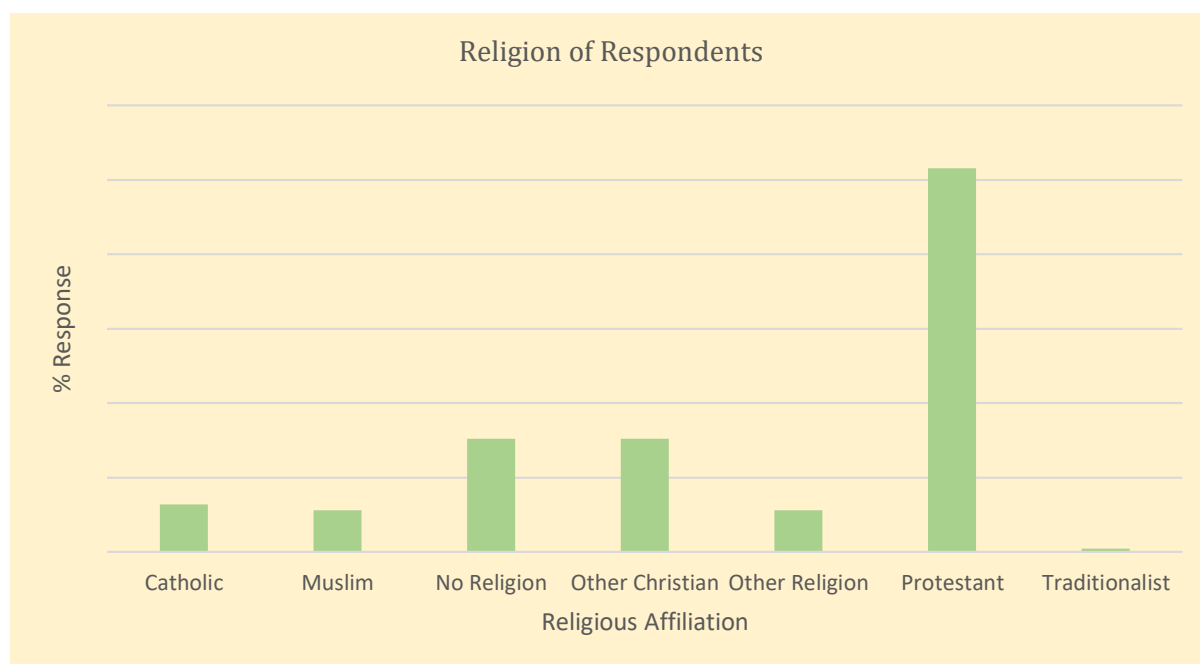


Figure 3-1: Religion
Source - AWEMAC field Survey

The Mijikenda traditionally believed in a supreme god *Mulungu* and the community has sacred forests – the *Kaya* – which the elders use sites to pray and make sacrifices to *Mulungu*. The community is a patriarchal society with authority and property vesting with the male family head. The local African tradition, as well as the widespread Islamic faith, permit men to engage in polygamous marriages (Gachie, 2019). Also, Agirima are embedded with strong sense of community entitlement. A qualitative source noted that Jilore is one of the locations in the project area with residents that uphold strong sense of community entitlement.

3.2.2.5 Education

The overall literacy rate in Kilifi County stands at 68%. From this proportion, 51% are male while 49% are female. According to the Kilifi CIDP, the county has 935 ECD Centres, 418 Primary Schools, 86 Secondary Schools and 1 Public University (Pwani University). In terms of ratio, the teacher-pupil ratio in primary school is 1:85, which is more than twice the recommended national ratio of 1:40. The population without formal education together with those in primary level education account for 2/3 of the total population (GoK, 2018).

Most respondents, 38% have primary education. Only 1.2% are university undergraduates. However, a considerable proportion of those interviewed 30.4% have no education. Educational attainments are presented in Table 3.2.

Table 3-2: Education Attainment

Level of Schooling	Number	Percent (%)
Primary	95	38.0
No Education	76	30.4
Secondary	46	18.4
College (Middle-Level)	14	5.6
Pre-Primary	7	2.8
University Undergraduate	3	1.2
Post -Primary, Vocational	2	0.8
Total	250	100%

Source - AWEMAC field Survey

Most of interviewees were struggling to read and write which confirms on the low level of education within the project area. The education statistics infers that the locals might only be able to provide either semi-skilled or unskilled labour force. A key respondent from Pishi Mwenga Primary School indicated that food and water shortage, inadequate teachers which relates to low Teacher to Pupil ratio, teenage pregnancies, and early marriage are some of the issues affecting education sector in the project area.

3.2.3 Economic Conditions and Source of Livelihood

Most of the interviewed households are male headed. Only 22% are female-headed, while 0.4% are child-headed family (less than 18 years). Existence of child headed families informs the likely potential of vulnerable persons along the proposed RoW. This highlights the need for RAP enumeration process to identify such groups who might be economically disadvantaged due to their vulnerable status in order to ensure they have access to development benefits and opportunities. The RAP enumeration process should also ensure other Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households especially PLWD, orphans, widows and elderly are clearly identified for extra-support during relocation and protection of their rights.

3.2.3.1 Household Composition

Table 3.3 shows the household structure in the project area.

Table 3-3: Household structure

Age/Gender Category in Years	Maximum members in the household	Average
0-18 Years	9	5
19-35 Years	6	3
36-59 years	4	1
60 and Above Years	3	1
Household Size	9	5

Source - AWEMAC field Survey

In the project area, the average total household size is 5 members.

3.2.3.2 Occupation

In terms of employment, only 23% of family heads are employed. Among them, casual labourers are 55%, those employed in private/ informal sector are 22%, while 20% are self-employed/business. Those volunteering are 2% as presented in Table 3.4.

Table 3-4: Respondents' Occupation

Occupation	Number	Percent (%)
Casual Labourer	32	55
Employed in government/Private sector	13	22
Self-employed/Business	12	20
Volunteer	1	2
Total	58	100.0%

Source - AWEMAC field Survey

A key respondent mentioned that most residents usually depend on subsistence farming and provision of casual labour force as a source of their livelihood. The residents also practice some small-scale trading in commodities such as domestic/consumer goods, fruits, vegetables etc. as shown in the plate 3.1. Some of the respondents in the project area, particularly residents who

reside along Athi-Galan-Sabaki River, engage in fishing and sand harvesting for income generation. The economic activities in the project area usually boom during harvest seasons of coconuts, cashew nuts, and Mango harvest.

Although there are anticipated negative impacts such as population influx of workers leading to social challenges such as illicit behaviors, sanitation challenges within towns along the RoW; it is expected that positive impact of the proposed project will outweigh the negative. Notably the proposed project will offer job opportunities for males and females including the youth both semi-skilled and unskilled locals in the Kilifi County area. Drivers, masons, civil engineers, steel-fixers, welders and other casuals such as carpenters will gain employment. Short-term employment opportunities such as Right of way (ROW) clearance, pit dressing, loading and offloading of construction materials and deliveries, record keeping and provision of security at active sites and temporary campsites and stores will also emerge.

Also, there will be some indirect job opportunities such as catering, kiosks (small scale traders), barber shops, which crop up in the areas to service the crew / construction workers. These jobs are expected to improve the economy of the local communities along the area and improve the livelihoods of the local people.



Plate 3-1 Small scale trade in the proposed project area
Source - AWEMAC field Survey

3.2.3.3 Monthly Income of the Household Head

Most respondents 171(68%) estimated their monthly income to be less than Kenya Shillings 10,000. Table 3.5 shows the respondents' income distribution.

Table 3-5: Monthly Income of the Households

Monthly income (Kshs)	Count	Percent (%)
0-10,000	171	68
10,001-20,000	39	16
20,001-30,000	14	6
40,001-50,000	9	4
30,001-40,000	7	3
50,001-100,000	7	3
Over 100,000	3	1
Total	250	100%

Source - AWEMAC field Survey

The poverty rate in Kilifi is estimated at 71.4%, while dependents in Kilifi County comprise persons aged less than 15 years and those above 64 years, which accounts for 50 percent of the population (GoK, 2018). The proposed project is therefore viewed as a key development enabler for Kilifi County. The increase in the capacity of the transmission system will increase access and distribution of electricity at the homesteads and institutional level within County. Various institutions such as primary and high schools will create opportunities for students to study. Technical and vocational schools in the project area will be connected to an improved power supply hence imply that educational performance in the project area will improve. Improved energy sector, will lead to improved health, and as well as large-scale and small-scale economic activities which in the long run will lead to development. Key informants noted that an improved power supply is imminent to power distribution leading to food security.

3.2.3.4 Ownership of Bank Account

Only 33.6% of household heads had a bank account. The high number of households not having a bank account should be a point of concern during RAP compensation with proper support and due diligence being required. The nearest banks are in Malindi and Kilifi town, which are quite a distance from most sections of the project area.

Based on a key informant interviews, it will be prudent for the project to consider sensitizing the locals along the RoW to open accounts for depositing of compensation money. Further, it would be ideal to ensure the locals have access of their monies by registering for mobile bank transfers that are quite popular and easily accessible in local market centers within the region. This would ease the burden of long distance travels to the banks and costs of travel.

3.2.4 Infrastructure Development

This section provides information on the proposed project area infrastructure including roads and drainages, and air strips.

3.2.4.1 Roads and Rail Network Ports and Airports, Airstrips and Jetties

Kilifi County has a road network of 101,000 km (out of which one (1) road is Class A Bitumen Trunk Road of 115.4Kms, one (1) Class A7 Bitumen National Road of 168.6 Kms, five (5) roads Class C Bitumen Primary Roads of 219.3 Kms, Class D gravel Secondary Roads and E earthen minor roads 3000Kms and the rest unclassified.

The county has about 40km of rail network, which is part of the Mombasa-Kisumu railway stretch that passes through the county between Mazaruni and Samburu. There is one station in Mariakani and another railway terminus in the neighboring Mombasa County is about 180km Malindi town.

The study showed that the nearby airstrips are Malindi Airstrip – approximately 12km to Malindi substation (closest point to the TL); Galana Ranch Airstrip– more than 60 Km away to the closest section of TL; and Kilifi Plantation Airstrip - approximately 4.85Km to the Kilifi substation (closest section to TL). It was noted that all the distances from airstrips are enough for the plane taking off to have gained enough height to avoid collisions. However it is recommended that construction of the pylons be done in close engagement with KCAA to ensure compliance with Civil Aviation Act No. 21 of 2013 including aircraft safety regulations.

3.2.4.2 Transport

The county boasts of two modern bus terminuses in Malindi and Kilifi towns, respectively. There are other middle level bus/matatu Parks in Mariakani and Kaloleni. The construction of Mtwapa ultra-modern bus/Matatu Park in Kilifi South Sub-county is underway. In the future, the county will develop bus/matatu parks at Watamu, Kwachocha, Matsangoni, Tezo, Mavueni and Gongoni. The county is considering construction of marshalling yards for lorries and trucks in the suburb and peri-urban areas of Malindi, Mtwapa, Kilifi and Mariakani towns.

The interviewed households have various means of transport; though, most of respondents 69.5% indicated motorcycle (*Bodaboda*) as their main mode of transport. Motorcycle/*bodaboda* is preferred since they are relatively common and efficient in accessing remote areas compared to other transport means. Other means are shown in figure 3-2.

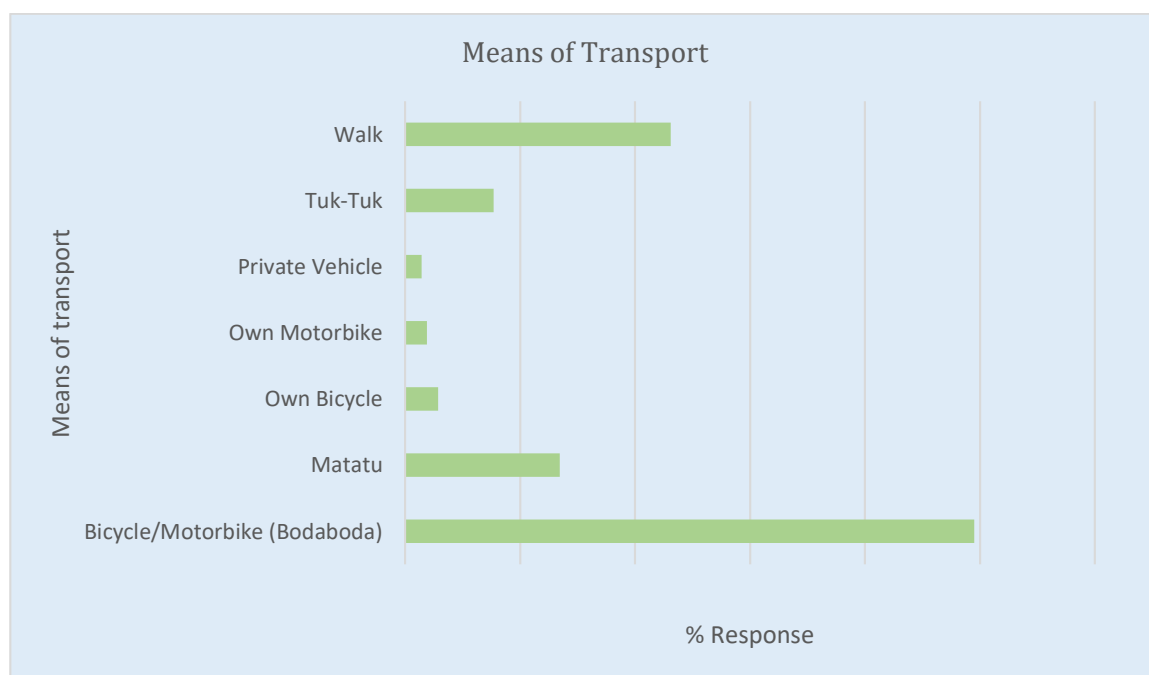


Figure 3-2 Main mode of Transport
Source - AWEMAC field Survey

3.2.4.3 Marine Transport

The County has a total of five (5) jetties located at Mtwapa, Kilifi, Ngomeni, Malindi and Takaungu. Ngomeni is another natural harbor in the centre of the coastline with potential to develop as a third port of Kenya and possibly a Special Economic Zone. Potential for another small port is also found in Kilifi bay, which is currently already being used for water sports with a hotel anchorage. Malindi also has a port that consists of a pier in sound condition, used as a landing site in the unsheltered sea mainly serving the local fish industry.

3.2.4.4 Posts and Telecommunications

The county is covered by all the major mobile telephone service providers such as Airtel Kenya, Safaricom, and Telkom. The county has mobile telephone coverage of 75 percent and minimal usage of landline connection. The county has 7 post offices and 5 sub post offices. The County's major towns are also served by several other courier service providers. The proportion of the population that must travel 5km or more to the nearest post office is 78 percent. There are 70 cyber cafes mostly in the urban areas and thus there is need to prioritize the establishment of digital villages and more cyber cafes in rural areas of the County.

In terms of communication, most households interviewed 94.7% use mobile phone as their primary mode of communication.

3.2.5 Energy Access

Over 80% of the population in the county relies on wood fuel for their energy needs, a fact that has led to destruction of forests in the county. Access to electricity and solar energy technologies is estimated at 21% and 6% respectively. Those that have access to liquefied petroleum gas and paraffin is estimated at 2% and 8% respectively. According to Kenya National Bureau of Statistics (KNBS) and Society for International Development (SID), 2013, the potential for investment in

renewable energy sources (solar and wind) is high. In addition, the Indian Ocean is a potential source of offshore energy.

Most of the interviewed households, 85.6%, are not connected to the power grid. Based on the socio-economic survey, the 14.4% of households that are connected to electricity use it as follows: Lighting 68%, business-related purposes 16%. Also, other use are domestic cooking and water heating 8% respectively. Households not connected to power cite numerous reasons, however, a majority 56.7% stated that connection and wiring fee are unaffordable. Other reasons are shown in Table 3.6. It is anticipated that transmission of the power would support Government of Kenya social objective of universal access to electricity. Specifically it will support Kenya Power in increasing its connection capacity hence indirectly benefit the local region that include households and businesses that will be connected to the electricity network for the first time and whose use of electricity will replace consumption of kerosene and other fuels for lighting. This will enable productive activities thus contributing to economic growth. Other beneficiaries will be the existing electricity consumers that include business customers of Kenya Power for whom the quality and reliability of electricity service will improve.

Table 3-6: Reasons not connected to electricity

Reasons not connected to Electricity	Percent (%)
Connection/Wiring Fee Unaffordable	56.7
Transformer Capacity Limited	17.4
Transformer too far	12.4
Dwelling Inappropriate for connection	8.4
Application pending	4.5
No need for electricity	0.6
Grand Total	100%

Source - AWEMAC field Survey

3.2.6 Access to health

Most respondents 52.6% seek medical services in government hospitals. Also, a considerable proportion 23.7% go to private hospitals/clinics. Other health facilities used by the respondents are presented in the table 3-7.

Table 3-7: Type of Health facility

Health Facility	Percent (%)
Government Health facilities	52.6
Private Hospital/Clinic	23.7
Pharmacy/Chemist	9.2
Shop/Kiosk	7.9
Herbalist	5.3
Faith-based (Church, mission, Hospital/Clinic)	1.3
Grand Total	100%

Source - AWEMAC field Survey

In Kilifi County, doctor patient ratio is 1: 10,000 patients and 4: 10,000 patients for nurses as compared to the WHO recommended ratio of 1:1000. The county has 5,129 medical and 828 non-medical staff, which translates into a total staffing gap of 5,957. The average distance to nearest

the health facility (rural & urban) is 5km. The total hospital bed capacity is 492 distributed as follows: 184 beds for Kilifi County Hospital, 158 beds for Malindi Sub County hospital (GoK, 2018).

Based on the socio-economic survey, the average distance to the nearest health facility is 3Kms for 45% of sample population. 55% access their nearest health facility beyond 4km. A majority of residents 62% access health facilities that are outside their location, while 24% utilize health facility in their location. Only 14% seek medical services from health facilities within their village. Some of the health facilities utilized by the respondents are: Malindi Sub-County Hospital, Tawfiq Hospital in Malindi town, and Kilifi County Hospital. Also, Jilore Dispensary, Kakoneni Dispensary, and Malanga (AIC) Dispensary.

A key respondent noted that although the healthcare facilities are accessible to both locals and could be used by the project staff; they are ill equipped. He cited that for instance despite having a maternity wing, Jilore Dispensary operates with only Clinical Officers.

3.2.6.1 Types of diseases commonly reported

Table 3.8 shows various diseases reported by respondent for the last four weeks.

Table 3-8: Types of diseases commonly reported

Illness	Percent (%)
Common Cold/Flu	42
Malaria	17
Blood Pressure	9
Eye Problem	8
Heart Problem	6
Amoeba / typhoid	6
Pnuemonia	2
Cancer	2
Dental Problem	2
Fracture	2
Skin Problem	2

Source - AWEMAC field Survey

A key respondent from health sector in the project area, asserted that malaria, and common cold/flu, as well as typhoid, injuries sustained from road accidents are the common reported illness.

3.2.6.2 Access to maternal health

According to KDHS (2014), the percentage delivery in a health facility Kilifi stands at 52.6%, which is below the national rate of 61%. Also, the National MMR/100,000 live birth was 362, while Kilifi MMR 250/100,000 live births (KDHS 2014).

In terms of maternal service at a medical staff at Jilore dispensary alleged that the poverty level is one of the many social-economic problems that leads to low delivery in a health facility in the project area. The medical staff noted;

“Many times, I have received cases of mothers who have delivered away from health facilities under serious complications since they could not afford transport to come to the hospital. In some place’s residents are not aware of services offered by the maternity unit, including the Linda Mama initiative by NHIF. Mothers deliver at their home or even on the road then come to the health facility with a baby.”

The survey team observed the Maternity Wing at Jilore Dispensary as shown in Plate 3.2, which according to the health facility management, is an improvement to the health sector in the project area.



Plate 3-2: Maternity Wing at Jilore Location route at AP15

Source - AWEMAC field Survey

3.2.6.3 HIV/AIDS: Knowledge and Prevention

In Kilifi County, the HIV/AIDS prevalence rate is 4.5% compared to the national prevalence rate of 6.3%. The most affected age group is 20-24 for females and 30-39 for males. However, sub-counties such as Malindi, Kilifi North, and Kilifi south have an average of over 10% in HIV prevalence (GoK, 2018). The factors responsible for the high prevalence include poverty, increased drug abuse, and idleness among youth, risk behavior by long-distance truck drivers, the tourism sector, wife inheritance, high divorce and separation rates and early sexual debut due to peer pressure (GoK, 2018).

The rates of HIV/AIDS prevalence in Kilifi County calls for the proposed project to ensure adequate mitigation measures are put in place to combat the spread of HIV and sexually transmitted infections (STIs). Measures such as sensitization of locals and workers on HIV/AIDS and other STDs and contractors to ensure a code of conduct is signed by all with physical presence on site as well as within the project area; sensitization forums for workers and most at risk such local youth on ethics, morals; general good behaviour and the need for the project to co-exist with the neighbours should be established. Further, working jointly with Kilifi County and relevant national government health agencies to mitigate STD, HIV and AIDS during the construction and operational phases of the project will be critical.

3.2.7 Housing Types and structures

Different construction materials are used in building houses in different localities. National Housing Survey (2013) indicates that iron sheets usage for roofing, in Kilifi County, is at 43.7% and that of grass/Makuti is at 53%. Wall construction using stones/blocks/bricks is at 30% and it is mostly in urban areas while mud/ wattle wall construction is at 48%, mostly in rural areas. Most houses, 67%, have earthen floors while 30 % have cemented floors. Housing types are primarily determined by various factors including availability and cost of construction materials, weather and cultural/religious believes in the regions. In the rural areas, houses are simple and small in sizes, generally 1 to 3 rooms per unit. On the other hand, Swahili houses, bungalows, mansionettes

and flats are very common albeit in urban areas. However, presence of shanties is also very common in the urban areas.

Most interviewed households have semi-permanent houses. From this proportion, Shanty/Traditional houses are 69.2%, Swahili 14.6%. Those with permanent houses are 16.2% (bungalow 15.4%, while maisonette 0.8%). At AP1, just behind the Kilifi Substation the social safeguard team observed some residence structures belonging to squatters along the proposed transmission line. The squatters were noted to have constructed temporary structures along the road reserve at near AP 1 - Sea Horse Village (plate 3-3). They rear livestock such as cows, goats and chicken along the road. A Chief in the project area indicated that most of the respondents have lived in the project area for an extended period. The chief also noted that Jilore location has a good number of residents with improved housing (permanent structures) compared to other locations in the project area. Some permanent houses and structures (Plate 3-4) also exist along the transmission route especially in Jilore location and Kilifi North Township Location. The line is likely to cause some displacement at these points which underpins the need for a resettlement action plan (RAP). Nonetheless the various housing types and construction materials noted along project corridor with a significant 69.2% being shanty/traditional houses is likely to have a direct bearing on the overall cost of resettlement.



Plate 3-3 Squatters settlements near the transmission route at AP1 – Sea Horse Village
Source - AWEMAC field Survey



Plate 3-4 Permanent house structure along the Row

Source - AWEMAC field Survey

The survey estimated approximately 1,083 structures which include permanent (136), semi-permanent (71), temporary (793), services (watering points) (51), burial sites (24) and dug open pits meant for pit latrines (8) will be affected. This includes an approximate 22 business structures mainly retail shops owned by households ranging from four (4) permanent, four (4) semi-permanent, and fourteen (14) temporary are also affected by the RoW. The most affected business enterprises are retail shops mainly owned by households. Table below shows a summary of the estimated number of structures to be affected by the proposed transmission line whereas the succeeding table highlights the business structures affected per location.

Table 3-9 Summary of the estimated number of structures along the RoW

Location	Permanent	Semi-permanent	Temporary	Services (watering points)	Burial sites	Dug open pits meant for Pit Latrines	Total
Goshi	8	11	178	1	-		198
Jilore	60	38	228	6	14	5	351
Langobaya	5	4	62	43		1	115
SokoKe/Nyari	8	4	101		7	2	122
Tezo-Kilifi township	55	14	224	1	3		297
Total	136	71	793	51	24	8	1083

Source – Draft RAP report for Malindi Kilifi Transmission Line

Table 3-10 Summary of business structures affected

Location	Permanent	Semi-Permanent	Temporary
Goshi	-	-	-
Jilore	3	2	8
Langobaya	-	-	1
Sokoce/Nyari	1	1	1
Tezo-Kilifi township	-	1	4
TOTAL	4	4	14

Source – Draft RAP report for Malindi Kilifi Transmission Line

3.2.8 Property Ownership

In the project area, residents own various resources and properties such as land and house/structures. However, mode of acquisition of these properties, particularly, land differ from place to place. According to Kilifi County Baseline Survey (2013), 65% of farmland was owned by household head or spouse, about 20% communally owned and 4% rented out by individual owners.

The socio-economic survey established that most 51.3% purchased the land, while 26.2% inherited, those that were allocated are 17.6% and self-acquired/squatters are 4.8%. In terms of land ownership document, 30.3% indicated to have title deed. 68.6% have other documents (allotment letter 19.1% and Chief's letter 7.9%). Those without any land ownership are 1.1%, as illustrated in Figure 3-3.

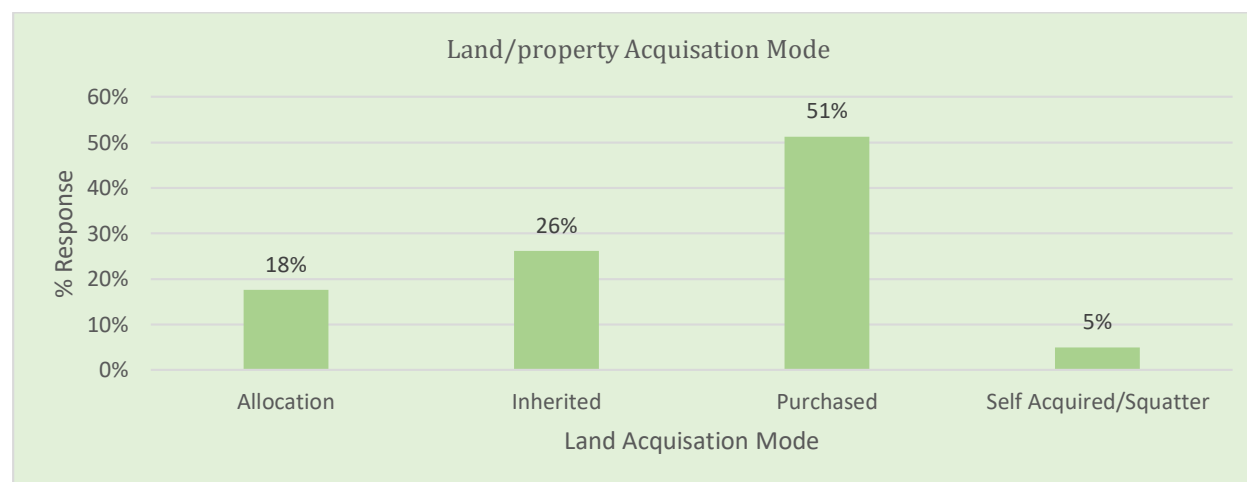


Figure 3-3: Land/Property Acquisition Mode

Source - AWEMAC field Survey

Qualitative sources of information confirmed that most land and property owners in the project area have no legal land ownership documents, while squatters live on the land of absentee landlords. Notably squatters were observed in Madunguni Forest reserve near AP 14 and Sea Horse Village near AP1. The key respondent also alleged that land disputes is common in the project area. Based on the socio-economic survey, a majority of the interviewed PAPs do not have legal documents. Land disputes and lack of land ownership documents may pose a challenge of ownership confirmation during RAP implementation which might delay compensation for some of the PAPs and impact project implementation.

3.2.9 Land Use

Land is an essential factor of production, as such people utilize it for various socio-economic purposes. In the project area, resident not only use land for settlement but also practice

agriculture/farming (poultry, livestock farming and aquaculture). They mainly practice mixed farming. The main crops grown include maize, cashew nuts and beans. They also rear livestock such cows and goats. Interviewed households practice diverse farming as presented in Table 3.11.

Table 3-11: Types of Agriculture

Type of Farming	Percent (%)
Poultry	47
Livestock	42
Beekeeping	1
Fish farming	1
No farming activity	9
Total	100%

Source - AWEMAC field Survey

For those that rear livestock: indigenous goat constituted 65.1%, indigenous cattle 30.2%, dairy goats 2.3%, Indigenous sheep and exotic cattle-diary 1.2% respectively. Plate 3.3 shows cattle’s grazing in the project area. Conversely, poultry kept are indigenous chicken 66%, indigenous ducks 31%, chicken broiler 2% and turkey 1%. Common crops grown are maize, cashew nuts and beans, cassava, spinach locally referred to as “Mchicha”. Mango and coconut tree plantations are also common.

Only 3.37% of the farmers have an irrigation scheme. An assistant chief in the project area confirmed that a small proportion of residents, mainly those residing along Athi-Galana-Sabaki River have minor irrigation schemes since most of residents engage in subsistence-mixed farming.



Plate 3-5: Cattles grazing in the Project Area

Source - AWEMAC field Survey

Generally, natural pastures occupy almost half of County farmlands, woodlots 7%, improved pasture/forage production 8%, homesteads 9%, subsistence crop production 21%, commercial crop production 1.5% and unusable land (swampy, rocky, hilly) 8% (GoK, 2018).

Approximately 1% of farmers undertake bee keeping with the existence of sparsely located beehives within Dida area. It will be important where possible to avoid any interference of the beehives if outside the RoW. Studies on frequency of electromagnetic fields (EMF) on Honeybees (Shepherd S et al. 2018), found out that honeybees exposure on EMF was found to reduce learning, alter flight dynamics, reduce the success of foraging flights towards food sources, and feeding. The results suggest that EMFs emitted from power lines may represent a prominent environmental stressor

for honeybees. The study notes that transient exposure to EMF reduces a bee’s ability to learn, reduces their memory retention, and affects flight and foraging behaviour all of which could potentially reduce their ability to pollinate. As a precaution, it is recommended that beehives should not be placed directly on the proposed transmission line RoW. Measures such as relocation, and compensation of the beehives for affected households should be considered for proposed transmission line alignment.

The study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line and substation. It was noted that approximately 603 registered landowners will also be affected either partial impact or full impact - total displacement. However, only approximately 7% of the landowners will have their land parcels fully affected / totally displaced. Full impact entails land parcels affected more than 70% of the land - total parcel area. The PAPs can still use the remaining 30% land for farming and other economic activities. The most extreme impacts of land will be felt by people who will have to relinquish all or most of their land and other property and move to other locations which may be some distance away from the affected project area. Nonetheless, the study identified that the location of the Transmission line traverses almost 99.9% in rural setting, which is a major advantage in terms of resettlement and land availability. This largely means that although communities have settled along the route, the prospects including land adequacy, quality of land and accessibility of resettlement land (where compensation is provided) in the vicinity (cost allowing) will not be a major challenge. This means social support systems and networks will not be greatly disrupted, affected persons can still consider themselves as part of their current communities and still access the same services and advantages from the original areas. Since the project is rural, coupled with its inherent nature that only requires wayleave instead of land acquisition to pave the way for the transmission line, no significant full resettlement is envisaged.

Notably, the impact of the project on land will vary as some households will no longer be able to utilize the parcel area in the wayleave for certain farming activities such as growing trees and fruits that grow over 12ft height (3.65m) tall. Some households will only be affected during construction, and afterward they will be able to continue utilizing the portion of land in the area as before, e.g. for crop farming and natural pasture / animal grazing. For households where transmission line towers will be constructed on their land, the affected portion of land will permanently remain unutilized for the entire period of existence of the transmission line.

Table below highlights summary of the number of landowners and structure owners affected by the transmission line.

Table 3-12 Summary of land and structure owners by location

Location	Landowners	Structure owners
Goshi/Kakuyuni	38	70
Jilore	96	118
Langobaya	85	70
Sokoce/ Nyari	145	45
Tezo/ Kilifi Township	139	105
TOTAL	603	408

Source – Draft RAP report for Malindi Kilifi Transmission Line

3.2.10 Vulnerable Population

The project corridor has a significant number of persons such as widows, People Living with Disabilities (PLWDs), and the elderly . In total 209 persons accounting for 5.7% of the total PAPs population were identified (Draft RAP report for Malindi – Kilifi). There were 44 elderly 70+ years, disabled persons were 46, 41 widowed, and 78 Orphans as presented in table 3.13.

Based on the vulnerable population likely to be encountered along the transmission alignment, the project should ensure key measures are established. This should include identifying the

individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status in order to ensure they have access to development benefits and opportunities. Further the RAP compensation process should be well managed to ensure the vulnerable especially PLWD, orphans, widows and elderly are clearly identified and receive funds without losing them to care givers.

Table 3-13: Vulnerable population in the Project area

Category	No.
Persons with disability	46
Widowed	41
Eldery persons 70+	44
Orphans	78
Total	209

Source: Draft RAP report for Malindi – Kilifi

3.2.10.1 Widows

The draft RAP for Malindi Kilifi identified 41 orphans along the RoW for the proposed transmission line. Widows comprised 7.2% of the households interviewed during the socio-economic survey, among them, 80% are plot owners, while 17% are house/structure owners. Only 5.5% of the widowed were renting. In terms of education, most of the widows 76% had no education. Only 17% have primary level of education, while 7% secondary level and mid-level college education respectively. A majority 97% of widows estimated their monthly income to be less than 10,000 Kenya shillings.

The sampled widows complained of high levels of poverty that prevents them from educating their children, meeting medical care bills, and buying adequate food for their families. A key respondent, an assistant chief in the project area mentioned that some widows are embroiled in endless disputes over property ownership as well as being coerced to participate in traditional and cultural practices such as wife inheritance and widow cleansing rituals. The Chief also alleged that a section of widows ends up engaging in high-risk jobs to make ends meet, as a result of abandonment by their in-laws and society.

3.2.10.2 People Living with Disabilities (PLWDs)

People Living with Disabilities (PLWDs) comprised 2.8% of the total household composition for the interviewed households. The draft RAP for Malindi Kilifi identified 46 PLWD along the RoW for the proposed transmission line. Most 71.4% are physically disabled while 14.3% are dump and mentally ill respectively.

3.2.10.2.1 Property Ownership for the Disabled

In terms of property ownership for people living with disability the project area, A qualitative source indicated that the Giriama sociocultural setup is unfavourable towards the disabled persons, as such the situation deprives many disabled opportunities to own properties/land. The key informant has this to say:

“The Agiriama traditions and socio-cultural practices are usually hostile towards people living with a disability. Such persons are subjected to stigmatization, abuse, and to a greater extent, denied the right to property ownership. They are perceived to be cursed and therefore have no standing in society.”

[Interview: Administrator at Kakoneni Association of the Impaired, Kilifi]

3.2.10.2.2 Cash Transfer for the Disabled

71.4% of the sampled PLWDs were not beneficiaries of the Cash-Transfer for the Disabled (CT-PWSD). Only 28.6% indicated to be receiving the CT-PWSD funds. For those not receiving the benefits, 40% was a result of not knowing where to register and were not aware of the need to register respectively. 20% indicated to have their own source of income.

A key informant revealed that very few PLWDs receive cash transfer for the disabled. They felt that the criteria used for selecting beneficiaries are discriminative as it leaves out majority of needy cases. A key informant (at Kilifi County Office for Social Security Services) confirmed that only persons with a severe disability benefit from the fund.

3.2.10.2.3 Source of livelihood

The sampled PLWDs in the project area stated that they only depend on family members or well-wishers for assistance. They also asserted that most disabled children do not go to school because of lack of school fees and other necessities such as wheelchairs, visual and audio aids, uniforms. As such, their kids are the most non-performing. In terms of access to medical services, they cited that they are the most disadvantaged as they cannot afford hospital bills. They revealed that -as such, they depend either on herbal concoctions or use cheap off-the-shelf self-medication.

3.2.10.3 The Elderly

The draft RAP for Malindi Kilifi identified 44 Elderly persons along the RoW for the proposed transmission line. The elderly comprised 6.4% of the sampled population during the socio-economic survey, which included men and women of more than 70 years of age. In terms of education, most of them 50% have no education, though considerable proportion 38% have primary education, while secondary 13% as shown in Figure 3-4.

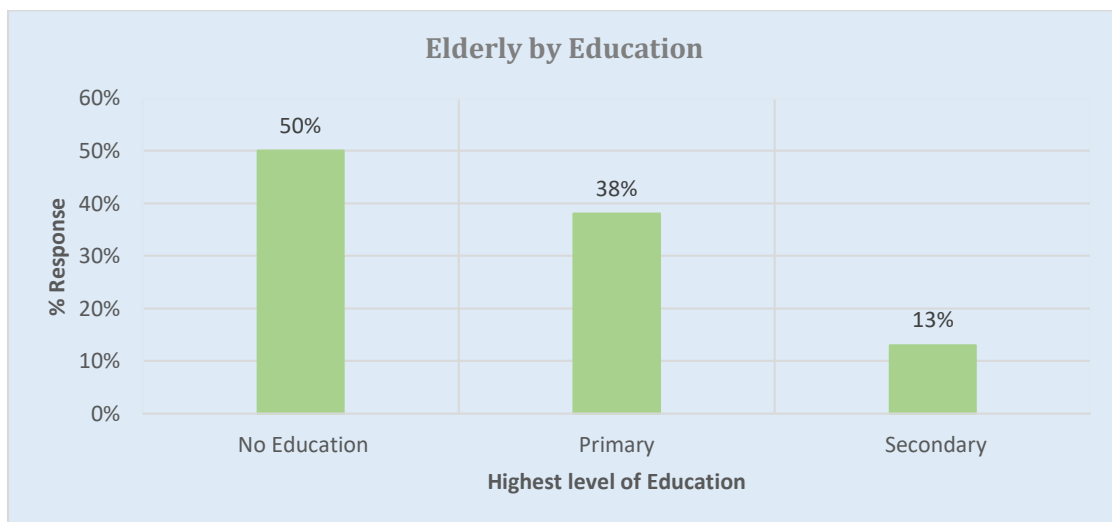


Figure 3-4: Education Level for Older Persons

Source - AWEMAC field Survey

3.2.10.3.1 Source of Livelihood for the Elderly

A qualitative source of information alleged that most elderlies in the project area depend on a family or community members for food, health, and financial support. Some also practice small-scale farming to obtain food. The dependents in Kilifi County comprises persons aged less than 15 years and those above 64 years, which accounts for 50 percent of the population with poverty rates being 71.4% (GoK, 2018).

In terms of property ownership, most of the elderlies interviewed, 88% are plot owners, while 12% owned houses/structures. One of the chiefs in the project area indicated that most elderlies in the project area are land lessors who lease out their land to other community members not only because they are unable to practice cultivation but as an income source.

3.2.10.3.2 Cash Transfer for Older Persons

Most elderlies 53% were not registered to receive cash. Though, a good proportion 47% indicated that they are registered and receiving the cash despite complaining that the disbursement usually takes a long duration of up to four months to receive the funds. For those not benefiting from the kitty, following reasons were given; do not know where to register 75%; not aware of the need to

register and those that have their own source of income are 12% respectively. Others alleged that chiefs also contribute by failing to register others because of grudges.

3.2.10.4 Orphans in the Project Area

A key informer at the Ministry of Children Kilifi County Office stated that most Orphans and Vulnerable Children (OVCs) in the project area are exposed to child victimizations such as forced early marriages, child labour as well as child neglect. According to GoK, (2018) Kilifi County 60.3% of the total (OVCs) is not covered by the social protection interventions, and therefore they are disfranchised by poverty and other kinds of vulnerabilities. The draft RAP for Malindi Kilifi identified 78 orphans along the RoW for the proposed transmission line. The ESIA recommends that the project liaises and partners with National Safety Net programs for Vulnerable persons / Government support programs to register vulnerable peoples at location levels thus enable them access existing facilities and services.

3.2.11 Marginalized and Indigenous People in the Project Area

The project expected to come across settlements occupied by indigenous people known as “the Watha.” This indigenous group is mostly found in the rural arid and semi-arid lands of the country. A minority of them live in thick forests scattered all over the country. They are also referred to as the “Elephant People” in the Coastal Region of Kenya. The people are traditionally hunters and gatherers. In Malindi Sub-County, the Watha community is found in four localities (Malindi, Langobaya, Marafa, and Magarini) of Malindi Sub-county, Kilifi County. The population of the Watha community in these sub-counties is estimated at approximately 30,000 persons (Gok, 2018).

The socio-economic survey however came across one (1) youthful respondent in Konjora 3 village – Kilifi Township location who noted to be of Bajuni origin. The respondent is polygamous with three children. The respondent has assimilated into the local Giriama culture and practices business, rears livestock and undertake subsistence farming. According to Save Lamu (2018); The Bajuni live on the small coral islands off the coast of Lamu (Pate Island) as well as on the mainland. They the largest ethnic group in Lamu East, numbering about 55,000 with their origin being islands between Kismayu (Somalia) in the north and the Lamu archipelago (Kenya) in the south. A few have migrated to mainland Lamu and neighboring Counties and towns in such of employment. They have assimilated to local culture and are currently farmers, livestock keepers, fisherfolk, mangrove cutters and tourism operators. The current livelihoods of the Bajuni are derived from the natural resources based on their locality. Bajuni of Lamu, Kenya are said to have close connections with the Bajuni of Kismayo, Somalia.

The survey team did not come across any significant settlement occupied by the Indigenous people (IP), “the Watha” and “the Bajuni”. The Watha are the only indigenous community domiciled within Kilifi County according to the KESIP final Vulnerable and Marginalized Groups Framework (VMGF) report of April 2019. The community meets the World bank OP 4.10 requirements and article 260 of the Constitution of Kenya (2010).

In relations to culture of the Watha People and their settlement, a Key informant (Chief in the project area) informed the social safeguard team that most people of Watha origin usually migrate towards the Giriama community from Tsavo East. In that regard, they might be scattered in Kilifi County; however, they are hardly noticed since they easily assimilate into the Giriama culture, identify themselves as Giriamas and rarely want to associate with the Watha traditions. Also, the Chief stated that those that migrate, do not establish a centralised settlement. Based on the socio-economic survey along the project corridor no vulnerable and marginalised groups / Indigenous persons (IPs) were identified or traversed. A social assessment (SA) will hence not be conducted thus no preparation of a vulnerable and marginalised groups plan (VMGP). In the absence of a VMGP, it is recommended that the project implements targeted interventions during RAP to ensure the Vulnerable Individuals and Households Vulnerable individuals and households are adequately engaged and access project benefits.

3.2.12 Child and Forced labour

Kenya has made some commendable moves towards eliminating child labour, primarily through the National Policy on the Elimination of Child Labour, and most recently the Computer and Cybercrime Bill with its provisions on child sexual exploitation. Also, worth mentioning is the Children's Act which domesticated most international and continental conventions to enhance child rights and protection. Kenya has ratified most key international conventions concerning child labour including Minimum Age, Worst Forms of Child Labour, Optional Protocol on Armed Conflict, Palermo Protocol on Trafficking in Persons. The Constitution of Kenya also prohibits forced labour. Although child abuse and exploitation including forced labour is prohibited by the Kenyan constitution, many children not yet in their teens, are forced to work in farms, as sand harvesters, street hawkers, domestic workers, drug peddling and most piteously, as sex workers. Children also engage in child labour mainly in agriculture sector. Further children in Kenya scavenge dumpsites and streets for scrap material, including metal and glass while often risking injury and exposing themselves to infectious diseases.

SCOPE - Strengthening Community Partnership and Engagement – a local NGO in Vitengeni Kilifi County notes that while the law requires children to be in school, poverty and family circumstances force many children in Kilifi County into child labour schemes at the expense of their education, health and safety, and their childhood. The NGO explains that there is a strong community belief that children must work to contribute to the family's income. For instance SCOPE highlights:

“Kadzo (not her real name) is a six years old girl in Class 3 at a Kilifi primary school, but currently Kadzo does not go to school because she has three young brothers who need to be taken care of as their mother goes to work to be able to provide for them. Since Kadzo is the only girl in the family of six, her mother decided to remove her from school to take care of her smaller brothers and work around the home as the mother works as a domestic worker in the neighbourhood.”

A key respondent in the project area, familiar with children matters stated that most orphans and vulnerable children in the project area are likely to be exposed to child victimisations such as forced early marriages, child labour as well as child neglect. The informant observed that there is need for proper and continuous consultations with the entire community to sensitise on respecting the rights and welfare of children and refrain from violating them.

3.2.13 Gender Based Violence– Sexual Exploitation and Abuse /Sexual Harassment (GBV -SEA/SH)

Gender Based Violence (GBV) is a public health concern across the world. It is a significant risk factor for poor health impacting on individuals' physical, sexual and psychological health, as well as their social and economic well-being. Vision 2030, through its social pillar, commits Kenya to invest in its people to improve the quality of life for all Kenyans by targeting a cross section of human and social welfare projects and programmes, including gender equality programmes. Furthermore, in addition to the constitutional guarantees of equality for all before the law (Chapter 4 on the Bill of Rights), Kenya subscribes to the Millennium Development Goals (which have been transformed into the Sustainable Development Goals), including Goal 3 – Promote Gender Equality and Empower Women. Kenya has therefore committed itself to eliminating gender-based violence and to protecting survivors through robust legislation, policy frameworks, and commitment to regional and international conventions and instruments on GBV.

Kilifi County is rated the County with the highest prevalence of Gender Based Violence in Kenya by the Kenya Demographic and Health Survey (2014) report. The report noted Kilifi County as having the highest rape prevalence in the country, at 97.9 per cent. In July 2016, the State Department of Gender Affairs in collaboration with the Kilifi County Referral Hospital and United Nations Population Fund identified an underutilized Hospital Building which was officially donated to host a Gender Based Violence Recovery Centre. Gender based violence involves a wide variety of agents from intimate partners and family members, to strangers and institutional actors

such as teachers, pastors, office managers and police. The commonest forms of GBV mentioned by men and women included inflicting bodily harm, physical assault, verbal abuse and rape. The most fundamental cause of GBV is the traditional belief about men's dominance over women.

Based on the socio-economic survey, locals claimed that the influx of non-locals might expose the project area to illicit behaviours, which might undermine the existing socio-cultural aspects, values, and norms of the locals. The situation would cause animosities between the locals and the outsiders, degenerating into conflicts and scramble for scarce resources such as accommodation, water, and food as well as job opportunities. This might result in social and cultural impacts such as child abuse, teen pregnancies, and pupils dropping out of school to take up jobs, gender-based violence (GBV) such as sexual exploitation and abuse (SEA) as spouses fight over-compensation.

Interview with a key informant in Kilifi County noted the possibility of sexual harassment (SH) between workers / staff working on the proposed power transmission project. The key informant stated that unwelcome sexual advances, requests for sexual favours, and other unwanted verbal or physical conduct of a sexual nature might arise at the project workplaces. The informant noted that the potential perpetrators of SH can be any individuals associated with the proposed project including construction workers and other personnel of the contractor, consultants supervising the project or undertaking technical assistance activities relating to the project or even the security personnel hired for the project.

3.3 Cultural environment

The project area is largely dominated with the Agiriama tribe from the Mijikenda community who are also from the larger Bantu people. They have centralized homestead with strong ancestral, and family ties with a strong sense of community entitlement. A qualitative source noted that Jilore is one of the locations in the project area with residents that uphold strong ancestral and family-ties as well as community entitlement.

An assistant chief familiar with cultural issues within the project area confirmed no existence of active community cultural sites. However, he clarified that, there might be sacred sites being used at an individual or family levels. He noted that the Agiriama's, long ago used to worship their gods "*Mulungu*" and perform cleansing ceremonies. The ceremonies were done in "*Kaya*", sacred forest prayer places of the Mijikenda people, if there was a prolonged drought and famine. Nonetheless, discussions with elderlies in the project area established that there used to be cultural sites utilised by the ancestors to perform diverse cultural functions. The discussants mentioned "*Kwa Saleh*" and the "*kaya forests*" as one of the sites. These cultural sites had traditional monuments which they considered as ancestral heritage. One of the key informants indicated that, the alleged cultural site is in Kwa-Swaleh village in Mongotini a few Kilometres from Kakuyuni substation which is off the RoW. Notably apart from burial sites / graves there are no areas of cultural significance expected along the Malindi – Kilifi RoW.

Baobab tree: One of the local administrators in the project area stated that the Giriama community is rapidly abandoning retrogressive traditions and cultural practices. However, noted that a section of community members still safeguards the Giriama traditions; for instance, valuing traditional trees such as baobab tree, locally referred to as "*Mbuyu*", with a pretext that the tree symbolises peace and harmony and is also used to host cleansing ceremonies. Notably is a baobab tree along right of way in Konjora. Overall, discussions from various informants and locals established that the Agiriama community highly value burial sites, which they use to perform various burial ceremonies and rites.

Graveyards: An approximate of 24 graveyards were observed to be within the proposed RoW (see plate 3-7). Fourteen (14) graves were observed in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location. The elderly noted that the proposed project should avoid any interference with the existing graves either during construction works or clearing access routes, since the graves hold cultural values and social ties to the bereaved.

Churches: Though under private ownership, there are three (3) churches which include Word Celebration Centre Church in Jilore Location, Sokoke PEFA Church in Nyari Location, and Barikiwani Church in Konjora location that are along the right of way. The churches are of religious value to the community and society at large.

Cultural sites and ruins: Kilifi County boasts of several cultural sites, such as Mnarani ruins, mosques, and a group of tombs. The Mnarani ruins site consists baobab trees, the largest in the Coastal Kenya. Malindi cultural heritage consists of classic Swahili architecture since it was a Swahili Settlement since the 14th century. Other Malindi-Sub-county cultural heritage includes; Gede Ruins, Mambrui town, Vasco Da Gama (GoK, 2018). However, none of the mentioned cultural sites were traversed by the line.

Therefore, there is less need of conducting further cultural analysis in the project area apart from ensuring that burial sites are not interfered with throughout the project cycle. However, the project contractor should work closely with local elders to identify any other physical cultural resources or areas of cultural heritage importance which may have not been identified during the ESIA process. for preservation and protection purposes.



*Plate 3-6 A graveyard adjacent to AP 11 in Marini village Jilore Location
Source - AWEMAC field Survey*

3.4 Physical Environment

The physical environment describes the topography, landforms, geology, soils, climate and meteorology, air quality, and hydrology (water quality, and water resources).

3.4.1 Topographic Features

Kilifi County has four major topographic features (figure 3-5). The first one is the narrow belt, which forms the coastal plain and varies in width from 3km to 20km. The coastal plain lies below 30m above sea level with a few prominent peaks on the western boundary such as Mwembetungu hills. Across this plain are several creeks with excellent marine swamps that are richly endowed with mangrove forests and present great potential for marine culture. This zone is composed of marine sediments, including coral, limestone, marble, clay stones and alluvial deposits that support agriculture. The second topographical feature is the foot plateau that lies to the east of the coastal plain. It is characterized by a slightly undulating terrain that falls between 60m and 150m altitude and slopes towards the sea. Several dry river courses transverse the surface with underlying Jurassic sediments consisting of shells, sandstones and clays. This zone is covered by grassland and stunted shrubs.

The third feature is the coastal range, which falls beyond the foot plateau between 150m to 450m altitude and has distinct low range sandstone hills. These hills include Simba, Kiwava, Daka, Wacha, Gaabo, Jibana, Mazeras and Mwangea. The fourth is the Nyika Plateau, which rises from 100m to 340m above sea level covering about two thirds of the county area on its western side. This plateau is characterized by a low population density, thin vegetative cover, shallow depressions and gently undulating terrain. It constitutes the arid and semi-arid areas of the county, which are suitable for ranching.

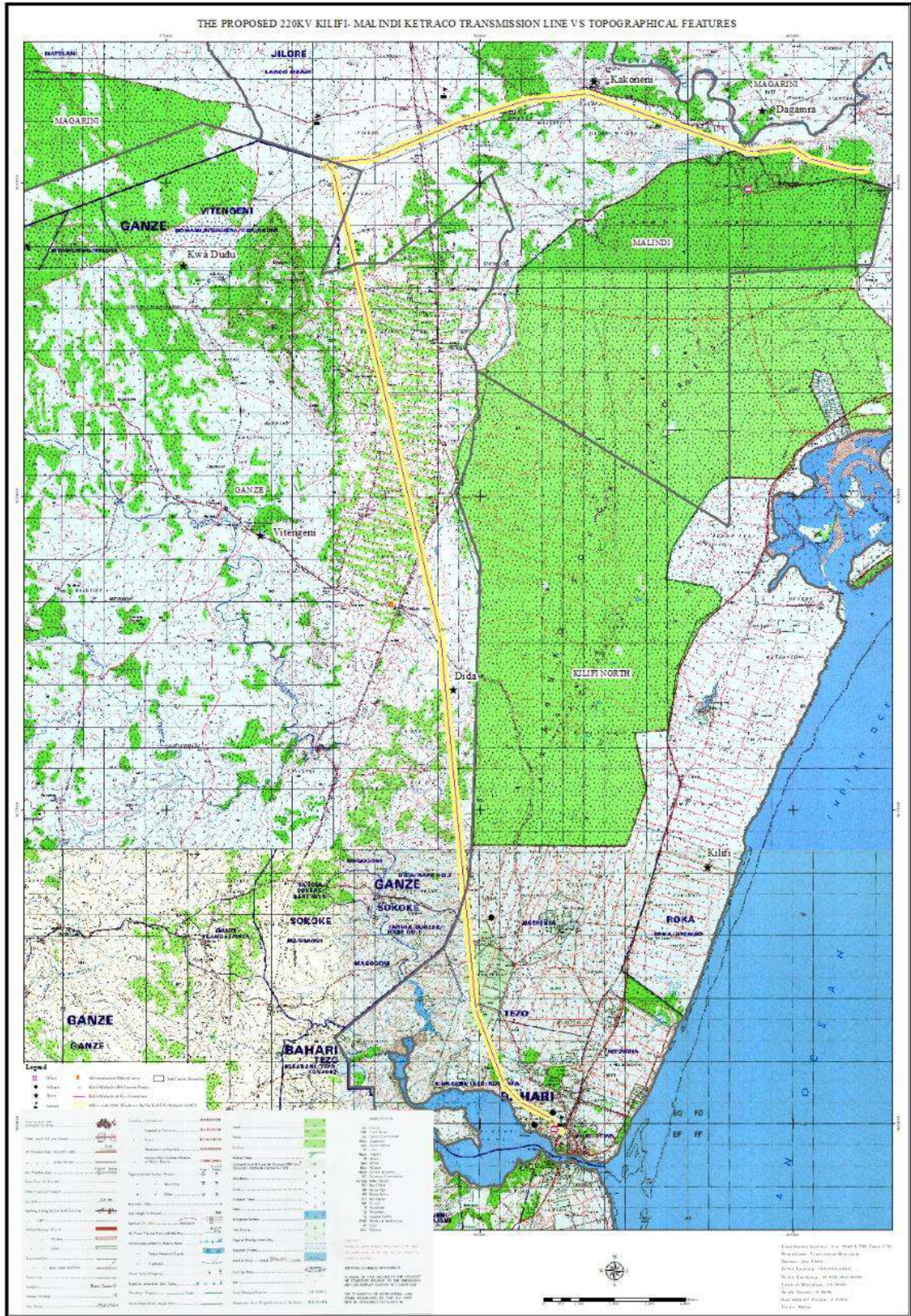


Figure 3-5 Topographical Map within Kilifi Project area
 Source - www.topographic-map-Kenya

The drainage pattern of the county is formed by one permanent river, several ephemeral rivers and streams which drain into Indian Ocean. The permanent river is Sabaki / Galana River while the seasonal rivers are Nzovuni, Rare, Goshi and Kombeni. The streams include Wimbi, Kanagoni, Masa, Muhomkulu and Mleji. The proposed project lies within the foot plateau, coastal range, and Nyika Plateau forming three of the four main topographical features in Kilifi (Figure 3-5). From Kilifi side the line traverses the foot plateau consisting of fluvial (UF) well drained soils to Nyika Plateau consisting of excessively drained loam soils at Loop in Loop Out in Weru Group Ranch suitable for ranching. The Nyika Plateau runs through to Kilifi before ending at Matano Manne centre. Within this region the drainage changes to SC2 consisting of sandstone, greywacke, arkose soils. Within the outskirts of Arabuko Sokoke forest, the soils again change to UF well drained soils running all the way up to Konjora area. The soils in this section are suitable for agricultural purposes. As the line nears Pwani University in Kilifi township the drainage changes to Coastal range consisting of marine and estuarine (UM) excessively drained soils.

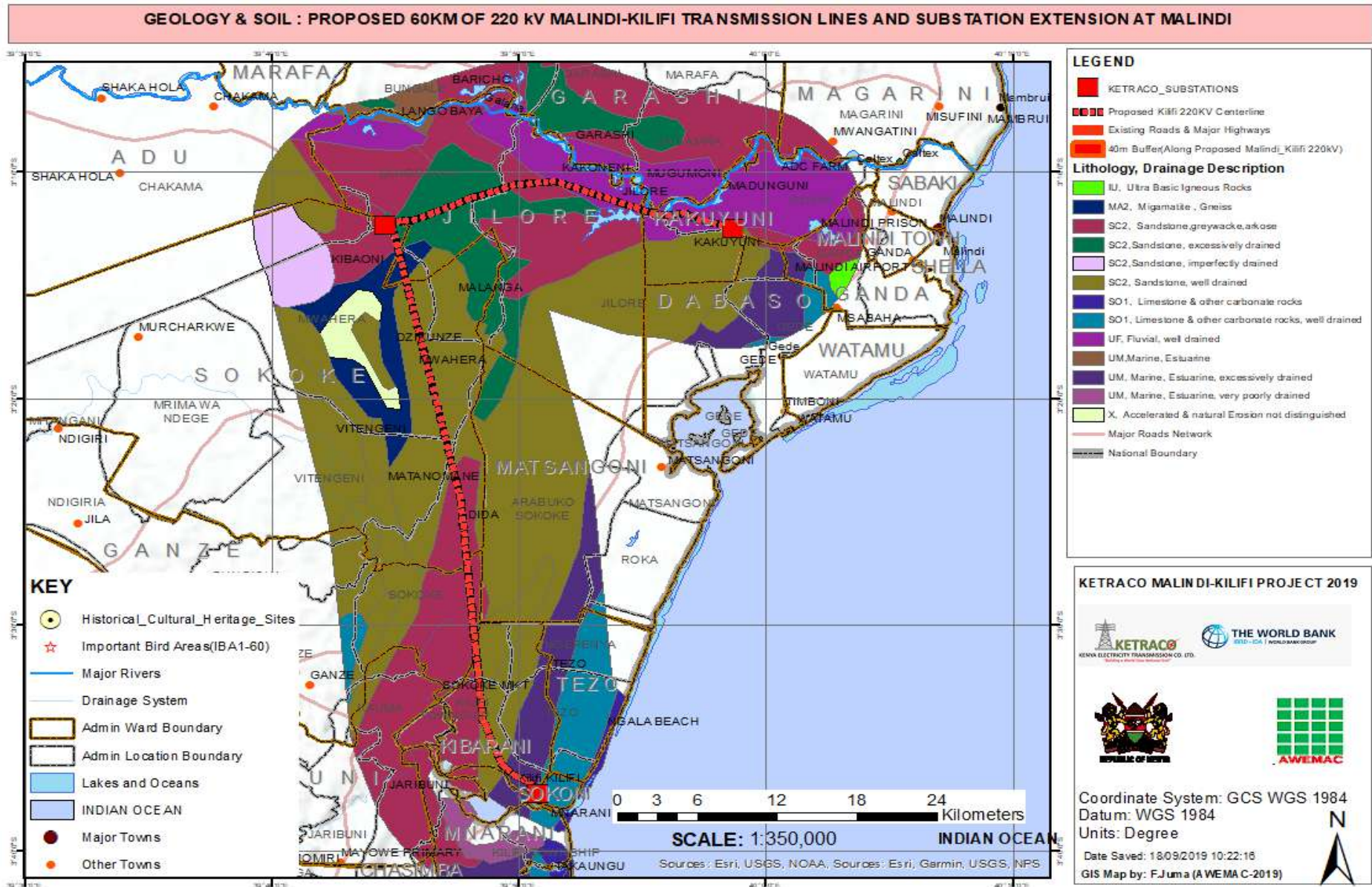


Figure 3-6 Geology and Soil along the RoW

Source - AWEMAC GIS

3.4.2 Climatic Conditions

The general weather pattern is warm throughout the year with two seasons of moderate rainfall averaging 900mm in a year. Long rains occur in the months of March and July with a peak in April while the short rains occur in October and December with a decrease in December leading to a minimum in January. Rainfall is controlled by the Monsoon winds and topography. During the rain seasons the coastal region including Kilifi County and along RoW for the proposed project receives the highest amounts of rain with the amount decreasing inland. Mean annual rainfall ranges from 510mm in the drier northern hinterland to over 1,016mm in the wetter areas. Annual temperature range averages 29.5°C (maximum) and 22°C (minimum). Average relative humidity is 65% but decreases to the hinterland.

3.4.3 Rainfall Variability

Kilifi County experiences bimodal rainfall with two distinct wet seasons occurring in March-May and Oct-December (Long and Short Rains). The average rainfall for each season ranges from 7mm -1200mm and 200-700mm respectively. Distribution both in space and time has been poor and varying over time. There have been considerable changes in rainfall patterns in Kilifi county particularly on the onset and session. This has led to negative effects to crop yields, livestock production, water sources, forest resources and climate related hazards. Notable along the Row were various vegetation depicting variability in rainfall patterns. The Arabuko Sokoke area was noted to be have rich vegetative cover an indicator of receiving higher rainfall ranges compared to Weru Group Ranch and Mungotini in Goshi location.

3.4.4 Water Resources

3.4.4.1 County Water Status

Kilifi County is a generally water stressed county with a general daily water gap of 80,884 cubic metres per day in 2018 which will rise to 99,784 m³/d, 118,684 m³/d and 137,584 m³/d by 2022, 2026 and 2030 respectively. Malindi Sub-County has the highest daily water demand at 30,637 m³/d while Gaze Sub-county has the lowest water demand of 6,902 m³/d. Currently, Kilifi South and Kilifi North Sub-counties provides 8,380 m³/d and 7,810 m³/d respectively to the population. The two sub counties have greater potential for shallow wells and have higher water pipeline connectivity. Overall most parts in rural Kilifi County are water deficient; the county meets 30% of the water demand. Daily production is 43,000m³ per day against a demand of 182,000m³. This is against a rapidly expanding population and an old water distribution system that is inefficient and vulnerable to frequent breakdowns (GoK, 2018). The County Government and other stakeholders in the water sector are exploring possibilities of drilling boreholes, pipeline extensions and enhancing other water sources to meet the growing water demands in both rural and urban areas. Other equally important sources of water for the communities in the county are water pans, earth dams and rivers especially in the rural areas where piped water is either not available or inadequate.

3.4.4.2 Water Sources and Access

Boreholes and water pipelines are the major sources of water for the population across Kilifi county. The average walking distance to the nearest water point is estimated at 3.5km. According to the Department of Water Environment, Forestry Natural Resources solid waste management score Card Report, (2016), 60% of the households in the county have access to piped water distributed by Kilifi - Mariakani Water and Sewerage Company (KIMAWASCO) and Malindi Water and Sewerage Company (MAWASCO). Overall, most parts in rural Kilifi county is water deficient as it only meets 30% of the water demand. Daily water supply from KIMAWASCO is 43,000m³ per day against a demand of 182,000m³ per day. This is against a rapidly expanding population and an old water distribution system that is inefficient and vulnerable to frequent breakdowns. (GoK, 2018).

Water resources (rivers, streams, swamps and springs) found along the proposed transmission line were mapped to determine the likely impacts of the infrastructural development to the resources. The main water body along the Malindi – Kilifi route is the Galana river which is approximately 200m from the RoW around Mungotini in Goshi Location.

In the project area, households have diverse sources of water, though, a majority 61.5% are connected to public tap, other water sources are presented in Table 3.14.

Table 3-14: Source of water

Source of Water	Count	Percent (%)
Public Tap	128	61.5
Piped into dwelling	41	19.7
Piped into Plot/Yard	34	16.3
River/Stream/Pond/Dam/Lake	3	1.4
Borehole	2	1.0
Total	250	100%

Source - AWEMAC field Survey

A number of households were also observed to harvest rainwater mainly through traditional tree bark means (See plate 3-7). Most of the interviewed households 82.7% buy water at an average of 10 Kenya Shillings. The overall estimated average distance to water point is 700 meters. Though, 79.8% of the interviewed population access waterpoints located more than 1km, which is well above the (WHO, 2003) recommendation of within 100 metres. In the project area, residents must walk for more than 1km to access water, particularly from borehole, rivers and streams, as shown in figure 3.6.

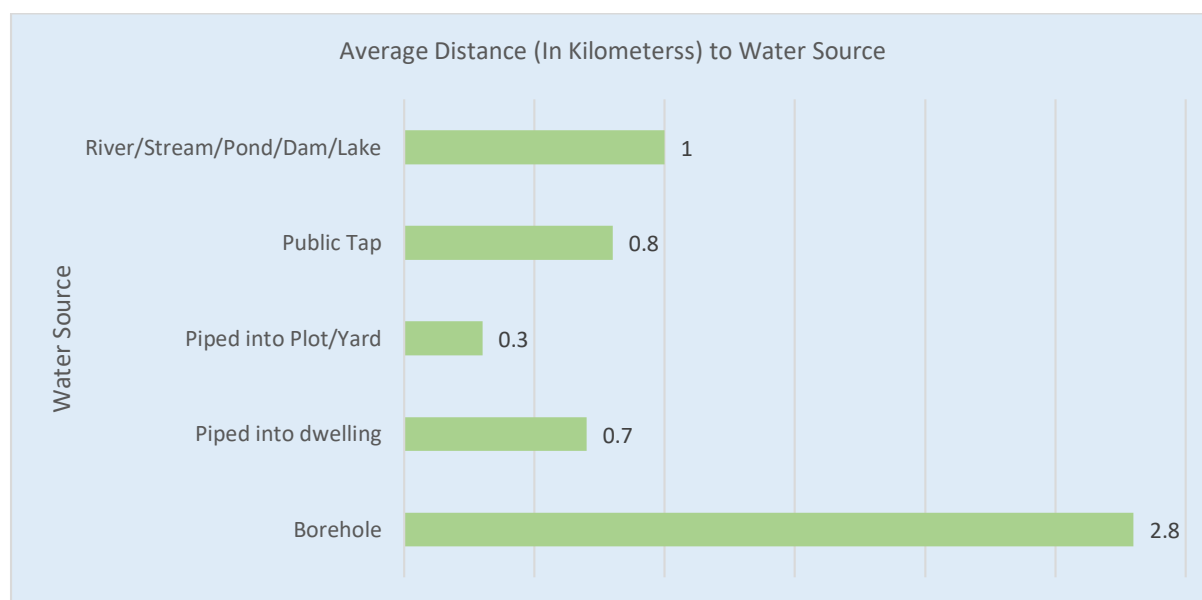


Figure 3-7: Average Distance to Water Source

Source - AWEMAC field Survey

A village elder in the project area stated that rivers, streams and dams are usually helpful to the residents during dry seasons or when public taps run dry.

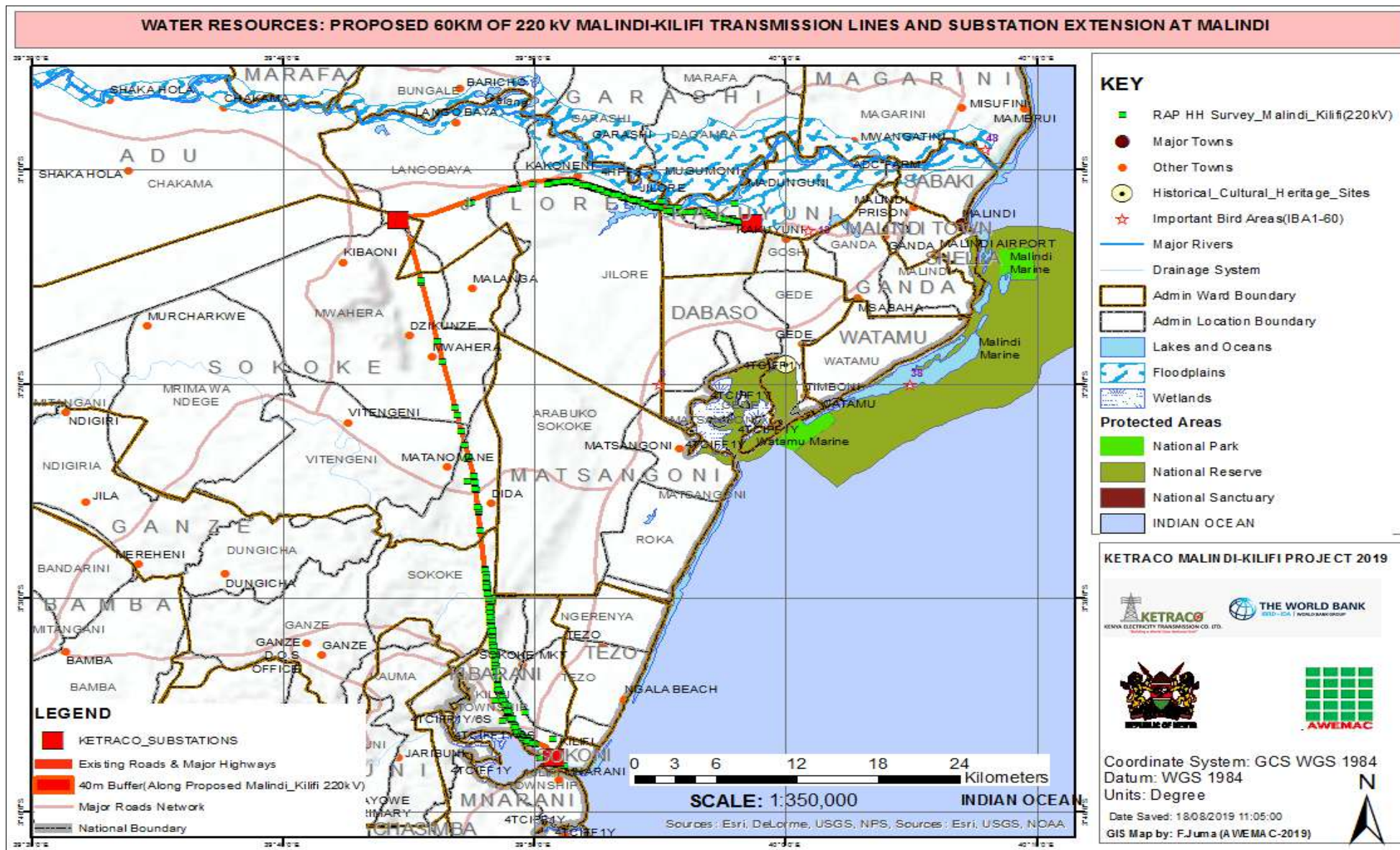


Figure 3-8 Water resources along RoW
Source - AWEMAC GIS

Notably the proposed line does not cross any river, though it traverses sections consisting of floodplains likely to be marshy in rainy seasons. The water resources in the project areas include partial fresh waters from community and private boreholes, protected shallow wells, public taps, and river Galana. Taking into consideration water scarcity in the County, it will be prudent for the project contractor to establish sources of water such as boreholes that will avert any competition with the local community or be a potential for water resource conflict between residents, livelihood sources (livestock, irrigation, cropping) and the transmission projects. Establishing of water sources (boreholes) should be preferably done in mindful of community needs and accessibility in the future.



*Plate 3-7: Traditional rainwater harvesting from back of a tree
Source - AWEMAC field Survey*

3.4.5 Solid Waste Management

Kilifi County prides in acquiring good solid waste collection infrastructure; which includes compactors, trucks and bins. Dumping site in the county has also been secured, however, challenges still exist in the management personnel, inadequate PPEs for the work, use of modern technology in waste management, lack of PPPs and an un-empowered community in waste handling and management. Notably, waste management by the County is also concentrated within the urban areas - Kilifi town and Malindi town - with little or no services at the rural areas.

Regarding garbage disposal, most residents 50% burn garbage in open place, 32% dump in the homestead compound, while 11% bury their waste. Only 2% of the garbage are collected by the county government. Whereas 4% dump in their pit - latrines.

3.4.6 Sanitation

Access to basic sanitation facilities remains a formidable challenge across Kilifi county. The county toilet coverage is estimated at 67% while 30% of households have hand washing facilities. A significant proportion of the population in the county has no access to basic sanitation facilities, posing serious public health implications. More importantly, proportion of households with access to sanitation facilities varies across and between major urban centers

and peri-urban areas and the concentration of these facilities tends to decline towards the rural areas within the county (Kilifi CIDP 2018-2022)

In terms of toilet coverage, 13.9% of household interviewed did not have access to toilet facility. The toilet regimes are presented in Table 3.15.

Table 3-15: Type of toilet Facilities

Type of Toilet facility	Percent (%)
Pit Latrine without Slab/Open Pit	26.4
Flush to Pit (Latrine)	21.2
Pit Latrine with Slab	20.7
No toilet	13.9
Flush to Septic Tank	7.2
Ventilated Improved Pit Latrine (VIP)	5.8
Composting Toilet	2.9
Flush to Piped Sewer System	1.9
Total	100%

Source - AWEMAC field Survey

A considerable proportion 31% share toilet facility with other households. According to GoK, (2018) toilet coverage in Kilifi county is estimated at 67% while only 30% of households have hand washing facilities.

3.4.7 Environmental Threats

Kilifi County experiences daunting environmental challenges (GoK, 2018) as indicated table 3-16. The major threat in Kilifi County is the climate related disasters which include; drought, floods, diseases and conflicts. According to Kilifi County Integrated Development plan (CIDP), the effects of climate change are evident across all the sectors of the County including livestock, crop production, fisheries, and environment. Communities who live in the semi-arid areas of Kaloleni, Ganze, Magarini and parts of Malindi sub-county are more prone to the impacts of extreme weather events such as drought given their weak coping strategies and high poverty levels among the households. Areas prone to flooding include the Sabaki Flood Plain, Kwa Kadzengo in Kikambala, Mtondia, Vitengeni and along river Mbogolo in Mavueni.

Table 3-16 Environmental hotspots areas in the county

Issue	Hotspot areas	Hotspot areas that are within the project's area of influence	Contribution to Environmental Degradation
Deforestation	Dakatcha, Galana Ranch, Mwangea Hills, Jorore, Fungo, Rabai, Tsolokero kayas	Arabuko Sokoke region	Soil Erosion, land degradation, Climate change.
Charcoal Production for commercial purposes	Arid and Semi-Arid Areas of Ganze and Magarini Sub Counties	Arabuko Sokoke region / Dida	Pollution, Soil Erosion, land degradation, Climate-change
Quarrying (limestone, coral blocks, ballast, Sand)	Kilifi South (Marengo), Kilifi North (Tesco, Roka, Kakanjuni, Nzovuni), Ganze (Kadzandani	No quarrying was observed.	Noise, visual, air pollution, land degradation, water sources pollution,

Issue	Hotspot areas	Hotspot areas that are within the project's area of influence	Contribution to Environmental Degradation
	and Jaribuni) and Rabai (Kokotoni) Magarini (Gonging)		Water borne diseases,
Mining (Manganese)	Kadzandani, Bale, Chivara in Ganze sub county	No Mining activities were observed.	Noise, visual, Air pollution, land degradation, Water borne diseases.
Salt Mining/Harvesting	Magarini (Gonging, Marereni, Fundisa, Kurawa)	No Mining activities were observed.	Salt brine, pollution of Underground water, Diseases,
Air pollution from industrial activities	Cement Manufacturing-Athol River Mining (Raba) & Mombasa Cement (Kilifi South)	No industries were observed.	Diseases,
Solid Waste	Major urban centres of Mariakani, Gonging, Malindi, Kilifi, Mtwapa, & Marereni	Key issue for most market centre areas Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga	Land degradation, various diseases,

Source – Kilifi CIDP 2018-2022 / AWEMAC Field Survey

Communities along the proposed project were noted to have weak weather coping strategies and high poverty levels among the households. Key environmental issue included deforestation for agricultural purposes and charcoal burning mostly within Arabuko Sokoke region and solid waste management in most of the market centre areas Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga.

3.4.8 Land Classification and Land Cover

3.4.8.1 Land Ownership Categories/Classification

According to the Kilifi County Baseline Survey (2013) 65% of farmland was owned by household head or spouse, about 20% communally owned and 4% rented out by individual owners. 34% of households had title deeds to their land, 55% owned land without formal documents, 22% had communal rights to use of land and about 8% had use of land but never been allocated (squatter). This indicates that about 66% of all households did not have formal titles to the land and therefore could not use land as collateral to borrow loans or as incentive to undertake investments. Percentage of households with title deeds has, however, greatly improved since then, courtesy of the Government of Kenya's title issuance and settlement schemes acceleration program and County Government support of administration of new adjudication schemes. Between 2013 and 2017, 105,470 Ha of land in 35 adjudication sections were surveyed and demarcated, benefiting over 40, 000 households (Department of land, Housing, Energy, Physical planning, 2017).

In areas such as Sokoke, Nyari, Langobaya (Weru Group Ranch), Goshi and particularly residents along River Sabaki and Kaliapapo village in Malindi Sub-county documented low presence of title deed holders. While Jilore, and Dida, areas saw a significant number of respondents having title deeds.

The Kenyan Constitution 2010 notes that all land in Kenya belongs to the people of Kenya collectively as a nation, as communities, and as individuals. Land in Kilifi County is classified as public, community, or private. The proposed transmission line traverses the two categories of land (public and private) with the most affected being privately owned land. Some of the key public affected land includes Kenya Forest Service in Goshi Location, Fumbini Primary School and Pwani University both in Kilifi North Township.

Though under private ownership, there are other key facilities including churches such as Word Celebration Centre Church in Jilore Location, Sokoke PEFA Church in Nyari Location, and Barikiwani Church in Konjora location that serve the community and society at large. Table below indicates public facilities / assets / land affected by the project;

Table 3-17 Impacts on public facilities / assets / land

Type of Facility	Location	Total Area Affected (Acres)	Nature of Impact and Description
Public Institutions / Public Land			
Kenya Forest Service	Goshi	39.971	Minimal Impact. Only a small section of land and trees are affected
Fumbini Primary School	Kilifi North Township	2.442	Minimal Impact, Only a small section of land and one tree affected
Pwani University	Kilifi North Township	17.749	Minimal Impact- only a small section of land affected, with perimeter wall and some trees
Churches			
Word Celebration Centre	Jilore	-	Full Impact- Entire church structures are affected (Semi-Permanent Structure).
Sokoke PEFA Church	Nyari	-	Full Impact- Entire the structures in the church premises are affected. These include Main church structure, Toilet, and Kitchen
Barikiwani Church	Konjora	-	Minimal Impact. Areas affected include: Two Pit Latrine
Companies			
African Plantation Capital Limited	Langobaya	10.660	Minimal Impact, areas affected is only one temporary structure and the company's fence. A section of crops/Bamboo trees will be affected Minimal Impact- Not to affect its operations
Associations			
Weru Group Ranch (Weru 19 & 20)	Langobaya	59.535	Minimal Impact, only a small section of land is affected
Kaaga Cooperative Society	Kilifi North Township	58.454	Minimal impact. Only a small section of land affected

Source – Draft RAP report for Malindi Kilifi Transmission Line

Notably, according to the RAP report for Malindi Kilifi, the entire Weru Group Ranch is titled as private land. PAPs engagement revealed that Weru Group Ranch is also at two levels – Weru 19 and Weru 20. Those in the sub divided section who hold individual land parcels are referred to as Weru 19 members. The respective members attended PAPs meeting and agreed they should

receive compensation as individual PAPs since they are bonafide landowners. Weru 20 is the unsubdivided section, it has a members register, and compensation should ideally be paid to the Group Ranch Account and thereafter management distributes to individual members in the list according to shares held. However, the members – Weru 20 -noted that there are internal disputes which will require to be settled before the compensation is done. The members and officials attended the PAPs meetings and were satisfied with this form of resolution.

3.4.8.2 Land Cover

According to Kilifi County Integrated Development plan (CIDP), natural pastures occupy almost half of County farmlands, woodlots 7%, improved pasture/forage production 8%, homesteads 9%, subsistence crop production 21%, commercial crop production 1.5% and unusable land (swampy, rocky, hilly, etc.) 8%. Use of land that has not been allocated to current occupiers (squatters) in the County is not so much a landlessness problem as is a communal protest against historical land injustices associated with colonialism and delayed or skewed post-colonial state's implementation of land sector reforms. Kilifi, as are most coastal Counties, is still contending not only with the monumental ten-mile coastal strip land alienation problem but also the British Crown land legacy. These legally protected lands are at the core of the squatter problem in both the rural and urban areas of the County. The Kilifi CIDP notes that the National Land Commission has in recent times been regularizing squatter settlement on the former British Crown land (that became state land after independence and now public land), formalizing squatter settlements in the privately registered land in the ten-mile coastal strip remains a thorny issue.

Mapping along the proposed line (figure 3-8) indicated that between Dabaso and Kakuyuni area in Malindi sub-county, land cover is mainly bushland. Sparsely dense agricultural and woodland was notable within Jilore location. As the line approaches Weru Group Ranch near Kibaoni, land cover is notably bushland which runs up-to Matano Manne, Dida and Changani villages. Within the boundary of Arabuko Forest the land use is mainly forested with shrubs and bushland. From Sokoke to Konjora running up-to Kilifi Township land cover is mainly crop plantations consisting of maize farming.

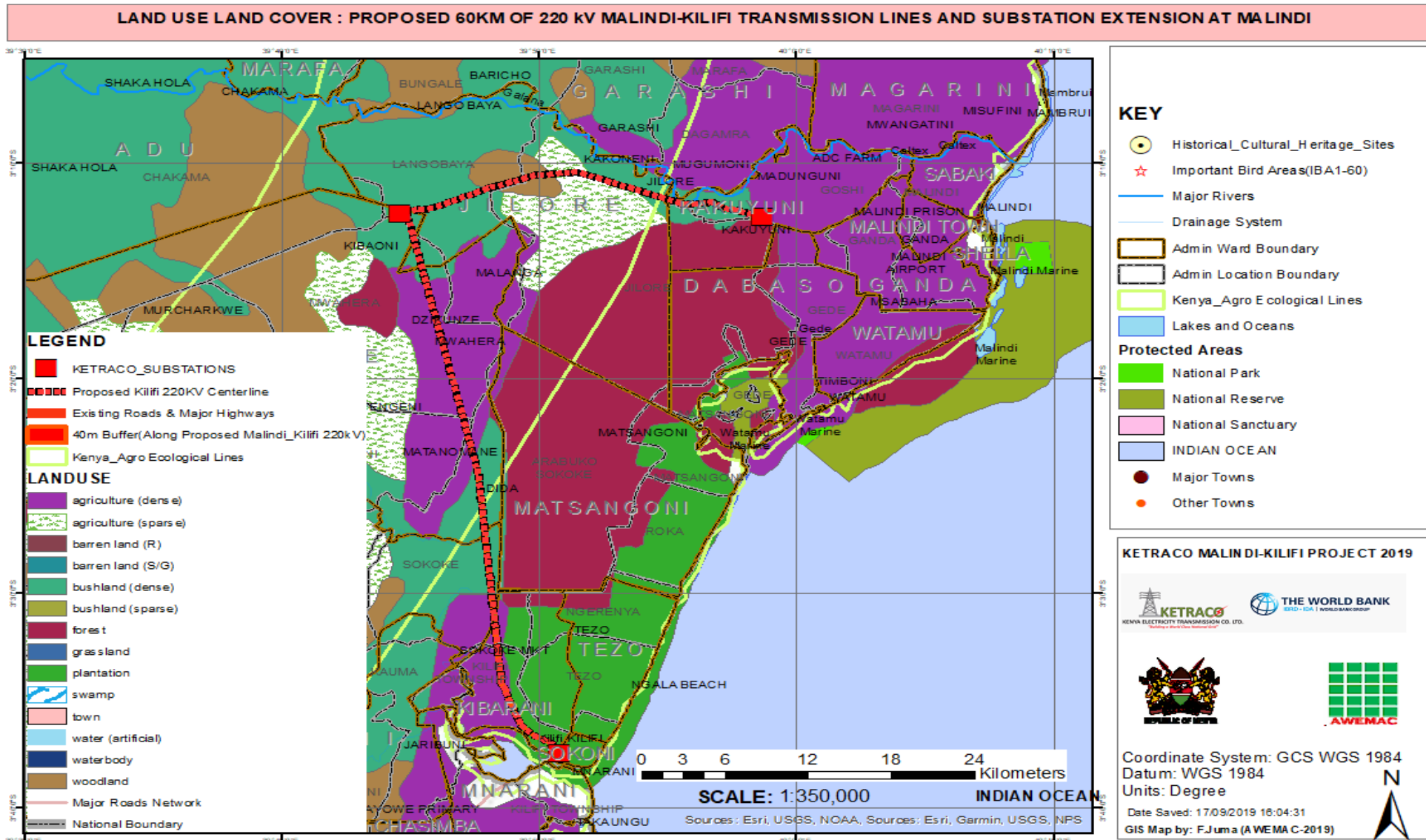


Figure 3-9 Land use and land cover
Source - AWEMAC GIS

3.4.8.3 Mean Land Holding Size

Kilifi County's farmland use pattern indicates availability of a relatively high average acreage per farming household and favorable physical conditions to produce a variety of food and cash crops. This is deduced from the fact that almost half of County farmland is natural pastures, with only 21% under subsistence crop production and a mere 1.5% under commercial crop production. The mean land holding size per household is 3.04 Ha while the mean holding size for large scale farmers is 8.09 Ha in the County (GoK, 2018).

3.5 Biological Environment

This section discusses into detail the flora and fauna types and diversity, endangered species, sensitive habitats, wildlife within protected areas and other dispersal areas along the transmission route. The proposed transmission line falls within the coastal tropical lowland Kenya's eco – climatic zone. Like most natural systems, human activities have played a major role in altering the natural bio physical environments in this eco – climatic zone. Due to the location of the proposed power transmission project in relation to Arabuko Sokoke forest, the sensitivity of the forest ecosystem services including being recognized as a biodiversity hotspot; a brief has been given about the Arabuko Sokoke biodiversity.

3.5.1 Ecological Conditions

The Malindi – Kilifi line avoids Arabuko – Sokoke Forest's biodiversity; the Gede ruins cultural conservation areas; and the generally densely populated human settlements. This demonstrates the important role ecological knowledge and considerations play in such crucial infrastructural developments. However, the adjoining habitats still form important animal and plant dispersal areas and habitats.

Kilifi County is divided into five Agro-Ecological Zones (AEZ) defining areas with similar production related characteristics such as annual mean temperatures, vegetation and humidity. These zones include the following: -

- **Coconut-Cassava Zone:** This zone covers the coastal uplands and the low-level coastal plains and has the highest potential for crop production in the county. The major farming activities in this area includes fruit tree cropping (mango, citrus, cashew nut and coconut), vegetable farming (chilli, brinjals, okra) and food cropping (maize, bananas, cowpeas, upland rice, green grams). Dairy farming also does well in this zone. The zone receives an average annual precipitation of 1,300mm per annum and a mean annual temperature of 24°C.
- **Cashew nut-Coconut zone:** this zone stretches northwards along the coastal plain up to Arabuko Sokoke forest. The zone receives an average precipitation of 900mm and mean annual temperature of 24°C. It has agricultural potential with the same crop types as the coconut- cassava zone but with slightly less production.
- **Livestock-Millet Zone:** The zone is of lower agricultural potential with annual precipitation ranging from 700mm to 900mm. The area is suitable for dry land farming supporting drought tolerant crops and ranching activities.
- **Lowland Ranching:** This zone varies in altitude from 90m to 300m with annual mean temperature of 27° Celsius and annual precipitations of 350mm to 700mm. The major activities within this zone are ranching and wildlife.
- **Coconut Cashew Nut – Cassava Zone:** this zone is mainly found in Kilifi South and North constituencies and is the smallest of all the zones. It lies in the altitude between 30m to 310m above mean sea level with mean temperature of 27° Celsius and annual precipitations of 900mm per annum. The area has a similar potential for the crops found in the coconut-cassava and cashew nut-cassava zones.

The dominant woody species along the proposed transmission line were *Mangifera indica* (Mango tree), *Anacardium occidentale* (cashew nut), *Azadirachta indica* (neem tree), *Cocos nucifera* (coconut) and *Gmelina arborea* in areas with larger human populations. In the sparsely populated

areas such as around Weru Group Ranch, the area was dominated by shrubs especially *Acalypha fruticosa*, *Brackenridgea zanguebarica*, *Combretum spp*, *Commiphora spp*, and *Croton pseudopulchellus*.

3.5.2 Arabuko Sokoke Biodiversity

The transmission line does not traverse the Arabuko forest reserve; therefore the project may not have significant direct impact on fauna or biodiversity in the protected reserve. The proposed transmission route specifically veers off to avoid Arabuko Sokoke forest at various angle points as follows AP6 (1.85km) to the East, AP12 (287m), AP13 (275m) and AP16 (465m) to the South. However, the Arabuko – Sokoke Forest and adjoining areas are a globally recognized biodiversity hot spot which underlines the need for a synopsis of the forest.

Arabuko Sokoke is East Africa’s largest surviving single block of indigenous, dry coastal forest with a total area of approximately 39, 100 ha. The coastal forest reserve is managed by Kenya Forest Service (KFS). It is the most intact coastal forest in East Africa, with 20% of Kenya's bird species, 30% butterfly species and at least 24 rare and endemic bird, mammal and butterfly species (KFS, 2020). The eastern part of the forest lies on a flat coastal plain at an altitude of about 45 m above sea level. This rises to a plateau of about 60-200 m in the central and western parts of the forest.

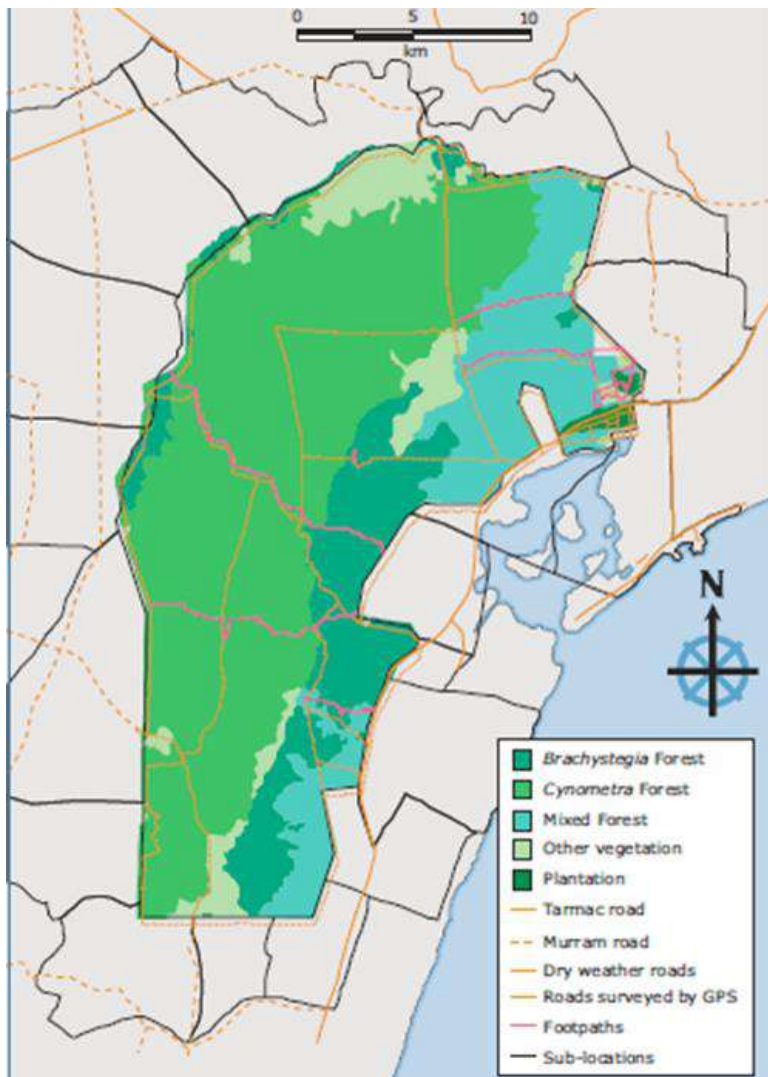


Figure 3-10 Vegetation types of Arabuko-Sokoke Forest.

Source - Maps prepared for Arabuko-Sokoke Strategic Forest Management Plan January 2002 -2027

The Arabuko-Sokoke ecosystem is made up of three different forest types (figure 3-10) which include; cynometra-dominated forests and thickets; brachystegia-dominated woodlands also known as Miombo woodlands and; the mixed forests each of which protects different communities of plants and animals. Mixed forest (7,000 ha) are in the east, on grey sands. This habitat is relatively dense, tall and undifferentiated, with a diversity of tree species. Characteristic trees include *Combretum schumannii*, *Drypetes reticulata*, *Azelia quanzensis*, *Dialium orientale*, *Hymenaea verrucosa* and *Manilkara sansibarensis*. Brachystegia woodland (7,700 ha) runs in a strip through the approximate centre of the forest, on white, very infertile soil. This relatively open habitat is dominated by *Brachystegia spiciformis*. In the west, on red Magarini sands, is Cynometra forest and thicket, dominated by *Cynometra webberi* with *Manilkara sulcata*, *Oldfieldia somalensis* and (formerly) *Brachylaena huillensis*. The transition between white and red soil is sudden, and marked by a chain of seasonal ponds. There are two areas of relatively tall Cynometra forest, with a canopy height of up to 20 m, in the north (3,300 ha) and the south (6,600 ha) of this zone. Between these is a lower, scrubbier formation of intermediate Cynometra (11,300 ha) with a canopy height of 7–8 m. The dry north-western part of the reserve is covered by a low, dense, and often almost impenetrable Cynometra thicket (2,300 ha), with the canopy no more than 5 m high. Altogether, the area of indigenous forest or thicket at this site totals 38,200 ha.

According to BirdLife International, Arabuko-Sokoke is an Important Bird Area (IBA) and the second most important forest for bird conservation on mainland Africa. More than 270 bird species are recorded including nine globally threatened species. Clarke's weaver (*Ploceus golandi*) is known only from Arabuko-Sokoke and the little-studied Dakatcha woodland. It occurs mainly in *Brachystegia woodland*, although its numbers fluctuate. Dakatcha woodland is approximately 17 kilometers to the nearest point of the proposed transmission route (Figure 3-10, below).

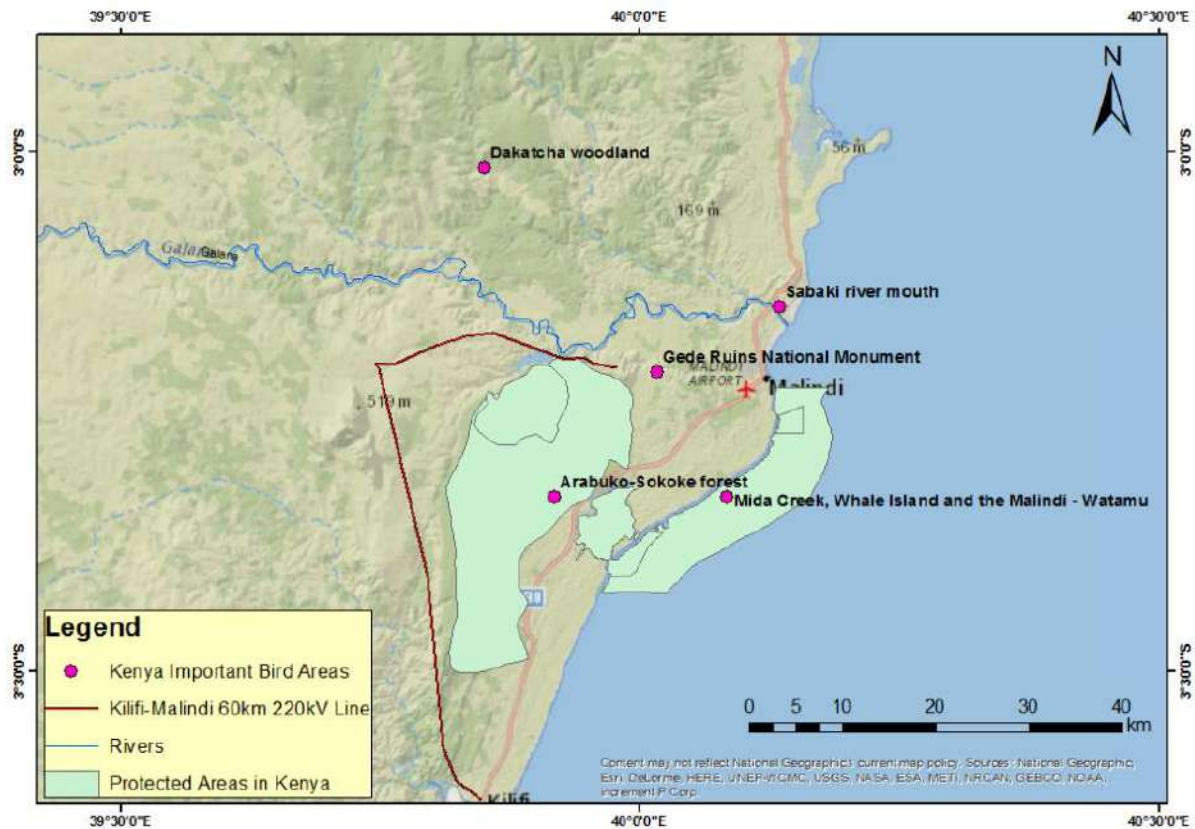


Figure 3-11 Important Bird Areas (IBA) vis-a-vis the proposed power transmission route
Source - IBA Kenya / AWEMAC GIS

Another key bird species, Sokoke scops owl (*Otus ireneae*) is known only from this forest and one other site in north-east Tanzania. It is confined to *Cynometra forest* and (at much lower densities) intermediate *Cynometra*. Arabuko-Sokoke holds by far the bulk of the world's population, with an estimated 850–1,200 pairs of Sokoke scops owl (*Otus ireneae*). Arabuko-Sokoke may also hold the world's largest population of *Sheppardia gunningi*, with as many as 9,000 pairs thought to be present, primarily in the *Cynometra forest*. It is also a world stronghold for Sokoke pipit (*Anthus sokokensis*), with around 3,000 individuals estimated to occur in the *Brachystegia woodland* alone; its status in other habitat types is not well-known. Spotted Ground Thrush (*Zoothera guttata*) is a scarce but regular intra-African migrant from March–October, and Amani Sunbird (*Anthreptes pallidigaster*) is very local, occurring principally in the *Brachystegia woodland*, with an estimated population of 2,800 birds. Regionally threatened species include: Great Egret (*Casmerodius albus*), white-backed duck (*Thalassornis leuconotus*) and African finfoot (*Podica senegalensis*) (all recorded occasionally on Arabuko Sokoke forest pools); Ayres's hawk-eagle (*Hieraaetus ayresii*) (a scarce resident); crowned eagle (*Stephanoaetus coronatus*); African pitta (*Pitta angolensis*) (a scarce non-breeding visitor, with few recent records); scaly babbler (*Turdoides squamulatus*) (local and rarely recorded); and little yellow flycatcher (*Erythrocerus holochlorus*).

Arabuko-Sokoke is rich in rare and endemic wildlife, especially among the fauna. Six taxa of butterfly endemic to the East African coast are present, as well as three rare, near-endemic mammals: golden-rumped elephant shrew (*Rhynchocyon chrysopygus*) (EN), Aders's duiker (*Cephalophus adersi*) (EN; found only in Sokoke and Zanzibar) and the distinctive small carnivore bushy-tailed mongoose (*Bdeogale crassicauda omnivore*). There is also a small population of African bush elephant (*Loxodonta Africana*) (EN), and African golden cat (*Felis aurata*), rare in Kenya, may occur. Unusual reptiles include the green keel-bellied lizard (*Gastropholis prasine*), and the forest is exceptionally rich in amphibians, including coastal endemics such as Bunty's Dwarf Toad (*Mertensophryne micrannotis*). Arabuko-Sokoke supports at least 50 globally or nationally rare plant taxa. The forest has approximately 49 reptile and 25 amphibian species recorded so far. It also harbours 40 recorded mammal species including African Elephant, African Buffalo, African Civet, Caracal, Syke's Monkeys, Yellow Baboons and Lesser Galago (or bushbaby). Some of Kenya's rarest mammals are found here, including the Golden-rumped Elephant-shrew, Sokoke Bushy-tailed Mongoose and Ader's Duiker.

The Arabuko-Sokoke Forest Reserve is entirely fenced, and is surrounded by small-scale cultivation. The fence is a management intervention to reduce human-elephant conflict by limiting crop-raiding by large mammals such as elephants. According to the Wildlife Corridors and Dispersal Area Report (2017) under vision 2030, the fences are a major barrier to elephant movements, and have limited their access to watering points outside the reserve. Seasonal ponds and wetlands in the forest provide water for limited periods only, being dry for much of the year. Temporary measures to provide piped water to central troughs within the forest reserve during drought periods are not practicable, owing to financial constraints. It worth noting that six elephant corridors have been proposed in the Arabuko-Sokoke Forest region, linking the reserve in the north with the Sabaki River, and Lake Jilore (figure 3-12). Another five corridors have been proposed, linking the forest reserve with expansive hinterlands in the south-east. The northern corridors provide access to permanent water sources outside the forest reserve, and create connectivity with landscapes in the Dakatcha Woodlands IBA, the Galana.

Map 7.39: Potential elephant movement routes (arrows) from Arabuko-Sokoke Forest Reserve across the Sabaki River to the landscapes in the north and Tsavo East NP. Source: ASF Elephant Conservation Action Plan, 2013.

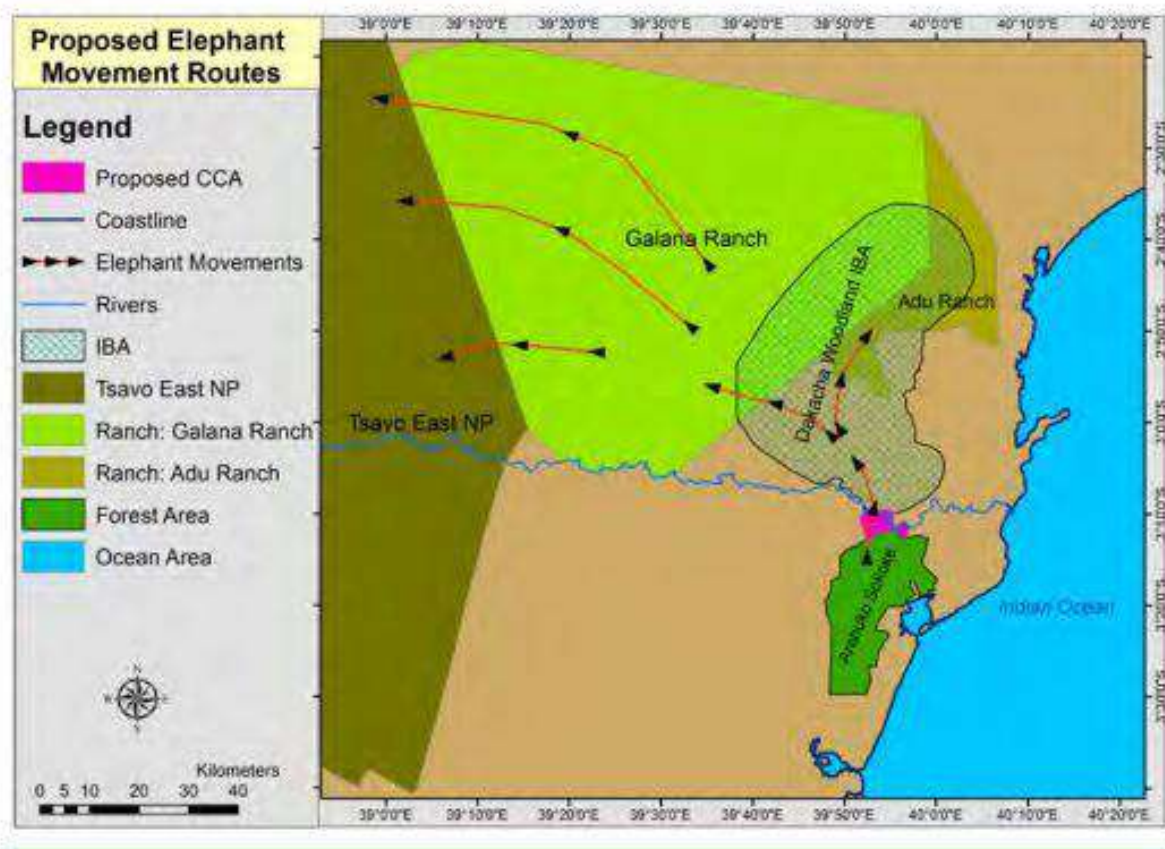


Figure 3-12 Proposed elephant corridor
Source: Report on Wildlife Corridors and Dispersal Areas (2017)

3.5.3 Aquatic habitats

The transmission line will be traversing through a marshland located in the flood zone of River Galana in Mongotini Sub-location (Plate 3-8). The marshland has already been intruded with intensive mixed farming on the fringes. Other aquatic habitats found around the proposed transmission line include temporary water puddle near Weru Group Ranch (Plate 3-9) and Lake Jilore (Plate 3-10) in Jilore Location. Such puddles (at Weru or elsewhere) are an important biotic components of this eco region. These aquatic habitats are unlikely to be affected since the proposed line RoW will not be passing directly through them.

The Kilifi creek provides various habitat types and niched that are colonized by diverse array of organisms for feeding, breeding and sheltering. Biodiversity that have been recorded within the creek include;

FISH: About 95 species have been recorded in Kilifi creek. The 4 main fin fish species being *Gerres filamentosus*, *Pomadasys multimaculatum*, *Leiognathus equula*, and *Terapon theraps*. The main non-fin fish species (crustaceans) recorded here are: *Penaeus indicus*, *Penaeus monodon*, *Portunus pelagicus* and *Scylla serrata*.

Details of ichthyofaunal biodiversity along the lower Galana is provided in the ecological survey report (Annex 3).



Plate 3-8 Intermittent flood zone near River Galana in Mongotini Sub-location
Source - AWEMAC field Survey



Plate 3-9 Temporary water puddle near Weru Group Ranch
Source - AWEMAC field Survey



Plate 3-10 A shallow marshland wetland in Jilore

Source - AWEMAC field Survey

As the proposed transmission line approaches AP 2 and AP 3 it avoids the Kilifi Creek, which is located to the South West, approximately 400 metres from the closest point to the transmission line. The creek is very rich in biodiversity, both floras and fauna e.g. *Avicennia marina*, *Rhizophora mucronatae*, *Ceriops tagal* (mangroves) and fauna e.g. *C. mongolus*, *Dromas ardeola*, *S. albifrons*, *Gelochelidon nilotica* (birds), *Penaeus indicus*, *Penaeus. Monodon* (crustaceans), Perciformes and Squatiniformes (fish). Its high diversity of mangrove species provide habitat to a variety of both resident and migrant birds.

3.5.4 Fauna

The main wildlife likely to be found within the project RoW includes rabbits and baboons and they are mainly found in Arabuko-Sokoke forest environs / dispersion areas. Other mammals known to inhabit this area include African Civet, Caracal, Syke's Monkeys, Yellow Baboons and Lesser Galago (or bushbaby). Some of Kenya's rarest mammals are found within the Arabuko Sokoke Forest, including the Golden-rumped Elephant-shrew, Sokoke Bushy-tailed Mongoose and Ader's Duiker. Large mammals such as the African Elephant, and African Buffalo were observed notably within the fenced Arabuko Sokoke forest.

The Kilifi Creek lying approximately 400metres outside the proposed transmission line is rich in plant population and diversity. Kilifi Creek is located some 55 km north of Mombasa city. The deepest part of the creek is approximately 38 m at the entrance and a distance of about 4 km (500 m wide) separates the ocean from an open lagoon known as Bahari ya Wali. The total area of the creek and Bahari ya Wali is 22.4 km² (Sigana, Mavuti and Ruwa, 2009; Oyugi, 2005). The marine estuary is a transitional environment characterized by highly fluctuating environmental conditions.

The Project transmission route veers off to avoid Arabuko Sokoke forest [AP6 (1.85km) to the East at Sokoke Location, AP12 (287m), AP13 (275) and AP16 (465m) to the South] The 420Km² Arabuko - Sokoke coastal dry forest and its adjoining habitats is a globally recognized biodiversity hotspot. The region has been designated IBA (Important Bird Area) and is home to the globally endangered birds including Clarke's Weaver, Sokoke pipit, Amani Sunbird, Spotted Ground Thrush and Sokoke Scops Owl. The major bird habitats along the Malindi – Kilifi route are mainly the various types of vegetations (Forests, shrubs, grasslands). Besides birds, bats are the other

animals that can significantly be impacted by electricity transmission lines. A brief appraisal of bat biodiversity in the proposed TL is presented in succeeding *section 3.5.4.2*.

Overall, a number of mammalian, lepidopteran, avian, and reptilian were recorded around the transmission line. The ecological survey report (Annex 3) highlights the main mammalian, lepidopteran (butterfly) species, reptilian (snakes) species and avian (bird) species along the proposed transmission line.



Plate 3-11: A Common Grass Snake spotted in Kibao Kiche Village

Source - AWEMAC field Survey



Plate 3-12: A Boomslang Snake spotted in a bush; Nyari area

Source - AWEMAC field Survey

3.5.4.1 Migratory avifauna

The vicinity of the proposed Malindi – Kilifi high voltage transmission line include the high biodiversity Arabuko – Sokoke forest and the estuary of the Galana river. In these areas, migratory bird species including palaeartic, Madagascan and intra-African migrants which move sporadically across the continent have been recorded. Species that have been recorded include (BirdLife International, 2019):

- i. Northern Carmine bee eater (*Merops nubicus*) – (recorded around Arabuko – Sokoke and its environs) and in Kilifi Creek
- ii. Spotted ground thrush (*Zoothera guttata*) - (recorded around Arabuko – Sokoke and its environs)
- iii. African Pitta (*Pitta angolensis*) - (recorded around Arabuko – Sokoke and its environs)
- iv. Gull-Billed Tern (*Gelochelidon nilotica*), formerly *Sterna nilotica* - (recorded around Arabuko – Sokoke and its environs)

Research shows, avian collisions with power lines can occur in large numbers if located within daily flyways or migration corridors, or if groups are travelling at night or during low light conditions. Birds are vulnerable to collisions with a range of fixed structures, such as buildings, towers, transmission lines, and wind turbines (Erickson et al. 2001, Manville 2005). Indeed, the dangers that collisions with electrical structures pose to birds have been known since the late 1800s (Coues 1876). Estimates of mortality due to collisions with power lines in the United States have ranged from hundreds of thousands to 175 million birds each year (Erickson et al. 2001). In Norway, annual estimates of tetraonid (e.g., grouse, ptarmigan) power line mortalities alone have ranged from 20,000 to 50,000 individuals (Bevanger 1995). As many as 245 species are known to collide with power lines, with shorebirds, waterfowl, cranes, herons, tetraonids, and passerines among the most common victims (Brown et al. 1987, Bevanger 1995, Bevanger 1998).

As seen from the figure below, the proposed transmission line avoids the North Eastern side of Arabuko Sokoke Forest which has several migratory routes. However, of concern should be the route on the North Western side across Lango-baya location; used by birds migrating to and from the Tsavo-Taita Hills and lake Jilore region. According to Nature Kenya, the Lango-Baya to Arabuko Sokoke Forest area has a number of congregatory birds' species - species that gather in globally significant numbers at a particular site and at a particular time in their life cycle for feeding, breeding or resting (during migration) - that may be impacted by the TL given the large numbers attracted to Lake Jilore and Sabaki River Mouth. These species include greater flamingos, Ruffs, and a variety of gull species. In addition are a number of raptor species over the area including Africa Fish Eagles which are susceptible to collision and electrocutions. Adequate bird electrocution and mortality mitigation measures have been provided in chapter 8.

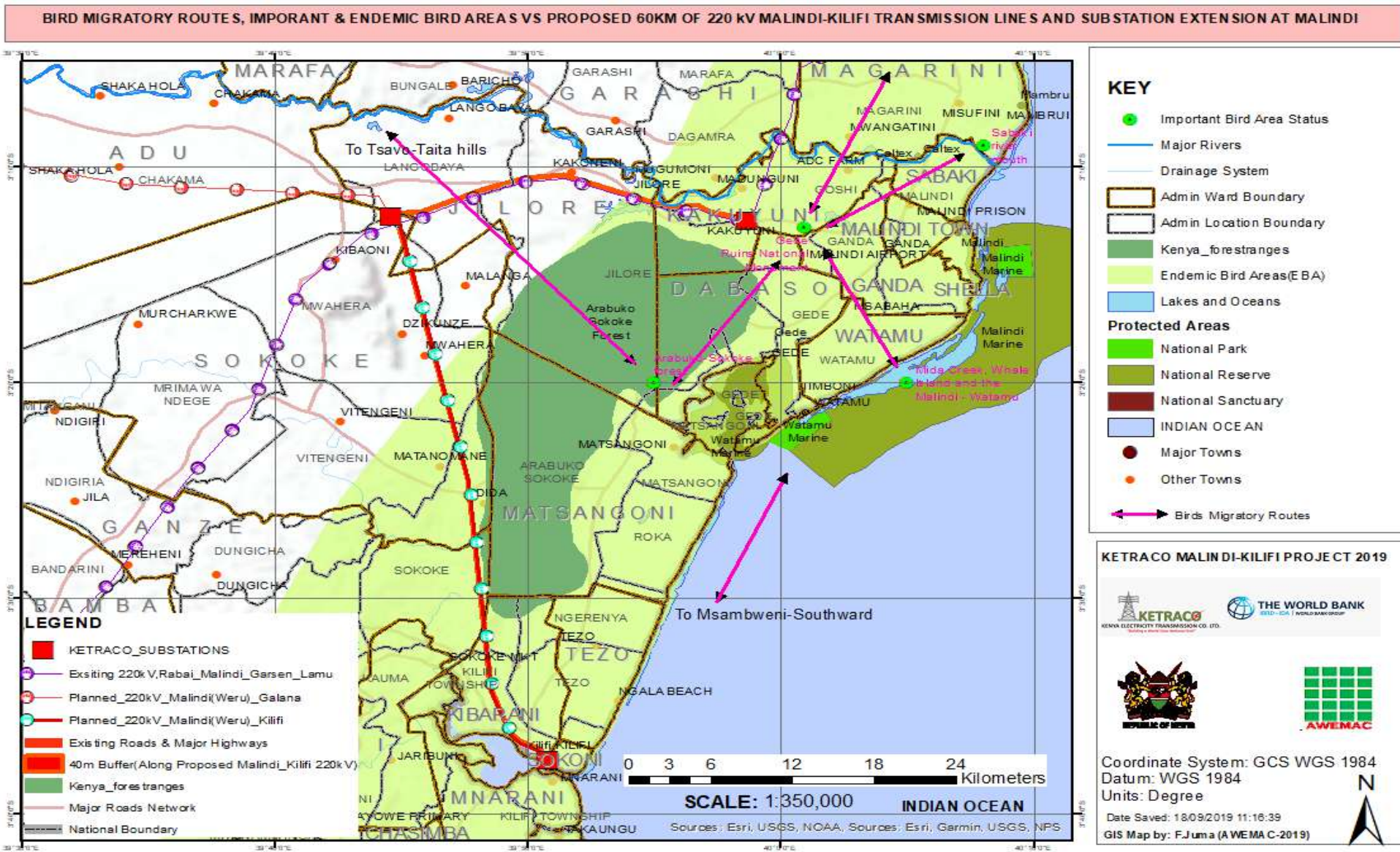


Figure 3-13 Birds migratory routes
Source - AWEMAC GIS

3.5.4.2 Bats (Chiroptera)

Arabuko-Sokoke forest, the kaya forests and the caves dotted in Kilifi County support over 20 species of bats (Musila et al., 2019b; Table 4-6, Annexe 3). These bats face many threats brought about as a result of habitat destruction, alteration and fragmentation and specifically take forms such as disturbance of crucial roosts, closure of cave roosts, environmental toxins, persecution, and destruction or fragmentation of their roosting and foraging habitats, escalated mortality from wind turbines in the emerging wind farms and power transmission lines. These threats may act in concert, exacerbating an already bad situation, especially for species listed in the threatened category of IUCN Red List (Table 4-6, Annexe 3). The placement of power lines leads to habitat loss and fragmentation of many bats, especially narrow-space foraging species that can forage in the forest interior. Power lines can also lead to direct mortality via collisions for high-flying bat species and via electrocution of the large fruit bats that may perch on live wires during foraging bouts.

Although a few species from the area may be at high risk due to potential collision with, or electrocution on, power lines (Table 4-6, Annexe 3), it is likely that the area does not represent Critical Habitat for any bat species. For species such as the Harrison's Giant Mastiff Bat (*Otomops harrisoni*) and Hildegard's Tomb Bat (*Taphozous hildegardeae*) which are of global conservation concern, the area is unlikely to be Critical Habitat as the species are fairly ubiquitous and widespread (Patterson & Webala, 2012; Patterson et al. 2018, Musila et al., 2019a). However, adequate bat electrocution and mortality mitigation measures have been provided in chapter 8.

3.5.5 Flora

Effects of the transmission line on vegetation was studied through transect walks along the proposed route and identifying plant types (trees, grasses, shrubs) and species, vegetation cover and effects of human activities on the vegetation. Commercial fruit crops including coconut tree, mango tree, and cashew nut are common within the RoW. Plant species of conservation importance including mangroves and other 45 species were identified and their conservation status noted (rare species, endangered species, species of economic importance etc.) (Please refer to Table 4-5 Ecological Survey Report – Annex 3). Based on the Malindi – Kilifi Row vegetation studies were carried out near the following areas: KFS staff quarters (AP 12 – AP13, AP 14), Dagamra town, Kakoneni town (AP 10, AP 11), Gandini Primary (AP 9), Vitengeni town, Dida town (AP 6), Sokoke village and near Komaza offices in Kilifi (AP 1, AP 2).

Kilifi Creek has a high diversity of mangrove species that provide refuge to a variety of both resident and migrant bird such as *C. mongolus*, *Dromas ardeola*, *S. albifrons* and *Gelochelidon nilotica*.



Plate 3-13: A Baobab tree inside the proposed transmission line's RoW

Source - AWEMAC field Survey



Plate 3-14: A Mango tree inside the proposed transmission line's RoW

Source - AWEMAC field Survey



Plate 3-15: A Cashew-nut tree inside the proposed transmission line's RoW bordered by palm trees to the right

Source - AWEMAC field Survey



Plate 3-16: Neem trees inside the proposed transmission line's RoW
Source - AWEMAC field Survey



Plate 3-17: Coconut trees inside the proposed transmission line's RoW
Source - AWEMAC field Survey

3.6 Environmental Parameters Quality Assessment

The ESIA study covered into detail the key environmental parameters which included; Air Quality Assessment; Water Quality Assessment and Noise Level Assessment

3.6.1 Water Quality Assessment

The Proposed TL passes near Galana River; however, the TL does not traverse the river. Water quality samples were collected during the environmental baseline data collection on the downstream side (GPS- Coordinates -3 .196275, 39.929071) of the Galana River from the nearest point to the TL to; give baseline information of the water prior to TL construction and provide data that will act as a reference for monitoring water resources in the project area influence in future (Annex 4). Project activities such as excavations along the TL within (AP 2- A P3) may affect the water quality if not mitigated.

The concentration levels of the analyzed parameters were compared with the first schedule on quality standards for sources of domestic water (GOK 2006). Water quality parameters were determined and analyzed from River Galana which is the nearest surface water body along the project RoW (Table 3-18). The water quality parameters analyzed, showed that some had variations from the NEMA standards/guideline values and World Health Organization standards (WHO). Several parameters such as pH range, fluoride, Total dissolved solids, ammonia were within the acceptable levels in the sampled point. Other metals such as Lead, Cadmium and Arsenic were found to be below the detection limit and well below the NEMA and WHO standards. Nonetheless, the water does not conform to EMCA (Water Quality) Regulations, of 2006 standards for domestic water due to high suspended solids and presence of Escherichia coli. Presence of E-coli could be attributed to traces of untreated sewer finding its way into the river.

Table 3-18 Comparison of water sample results against WHO Standards and NEMA Guidelines

Sampling point Parameter	River Galana	WHO	NEMA Guideline values
GPS- Coordinates	-3 .196275, 39.929071		
Suspended solids, mg/L	48.63		30Max
Ph Value @ 25°C	6.52	6.5 – 8.5	6.5 – 8.5
Total dissolved solids, mg/L	559	<1500	1200Max
Nitrates (mg/l-1)	6.04		10
Nitrites (mg/l-1)	0.02	< 0.1	3.0Max
Phenols, mg/L	Nil		Nil
Ammonia as NH ₃ , mg/L	0.24		0.5Max
Fluoride as F, mg/L	1.20	<1.5	1.50Max
*Lead as Pb, mg/L	<0.01		0.05Max
*Cadmium as Cd, mg/L	<0.01	<0.003	<0.01
Arsenic as As, mg/L	<0.01	<10	<0.01
Copper as Cu, mg/L	0.02		0.05Max
Selenium as Se, mg/L	<0.01		0.01Max
Colour mgPt/l	1750		-
Zinc as Zn, mg/L	0.19		1.50Max
Permanganate value, mg/L	0.25		1.0Max
Escherichia coli/100ml	Present		Nil

Source – Polucon Laboratory Services

3.6.2 Noise quality measurements

During the baseline study and survey conducted, there were no significant noise polluting activities within the proposed project area. For instance, there are no industries along the proposed project

area which could otherwise pose noise pollution. Vehicle traffic within the proposed project RoW is also extremely low and only characterized by motorbikes hence does not pose noise pollution.

During construction noise will be a temporary phenomenon. Possible noise pollution from the proposed project construction period is likely to be encountered during excavations and heavy moving machinery. Nonetheless, at the construction stage, it is expected that background noise levels will be monitored periodically at sensitive areas such as near schools, villages and Arabuko Sokoke Forest environs. Sound level values will be computed and compared with the legal standard permissible limits. Nonetheless, noise sampling was undertaken in eight areas along the line. The main purpose of the noise sampling was to obtain baseline information and act as a reference for monitoring hum or buzz effect caused by transmission in the project area influence in future. The baseline noise survey results will compare noise levels after the TL is operational and to monitor whether the hum affects baseline levels at these locations. It is anticipated that as part of operational monitoring noise quality assessments will be done to assess how far the hum or buzz is heard and whether it will affect residential units and wildlife. However, its worth noting that the acoustic noise produced by transmission lines is greater with high voltage power lines (400-800 kilo volts [Kv]) and even greater with ultra-high voltage lines (1000 Kv and higher). However, the proposed Malindi -Kilifi transmission line has a voltage of 220kV with a 40 meters wayleave hence the acoustic noise is expected to be negligible. Further noise from transmission lines reaches its maximum during periods of precipitation, including rain, or as the result of fog. Nonetheless, the sound of rain typically masks the increase in noise produced by the transmission lines, but during other forms of precipitation such as fog the noise from overhead power lines can be troubling to immediate residents. However, the buzzing noise decays very rapidly with distance from source hence no potential noise nuisance is expected for people living outside the allocated wayleave of 40 metres - 20 metres on both sides from centre line.

Table 3:19 below gives the baseline noise measurements obtained from sample areas along the RoW. Sampling points were residential and upcoming commercial areas including areas in the outskirts of Arabuko Sokoke; Jilore, Kakoneni, Malanga, Sokoke, Konjora and Fumbini villages. The results indicated that the noise levels were below the maximum allowable limits as provided by the Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009 and the World Bank IFC Environmental, Health, and Safety (EHS) Guidelines, General EHS Guidelines - Environmental Noise Management. The highest reading was recorded at Kakoneni Village which had Leq of 51.9 dB(A). This was attributed to the village being adjacent to C103 Road hence the noise recorded could have been as a result of vehicular movement. The lowest measurements were recorded at Mpirani Primary School and Kafitsoni Village in Dida. The areas were generally silent with Kafitsoni in Dida recording Lmin of 35.3 dB(A). Noise and vibrations from the proposed project has however been considered and mitigated under the environmental and social management plan and hence will be of minimal impact.

Table 3-19 Noise Measurement levels

S/N	Location	Coordinates	Time	Measured Noise Level in dB(A)	L _{EQ} dB(A)	Standard measured in dB(A)		Remarks
						Noise Regulations Leq,14 h	IFC Guidelines	
1.	Mongotini Village (Kibao Kiche)	37 M 602519 9646502	10:30 10:45	L _{max} : 56.3 L _{min} : 43.2	49.9	55	55	Reading taken at approx. 200m from C103 road and 100m from the proposed transmission line
2.	Kafitsoni Dida Village	37 M 588286 9621227	11:40 11:55	L _{max} : 48.2 L _{min} : 35.3	45.0	55	55	Reading taken at a water point, approx. 100m from the line
3.	Fumbini Village (Area Near Konjora Primary School)	37 M 592323 9600934	14:17 14:31	L _{max} : 53.3 L _{min} : 44.1	49.8	55	55	Reading taken approx. 100m from line
4.	Konjora 3	37 M 559774 9605256	13:39 13:44	L _{max} : 53.9 L _{min} : 41.8	49.1	55	55	Reading taken approx. 200m from the line near KIWASCO pumping station
5.	Sokoke (Near Nyari Primary School)	37 M 589321 9612189	12:30 12:45	L _{max} : 51.7 L _{min} : 42.1	47.7	55	55	Reading taken approx. 100m from the line
6.	Mpirani Primary School	37 M 589275 9609884	13:00 13:15	L _{max} : 48.2 L _{min} : 39.5	45.0	55	55	Reading taken from the school playfield, approx. 200m from line.
7.	Kakoneni	37 M 594495 9649363	16:32 16:47	L _{max} : 56.8 L _{min} : 47.0	51.9	55	55	Reading taken approx. 100m from C103 road and 100m from the proposed line
8.	Sea Horse Village	37 M 593740 9599674	14:45 15:00	L _{max} : 53.4 L _{min} : 40.1	48	55	55	Reading taken approx. 200m from the line and 500m from the proposed Kilifi sub station

Source - AWEMAC field Survey

3.6.3 Air Quality Assessment

The baseline study and survey conducted established that there were no current air polluting activities within the project RoW. For instance, vehicle traffic within the project RoW is extremely low hence does not pose air quality risk. Further, there are no industries along the project RoW which could otherwise pose air quality risks. The only possible air quality contaminants from the project route are minimal dust emissions and greenhouse gases likely to occur during the construction phase and are therefore not an ephemeral or permanent source of air pollution. Dust emissions would be attributed to land excavations and heavy moving machinery whereas greenhouse gases are likely to be emitted by heavy machinery to be used in transportation of the power towers. These will however be mitigated under the environmental management plan and hence be of minimal impact. Nonetheless, it is expected that the effects will not adversely affect the baseline air quality of the project area.

3.6.4 Radiological baseline measurements

The earth contains natural background radiations originating from terrestrial and cosmic sources. National radiation levels can be significantly modified by human activities. The modified levels can impact adversely on human health and the environment. In Kenya, research on levels of radionuclides has shown both high and low background radiation levels in different parts of the country. Natural radioactivity varies from one place to another and in other places, there are wider deviations of radioactivity from the normal levels because of abundance of minerals and local geology of each region (UNSCEAR, 2000; Mohanty et al., 2004). The presence of naturally occurring radionuclides in the environment may result to an external and internal dose received by a population exposed to them directly and via the ingestion and inhalation pathways. Studies (Mohanty et al., 2004) have shown that there are few regions in the world, which are known for high background radiation due to the local geology and geochemical effects that cause enhanced levels of terrestrial radiation.

Radioactivity measurement in the environment is very important in setting the standards and guidelines for the use of soil, building materials, water and vegetation and in assessing the radiation hazard associated with them. The potential health effects associated with exposure to high levels of ionizing radiations have made it necessary for continuous environmental monitoring to ascertain the radioactivity concentrations of ^{226}Ra , ^{232}Th , ^{238}U and ^{40}K in the environment to create awareness to the public and policy makers to ensure that exposure to radiation is as low as achievable. Due to the absence of existing baseline radiological data in the region, the analysis of the Kenya geological map (1942) showed that there is granitic intrusion on the southern slopes of Nyambene ranges. As such, the geology of the area suggests that the Malindi -Kilifi double circuit transmission line and substation will not trigger any known radiological impacts. However, should any radionuclides be detected along the project area RoW due diligence will be followed as per existing legal requirements

4 CHAPTER FOUR: POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

4.1 Introduction

Kenya has in place a wide range of institutional, policy, and legislative framework to address the major causes of environmental degradation and negative impacts on ecosystems emanating from industrial and economic development programmes. This chapter includes a summary of the policies, laws, regulations and institutional setup relevant to environmental and social management in Kenya and pertinent to this project. A review of the most pertinent regulations and standards governing health and safety has been included. In addition, analysis for international good practice (World Bank safeguard Policies and MEAs) and their applicability to the proposed project were reviewed and presented to guide the proponent. Reference was equally made to diverse instruments under World Bank Group in identifying and mitigating potential impacts. Some of the tools are: General and Power Transmission Environmental, Health and Safety (EHS) Guidelines and Environmental Assessments Sourcebooks, etc...

4.2 KETRACO Guiding Frameworks

4.2.1 Environmental and Social Management Framework (ESMF).

The ESMF was prepared by the KETRACO to address the environmental and social impacts of the portion of the Kenya Electricity System Improvement Project (KESIP) where this proposed project falls. The ESMF sets out the principles, rules, guidelines and procedures to assess the environmental and social impacts of subprojects prepared during Project implementation. It includes guidelines to prepare measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts of subprojects, provisions for estimating and budgeting the costs of such measures, and information on the agencies responsible for addressing project impacts. The ESMF is a key guiding document for preparation of the ESIA.

4.2.2 Resettlement Policy Framework (RPF)

The Resettlement Policy Framework (RPF) was prepared by the KETRACO to address the resettlement and compensation principles of the portion of the Kenya Electricity System Improvement Project (KESIP) where this proposed project falls. The aim of this RPF is to establish the resettlement and compensation principles, which include the process for undertaking socio-economic surveys and a census of the project affected persons (PAPs), a description of eligibility criteria for accessing compensation under the project, cut-off date for inclusion of PAPs in the Resettlement Action Plan or Abbreviated Resettlement Action Plan (RAP/ARAP), organizational arrangements for implementation of the RAP/ARAP (to be prepared in accordance with this RPF), and the design criteria to be applied to meet the needs of the people who may be affected by the various subprojects, whether or not PAPs have to physically move. The objective of this RPF is to establish the principles, procedures, entitlements and eligibility criteria, organizational arrangements, and provisions for monitoring and evaluation (M&E), the framework for stakeholder and PAPs participation, as well as the mechanisms for addressing grievances which will be applied to the proposed transmission project. It provides guidelines on how the project will avoid, manage or mitigate all project related displacement risks. The RPF is a key guiding document for preparation of the RAP.

4.2.3 Vulnerable and Marginalized Groups Framework (VMGF)

The Vulnerable and Marginalized Groups Framework (VMGF) describes the policy requirements and planning procedures that should be used during the preparation and implementation of the project components, especially those identified as occurring in areas where IPs/VMGs are present. The VMGF highlights the need for screening to be done to assess and confirm the presence of VMGs. VMGF highlights that a site-specific social assessment (SA) should be prepared that should inform the preparation of individual VMGPs as set out in the Framework and further public consultations and stakeholder engagements should be conducted. The VMGF by KETRACO is therefore a key guiding document for preparation of the social assessment and VMGPs if need arises.

4.3 National Policy framework

4.3.1 Constitution of Kenya

The Constitution of Kenya is the country’s supreme legislation and has Environmental provisions in Chapter Four, under ‘Rights and Fundamental Freedoms’, Chapter Five, under ‘Environment and Natural Resources’, and Chapter Ten, under ‘Judicial Authority and Legal System’. The Fourth Schedule also includes environmental provisions under ‘Distribution of functions between National and County Governments’ and the Fifth Schedule titled ‘Legislation to be enacted by Parliament’. Environmental rights and freedoms are presented in Article 42 of the new constitution, which states: Every person has the right to a clean and healthy environment, which includes the right –

- To have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and
- To have obligations relating to the environment fulfilled under Article 70.

The Kenyan constitution also gives prominence to public participation; as a general national value in environmental protection. Article 69(1) states that the State shall encourage public participation in the management, protection, and conservation of the environment. Chapter 5 Part II - Environment and Natural Resources - Article 69 (1) of the Constitution of Kenya, 2010 commits the State to:

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

Article 69 (II) states that “Every person has a duty to cooperate with state organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.” Moreover, the Constitution includes aspects around land acquisition and compensation. It also mandates the development of a national land policy to implement the principles and establishes the National Land Commission.

4.3.2 Policies, Plans, and Strategies

Table 4-1 Policies, Plans and Strategies

Policies, Plans and Strategies	Key areas of application
The Big Four Agenda	<ul style="list-style-type: none"> ▪ The Big Four Agenda (GOK, 2017) was launched during the 54th Jamhuri Day Celebrations on 12 December 2017 and elaborates the specific agenda and measures the Jubilee administration will focus on over the period 2018-2022. ▪ The areas of focus set out are -food security, affordable housing, manufacturing and universal healthcare. <p><i>The proposed project will see an increase in energy / electricity supply, quality, reliability and a reduction of power cost in the country, one of the key enablers of economic growth critical for achieving the Big Four Agenda on sustainable development.</i></p>

Policies, Plans and Strategies	Key areas of application
Kenya Vision 2030	<ul style="list-style-type: none"> ▪ Vision 2030 (GOK, 2007) is divided into three fundamental pillars: economic, social and political. The social pillar aims at realising a just and cohesive society enjoying equitable social development in a clean and secure environment. ▪ These pillars are anchored on the following foundations: macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor; infrastructure; energy; science, technology and innovation; land reform; human resources development; security and public sector reforms. ▪ The Vision 2030 aims at transforming Kenya into a globally competitive, newly industrialized, middle income and prosperous country. The growth objectives underpinning the Vision 2030 require a sustainable annual economic growth rate of more than 10% supported by industry, agriculture and services. ▪ Efficient, accessible and reliable infrastructure has been identified as an enabler for achieving sustained economic growth, development and poverty reduction by lowering cost of doing business and improving the country's global competitiveness. <p><i>The proposed Project aims to support creation of transmission and distribution infrastructure to enhance electricity service provision in Kenya in tandem with Vision 2030 on energy as a key enabler.</i></p>
Third Medium Term Plan (MTP III) (2018-2022)	<ul style="list-style-type: none"> ▪ The Third Medium Term Plan (MTP III) (GOK, 2018) of the Kenya Vision 2030 outlines the main policies, legal and institutional reforms as well as programmes and projects that the Government plans to implement during the period 2018-2022. It builds on the achievements of the first and second MTPs and prioritizes implementation of the Big Four Agenda initiatives. ▪ Under infrastructure, the Plan aims to meet the demands of a growing population through the following programmes and projects: <ul style="list-style-type: none"> ➢ Increased electricity generation capacity from 2,699 MW in FY 2017/18 to 5,221 MW in FY 2021/22 ➢ Connect 5 million new households and 15,739 public institutions to electricity through the Last Mile Connectivity Programme <p><i>The proposed project is hence in line with the MTP III as it will support the transmission of electricity geared towards power for the last mile connectivity programme.</i></p>
Sessional Paper No. 10 of 2014 on the National Environment Policy	<ul style="list-style-type: none"> ▪ The policy seeks to provide the framework for an integrated approach to planning and sustainable management of natural resources in the country. <ul style="list-style-type: none"> ➢ The broad objectives of the national environmental policy in Kenya are: -To ensure optimal use of natural resources while improving environmental quality. ➢ To conserve natural resources such that the resources meet the needs of the present without jeopardizing future generations in enjoying the same. ➢ To develop awareness that inculcates environmental stewardship among the citizenship of the country. ➢ To integrate environmental conservation and socio-economic aspects in the development process. ➢ To ensure that national environmental goals contribute to international obligations on environmental management and social integrity. ➢ To achieve the above policy objectives, it is a policy directive that appropriate reviews and evaluations of all forms of

Policies, Plans and Strategies	Key areas of application
	<p>developmental project plans and operations are carried out to ensure compliance with the environmental policy and legal frameworks.</p> <ul style="list-style-type: none"> ▪ It recognizes the various vulnerable ecosystems and proposes various policy measures not only to mainstream sound environmental management practices in all sectors of society throughout the country but also recommends strong institutional and governance measures to support achievement of desired objectives and goals. ▪ In chapter 4 on Management of Ecosystems and Sustainable Use of Natural Resources the policy notes that ecosystems provide a wide range of goods and services which include provisioning, regulating, cultural and supporting services. Despite the services they provide, ecosystems are under pressure from human activities. ▪ The most critical ecosystems in Kenya include forests, freshwaters, wetlands, coastal and marine, mountains, arid, semi-arid and spectacularly diverse wildlife populations. Within these ecosystems are key natural and cultural heritage resources which support diverse biodiversity and provide natural capital for economic development and support livelihoods. <p><i>The proposed project will traverse within the corridor of critical ecosystems such as Arabuko Sokoke Forest hence is expected to ensure sustainable management of natural resources.</i></p>
<p>Sessional Paper No. 1 of 2017 on National Land Policy</p>	<ul style="list-style-type: none"> ▪ The overall goal of the national land use policy is to provide legal, administrative, institutional and technological framework for optimal utilization and productivity of land related resources in a sustainable and desirable manner at national, county and community levels. ▪ The Policy is premised on the philosophy of economic productivity, social responsibility, environmental sustainability and cultural conservation. ▪ Key principles informing it include efficiency, access to land use information, equity, elimination of discrimination and public benefit sharing. ▪ Amongst the key principles envisioned by the policy include; <ul style="list-style-type: none"> ➢ Land use planning, resource allocation and resource management for sustainable development to promote public good and general welfare; ➢ Environmental management and sustainable production in the utilization of land resources; ➢ Coordination and integration of institutional linkages in planning at sectoral and cross-sectoral levels to foster collaboration and decision making among different land users; ➢ Equitable utilization of land resources to meet governance, social-economic and cultural obligations of the people of Kenya; <p><i>The proposed project will need to be consistent with the provisions of this Policy in order to avoid conflicts. Among the issues that will have to be addressed, are the modalities for the acquisition of land for PAPs.</i></p>
<p>Sessional Paper No. 6 of 1999 on Environment and Sustainable Development Policy.</p>	<ul style="list-style-type: none"> ▪ The policy defines approaches that will be pursued by the Government in mainstreaming environment into development. ▪ The policy harmonized environmental and developmental objectives with the broad goal of achieving sustainable development. <p><i>The policy paper also provided guidelines and strategies for government action regarding environment and development. This policy is relevant to the proposed transmission line and substation project in view of the</i></p>

Policies, Plans and Strategies	Key areas of application
3 rd Draft National Energy Policy, 2012	<p><i>potential impacts on the environment and involvement of the public in project planning.</i></p> <ul style="list-style-type: none"> ▪ The level and the intensity of energy use in a country is a key indicator of economic growth and development. The Kenya Vision 2030 identified energy as one of the infrastructure enablers of its social economic pillar. Sustainable, affordable and reliable energy for all citizens is a key factor in realization of the Vision. ▪ The overall objective of the energy policy is to ensure affordable, sustainable and reliable supply to meet national and county development needs, while protecting and conserving the environment. ▪ Specifically, the policy aims to; <ul style="list-style-type: none"> ➢ Utilize energy as a tool to accelerate economic empowerment for the National and County Governments as well as urban and rural development. ➢ Improve access to quality, reliable and affordable energy services. ➢ Ensure that prudent environmental, social, health and safety considerations are factored in energy sector developments. ➢ Promote diversification of energy supply sources to ensure supply security ➢ Provide for the phased transfer of provision of energy services to the Counties in <p><i>The proposed project is hence in line with the tenets of the energy policy and should ensure prudent environmental, social, health and safety considerations are factored in the development.</i></p>
National Policy on Gender and Development (NPGD), 2019	<ul style="list-style-type: none"> ▪ The Policy spells out a policy approach of gender mainstreaming and empowerment of women and clearly states that it is the right of women, men, girls and boys to participate in and benefit equally from the development process. ▪ The NPGD provides a framework for mainstreaming gender in all policies, planning and programming in Kenya and puts in place institutional mechanisms to ensure effective implementation. <p><i>The proposed project should hence ensure gender concerns are mainstreamed into the development to ensure that the needs and interests of each gender are addressed.</i></p>
Kenya National Youth Policy (2016)	<ul style="list-style-type: none"> ▪ The Youth policy provides for Youth inclusion in the different sectors to identify specific Youth issues and how to address and include them. ▪ Article 260 of Kenya's Constitution defines a Youth as a person aged between eighteen (18) years and thirty-four (34) years. <p><i>It is expected the proposed project will identify the needs and concerns of youth and include their views.</i></p>
National Policy on Older Persons and Ageing, 2009	<ul style="list-style-type: none"> ▪ The older people are often discriminated and neglected. They are also prone to risks as are children, women, youth and the PLWDs. ▪ The policy aims to facilitate the integration and mainstreaming of the needs and concerns of older persons in national development. ▪ The policy, among other issues, emphasises on social protection in old age through either non-contributory benefits focused on reducing poverty and vulnerability, or contributory benefits aimed at maintaining the income of individuals. <p><i>The national policy for older persons and ageing lays basis for the intervention and involvement of the elderly in development matters.</i></p>

Policies, Plans and Strategies	Key areas of application
Sessional Paper No. 2 of May 2006 on Gender Equality and Development	<ul style="list-style-type: none"> ▪ The Sessional Paper provides a framework for gender mainstreaming and recognizes that socio-cultural attitudes held by men and women, and socialization process are of great significance in determining the unequal status between men and women. ▪ It also recognizes that development initiatives impact differently on men and women and in turn women and men impact differently on development process. <p><i>The proposed project should hence ensure gender equality concerns are mainstreamed into the development.</i></p>
HIV/AIDS Policy of 2009	<ul style="list-style-type: none"> ▪ The policy identifies HIV/AIDS as a global crisis that constitutes one of the most formidable challenges to development and social progress. ▪ The Pandemic heavily affects the Kenyan economy through loss of skilled and experienced manpower due to deaths, loss of man hours due to prolonged illnesses, absenteeism, reduced performance, increased stress, stigma, discrimination and loss of institutional memories, among others. <p><i>Due to the large of number of workers who will be involved in the proposed project and the associated social issues with projects of such as scale, HIV/AIDS has been considered as one of the proposed impacts, hence adequate mitigation measures will require to be proposed to that effect.</i></p>
National Forest Policy, 2014	<ul style="list-style-type: none"> ▪ This Forest Policy provides a framework for improved forest governance, resource allocation, partnerships and collaboration with the state and non-state actors to enable the sector to contribute in meeting the country's growth and poverty alleviation goals within a sustainable environment. ▪ The Policy aim to enhance management of forest resources for conservation of soil, water biodiversity and environmental stability. <p><i>Although the project does not traverse any protected forest, it is expected to traverse the outskirts of Arabuko Sokoke forest which has forest vegetation. The project should hence ensure all forest resources are managed sustainably to yield social, economic and ecological goods and services for the current generation without compromising similar rights of future generations;</i></p>
National Water Policy, 2012	<ul style="list-style-type: none"> ▪ The National Water Policy, 2012 has been developed in line with the mandate, vision and mission of the Ministry responsible for water affairs in Kenya. This Policy is compliant with the Constitution of Kenya 2010 and the Vision 2030 besides considering the targets of Sustainable Development Goals (SDGs). ▪ The Policy is built on the premises of Integrated Water Resources Management (IWRM). The Policy aims at guiding the development of strategies for water management and utilization by water sector stakeholders. ▪ This policy recognizes the great expectation of population regarding access to freshwater supplies and use for domestic, livestock, agriculture and other production purposes. <p><i>It is therefore expected that the proposed project will ensure adequate protection of water resources for population access such River Galana /Sabaki which traverses near the boundary of the project.</i></p>
The National Climate Change Response	<ul style="list-style-type: none"> ▪ NCCRS has the following key recommendations: adaptation and mitigation measures in key sectors; necessary policy, legislative and institutional adjustments; enhancing climate change awareness, education and communication in the country; capacity building

Policies, Plans and Strategies	Key areas of application
Strategy (NCCRS), 2010	<p>requirements; enhancing research and development as well as technology development and transfer in areas that respond to climate change, among many others.</p> <ul style="list-style-type: none"> It is prudent to ensure that the proposed project infrastructure design is climate-proof over its lifespan, which includes carrying out geotechnical site investigations (GSIs) to determine appropriate sites for infrastructure development; factoring a maintenance component into all infrastructural development funds; and designing infrastructure that can withstand the prevailing climatic conditions, e.g. structures that can withstand strong winds, tides.
The National Biodiversity Strategy, and Action Plan (NBSAP) 2000	<ul style="list-style-type: none"> NBSAP was formulated 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. <i>It is therefore prudent to ensure the proposed project objectives are in line with the strategy to conserve Kenya's biodiversity; and to sustainably use its components.</i>
Least Cost Power Development Plan, 2017-2037	<ul style="list-style-type: none"> This is a long term 20 year rolling plan covering the period 2017-2037. It integrates Feed-In-Tariff Policy approvals and provides a focus on the Government Big 4 Agenda in which energy is expected to be a central enabler of the programme. The report covers a comprehensive load forecast, addresses the committed generation projects between 2017-2024 and the expansion programme for the period 2025-2037. The main objective of the plan and its update (from 2011 -2030) is to take into account new assumptions, reflect on emerging technologies as well as market dynamics that may influence future power expansion plan and accommodate new Government policy guidance on renewable energy expansion in the immediate long term. A key objective of the plan is to simulate the generation plants; - and prepare a Transmission System expansion plan in line with the generation expansion. <p><i>On transmission the report covers the target network for the period 2017-2037 ensuring that the target network is adequate, secure and cost effective.</i></p>
Kilifi County Integrated Development Plan, 2018-2022	<ul style="list-style-type: none"> Access to electricity in Kilifi County is estimated at 21%. The proposed project aligns to Kilifi County CIDP which aims at the promotion of equitable, clean and affordable access to energy as one of the strategic priorities of the county. <p><i>It is envisioned that the proposed project will support adequate transmission of power for the last mile Connectivity programme within Kilifi County aimed at expanding electricity infrastructure through the rural electrification programmes.</i></p>

4.4 National legal and regulatory framework

The Republic of Kenya has numerous laws and regulations that guide environmental management and conservation in the country. Most of these laws are sector specific and cover a wide range of issues including public health, soil conservation, protected areas conservation, endangered species, public participation, water rights, water quality, air quality, excessive noise control, vibration control, land use, among others. The relevant legislations are described in sections 4.3.1.

Table 4-2 Laws and Regulations

Laws and Regulations	Key areas of application	Permit / license Requirements
<p>Environmental Management and Coordination Act (EMCA, Cap 387) and relevant amendments</p>	<ul style="list-style-type: none"> ▪ EMCA Cap 387 is the principal law in Kenya that governs the management, use and regulation of environmental resources including natural capital. ▪ The law provides for a number of policy and institutional arrangements aimed at ensuring that Kenya’s environmental resources are utilized in a sustainable and equitable manner. ▪ EMCA establishes among others the following institutions: National Environment Management Authority, National Environment Complaints Committee, National Environment Tribunal, National Environment Action Plan Committees, and County Environment Committees. ‘ ▪ The National Environment Management Authority (NEMA) was established as the principal instrument of government charged with the implementation of all policies relating to the environment, and to exercise general supervision and coordination over all matters relating to the environment. ▪ In consultation with the lead agencies, NEMA is empowered to develop regulations, prescribe measures and standards and, issue guidelines for the management and conservation of natural resources and the environment. The Act provides for environmental protection through; <ul style="list-style-type: none"> ➢ Environmental impact assessment ➢ Environmental audit and monitoring ➢ Environmental restoration orders, conservation orders, and easements. ▪ The law provides for a series of measures to be taken in pursuance to achieving this aim, i.e., establishment of various organs from the county level (County Environmental Committee), to the national level, development of County/National Environmental Action Plans and monitoring and compliance plans among others. ▪ Other aspects provided for include Strategic Environmental Assessment, Standards and Quality Monitoring, and Environmental Impact assessment. ▪ Schedule 2 of the Act (amendments 2019) provides details on projects that require Environmental Impact Assessment by categorizing the projects into Low Risk Projects, Medium Risk Projects and High-Risk Projects. The High-Risk Projects include any activity out of character with its surrounding; and any structure of a scale not in keeping with its surrounding. High risk projects also include other projects of high magnitudes such as high voltage transmission lines. <p><i>This project is listed under High Risk Project as power and infrastructure projects, specifically (a) high voltage electrical transmission lines; for which an</i></p>	<ul style="list-style-type: none"> ▪ Obtain EIA License prior to commencement of the project

	<p><i>Integrated Environmental and Social Impact Assessment study report is prepared. Through EMCA, various regulations have also been gazetted which the proponent is expected to abide as discussed below;</i></p>	
<p>The Environmental Impact (Assessment and Auditing) Regulations, 2003 and (Amendment) Regulations, 2016 (L.N 149) & 2019 (L.N 32)</p>	<ul style="list-style-type: none"> ▪ Environmental Impact Assessment under the EMCA Cap 387 Act is guided by the Environmental Impact Assessment (Assessment and Auditing) Regulations of the year 2003, which is given under legal notice no. 101 and (Amendment) Regulations, 2016 (L.N 149) & 2019 (L.N 32) ▪ The regulations stipulate the ways in which environment impact assessment and audits should be conducted. The project falls under the second schedule of EMCA, Cap 387 High Risk Project that requires an Environmental Impact Assessment Study be undertaken to provide baseline information upon which subsequent environmental control audit shall be based. ▪ The EMCA, Cap 387 requires that during the EIA process a proponent shall in consultation with the Authority seek views of persons who may be affected by the project or activity through posters, newspaper, radio and public meetings with the affected parties and communities. <p><i>This Report complies with the requirements of the Environmental Regulations in the coverage of environmental issues, project details, impacts, legislation, mitigation measures, management plans and procedures. The Proponent shall be required to commit to implementing the environmental management plan laid out in this report and any other conditions laid out by NEMA.</i></p>	<ul style="list-style-type: none"> ▪ Undertake Annual Environmental Audit (EA) of the project during operation
<p>Environmental Management and Coordination (Water Quality) Regulations, 2006</p>	<ul style="list-style-type: none"> ▪ These regulations provide for the protection of lakes, rivers, streams, springs, wells and other water sources. The objective of the regulations is to protect human health and the environment. The effective enforcement of the water quality regulations will lead to a marked reduction of water-borne diseases and hence a reduction in the health budget. ▪ The regulations also provide guidelines and standards for the discharge of poisons, toxins, noxious, radioactive waste or other pollutants into the aquatic environment in line with the Third Schedule of the regulations. The regulations have standards for discharge of effluent into the sewer and aquatic environment. <p><i>Everyone including the proposed project proponent is required to refrain from any actions, which directly or indirectly cause water pollution, whether or not the water resource was polluted before the enactment of the Environmental Management and Coordination Act (EMCA) Gazetted in Cap 387.</i></p>	<ul style="list-style-type: none"> ▪ Undertake Quaterly effluent discharge quality and quantity monitoring through sampling. ▪ Apply for an effluent discharge license (EDL) (for campsites and substations)

<p>Environmental Management and Coordination (Waste Management) Regulations, 2006</p>	<ul style="list-style-type: none"> ▪ These Regulations are meant to streamline the handling, transportation and disposal of various types of waste. ▪ The aim of the Waste Management Regulations is to protect human health and the environment. Currently, different types of waste are dumped haphazardly posing serious environmental and health concerns. The regulations place emphasis on waste minimization, cleaner production and segregation of waste at source. <p><i>The Proponent shall observe the guidelines as set out in the environmental management plan laid out in this report as well as the recommendation provided for mitigation /minimization /avoidance of adverse impacts arising from the Project activities.</i></p>	<ul style="list-style-type: none"> ▪ Obtain waste transportation and disposal Permit or Contract a licenced waste transport and disposal company
<p>Environmental Management and Coordination of Controlled Substances Regulations, 2007 (Legal Notice No.73 of 2007)</p>	<ul style="list-style-type: none"> ▪ This regulation mandates NEMA to monitor the activities of persons handling controlled substances, in consultation with relevant line ministries and departments, to ensure compliance with the set requirements. ▪ The regulations stipulate that controlled substances must be clearly labelled with among other words, “Controlled Substance-Not ozone friendly”) to indicate that the substance or product is harmful to the ozone layer. Advertisement of such substances must carry the words, “Warning: Contains chemical materials or substances that deplete or have the potential to deplete the ozone layer.” ▪ Persons are prohibited from storing, distributing, transporting or otherwise handling a controlled substance unless a material safety data sheet accompanies the controlled substance. ▪ NEMA must license manufacturers, exporters or importers of controlled substances. Further, NEMA must authorize any person wishing to dispose of a controlled substance. The licensee should ensure that the controlled substance is disposed of in an environmentally sound manner. <p><i>These regulations also apply to any person transporting such controlled substances through Kenya. Such a person is required to undertake a Free Prior Informed Consultation (FPIC).</i></p>	<ul style="list-style-type: none"> ▪ Undertake a Free Prior Informed Consultation (FPIC)
<p>EMCA (Conservation of Biological Diversity and Resources, Access to Genetic Resources and Benefit Sharing) Regulations 2006</p>	<ul style="list-style-type: none"> ▪ Kenya has a large diversity of ecological zones and habitats including lowland and mountain forests, wooded and open grasslands, semi-arid scrubland, dry woodlands, and inland aquatic, and coastal and marine ecosystems. ▪ In addition, a total of 467 lake and wetland habitats are estimated to cover 2.5% of the territory. In order to preserve the country’s wildlife, about 8% of Kenya’s land area is currently under protection. ▪ The country has established numerous goals, as well as general and specific objectives that relate to these issues, among others: environmental policies and legislations; involvement of communities; 	<ul style="list-style-type: none"> ▪ Obtain EIA License prior to commencement of the project since it may have an adverse impact on the ecosystem.

	<p>documentation of national biological resources; sustainable management and conservation of biodiversity; fair and equitable sharing of benefits; technical and scientific cooperation; biodiversity assessment; dissemination of information; institutional and community capacity building; and integration of biodiversity concerns into development planning.</p> <p><i>These regulations apply to the proposed project based on the biological diversity along the RoW hence integration of biodiversity concerns into development planning. Mitigation measures have been developed to ensure reduced impacts</i></p>	
<p>Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009</p>	<ul style="list-style-type: none"> ▪ These Regulations determine that no person or activity shall make or cause to be made any loud, unreasonable, unnecessary or unusual noise that annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. In determining whether noise is loud, unreasonable, unnecessary or unusual, the following factors may be considered: <ul style="list-style-type: none"> ➢ Time of the day; ➢ Proximity to residential area; ➢ Whether the noise is recurrent, intermittent or constant; ➢ The level and intensity of the noise; ➢ Whether the noise has been enhanced in level or range by any type of electronic or mechanical means; and, ➢ Whether the noise is subject to be controlled without unreasonable effort or expense to the person making the noise. ▪ These regulations also relate noise to its vibration effects and seek to ensure that the level of noise causes no harmful vibrations. Any person(s) intending to undertake activities in which noise is suspected to be injurious or endangers the comfort, repose, health or safety of others and the environment, must make an application to NEMA and acquire a license <p><i>Noise is expected during construction phase therefore, contractor is required to implement the provisions of the ESMMP, to ensure noise reduction. In addition, he shall be required to adhere to the provisions of maximum permissible levels for construction sites. The Proponent/management shall observe policy and regulatory requirements and implement the measures proposed in this documenting an effort to comply with the provisions of the Regulations.</i></p>	<ul style="list-style-type: none"> ▪ Obtain Noise and Excessive Vibration permit
<p>Environmental Management and Coordination (Air Quality) Regulations, 2014</p>	<ul style="list-style-type: none"> ▪ The objective this regulation is to provide for prevention, control and abatement of air pollution to ensure clean and healthy ambient air. ▪ It provides for the establishment of emission standards for various sources, including as mobile sources (e.g. motor vehicles). ▪ Emission limits for various areas and facilities have been set. 	<ul style="list-style-type: none"> ▪ Conduct ambient air quality analysis of the generators as recommended under the third

	<ul style="list-style-type: none"> ▪ The regulations provide the procedure for designating controlled areas, and the objectives of air quality management plans for these areas. <p><i>Although impacts on air pollution is listed minor, the Proponent shall observe policy and regulatory requirements and implement the mitigation measures proposed in this document to comply with the provisions of these Regulations on abatement of air pollution.</i></p>	<p>schedule of the regulations.</p>
Building Code, 2000;	<ul style="list-style-type: none"> ▪ This law recognizes the county governments as the leading planning agencies. It compels potential developers to submit development applications for the approval. ▪ The county governments are hence empowered to approve or disapprove any plans if they do or don't comply with the law, respectively. ▪ Any developer who intends to erect a building must give the respective local authority a notice of inspection before the erection of the structure. ▪ On completion of the structure, a notice of completion shall be issued by the local authority to facilitate final inspection and approval. ▪ No person therefore shall occupy a building whose certificate of completion has not been issued by the county government. <p><i>In the development of the project, the proponent will have to comply with the provisions of this Act by complying to the Building code provisions in specific sites where buildings or support facilities will be required.</i></p>	<ul style="list-style-type: none"> ▪ Obtain County approval of Building plans (such as campsites and substation offices) ▪ Obtain certificate of completion for buldings (such as campsites and substation offices)
Civil Aviation Act No. 21 of 2013;	<ul style="list-style-type: none"> ▪ This Act establishes the Kenya Civil Aviation Authority (KCAA) with the objective and purpose to economically and efficiently plan, develop and manage civil aviation, regulate and operate a safe civil aviation system in Kenya in accordance with the provisions of this Act. <p><i>The transmission line and substation construction project must obtain a permit for towers to be erected from the Kenya Civil Aviation Authority.</i></p>	<ul style="list-style-type: none"> ▪ Obtain a permit for erection of Towers
Energy Act, 2019;	<ul style="list-style-type: none"> ▪ The energy Act aims to consolidate the laws relating to energy, to provide for National and County Government functions in relation to energy, to provide for the establishment, powers and functions of the energy sector entities; promotion of renewable energy; exploration, recovery and commercial utilization of geothermal energy; regulation of midstream and downstream petroleum and coal activities; regulation, production, supply and use of electricity and other energy forms; and for connected purposes ▪ The Act establishes the Energy and Petroleum Regulatory Authority to ensure generation, importation, exportation, transmission, distribution, supply and use of electrical energy with the exception of licensing of nuclear facilities; 	<ul style="list-style-type: none"> ▪ Obtain Permit and License to carry out electrical installation work (for contractor) ▪ Ensure electrical workers have a certificate for electrical works.

	<ul style="list-style-type: none"> ▪ Article 177 of the Act gives liability to the transmission licensee to make compensation to the owner or occupier of any land or the agents, workmen or servants of the owner or occupier of any land which is the subject of the provisions of this Act, for damage or loss caused by the exercise or use of any power or authority conferred by this Act or by any irregularity, trespass or other wrongful proceeding in the execution of this Act or by the loss or damage or breaking of any energy infrastructure or by reason of any defect in such infrastructure. ▪ A RAP will be conducted to assist in compensation of the PAPs and affected property. ▪ Article 178 of the act gives provisions for installation of energy infrastructure along roads, and railways, government property, including forests, National parks, reserves and heritage sites, for the purpose of the production, conveyance and supply of energy. ▪ Article 179, gives the Cabinet Secretary compulsory acquisition of land for purposes of constructing, modifying or operating any energy infrastructure or for incidental purposes where reasonable attempts to acquire the land had failed. ▪ Article 193, gives the County Governments power to ensure efficient use of energy and its conservation. ▪ On Article 148 highlights that a person who wishes to carry out electrical installation work must be licensed as an electrical contractor by the Authority. 	
<p>Forest Conservation and Management Act, No. 34 of 2016;</p>	<ul style="list-style-type: none"> ▪ The Forest Conservation and Management Act, 2016 gives effect to Article 69 of the Kenyan 2010 Constitution about forest resources; to provide for the development and sustainable management, including conservation and rational utilization of all forest resources for the socio-economic development of the country and for connected purposes. ▪ The Act applies to all forests on public, community and private lands. The principles of the Act lay emphasis on (a) good governance in accordance with Article 10 of the Constitution; (b) public participation and community involvement in the management of forests; (c) consultation and co-operation between the national and county governments; (d) the values and principles of public service in accordance with Article 232 of the Constitution; (e) protection of indigenous knowledge and intellectual property rights of forests resources; and (f) international best practices in management and conservation of forests. ▪ Further, the act forms the baseline to develop a national forest policy and formulate a public forest strategy for the sustainable use of forests and forest resources. 	<ul style="list-style-type: none"> ▪ -

	<ul style="list-style-type: none"> ▪ In addition, the Act, establishes the Kenya Forest Service to conserve, protect and manage all public forests in accordance with the provisions of this Act. <i>The power transmission project traverses' affects patches of privately owned natural forests. The natural forests are along the alignment found outside / periphery the corridor for Arabuko Sokoke Forest; therefore, important to ensure community participation as provided for under the Act. The most appropriate would be initiation of participatory forest management in these forest sections so that the local community can have a significant input with Kenya Forest Service (KFS) office playing a coordination role. Further, the project as such will need to ensure that disruption of the environment in forested areas is minimised and appropriate mitigation measures are established and implemented</i> 	
<p>Kenya Roads Act, 2007;</p>	<ul style="list-style-type: none"> ▪ This is an Act of Parliament that provided for the establishment of Kenya Road Agencies i.e. Kenya National Roads Authority (KeNHA), the Kenya Urban Roads Authority (KURA) and the Kenya Rural Roads Authority (KeRRA) and provided powers and functions of the authorities. ▪ The Rural Roads Authority has the responsibility for the management, development, rehabilitation and maintenance of rural roads. Article 49 of the act requires written permission to be obtained from for construction or erection of any structures or other thing on, over, and below roads the surface of a road reserve . ▪ KeRRA functions and duties include(a) constructing, upgrading, rehabilitating and maintaining roads under its control; and (b) controlling reserves for rural roads and access to roadside developments. <i>The various Roads Authorities will be key stakeholders in the development of the project and most important during construction phases for development and maintenance of road access within the project corridor.</i> 	<ul style="list-style-type: none"> ▪ Obtain Written Permission to construct Transmission lines over Roads
<p>The Land Registration Act, 2012</p>	<ul style="list-style-type: none"> ▪ This is an Act of Parliament that revises, consolidates and rationalizes the registration of titles to land, to give effect to the principles and objects of devolved government in land registration, and for connected purposes. ▪ The act requires that proper marking and maintenance of boundaries. ▪ An interested person who has made an application to the Registrar for his/her boundaries to be ascertained, the Registrar shall give notice to the owners and occupiers of the land adjoining the boundaries in question of the intention to ascertain and fix the boundaries. ▪ With regard to the maintenance of boundaries, the Act requires every proprietor of land to maintain in good order the fences, hedges, stones, pillars, beacons, walls and other features that demarcate the 	<ul style="list-style-type: none"> ▪ Give notice to the owners and occupiers of the land along RoW

	<p>boundaries, pursuant to the requirements of any written law. <i>The proposed project will require landowners and specifically PAPs to identify their land boundaries which are within the RoW.</i></p>	
<p>The Land Act, 2012; and The Land Laws (Amendment) Act, 2016</p>	<ul style="list-style-type: none"> ▪ The Land Act was enacted by Parliament to give effect to Article 68 of the Constitution, to revise, consolidate and rationalize land laws; to provide for the sustainable administration and management of land and land-based resources, and for connected purposes. ▪ The Act applies to all land declared as (a) public land under Article 62 of the Constitution; (b) private land under Article 64 of the Constitution; and (c) community land under Article 63 of the Constitution and any other written law relating to community land. ▪ The Land Act guarantees security of tenure for land under (a) freehold; (b) leasehold; (c) such forms of partial interest as may be defined under the Act and other law, including but not limited to easements; and (d) customary land rights, where consistent with the Constitution and guarantees equal recognition and enforcement of land rights arising under all tenure systems and non-discrimination in ownership of, and access to land under all tenure systems. <p><i>Under the Lands Act 2012, Sections 28 and 29 allow for Compulsory Acquisition as an option in acquiring land for public utility.</i></p>	<ul style="list-style-type: none"> ▪ -
<p>National Land Commission Act, No. 5 of 2012;</p>	<ul style="list-style-type: none"> ▪ The National Land Commission of Kenya is an independent government commission established by the act and provided for by Constitution of Kenya to, amongst other duties, manage public land on behalf of the national and county governments, initiate investigations into present or historical land injustices, recommend appropriate redress, monitor and have oversight responsibilities over land use planning throughout the country. ▪ The mandate of the National Land Commission is drawn from the National Land Policy of 2009 (Rev 2017), Constitution of Kenya 2010, National Land Commission Act, 2012, the Land Act 2012 and the Land Registration Act of 2012. ▪ Under the National Land Commission Act, the Commission shall among other duties monitor the registration of all rights and interests in land and ensure that public land and land under the management of designated state agencies are sustainably managed for their intended purpose and for future generations. <p><i>The commission is required in consultation and cooperation with the national and county governments, to establish county land management boards for the purposes of managing public land.</i></p>	<ul style="list-style-type: none"> ▪ -

<p>The Valuers Act cap 532, 1985</p>	<ul style="list-style-type: none"> ▪ The revised edition 1985 of the Valuers Act Cap 532 makes provisions for the relevant charges and conducts of valuers in relation to valuation of assets. ▪ The Act also provides the relevant regulations and guidelines in the undertaking of the valuation works. <p><i>The Act requires that adequate valuation is carried out to help meet the actual compensation measures and the market rates and reduce any acts of malice in the exercise.</i></p> <p><i>A competent valuer will have to be deployed to site to carry out the professional valuation of assets for compensation along the RoW.</i></p>	<ul style="list-style-type: none"> ▪ Certificate of registration for the valuer to undertake land valuation.
<p>Occupational Safety and Health Act, No. 15 of 2007;</p>	<ul style="list-style-type: none"> ▪ The Occupational Safety and Health Act 2007 applies to all workplaces where any person is at work, whether temporarily or permanently. ▪ The purpose of the act is to secure the safety, health and welfare of persons at work and protect persons other than persons at work against risks to safety and health arising out of, or regarding, the activities of persons at work. ▪ Section (3) Every occupier shall carry out appropriate risk assessments in relation to the safety and health of persons employed and, on the basis of these results, adopt preventive and protective measures ▪ Section 9.(1) Every occupier shall establish a safety and health committee at the workplace in accordance with OSH Committee regulations. ▪ Section 11. (1) requires the occupier of a workplace to cause a thorough safety and health audit of his workplace to be carried out at least once in every period of twelve months by a safety and health advisor. ▪ Section 19 of the Act provides that an occupier of any premises likely to emit poisonous, harmful, injurious or offensive substances, into the atmosphere shall use the best practicable means to prevent such emissions into the atmosphere and render harmless and inoffensive the substances which may be emitted. ▪ Section 16 provides that no person shall engage in any improper activity or behavior at the workplace, which might create or constitute a hazard to that person or any other person. ▪ Section 44. (1) requires before a person occupies or uses any premises as a workplace, he shall apply for the registration of the premises by sending to the Director a written notice containing the particulars set out in the Fourth Schedule ▪ <p><i>It is thus recommended that all Sections of the Act related to this project, such as provision of protective clothing, clean water, and insurance cover are observed to protect all from work related injuries or other health hazards.</i></p>	<ul style="list-style-type: none"> ▪ Obtain Registration of Workplace Certificate for workplaces (Campsites, substation offices etc) ▪ Undertake Annual Safety and Health Audit ▪ Establish a Safety and Health Committee ▪ Undertake appropriate risk assessment of the Workplace

<p>Penal Code Act (Cap 63);</p>	<ul style="list-style-type: none"> ▪ The Penal Code (Cap. 63) chapter on “Offences against Health and Conveniences” strictly prohibits violation of the atmosphere at any place, to make it noxious to health of persons in general dwelling or carrying out business in the neighborhood or passing along public ways is guilty of misdemeanor and shall be subjected to imprisonment not exceeding two years with no option of fine. ▪ Under this code, any person who for trade or otherwise makes loud noise or offensive awful smell in such places and circumstances as to annoy any considerable number of persons in the exercise of their rights, commits an offence, and is liable to be punished. <p><i>The contractor of the proposed transmission line and substation will therefore need to ensure that all emissions are controlled during the construction phase of the project to avoid interference on health of the local communities and the workers.</i></p>	<ul style="list-style-type: none"> ▪ -
<p>Physical and Land Use Planning Act, 2019;</p>	<ul style="list-style-type: none"> ▪ The Physical and Land Use Planning Act, 2019 provides for the preparation and implementation of physical development plans. ▪ Section 55 of the Act provides for development control to protect and conserve the environment and to ensure orderly physical and land use development amongst others. These includes process and procedures for processing of easements and way-leaves;siting of base transmission station, power generation Plants,etc ▪ The third schedule section 4 of the act specifically highlights that planning authorities shall require applications for major developments to be subjected to environmental and social impact assessment. <p><i>The proponent and contractors of the proposed transmission line and substation should ensure compliance with the provisions of the act and land use planning. Public participation has been conducted to ensure the involvement of stakeholders in the planning process.</i></p>	<ul style="list-style-type: none"> ▪ Subject the project to environmental and social impact assessment – issuance of an EIA license ▪ Processing of easements and way-leaves;
<p>Public Health Act (Cap 242);</p>	<ul style="list-style-type: none"> ▪ The Public Health Act (Chapter 242) is an Act of Parliament that provides for securing and maintaining good health of citizens. ▪ The Act contains directives that are focused on ensuring protection of human health. There are provisions within the Act that deal with water, air and noise quality as they pertain to human health. ▪ An environmental nuisance includes the emission from premises of waste waters, gases and smoke which could be regarded as injurious to health. ▪ The owner and/or occupier of premises responsible for such nuisances are liable to prosecution under the Act. <p><i>The construction of the proposed transmission line and substation has potential pollution risks related to water siltation in sections near water sources such as near River Galana.</i></p>	<ul style="list-style-type: none"> ▪ -

	<p><i>The contractor will need to ensure that water pollution is controlled and does not affect residents.</i></p>	
Climate Change Act, 2016;	<ul style="list-style-type: none"> ▪ The Act 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 Act should be applied for the development, management, implementation and regulation of mechanisms to enhance climate change resilience and low carbon development for the sustainable development of Kenya. ▪ The Act should be applied in all sectors of the economy by the national and county governments to— <ul style="list-style-type: none"> ➢ Mainstream climate change responses into development planning, decision making and implementation; ➢ Build resilience and enhance adaptive capacity to the impacts of climate change; ➢ Mainstream the principle of sustainable development into the planning for and decision making on climate change response; and ➢ Integrate climate change into the exercise of power and functions of all levels of governance, and to enhance cooperative climate <p><i>The proposed project should therefore ensure that infrastructure design is climate-proof over its lifespan and undertaken as per provisions of the act specifically on planning and implementation stages.</i></p>	▪ -
County Governments Act, No. 17 of 2012; together with its Amendment Act, 2016	<ul style="list-style-type: none"> ▪ This is an Act of parliament to give effect to Chapter Eleven of the Kenyan Constitution; to provide for County government’s powers, functions and responsibilities to deliver services and for connected purposes. ▪ This Act vests responsibility upon the County Governments in planning of development projects within their areas of jurisdiction be it projects of importance to the county government or those of national importance. ▪ Section 102 of the Act provides the principles of planning and development facilitation which include integration of national values in county planning, protect the right to self-fulfillment within the county communities and with responsibility to future generations, protection of rights of minorities and marginalized groups and communities, promotion equity resource allocation, among others. ▪ Section 103 of the Act sets out the prime objective of county planning which aligned to the bill of rights and the constitution of Kenya. ▪ Section 113 of the Act makes public participation in County planning processes compulsory ▪ Section 114 and 115 indicate and give guidelines in planning of projects of national significance and instill the aspect of public participation in every aspect of the planning process through that: clear 	▪ -

	<p>strategic environmental assessments; clear environmental impact assessment reports; expected development outcomes; and development options and their cost implications.</p> <ul style="list-style-type: none"> ▪ Each county assembly is tasked with the role to develop laws and regulations giving effect to the requirement for effective citizen participation in development planning and performance management within the county. <p><i>In the execution of the proposed project, the County Government of Kilifi forms a key stakeholder in project planning in ensuring equal allocation of the resource in question and ensuring public participation.</i></p>	
<p>Employment Act, No 11, 2007;</p>	<ul style="list-style-type: none"> ▪ The Employment Act, 2007 defines the fundamental rights of employees including the basic conditions of employment of workers. It also regulates employment of children. ▪ The contractor on site will have to employ casual labourers probably from the communities where the transmission traverses during construction. <p><i>The basic conditions of employees should be observed to avoid unnecessary conflicts during the construction works. The Contractor shall pay the entire amount of the wages earned by or payable to the workers. Payment of such wages should be done at the end of a working day at or near the place of work. The Contractor shall also ensure that all statutory deductions are submitted without delay to appropriate government agencies e.g. Kenya Revenue Authority, NSSF, NHIF, among others.</i></p>	<ul style="list-style-type: none"> ▪ Ensure Statutory deductions without delay to appropriate government agencies e.g. Kenya Revenue Authority, NSSF, NHIF
<p>Water Act, 2016;</p>	<ul style="list-style-type: none"> ▪ The Water Act No. 43 of 2016 repealed the water Act 2002. The enactment of this law aimed at aligning national water management and water services provision with the requirements of the Constitution of Kenya 2010 particularly on the clauses devolving water and sanitation services to the county governments. ▪ The act highlights regulation of Water Rights and Works with Section of 36 of the act requiring a water permit be obtained for any use of water from a water resource, except as provided by section 37; ▪ Section 40 stipulates procedures for obtaining a water permit including subject of public consultation and, where applicable, of environmental impact assessment in accordance with the requirements of the Environmental Management and Coordination Act, 1999 (No. 8 of 1999). ▪ Section 55 highlights abstraction of ground water. The Fourth Schedule has effect with respect to the abstraction of ground water and respective works including application for a permit. ▪ Consequently, the new law retained some and established other new institutional arrangements including; <ul style="list-style-type: none"> ➢ Ministry of Water and Irrigation as the sector coordinator, 	<ul style="list-style-type: none"> ▪ Apply for Water Extraction Permit ▪ Obtain EIA license prior to digging boreholes

	<ul style="list-style-type: none"> ➤ Water Services Regulatory Board (WASREB) for regulation of water services' providers, ➤ Water Resources Regulatory Authority (WRA formerly WRMA) for water resource use regulation, ➤ National Water Harvesting and Storage Authority for major water infrastructural development, ➤ Water Tribunal for dispute resolution, ➤ Water Sector Trust Fund for water services development towards the un-served and poor segments of the society in peri-urban and rural areas, ➤ Water Works Development Agencies to replace the Water Service Boards, and ➤ Basin Water Resources Committees to replace Catchment Advisory Committees (CAACs) <p><i>The Act vests provision of water and sanitation services with the county governments through Water Services Providers (WSPs) whose operations must be in accordance with a Service Agreement entered between each WSP and WASREB. During the entire project lifecycle, regulations and guidelines as per the Water Act provision should be considered.</i></p>	
<p>HIV and AIDS Prevention and Control Act, 2006;</p>	<ul style="list-style-type: none"> ▪ Section 3 of The Act indicated the purpose of the legislation including public awareness and rights to people living with HIV/AIDS. ▪ Public awareness shall be achieved through education, public campaigns even at workplaces. <p><i>This Act's provisions then give the guidelines unto which the project shall follow in educating workers and staff and providing of incentives to combat HIV/AIDS. The proposed project should adopt the guidelines as set in the provisions of the act to enhance public awareness and rights to people living with HIV/AIDS</i></p>	<ul style="list-style-type: none"> ▪ -
<p>The Sexual Offences Act, 2006 and its amendment 2012</p>	<ul style="list-style-type: none"> ▪ The act of Parliament makes provision about sexual offences, their definition, prevention and the protection of all persons from harm from unlawful sexual acts, and for connected purposes. ▪ The act emphasis on observing a standard work ethic to ensure persons from both genders are not subjected to sexual offences. ▪ The Act highlights key aspects within its provisions as follows; <ul style="list-style-type: none"> ➤ Rape. ➤ Attempted rape. ➤ Sexual assault. ➤ Compelled or induced indecent acts. ➤ Acts which cause penetration or indecent acts committed within the view of a child or person with mental disabilities. ➤ Defilement. ➤ Attempted defilement. ➤ Gang rape. ➤ Indecent act with child or adult. ➤ Promotion of sexual offences with a child. ➤ Child trafficking. 	<ul style="list-style-type: none"> ▪ -

	<ul style="list-style-type: none"> ➤ Child sex tourism. ➤ Child prostitution. ➤ Child pornography. ➤ Exploitation of prostitution. ➤ Trafficking for sexual exploitation. ➤ Prostitution of persons with mental disabilities. ➤ Incest by male persons. ➤ Incest by female persons. ➤ Sexual harassment. ➤ Sexual offences relating to position of authority and persons in position of trust. ➤ Sexual relationship which pre-date position of authority or trust. ➤ Deliberate transmission of HIV or any other life threatening sexually transmitted disease. ➤ Administering a substance with intent. ➤ Distribution of substance by juristic persons. ➤ Cultural and religious sexual offences. ➤ Non-disclosure of conviction of sexual offences. ➤ Vulnerable witnesses. ➤ Vulnerable witnesses to be notified of protective measures. ➤ Evidence of surrounding circumstances and impact of sexual offence. <p><i>Ample working environment should prevail in all workplaces in the project, to be enhanced through implementation of a Sexual Misconduct Policy.</i></p>	
<p>Alcoholic Drinks Control Act, 2010.</p>	<ul style="list-style-type: none"> ▪ The Alcoholic Drinks Control Act is an act of Parliament to regulate the production, sale, and consumption of alcoholic drinks, to repeal the Chang'aa Prohibition Act, the Liquor Licensing Act and for connected purposes. The Act seeks to: <ul style="list-style-type: none"> ➤ To protect the health of individuals by providing a legal framework to control sale, production & consumption of alcoholic drinks ➤ To protect consumers of alcohol products from misleading inducements to use alcohol ➤ To protect young people (those below 18 years) by restricting their access to alcoholic products ➤ To educate the public on the dangers of alcohol use (economic, social & health) ➤ To protect the government by dealing with illicit trade ➤ To promote and provide for treatment & rehab programmes for the addicted ➤ To promote research and dissemination of information especially of health risks <p><i>The proposed project is therefore expected to be in the forefront to ensure the public i.e. students are informed and sensitized on the dangers of alcohol use (economic, social & health) impacts.</i></p>	<ul style="list-style-type: none"> ▪ -
<p>Persons with Disabilities Act, 2003;</p>	<ul style="list-style-type: none"> ▪ This act protects the rights of people with disabilities ensuring they are not marginalized and that they enjoy all the necessities of life without discrimination. 	<ul style="list-style-type: none"> ▪ -

	<ul style="list-style-type: none"> ▪ The act guarantees that <ul style="list-style-type: none"> ➢ No person shall deny a person with a disability access to opportunities for suitable employment. ➢ A qualified employee with a disability shall be subject to the same terms and conditions of employment and the same compensation, privileges, benefits, fringe benefits, incentives or allowances as qualified able-bodied employees. ➢ An employee with a disability shall be entitled to exemption from tax on all income accruing from his employment. <p><i>A person with disability is entitled to exemptions which apply with respect to exemptions and deductions as described in Schedule 42 subsection (2) of the act, among other provisions within this act that should be complied with all parties involved.</i></p>	
<p>The National Gender and Equality Act, 2011</p>	<ul style="list-style-type: none"> ▪ National Gender Equality Commission is a constitutional Commission established by an Act of Parliament in August 2011, as a successor commission to the Kenya National Human Rights and Equality Commission pursuant to Article 59 of the Constitution. ▪ NGEC derives its mandate from Articles 27, 43, and Chapter Fifteen of the Constitution; and section 8 of NGEC Act (Cap. 15) of 2011, with the objectives of promoting gender equality and freedom from discrimination. <p><i>Gender mainstreaming in projects ensures that the concerns of women and men form an integral dimension of the project design, implementation, operation and the monitoring and evaluation ensures that women and men benefit equally, and that inequality is not perpetuated.</i></p>	<ul style="list-style-type: none"> ▪ -
<p>Protection of Traditional Knowledge and Cultural Expressions Act, 2016;</p>	<ul style="list-style-type: none"> ▪ The Act of parliament provides a framework for the protection and promotion of traditional knowledge and cultural expressions which gives effect to Articles 11, 40 and 69(L) (c) of the Constitution ▪ The Act requires a person who uses traditional knowledge or cultural expressions beyond its traditional context should indicate source of the knowledge or expression and where possible, the origin of the knowledge or expression, and use such knowledge or expression in a manner that respects the cultural values of the holders. ▪ Article 2 of Act requires that traditional knowledge or cultural expressions shall not, without the prior and informed consultation of the owners, be used for-(a) the reproduction of the traditional knowledge or cultural expressions; (b) the publication of the traditional knowledge or cultural expressions. <p><i>Based on this the consultants / proponent will require to ensure provisions of the act such as free prior and informed consultation of the locals is undertaken.</i></p>	<ul style="list-style-type: none"> ▪ -

Work Injury Benefits Act, 2007;	<ul style="list-style-type: none"> ▪ The Work Injury Compensation Benefit Act 2007 provides guideline for compensating employees on work-related injuries and diseases contacted in the course of employment. ▪ The Act also requires provision of compulsory insurance for all employees. ▪ The Act defines an employee as any worker on contract of service with employer. <p><i>It will be important for the proponent of the proposed project to ensure that all workers contracted during the project implementation phase are provided with appropriate insurance covers so that they can be compensated in case they get injured while working</i></p>	<ul style="list-style-type: none"> ▪ Provision of compulsory insurance for all employees
National Museums and Heritage Act, No. 6 of 2006;	<ul style="list-style-type: none"> ▪ The Act consolidates all the laws relating to national museums and heritage; and provides for the establishment control, management and development of national museums and the identification, protection, conservation and transmission of the cultural and natural heritage of Kenya. The act repeals the Antiquities and Monuments Act and the National Museums Act. <p><i>The proposed project should ensure as per the National Museums Act; any monuments and antiquities should be protected and conserved to promote cultural resources in the context of social and economic development of the Country.</i></p>	<ul style="list-style-type: none"> ▪ -
Wildlife Conservation and Management Act, No. 47 of 2013.	<ul style="list-style-type: none"> ▪ The Wildlife and Conservation Act deals with the conservation and management of wildlife in Kenya. ▪ The Act provides that wildlife should be conserved so as to yield optimum returns in terms of cultural, aesthetic, scientific and economic benefits. ▪ The Act requires that full account be taken of the inter-relationship between wildlife conservation and land use. ▪ The Act controls activities within the national parks, which may lead to the disturbance of wild animals. Unauthorized entry, residence, burning, damage to objects of scientific interest, introduction of plants and animals and damage to structure are prohibited under this law. ▪ The proposed power transmission traverses Arabuko Sokoke forest corridor which could be a wildlife dispersal area. <p><i>During construction of the power transmission line the proponent will need to create a free passage of wildlife. To ensure wildlife is not affected negatively.</i></p>	<ul style="list-style-type: none"> ▪ -
The Agriculture, Fisheries and Food Authority Act of 2013	<ul style="list-style-type: none"> ▪ The Act provides for the establishment of the Agriculture, Fisheries and Food Authority, the administration of matters of agriculture and the preservation, utilization and development of agricultural land and related matters. "Agriculture" in this Act means cultivation of land and the use of land and water for any purpose of husbandry, aquaculture and food production and includes cultivation of crops and horticultural practice, breeding of aquatic animals and plants, the use of 	<ul style="list-style-type: none"> ▪ -

	<p>land, fish harvesting and (e) the use of land for agroforestry.</p> <ul style="list-style-type: none"> ▪ The Act requires the Authority in consultation with the county governments to among others promote best practices. ▪ Each county government is required to keep a register of land development orders and land preservation orders, which they may issue under this Act. <p><i>Meanwhile the project shall ensure sustainable development principles are adopted throughout the entire project cycle, with the local community enjoying the benefit of natural resources they have been bestowed with.</i></p>	
<p>Security Laws (Amendment) Act, 2014</p>	<ul style="list-style-type: none"> ▪ This act entails a legal framework and jurisdiction on security matters. It is a constitutional entitlement to live and feel secure from agents that may compromise ones' life and safety. ▪ Security measures are vital in this project following past terrorist experiences reported in the area; the contractor shall embark on a community policing program to be executed by a competent security firm. <p><i>It is recommended that the government takes keen in providing adequate support to enhance the security of persons involved in this project and the community at large, which will translate to provision of critical intelligence that will trigger a review of the existing security measures and tactics, among other advantages such as security expertise and artillery.</i></p>	<ul style="list-style-type: none"> ▪ -
<p>The Traffic Act Cap 403</p>	<ul style="list-style-type: none"> ▪ The Traffic Act reserves the use of the road corridor for road facilities only. Encroachment along the project corridor roads will have to be checked especially during the construction and operational phase of the project. ▪ Part III of the act deals with Licensing of Vehicles with section 15 (1) noting that no person shall own or possess a motor vehicle or trailer, or use it on a road, unless such vehicle or trailer is licensed under the act. ▪ Part IVof the act deals with - Driving Licences with section 30 (1) stipulating that no person shall drive a motor vehicle of any class on a road unless he is the holder of a valid driving licence or a provisional licence endorsed in respect of that class of vehicle. <p><i>The Act also spells out conditions for use of roads by motorists, among others. The contractor's vehicles shall comply to all traffic rules in Kenya.</i></p>	<ul style="list-style-type: none"> ▪ Motor vehicles and trailers to be licensed. ▪ Drivers must hold Valid driving licence
<p>Prevention, Protection and Assistance to Internally Displaced Persons and Affected</p>	<ul style="list-style-type: none"> ▪ The Act makes provision for the prevention, protection and provision of assistance to internally displaced persons and affected communities as per the United Nations Guiding Principles on Internal Displacement and for connected purposes. ▪ The Government and any other organization, body or individual when responding to a situation of internal displacement and the needs 	<ul style="list-style-type: none"> ▪ -

Communities Act, 2012,	<p>of internally displaced persons under this Act, shall consider their rights and freedoms as set out in the Bill of Rights of the Constitution.</p> <ul style="list-style-type: none"> ▪ The Government shall protect every human being against arbitrary displacement ▪ The Government shall put into place measures for assistance and protection needs of internally displaced persons with particular regard to displaced communities with a special dependency on and attachment to their lands and the protection needs of women, children, persons with disabilities, the elderly and other persons with special needs ▪ The Government shall create the conditions for and provide internally displaced persons with a durable and sustainable solution in safety and dignity and shall respect and ensure respect for the right of internally displaced persons to make an informed and voluntary decision on whether to return, locally integrate or resettle elsewhere in the country. ▪ The procedure for resettlement of internally displaced persons and the standards applicable to such resettlement shall be as prescribed <p><i>It is therefore recommended displaced persons and communities are protected and assisted in line with the Principles on internal displacement established by the Act.</i></p>	
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4.5 Kilifi County legislations

The proposed project is within the jurisdiction of Kilifi County which under the Kenyan Constitution – Chapter eleven – has powers, functions and responsibilities to deliver services and for connected purposes and establish relevant laws and regulations. This sub-section has reviewed the most applicable and relevant laws to the proposed project.

Table 4-3 Kilifi County Legislations

Kilifi Laws and Regulations	Key areas of application
<p>The Kilifi County Environment (Regulation and Control) Act, 2016</p>	<ul style="list-style-type: none"> ▪ This is an act of the Kilifi County Assembly to give effect to the Fourth Schedule of the Constitution; to control and regulate air pollution, noise pollution, public nuisances and outdoor advertising; and for connected purposes. ▪ Part I Section 3 of the Act states its objectives to provide for the control of— <ul style="list-style-type: none"> ➢ Air pollution; ➢ Noise pollution; ➢ Public nuisances, including waste and disease-causing pests; and ➢ Unregulated outdoor advertising, in order to ensure a clean and healthy environment. ▪ Part III of the act provides Provisions Relating to Air Pollution. Section 12. (1) states that a person or an entity shall not act in a way that directly or indirectly causes or is likely to cause immediate or subsequent air

	<p>pollution, or emit any liquid, solid or gaseous substance or deposit any such substance contrary to this Act. Section 14 states that every owner or operator of a controlled facility shall ensure that emissions from the facility does not cause air pollution in any territory outside the facility, in excess of the prescribed relevant ambient air quality levels.</p> <ul style="list-style-type: none"> ▪ Part IV of the act stipulates the Provisions Relating to Noise Pollution. In section 18. (1), the act states that a person or an entity shall not act in a way that directly or indirectly causes, or is likely to cause, noise pollution contrary to this Act. <p><i>The project proponent is therefore expected to align with the relevant provisions of the Act.</i></p>
<p>The Kilifi County Disaster Management Act, 2016</p>	<ul style="list-style-type: none"> ▪ This is an act of the County Assembly of Kilifi to provide for the management of disasters and emergencies in Kilifi County by effective planning and risk reduction, response and recovery procedures and promotion of coordination amongst the response agencies, and for related purposes. ▪ Part I section 3 of this act states its objectives as to – <ul style="list-style-type: none"> ➢ (a) establish an efficient structure for the management of disasters and emergencies by promoting cooperation amongst agencies with a role in disaster management, and enhancing their capacities to maintain the provision of essential services, including psychosocial services, during periods of disaster and emergency; ➢ (b) require the preparation and implementation of a County disaster management plan consisting of the response agency plans prepared by the response agencies and other groups and institutions in accordance with the requirements of this Act; ➢ (c) vest authority in persons and agencies to act during times of disaster and emergency in accordance with the plans approved under this Act, and to require the observance and implementation of directives given and initiatives taken by persons authorized under this Act; ➢ (d) to otherwise enhance the capacity of the County Government, relevant agencies and the community to effectively manage the impacts of disasters and emergencies and to take all necessary action to prevent or minimize threats to life, health and the environment from natural disasters and other emergencies; ➢ (e) to implement mechanisms to reduce risks and hazards that may cause, contribute to or exacerbate disaster or emergency situations in the County; and ➢ (f) to facilitate procedures aimed at implementing recovery activities in the aftermath of disasters and emergencies. <p><i>The Act describes County commitment on disaster management and highlights establishment of a disaster management plan. It also highlights need for coordination amongst various agencies. It is therefore expected the project proponent will abide with the provisions for the Act in case of a disaster.</i></p>

4.6 International Policies and Good Practice

4.6.1 World Bank Operational Policies

The objective of the World Bank's environmental and social safeguard policies is to prevent and mitigate undue harm to people and their environment in the development process. These policies provide guidelines for Bank and borrower staff in the identification, preparation, and

implementation of programs and projects. Operational policies have often provided a platform for the participation of stakeholders in project design and have been an important instrument for building ownership among local populations.

The proposed project is classified as Category A (Full Assessment) in accordance with the World Bank Safeguards Policy OP 4.01 (Environment Assessment). Reference has also been made to the World Bank Safeguard Policies, and the World Bank Environmental Assessment Source Book Volume II, which provides the relevant sectoral guidelines including the Banks Operation Policies/Bank Procedures. A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. As per these premise, the ESIA for the proposed power transmission project 'Category A' examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

All World Bank safeguard policies are listed in table 4-4 with descriptions for policies applicable to the Project: An analysis of WB Safeguard Policies against the proposed power transmission project indicates that 4 out of 11 WB safeguards are applicable. The applicable WB operational policies and relevance to the proposed project are discussed in table 4-5.

Table 4-4 An analysis of applicable World Bank safeguard policies

World Bank Safeguard Policy	Applicable	Remarks
Environmental Assessment (OP4.01)	Yes	Project must undergo mandatory full study ESIA Report as specified by OP 4.01 Annex B - Content of an Environmental Assessment Report for a Category A Project
Natural Habitats (OP 4.04)	Yes	Project passes a wildlife dispersal area outside the periphery of Arabuko Sokoke Forest
Forestry (OP 4.36)	Yes	Notably, project affects patches of privately owned natural forests. The natural forests are along the alignment found outside / periphery of the Arabuko Sokoke Forest.
Pest Management (OP 4.09)	No	The project does not involve pest management.
Physical Cultural Resources (OP 4.11)	Yes	Project likely to affect physical cultural resources and areas of cultural and religion importance such as burial sites, churches and baobab tree found along/within the RoW.
Indigenous Peoples / Vulnerable and Marginalised Groups - IPs/VMGs (OP4.10)	No	There are no Indigenous persons found within the RoW.
Involuntary Resettlement (OP 4.12)	Yes	The project will involve acquisition of easements for RoW, as well as land for ancillary facilities. There are people's homesteads and others earning their livelihood on the ROW, which require to be physically relocated or may lose their livelihoods due to project activities
Safety of Dams (OP 4.37)	No	Project will not involve construction of dams
Projects on International Waters (OP 7.50)	No	Project activities do not involve international waters.
Projects in Disputed Areas (OP.60)	No	There are no internationally disputed sites in the project area.

Table 4-5 Review of relevant World Bank Operational Policies

SN	Policy	Relevance
1.	Bank Operational Policy 4.01-Environmental Assessment	<ul style="list-style-type: none"> ▪ The environmental assessment process provides insights to ascertain the applicability of other World Bank safeguard policies to specific projects. This is especially the case for the policies on natural habitats, pest management, and physical cultural resources that are typically considered within the Environmental Assessment (EA) process. ▪ The policy describes an EA process for the proposed project. The breadth, depth, and type of analysis of the EA process depend on the nature, scale, and potential environmental impact of the proposed project. ▪ The policy favors preventive measures over mitigatory or compensatory measures, whenever feasible. The operational principles of the policy require the environmental assessment process to undertake the following: <ul style="list-style-type: none"> ➢ Evaluate adequacy of existing legal and institution frameworks, including applicable international environmental agreements. This policy aims to ensure that projects contravening the agreements are not financed; ➢ Stakeholder consultation before and during project implementation; ➢ Engage service of independent experts to undertake the environmental assessment; ➢ Provide measures to link the environmental process and findings with studies of economics, financial, institutional, social and technical analysis of the proposed project; ➢ Develop programmes for strengthening of institutional capacity in environmental management. <p><i>The requirements of the policy are like those of EMCA Cap 387, which aim at ensuring sustainable project implementation. Most of the requirements of this safeguard policy have been responded to in this report, by evaluating the impact of the project, its alternatives, existing legislative framework and, conducting public consultations and by proposing mitigation measures for the potential impacts identified.</i></p>
2.	Bank Operational Policy 4.04-Natural Habitats	<ul style="list-style-type: none"> ▪ This operational policy requires that the EIA study applies the precautionary principle approach to natural resource management to ensure environmental sustainability. ▪ The policy requires conservation of critical habitat such as the neighbouring / proximate Arabuko Sokoke Forest and its biodiversity during project development. To ensure conservation and project sustainability, the policy requires project alternatives to be sought when working in fragile environment areas and key stakeholders to be engaged in project design, implementation, monitoring and evaluation including mitigation planning. ▪ The requirements of this policy were observed as much as possible during the EIA study due to the proximate existence of critical biodiversity hospots such as Arabuko Sokoke Forest and Kilifi creek. ▪ The consulting team engaged several stakeholders during project impact assessment process so as to incorporate their concerns and views in the ESIA and Environmental and Social

SN	Policy	Relevance
3.	Bank Operational Policy 4.11-Physical Cultural Resources	<p>Management Plan. This policy is important because some sections of the proposed project route traverse outside the corridor for Arabuko Sokoke Forest.</p> <ul style="list-style-type: none"> ▪ This policy guides in preserving physical cultural resources and helps reduce chances of their destruction or damage. The policy considers Physical Cultural Resources (PCR) to be resources of archaeological, paleontological, historical, architectural, and religious (including graveyards and burial sites), aesthetic or other cultural significance. ▪ The policy is applicable due to presence of physical cultural resources such as burial sites found along the RoW. The Contractor is also responsible for familiarizing themselves with the following “Chance Finds Procedures”, in case culturally valuable materials are uncovered during excavation, including: <ul style="list-style-type: none"> ➢ Stop work immediately following the discovery of any materials with possible archaeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities; ➢ Protect artifacts as well as possible using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artifacts ➢ Prevent and penalize any unauthorized access to the artifacts ➢ Restart construction works only upon the authorization of the relevant authorities.
4.	Bank Operational Policy 4.12-Involuntary Resettlement	<ul style="list-style-type: none"> ▪ The objective of this policy to avoid where feasible, or minimize, exploring all viable alternative project designs to avoid resettlement. This policy is applicable in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. ▪ This policy covers direct economic and social impacts that both result from Bank-assisted investment projects. ▪ The policy is applicable if there will be (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. ▪ The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to project appraisal of proposed projects. The objective of this policy to avoid where feasible, or minimize, or explore all viable alternative project designs, to avoid resettlement. ▪ The policy requires the displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement.

SN	Policy	Relevance
		<ul style="list-style-type: none"> ▪ Appropriate and accessible grievance mechanisms should be established for these groups. In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities. <p><i>This policy will be applicable as the project causes the involuntary taking of land and other assets resulting in:</i></p> <ul style="list-style-type: none"> ➢ Relocation or loss of shelter; ➢ Loss of assets or access to assets; ➢ Loss of income sources or means of livelihood, whether the affected persons must move to another location; ➢ Loss of land.
5.	Forestry (OP 4.36)	<ul style="list-style-type: none"> ▪ The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. ▪ Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. ▪ The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest plantations to help meet growing demands for forest goods and services. ▪ This policy is applicable whenever any Bank-financed investment project (i) has the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or (ii) aims to bring about changes in the management, protection or utilization of natural forests or plantations ▪ <i>Notably, project affects patches of privately owned natural forests. The natural forests are along the alignment found outside / periphery of the Arabuko Sokoke Forest.</i>
6.	World Bank policy on access to information	<ul style="list-style-type: none"> ▪ The World Bank Policy on Access to Information sets out the policy of the World Bank on public access to information in its possession. This Policy supersedes the World Bank Policy on Disclosure of Information and took effect on July 1, 2010. ▪ This Policy is based on five principles: <ul style="list-style-type: none"> ➢ Maximizing access to information; ➢ Setting out a clear list of expectations; ➢ Safeguarding the deliberative process; ➢ Providing clear procedures for making information available; ➢ Recognizing requester’s right to an appeals process; <p><i>In disclosing information related to member countries/borrowers in the case of documents prepared or commissioned by a member country/ borrower (in this instance, safeguards assessments and plans related to environment and resettlement: OP 4.01, Environmental Assessments, and OP 4.12 Involuntary Resettlement) the Bank takes the approach that the Country/Borrower provides such documents to the Bank with the understanding that the Bank will make them available to the public.</i></p>

4.6.2 Alignment of WB and GOK Polices relevant to this ESIA

Both the World Bank safeguards and Government of Kenya (GoK) legislation are generally aligned in principle and objective:

- i. Both require screening of subproject investments in order to determine if further environmental assessments (ESIAs) is needed
- ii. Both require Environmental Impact Assessment before project design and implementation. This also includes an assessment of social impacts.
- iii. Both require public disclosure of ESIA reports and stakeholder consultation during preparation.
- iv. While OP 4.01 of World Bank stipulates different scales of ESIA for different category of projects, Amendment of the Second Schedule of EMCA 1999 (30th April 2019), and the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 requires EIA based on various sizes / risk of projects – low, medium and high - listed in the Schedule 2.
- v. Where EMCA Cap 387 requires Strategic Environmental Assessments, OP 4.01 requires that an environmental impact assessment (EIA), regional or sectoral EA, strategic environmental and social assessment (SESA), environmental audit, hazard or risk assessment, environmental management plan (EMP) and environmental and social management framework (ESMF) be conducted depending on the project category.
- vi. EMCA recognizes other sectorial laws while WB has safeguards for specific interests;
- vii. The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project which is consistent to the requirements of EMCA.
- viii. Additionally, statutory annual environmental audits are required by EMCA.

In Kenya, it is a mandatory requirement under EMCA Cap 387 for all development projects (listed in Schedule Two) to be subjected to an EIA study. Following amendments of legal notice 150 amendment to 2003 the EIA/EA regulation which classified projects under schedule into High risk, Medium risk and low risk it is now possible to determine whether a subproject will require a full scale ESIA is necessary or not. Thus, under the Laws of Kenya, environmental assessment is fully mainstreamed in all development process consistent with World Bank policies. However, since EMCA provides no minimum size threshold, all projects are screened at identification stage to determine level of environmental assessment required under EMCA. Further, to fully insure against applicable World Bank safeguard policies, individual investments are screened against each policy as part of the EIA Study.

4.6.3 Gaps between applicable World Bank Safeguards policies and Kenyan Laws

The applicable WB Safeguard Policies include; OP 4.01: Environmental Assessment, OP 4.04: Natural Habitats, OP 4.12: Involuntary Resettlement and OP4.11: Physical Cultural Resources. A detailed comparison and gap analysis between the applicable World Bank safeguard policies and Kenyan Laws is provided in Annex 5.

4.6.4 World Bank General Environmental, Health, and Safety (EHS) Guidelines

The General Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). They define acceptable pollution prevention and abatement measures and emission levels in World Bank financed projects. These General EHS Guidelines have been designed to be used together with the 'Guidelines for Electric Power Transmission and Distribution' which provide specific guidance to users on EHS issues in power transmission sector. The applicability of the EHS Guidelines has been tailored to the hazards and risks established during the environmental assessment. The applicability of specific technical recommendations has also been based on the professional opinion of qualified and experienced Environment, Social, Health and Safety experts. Where Kenyan regulations differ from the levels and measures presented in the EHS Guidelines; the proposed project has adopted whichever is more stringent. The general EHS guidelines

adopted in the ESIA study for the proposed project can be summarized as follows;

- a) **Environmental:** Effective management of the environmental, health, and safety (EHS) issues entails the inclusion of EHS considerations in an organized, hierarchical approach. This section has provided guidance on Environmental issues in the construction of the 60 Km 220 KV Kilifi-Malindi double circuit line that includes Air Emissions and Ambient Air Quality, Energy Conservation, Wastewater and Ambient Water Quality, Water Conservation, hazardous Materials Management, Waste Management, Noise, Contaminated Land, and Occupational Health and Safety.
- b) **Occupational Health and Safety:** Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. This section has provided guidance and examples of reasonable precautions to implement in managing principal risks to occupational health and safety in accordance to the IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution. The measures will apply to construction, operation and decommissioning activities. This guideline has provided guidance on issues related to General Facility Design and Operation; Communication and Training; Physical Hazards; Chemical Hazards; Biological Hazards; Radiological Hazards; Personal Protective Equipment (PPE); Special Hazard Environments; and Monitoring.
- c) **Community Health and Safety:** This section complements the guidance provided in the preceding environmental and occupational health and safety sections, specifically addressing some aspects of project activities as may be applicable on a project basis. Community Health and Safety issues may arise at any stage of a project life cycle and can have an impact beyond the life of the project. They include; water quality and availability, structural safety of project infrastructure, life and fire safety, traffic safety, transport of hazardous materials, disease prevention, emergency preparedness and response.
- d) **Construction and Decommissioning:** These guidelines provide additional guidance on prevention and control of Environment, Occupational Health & Safety and community health & safety impacts that may occur during the proposed 60 Km 220 KV Kilifi-Malindi double circuit line development or at the end of the project lifecycle.

4.6.5 Guidelines for Electric Power Transmission and Distribution

The EHS Guidelines for Electric Power Transmission and Distribution includes information relevant to power transmission between a generation facility and a substation located within an electricity grid. The applicability of the IFC Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution has been based on the professional opinion of qualified and experienced Environment, Health and Safety experts. The guidelines have been adopted based on industry specific impacts and management and in performance indicators and monitoring.

4.7 International Environmental Agreements, conventions and Treaties

Kenya has signed a number of international conventions and treaties on environment and natural resources also known as multi-lateral environmental agreements (MEAs) that obligate the country to promote sustainable environmental and natural resources management and social equity. Conventions are legally binding bilateral, regional or international agreements that binding to the states that are parties thereto. Kenya has ratified some of the most important conventions on the environment as discussed below which apply to the proposed power transmission project hence the contractor is bound to comply by the respective provisions.

Table 4-6 Multilateral Environmental Agreements

Multilateral Environmental Agreements	Key areas of application
United Nations Framework Convention on Climate Change (UNFCCC)	<ul style="list-style-type: none"> ▪ UNFCCC has near universal membership and is the parent treaty of the 1997 Kyoto Protocol. The Kyoto Protocol has been ratified by 192 of the UNFCCC Parties. ▪ The ultimate objective of both treaties is to stabilize greenhouse gas concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. <p><i>The proposed project should ensure all activities and development plans are undertaken in line with the provisions of the Convention aimed at stabilizing greenhouse gas concentrations in the atmosphere.</i></p>
Vienna Convention for the Protection of the Ozone Layer	<ul style="list-style-type: none"> ▪ The Vienna Convention for the Protection of the Ozone Layer was adopted in 1985 and entered into force on 22 Sep 1988. In 2009, the Vienna Convention became the first Convention of any kind to achieve universal ratification. ▪ The objectives of the Convention were for Parties to promote cooperation by means of systematic observations, research and information exchange on the effects of human activities on the ozone layer and <i>to adopt legislative or administrative measures against activities likely to have adverse effects on the ozone layer.</i>
Convention on the Conservation of Migratory Species	<ul style="list-style-type: none"> ▪ The convention on migratory species (CMS) was adopted to conserve migratory species of wild animals given that migratory species are an international resource. ▪ Such species may be terrestrial or marine. ▪ The convention's agreement on the conservation of African-Eurasian migratory water birds is specific on the need to protect the feeding, breeding, and wintering habitats, the main ones being wetlands and open water bodies. <p><i>This convention has been domesticated in the Wildlife (Management and Conservation) Act (2013) hence its tenets should be implemented in the proposed project</i></p>
Convention on Biological Diversity (CBD)	<ul style="list-style-type: none"> ▪ The CBD is one of the outcomes of the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. ▪ The CBD establishes a global legally binding framework for the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of utilization of genetic resources. <p><i>The provisions of this convention will be considered in the conservation of various species of plants, animals and the variety of ecosystems in the project area.</i></p>
African Convention on the Conservation of Nature and Natural Resources	<ul style="list-style-type: none"> ▪ The convention was adopted in Algiers on 15th September 1968 and came into force on 16th June 1969. <p><i>This convention reaffirms the importance of natural resources both renewable and non-renewable, particularly the soil, water, flora and fauna.</i></p> <p><i>The main objective is to facilitate sustainable use of the above resources.</i></p>
Rio Declaration on Environment and Development	<ul style="list-style-type: none"> ▪ The Rio Declaration on Environment and Development, often shortened to Rio Declaration, was a short document produced at the 1992 United Nations "Conference on Environment and Development" (UNCED), informally known as the Earth Summit. ▪ The declaration aimed at establishing a new and equitable global partnership through the creation of new levels of co-operation among States, key sectors of societies and people, working towards

Multilateral Environmental Agreements	Key areas of application
	<p>international agreements which respect the interests of all and protect the integrity of the global environmental and developmental system, recognizing the integral and interdependent nature of the Earth, our home.</p> <ul style="list-style-type: none"> ▪ The Rio Declaration consisted of 27 principles intended to guide countries in future sustainable development. It was signed by over 170 countries. <p><i>Principle 17 of the Rio Declaration provides key relevance to the proposed project; the principle denotes that environmental impact assessment as a national instrument shall be undertaken for proposed activities that are likely to have a significant impact on the environment and are subject to a decision of a competent national authority .</i></p>
<p>Earth Summit on Sustainable Development Agenda 21</p>	<ul style="list-style-type: none"> ▪ Agenda 21 is a non-binding, voluntarily implemented action plan of the United Nations regarding sustainable development. It is a product of the Earth Summit (UN Conference on Environment and Development) held in Rio de Janeiro, Brazil, in 1992. ▪ It is also regarded as an action agenda for the UN, other multilateral organizations, and individual governments around the world that can be executed at local, national, and global levels. The "21" in Agenda 21 refers to the 21st Century. Agenda 21 Section I on Social and Economic Dimensions is directed toward combating poverty, especially in developing countries, changing consumption patterns, promoting health, achieving a more sustainable population, and sustainable settlement in decision making. ▪ Section II on Conservation and Management of Resources for Development Includes atmospheric protection, combating deforestation, protecting fragile environments, conservation of biological diversity (biodiversity), control of pollution and the management of biotechnology, and radioactive wastes. ▪ Section III focuses on strengthening the Role of Major Groups including the roles of children and youth, women, NGOs, local authorities, business and industry, and workers; and strengthening the role of indigenous peoples, their communities, and farmers. <p><i>Kenya continues to implement Agenda 21 to support sustainable development through the integration of environmental concerns into the national development policies, plans, and programmes. Also relevant is the implementation of Agenda 17. The proposed project would need to be consistent with the objectives of Agenda 21.</i></p>
<p>The World Commission on Environment and Development (The Brundtland Commission of 1987)</p>	<ul style="list-style-type: none"> ▪ The Commission in its 1987 report dubbed “Our Common Future” focused on the environmental aspects of development, in particular the emphasis on sustainable development that produces no lasting damage to the biosphere and to particular ecosystems. ▪ In addition to environmental sustainability is economic and social sustainability. Economic sustainable development is development for which progress towards environmental and social sustainability occurs within available financial resources. ▪ While social sustainable development is development that maintains the cohesion of a society and its ability to help its members work together to achieve common goals, while at the same time meeting individual needs for health and well-being, adequate nutrition, and shelter, cultural expression and political involvement. The key aspect of sustainability is the interdependence of generations.

Multilateral Environmental Agreements	Key areas of application
	<p><i>The concept of EIA is embodied in many multilateral environmental agreements. Principle 17 of the Rio Declaration provides that environmental impact assessment as a national instrument shall be undertaken for proposed activities that are likely to have a significant impact on the environment and are subject to a decision of a competent national authority.</i></p>
<p>The 1992 United Nations Framework Convention on Climate Change (UNFCCC)</p>	<ul style="list-style-type: none"> ▪ The primary purpose of the convention is to establish methods to minimize global warming and the emission of the greenhouse gases. ▪ The UNFCCC was adopted on 9th May 1992 and came into force on 21st March 1994. ▪ The Convention has been ratified by 189 states. Kenya ratified the Convention on 30th August 1994. NEMA is the focal point for the Convention. <p><i>The proposed project should ensure minimizing emission of the greenhouse gases.</i></p>
<p>The Paris Agreement</p>	<ul style="list-style-type: none"> ▪ This agreement was adopted on 12th December 2015 at the 21st session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in Paris, it then came into force on 4th November 2016 after meeting the ratification threshold. ▪ The Agreement provides the framework to address climate change for a safer and sustainable future, it has an objective of preventing a global temperature increase above 1.5 degrees Celsius relative to pre-industrial levels by reduction of Greenhouse gas emissions. ▪ Kenya ratified the Paris Agreement and welcomed it into force on 28th December 2016. As at now a total of 171 parties out of 197 have ratified the agreement. <p><i>The proposed project should ensure all activities re in line with the tenets of the Paris Agreement to minimize greenhouse gas emission.</i></p>
<p>Convention on the Elimination of all forms of Discrimination against Women</p>	<ul style="list-style-type: none"> ▪ The Convention on the Elimination of all forms of Discrimination against Women (CEDAW) places explicit obligations on states to protect women and girls from sexual exploitation and abuse. ▪ Universal Declaration of Human Rights (Article 7), the UN Charter (Articles 1, 13, 55, and 76) and the International Covenant on Civil and Political Rights (Article 24) reaffirm the freedoms and rights of all children, including internally displaced children. ▪ The proposed project will ensure tenets of human right and protection of women and girls from sexual exploitation and abuse are embroiled in the development.
<p>International Labour Organization</p>	<ul style="list-style-type: none"> ▪ The International Labour Organization (ILO) is built on the constitutional principle that universal and lasting peace can be established only if it is based upon social justice. The ILO has generated such hallmarks of industrial society as the eight-hour working day, maternity protection, child-labour laws, and a range of policies which promote workplace safety and peaceful industrial relations. The ILO has four principal strategic objectives: <ul style="list-style-type: none"> ➤ To promote and realize standards, and fundamental principles and rights at work. ➤ To create greater opportunities for women and men to secure decent employment. ➤ To enhance the coverage and effectiveness of social protection for all. ➤ To strengthen tri-parties and social dialogue.

Multilateral Environmental Agreements	Key areas of application
	<ul style="list-style-type: none"> ▪ The key ILO Conventions applicable to the proposed power transmission project include: <ol style="list-style-type: none"> i. Equal Remuneration Convention (1951) (No. 100) - Calls for equal pay and benefits for men and women for work of equal value. ii. Discrimination (Employment and Occupation) Convention (1958) (No. 111) - Calls for a national policy to eliminate discrimination in access to employment, training, and working conditions, on grounds of race, colour, sex, religion, political opinion, national extraction or social origin, and to promote equality of opportunity and treatment. iii. Minimum Age Convention (1973) (No. 138) - Aims at the abolition of child labour, stipulating that the minimum age for admission to employment shall not be less than the age of completion of compulsory schooling. iv. Worst Forms of Child Labour Convention (1999) (No. 182) - Calls for immediate and effective measures to secure the prohibition and elimination of the worst forms of child labour which include slavery and similar practices, forced recruitment for use in armed conflict, use in prostitution and pornography, any illicit activity, as well as work which is likely to harm the health, safety, and morals of children.
Sustainable Development Goals (SDGs)	<ul style="list-style-type: none"> ▪ The Sustainable Development Goals (SDGs) are a new, universal set of goals, targets and indicators that UN member states will be expected to use to frame their agendas and political policies over the next 15 years. The SDGs include 17 Sustainable Development Goals and 169 targets. The 17 sustainable development goals (SDGs) include <ul style="list-style-type: none"> ➤ GOAL 1: No Poverty ➤ GOAL 2: Zero Hunger ➤ GOAL 3: Good Health and Well-being ➤ GOAL 4: Quality Education ➤ GOAL 5: Gender Equality ➤ GOAL 6: Clean Water and Sanitation ➤ GOAL 7: Affordable and Clean Energy ➤ GOAL 8: Decent Work and Economic Growth ➤ GOAL 9: Industry, Innovation and Infrastructure ➤ GOAL 10: Reduced Inequality ➤ GOAL 11: Sustainable Cities and Communities ➤ GOAL 12: Responsible Consumption and Production ➤ GOAL 13: Climate Action ➤ GOAL 14: Life Below Water ➤ GOAL 15: Life on Land ➤ GOAL 16: Peace and Justice Strong Institutions ➤ GOAL 17: Partnerships to achieve the Goal ▪ The GOALS seek to build on the Millennium Development Goals that expired in 2015. Most notably SDGs are integrated, indivisible and balance the three dimensions of sustainable development: the economic, social and environmental. <p><i>This project is expected to cut-across the three dimensions of sustainable development hence making SDGs a key reference point. The SDGs are also linked to several Kenyan legal frameworks such as Water Act, Forestry Act, and EMCA Cap 387.</i></p>

4.8 Institutional Framework

There are various national institutions that are important in matters related to resettlement in Kenya. Below is a highlight of the key institutions and their mandate:

Table 4-7 Key National Institutions on Resettlement in Kenya

Institutions / Departments	Key Mandate
The Ministry of Energy	<ul style="list-style-type: none"> ▪ The Ministry of Energy and Petroleum is responsible for energy policy and regulation of electricity and gas reticulation. The ministries mission statement is to facilitate provision of clean, sustainable, affordable, reliable, and secure energy services for national development while protecting the environment. The mandate of the ministry is <ul style="list-style-type: none"> ➢ Hydro power Development. ➢ Geothermal Exploration and Development. ➢ Thermal Power Development. ➢ Oil and Gas Exploration. ➢ Oil/Gas and Minerals sector capacity development. ➢ Rural Electrification Programme. ➢ Petroleum products, import/export/marketing policy Management. ➢ Renewable Energy Promotion and Development ➢ Energy Regulation, Security and Conservation. ➢ Fossil Fuels Exploration and Development. <p><i>MOE will be the coordinating agency for the proposed project.</i></p>
Ministry of Lands and Physical Planning (MOLPP)	<ul style="list-style-type: none"> ▪ The Directorate of Land is charged with the responsibility of ensuring efficient administration and sustainable management of the land resource in the country. <p><i>The MoLPP is responsible for, among others: lands policy management, physical planning, land transactions, land adjudication, settlement matters, land registration, as well as land and property valuation services which is important in acquisition and resettlement issues for the proposed project, as well as urban planning.</i></p>
Ministry of Environment and Natural Resource	<ul style="list-style-type: none"> ▪ This Ministry is responsible for policies and programmes aimed at improving, maintaining, protecting, conserving and managing the Country's natural resources (water, forestry, wildlife and environment). <p><i>The proposed project is expected to align with the policies and programs of this Ministry.</i></p>
National Environmental Tribunal	<ul style="list-style-type: none"> ▪ The National Environment Tribunal (NET) created under Section 125 of EMCA Cap 387 has the following functions: <ul style="list-style-type: none"> ➢ To hear and determine appeals from NEMA's decisions and other actions relating to issuance, revocation or denial of (EIA) licenses or amount of money to be paid under the Act and imposition of restoration orders; ➢ To give direction to NEMA on any matter of complex nature referred to it by the Director General; and ➢ If the proponent or any other stakeholder disagree with NEMA decisions in exercising the above-mentioned functions, then they may lodge a case at the NET to seek to overturn the decision. Should this avenue not lead to a favorable ruling from the NET, an appeal may be lodged in the Environment and Land Court.

<p>National Environment Complaints Committee</p>	<ul style="list-style-type: none"> ▪ The National Environment Complaints Committee performs the following functions: <ul style="list-style-type: none"> ➢ Investigate any allegations or complaints against any person or against the authority in relation to the condition of the environment in Kenya and on its own motion, any suspected case of environmental degradation and to make a report of its findings together with its recommendations thereon to the Cabinet Secretary. ➢ Prepare and submit to the Cabinet Secretary periodic reports of its activities which shall form part of the annual report on the state of the environment under section 9 (3) and ➢ To undertake public interest litigation on behalf of the citizens in environmental matters. <p><i>This committee will act as a safeguard for members of the public who feel aggrieved by actions taken under the proposed project and can exercise their constitutional rights to launch a complaint should they have exhausted all other grievance redress mechanisms available to them.</i></p>
<p>National Environment Management Authority (NEMA)</p>	<ul style="list-style-type: none"> ▪ The National Environment Management Authority (NEMA) exercises general supervision and, co-ordination of all matters relating to the environment. ▪ NEMA is also the principal instrument of the government in the implementation of all policies relating to the environment. ▪ NEMA is also the Designated National Authority for certain Multilateral Environmental Agreements. <p><i>The Authority reviews EIA project and study reports for the proposed projects, visits the project sites to verify information provided in the report and issues EIA licenses if it considers that all the issues relevant to proposed projects have been identified and mitigation measures to manage them have been proposed.</i></p>
<p>Kilifi County Government</p>	<ul style="list-style-type: none"> ▪ The proposed project is within the jurisdiction of Kilifi County Government ▪ The County government are expected to enact legislation as well as collaborate on physical planning. <p><i>Liaison with Kilifi County government authorities will be required for functions that fall under their jurisdiction.</i></p>
<p>The County and Sub-County Environment Committees</p>	<ul style="list-style-type: none"> ▪ Governors shall by notice in the gazette constitute a County Environment Committee that shall be responsible for the proper management of the environment within the County for which it is appointed. ▪ The County and Sub-County Environmental Committees contribute to decentralization of activities undertaken by NEMA. ▪ This has enabled local communities to have greater access to environmental management information. It has also enabled the County and Sub-County Environment Committees to conduct quick site visits and review of reports of proposed projects. <p><i>Since the proposed project is of national importance, the review of the report will be done at a National level for issuance of EIA license. However, it is also notable that the EIA study report should also be reviewed at Kilifi County level to create awareness and obtain local institutional ownership.</i></p>
<p>Kenya Forest Service (KFS),</p>	<ul style="list-style-type: none"> ▪ Kenya Forest Service is a corporate body established under the Forest Conservation and Management Act no 34 of 2016. ▪ The Act, which was operationalized on 31st March 2017, gave the Service's mandate as “to provide for the development and sustainable management, including conservation and rational utilization of all

	<p>forest resources for the socioeconomic development of the country and for connected purposes.”</p> <p><i>KFS will hence play a critical role on providing information on Madunguni Forest land that will be traversed by the proposed line. KFS is bound to Conserve, protect and manage all public forests in accordance with the provisions of the Act;</i></p>
Kenya Wildlife Services (KWS),	<ul style="list-style-type: none"> ▪ Kenya Wildlife Service is a state corporation that was established by an Act of Parliament (Cap 376), repealed by Wildlife Conservation and Management Act (WCMA 2013), with the following mandate of among others: conserve and manage national parks, wildlife conservation areas, and sanctuaries under its jurisdiction. ▪ KWS undertakes conservation and management of wildlife resources across all protected areas systems in collaboration with stakeholders. <p><i>KWS will be key on wildlife management found within the ROW of the proposed transmission line.</i></p>
Water Resources Authority (WRA)	<ul style="list-style-type: none"> ▪ Water Resources Authority (WRA) is a state corporation established under Section 11 of the Water Act, 2016. ▪ Pursuant to Section 6 of the Act, the Authority is an Agent of the National Government responsible for regulating the management and use of water resources. ▪ The Water Act, 2016 makes extensive provisions on the Authority’s role in regulating the use and management of water resources. ▪ WRA was operationalized on 21st of April 2017 vide Gazette Notice No. 59. However, the Authority has been in existence for 12 years following its establishment under the Water Act, 2002 as Water Resources Management Authority (WRMA). <p><i>WRA will provide the necessary water extraction permits envisioned / required for the project.</i></p>
The Directorate of Occupational Safety and Health Services (DOSHS)	<ul style="list-style-type: none"> ▪ The Directorate of Occupational Safety and Health Services (DOSHS) is one of departments within the Ministry of Labour and East African Community Affairs, whose primary objective is to ensure safety, health and welfare of all workers in all workplaces. ▪ Unsafe and unhealthy work environment causes accidents, diseases, disasters and environmental pollution that occasion huge economic and social burdens to individuals and enterprises thereby stifling economic and social growth. <p><i>DOSHS is a key stakeholder based on the role they play regarding safety, health and welfare of all workers in all workplaces and in registration of all workplaces which are envisioned in the proposed project.</i></p>
The National Land Commission	<ul style="list-style-type: none"> ▪ The National Land Commission: <ul style="list-style-type: none"> ➢ One of the Key functions of the commission as detailed in the Constitution Article 67(2) and The National Land Commission Act No. 5 of 2012, Sec 5 is to manage manage public land at community level on behalf of the national and county governments ➢ Advises the national government on a comprehensive programme for the registration of land titles ➢ Investigates present or historical land injustices, and recommends appropriate redress ➢ Encourages the application of traditional dispute resolution mechanisms in land conflicts ➢ Monitors/oversees land use planning throughout the country ➢ Ensures that public land/land under the management of designated state agencies is sustainably managed ➢ Develops and encourages alternative dispute resolution mechanisms in land dispute handling and management.

	<ul style="list-style-type: none"> ▪ The land Act No. 6 of 2012–Gives the definition of an easement and wayleave. Also details the procedure of application of wayleave through the NLC. ▪ It will take up the issues of verification of ownership after the completion of the RAP Study. It will set out clear procedures for land acquisition considering project impacts and land rights. The exercise will be part of the verification of ownership of property before compensation is paid and relocation carried out. KETRACO will share the Final RAP Report to NLC with a schedule of lands to be affected for ownership verification and gazettelement for “acquisition.” The “acquisition” process will take 45 days (30 days for the notice and 15 days for the Public inquiry). <p><i>The National Land Commission (NLC) will be engaged in the project on matters related to land acquisition as a result of physical displacement and will facilitate the compulsory acquisition of all land to be acquired in accordance with the Land Act 2012.</i></p>
Kenya Civil Aviation Authority (KCAA)	<ul style="list-style-type: none"> ▪ Kenya Civil Aviation Authority is a state corporation of Kenya that is responsible for regulating the aviation industry in Kenya and for providing air navigation services in the Kenya flight region. <p><i>Erecting transmission line towers requires a permit from the Kenya Civil Aviation Authority hence the proponent will be required to obtain permits and clearance from KCAA.</i></p>
National Museums of Kenya (NMK)	<ul style="list-style-type: none"> ▪ The National Museums of Kenya is a state corporation that manages museums, sites and monuments in Kenya. It carries out heritage research, and has expertise in subjects ranging from paleontology, ethnography and biodiversity research and conservation. <p><i>NMK will be a key institution to be engaged if the proposed project finds any important cultural heritage sites and/or archaeological sites.</i></p>
Nature Kenya	<ul style="list-style-type: none"> ▪ Nature Kenya—the East Africa Natural History Society (EANHS)—is Africa’s oldest environmental Society, established in 1909 to promote the study and conservation of nature in eastern Africa. ▪ Nature Kenya has identified and designated Important Bird Areas (IBAs) for Kenya, in collaboration with the National Museums; and documented the plants, animals and other biodiversity of Eastern Africa as a contribution to expanding the taxonomic scope of priority setting from IBAs to Key Biodiversity Areas (KBAs). Since IBAs are KBAs based on birds, they are today referred to as Important Bird and Biodiversity Areas. <p><i>Nature Kenya will be a key institution to be engaged to assist in identifying more information on the Important Bird Area in proximity to the proposed project area (Arabuko Sokoke Forest), birds/raptors migratory species and their migratory routes; to facilitate in mitigation measures against birds electrocution and collision among other biodiversity concerns.</i></p>

4.9 Administrative framework for the proposed project

The Project will be an Investment Finance operation processed under World Bank Operational Policy 10.00. The Republic of Kenya will be the Borrower, and the Ministry of Energy and Petroleum (MoEP) will be the Executing Agency and beneficiary of the proposed loan. KPLC and KETRACO will serve as implementing agencies.

4.9.1 Kenya Electricity Transmission Company- KETRACO

KETRACO was incorporated in 2008 through an Act of parliament to plan, design, construct, operate and maintain high voltage electricity transmission lines in Kenya. Since its establishment,

KETRACO has sought to resource itself and build the institutional capacity required to carry out its mandate. 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

Project Implementation Team

KETRACO has established a dedicated Project Implementation Team (PIT) to implement the Project. The PIT will be assisted by a consultant with experience in undertaking similar projects in the region. The PIT reports to the KETRACO Board Committee that will oversee project implementation, including the review of annual work plans and budgets. The consultant will prepare the technical specification and draft bid documents for transmission lines and substations.

The PIT will include a project engineer, three site managers, one civil engineer, one accountant, one procurement expert, one socio-economist and one environmentalist. The organogram for project Implementation team is shown below.

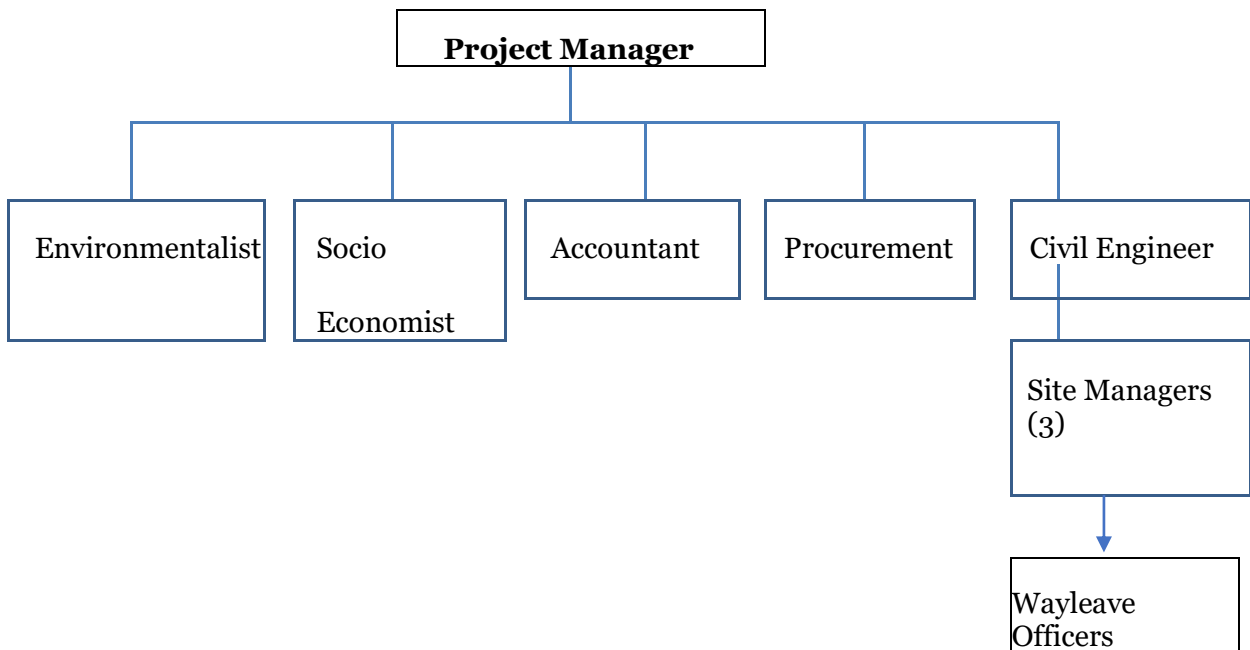


Figure 4-1 Organogram for project Implementation team

Source –KESIP ESMF

KETRACO will at all times remain responsible for the overall performance of all ESMPs. KETRACO will also be responsible for the implementation of the ESMF, RPF and VMGF. Currently, KETRACO has 7 NEMA and Environmental Institute of Kenya (EIK) registered professionals, 12 socio-economists, 14 land surveyors, 3 safety officers and 14 land valuers/economists.

Roles and Responsibilities of KETRACO ES Unit

The Environmental and Social (E&S) division of KETRACO will monitor compliance of the project to applicable environmental and social standards. The unit will be responsible for;

- Timely preparation of TORs for the ESIA, ESMPs, RAPs SAs, VMGFs, RAPs as appropriate for review and clearance by the Bank;
- Timely preparation of environmental and social screening forms for all the sub-project;
- Prior review and coordination for clearance of subproject ESIA and ESMPs by the Bank and NEMA;
- Monitoring of ESMP implementation, including monitoring of mitigation measures and monitoring of contractors environmental and social performance;
- Training of project staff, implementing partners, and contractors;
- Preparation of quarterly reports summarizing monitoring results, to be included in the Project's
- Quarterly Reports to the World Bank and NEMA Providing E&S monitoring oversight.
- Ensuring compliance to the WB safeguards standards and ESHS guidelines;
- Ensuring availability of adequate E&S resources to supervise and enforce compliance; Managing the Grievance redress mechanism
- Reviewing Contractor Management Plans (especially the Labor Management Plan) conduct independent E&S audits by appointing independent expert
- Hold responsibility to specialist studies required to examine wildlife crossings, and their locations, in consultation with the KWS.
- Hold responsibility to baseline studies for those areas that qualify as Critical Habitat to ensure conformance to WB 4.04.
- Hold responsibility to ensure adequate consultation with vulnerable and marginalized groups.

KETRACO safety unit has developed tools and handbooks to guide contractors in safe work management. The safety unit role will be to carry out screening and background checks prior to the appointment of contractors to check previous safety records and performance. The safety unit will also support the E&S unit to carry out contractor inductions before commencement in relation to;

- Community health and safety to address social pathologies in communities affected by the project through promoting education and awareness programs for contractors.
- Practical construction measures e.g. batching, using fire extinguishers etc.
- Cultural sensitivity issues to address contractor behavior in relation to community resources and assets.

The KETRACO E&S department is well trained and capable to ensure monitoring of the project. From the consultant perspective KETRACO has the capacity to monitor implementation of the Environmental and Social Management Plan (ESMP) and Environmental and Social Monitoring Plan (ESMnP) developed for the project. The department also has the capacity to undertake training and build the capacity of the contractor to implement both the ESMP and ESMnP.

4.9.2 Contractors

Contractors will be expected to develop own ESMP which identifies his specific obligations and activities and correlates these with the work schedule. This should be approved by the KETRACO safeguards. The contractor should employ a qualified officer responsible for implementation of social/environmental requirements. This person will maintain regular contact with KETRACO's environment and social focal point.

It is also recommended that the contractor should establish and appoint an Environmental and Social (E&S) team prior to approval of the contract. The E&S team should be trained on implementation of contractors ESMP and ESMnP. The trained E&S team should be responsible for ensuring full implementation of the contractors ESMP and ESMnP.

4.9.3 The World Bank

The World Bank will lay the benchmarks for all environmental and social safeguard issues concerned with the development and implementation of the project. It will provide overall supervision, facilitation and co-ordination of the project. It will also monitor funds and funds allocations; and project performance indicators. The World Bank will assess the implementation

of the ESMF and recommend additional measures for strengthening the management framework and implementation performance, where need be. The reporting framework, screening procedures and preparation of management and mitigation plans shall be discussed and agreed by the Bank team and PIU during the early part of project implementation.

The World Bank Task Team will review site-specific safeguards instruments, e.g. ESMPs, ESIAs and RAPs to ensure that their scope and quality are satisfactory to the Bank.

The World Bank will also monitor the implementation of the different prepared instruments through regular supervision missions (which will include an environmental and/or social specialist) during which document reviews, and site visits and spot-checks will be conducted as needed

5 CHAPTER FIVE: PUBLIC CONSULTATIONS AND DISCLOSURES

5.1 Introduction

The Consultation and Public Participation (CPP) and disclosures process is a policy requirement by the Government of Kenya which is enshrined in the Constitution of Kenya and a mandatory procedure as stipulated by the Environmental (Impact Assessment and Audit) Regulations, 2003 (Part III, section 17) and EMCA (Cap 387) section 59 on ESIA for the purpose of achieving the fundamental principles of sustainable development. World Bank also requires that stakeholder consultations be undertaken throughout the project cycle, and from project onset. Public Consultation and disclosure requirement has been emphasized in project frameworks such as Environmental And Social Management Framework (ESMF), Resettlement Policy Framework (RPF) and Vulnerable and Marginalized Groups Framework (VMGF) which have been prepared in accordance to Kenyan national laws and World Bank) guidelines.

It is an important process through which stakeholders including beneficiaries and members of the public living in proposed project areas (both public and private), are given an opportunity to contribute to the overall project design by making recommendations and raising concerns on proposed projects before they are implemented. In addition, the process creates a sense of responsibility, commitment and local ownership for smooth implementation.

This chapter describes the process of the public participation and consultation that was adopted in order to identify the key issues of the proposed transmission line and associated facilities. Views and concerns from the local residents, local leaders, and surrounding institutions, who in one way or another would be affected or have interest in the proposed transmission line and associated facilities, was sought through interviews, key stakeholder and public meetings.

5.2 Objectives of the Consultation and Public Participation

Consultation and public participation is an important process through which stakeholders including beneficiaries and members of the public living along the project route (both public and private), are given an opportunity to contribute to the overall project design by making recommendations and raising concerns on the project before it is implemented. In addition, the process creates a sense of responsibility, commitment and local ownership for smooth implementation.

The key objectives of the consultation and public participation for the proposed transmission line and associated facilities was to:

1. **Inform:** Promote stakeholder understanding of issues about the project with special reference to its key components and description, problems, alternatives, opportunities and solutions through balanced and objective information sharing;
2. **Consult:** To obtain feedback and acknowledge concerns and aspirations of stakeholders and interested parties on analysis, alternatives, and decisions regarding the project;
3. **Engage:** Work directly with stakeholders to ensure that their concerns and aspirations are understood and considered in the ESIA report and to assure them that their concerns / aspirations would be directly reflected in the developed alternatives; and that feedback will be provided on how their input influenced the final decision.
4. **Empower:** Make stakeholders partners in each aspect of the decision, including development of alternatives and identification of preferred solution to ensure ownership of subprojects at grassroots level.

In addition, the process enabled the establishment of a communication channel among the stakeholders, the team of consultants, the project proponent and the Government. The consultation and public participation also offered a platform for concerns of the stakeholders to be known to the decision-making bodies at an early phase of project development. Further, to ensure that all stakeholders are meaningfully engaged and consulted throughout the project cycle; a Stakeholder Engagement Plan (SEP) (Annex 14 – Section 3.14) has been designed.

5.3 Methodology in Consultation and Public Participation

In order to ensure effective stakeholders' consultation and public participation, stakeholders' mapping was conducted, and a database created consisting of project affected persons and interested parties. Assessment tools were prepared for effective and systematic interviews by the environmental and social consultants assisted by a team of technical field assistants. The tools included; key informant schedules, mapping, sampling of the areas to be assessed, field visits and observations; and triangulation of field data which focused specifically on the communities who stay within and neighbouring the proposed transmission line and associated facilities.

Various methods and instruments were identified and used for effective and efficient public consultation and participation. They include;

- Administration of public consultation questionnaires
- Key informant interviews
- Public community meetings
- Key Stakeholders' workshop
- PAPs Baraza / Meetings
- Meetings with Vulnerable Persons

5.3.1 Administration of Public Consultation Questionnaires

The purpose for administering questionnaires was to identify the positive and negative impacts and subsequently gather proposals on the best practices to be adopted and mitigate the negative impacts respectively. This also helped in identifying any other miscellaneous issues, which may bring conflicts in case proposed transmission line and associated facilities implementation proceeds as planned. Ten (10) field assistants, most of whom had a background in environmental education, assisted the team of consultants and technical officers in administering the questionnaires (*Annex 6*). The information gathered enabled the identification of the specific issues from the respondents, which provided the basis upon which the aspects of the Environmental and Social Impact Assessment was undertaken. Among the stakeholders who were consulted through administration of ESIA questionnaires included project affected persons (PAPs), and local community members neighbouring the proposed transmission line RoW and associated facilities. A total of one hundred and forty-four (140) ESIA questionnaires were administered during the consultative public participation exercise (See *Annex 7 – ESIA Public Consultation Questionnaires*).



Plate 5-1: An interview/questionnaire administration with the local communities
Source - AWEMAC field Survey

5.3.2 Key Informant Interviews

Some key respondents were sampled in the project area to give more resourceful information on the environmental and social assessment for the proposed transmission line and associated facilities. The key informant interviews were held with relevant national government, county and sub-county administrators of various departments such as environment, social services and energy. Also, school heads, administrators of local NGOs/CBOs, and chiefs were consulted. The consultant sought opinions from these project area leaders regarding environmental and social aspects and impacts of the proposed transmission line and associated facilities.



Plate 5-2: Consultations with Lango-Baya location’s Chief and Assistant Chiefs
 Source - AWEMAC field Survey

The table below categorizes and highlights various stakeholders engaged during the ESIA study exercise.

Table 5-1 List of stakeholders engaged during the ESIA study

SN.	Category	Stakeholder
1.	Government Institutions	<ul style="list-style-type: none"> • Kenya Electricity Transmission Company (KETRACO) • Kenya Civil Aviation Authority (KCAA) – Malindi • Department of Water, Environment & Natural Resources • Department of Lands, Energy, Housing & Urban Development • Department of Health Services, Kilifi County • Department of Education & ICT • Office of the Governor Kilifi County • National Environment Management Authority (NEMA) • The National Land Commission (NLC)-Kilifi County • Ministry of Public Service Youth & Gender Affairs – Kilifi County • Kilifi County Government – Office of the Governor • Kilifi County Commissioner • Kenya Wildlife Services (KWS) – Gede • Kenya Forest Service (KFS) – Gede • Kenya Forest Research Institute (KEFRI) - Gede

SN.	Category	Stakeholder
		<ul style="list-style-type: none"> National Museums of Kenya (NMK) – Gede
2.	Private Institutions and Community Based Organisations (CBOs)	<ul style="list-style-type: none"> Nature Kenya - Gede Kenya Civil Aviation Authority (KCAA) – Malindi Arabuko–Sokoke Forest Adjacent Dwellers Association Community Forest Association – Jilore Community Forest Association - Sokoke Community Forest Association – Gede Arabuko Sokoke Forest Management Team Friends of Arabuko Sokoke AROCHA Kenya KOAZA Forestry Ltd Kipepeo Butterfly Project
3.	Learning Institutions	<ul style="list-style-type: none"> Pwani University Jilore Vocational Training Centre Weru Technical Vocational College Godoma Technical Training Institute Kilifi Dicece Teachers Training College
4.	The General Public	<p>Local community members, Chiefs, Assistant Chiefs, Village Elders and <i>Nyumba Kumi</i> elders belonging to the following project affected locations in Kilifi County:</p> <ul style="list-style-type: none"> Goshi Location Jilore Location Lango Baya Location Vitengeni Location Sokoke Location Kilifi North Township Location

Source - AWEMAC field Survey

5.3.3 Public Community Meetings

A total of five (5) public community meetings were held at Goshi Location, Jilore Location, Lango-Baya Location, Kilifi North Township Location, and Sokoke Location (*Figure 5-1*). Courtesy calls were made to the respective local administration leaders (Chiefs and Assistant chiefs) to advice on the most suitable venues for holding public meetings (*See Annex 8i - a list of the Chiefs and Assistant Chiefs engaged during the ESIA exercise*). The selection of the public meeting venues was also done in consultation with the village elders (*See Annex 8ii – List of Village Elders Engaged and Consulted*). The venues' selection was based on ease of site accessibility, population, and renown venues for holding public meetings in the respective project areas. All the key locations and villages with high concentration of PAPs (*refer to Figure 2-6*) along proposed line were covered during the public consultation meetings. Public meeting notices were then prepared in line with the agreed venues and delivered to the respective chiefs, assistant chiefs, village elders, local community members, organisations and/or institutions seven (7) days prior to the commencement of the public meetings (*See a sample Notice in Annex 10*). These notices were also displayed and announced at public places including Chief's offices, Assistant Chief's offices, trading centres, places of worship and water collection points. The public meetings were held to engage a wider audience in information sharing and discussion. The meetings increased awareness of the proposed transmission line and associated facilities and were an ongoing means of engaging further public involvement. Participants were provided a chance to voice their concerns, issues, and ideas. These meetings also created avenues for exploring alternative strategies and building consensus. This contributed to giving the proposed transmission line and substation a social license to operate in the respective locations in Kilifi County.

Consultative meetings were continuously held during the ESIA Study exercise to deliberate on the positive impacts, negative impacts and mitigation measures for the proposed transmission line and associated facilities as well as capturing issues raised by the project affected persons. Five (5) public meetings were held on various dates in August 2019, with the local community members, *Nyumba Kumi* Elders, Village Elders, Chiefs, Assistant Chiefs, County Officials, and institutions/organisations' representatives in attendance. More than one thousand one hundred and thirty (1,130) people were engaged during the public meetings and key stakeholders' meeting that were held to ensure a comprehensive public participation exercise.

In all the meetings held, the following project information was shared.

- The name of the project (Malindi-Kilifi 220KV Double Circuit Transmission Line and associated facilities).
- Length of the transmission line (76KM) and details on substation
- RoW as 40m, 20m on each side from the center line
- Purpose of the ESIA
- Purpose of the public community meetings
- Role and contribution of the community in the assessment
- Importance/benefits of the proposed project to the community
- Impacts of the proposed project
- Public rights and entitlements e.g. on compensation, right to accept or reject the project

The ESIA public meetings were also used as sensitization avenues for the forthcoming RAP meetings. The participants at the meeting were briefly sensitized about the PAPs compensation procedures and encouraged to attend the scheduled RAP meetings for detailed information. A summary of participants is shown in the Table 5-2 below. Recorded minutes with participants attendance sheets for the meetings held are attached as appendices to this report (*see annex 11-Public Meetings' Minutes and Attendance Sheets*). Notably, despite thorough public consultation and information, a few people decided / chose not to sign or input thumb prints in the attendance sheets. Failure to input signatures and thumb prints was attributed to PAPs fear that their signatures might be misused for compensation without their consultation. Further being the initial public consultation meeting, the locals still had project misconception, and sensitivity on displacement of households including wayleave acquisition. However, with continued stakeholders engagement and consultation including PAPs RAP meeting, the misconception would be managed.

Table 5-2 Schedule of Public Meetings held during the ESIA study

S/N	Meeting Venue	Date & Time	Targeted Groups/Villages	Attendance		
				Male	Female	Total
1.	Chief's Office Grounds Jilore Location	Tuesday 6 th August 2019 9:00AM	<ul style="list-style-type: none"> ▪ Jilore A Village ▪ Kabelengani Village ▪ Vitongoni A Village ▪ Vitongoni C Village ▪ Sosoni A Village ▪ Sosoni B Village ▪ Za Mkono Village 	205	169	374
2.	DO's/Chief's Office Grounds Bao Lala in Lango Baya	Tuesday 6 th August 2019 2:30PM	<ul style="list-style-type: none"> ▪ Majengo B Village ▪ Pishi Mwenga Village ▪ Bao lala centre ▪ Makobeni Sub-location ▪ Malanga Sub-Location 	75	32	107
3.	Mgadini Football Grounds (near Fumbini Primary School)	Wednesday 7 th August 2019 9:00AM	<ul style="list-style-type: none"> ▪ Kibarani ▪ Fumbini Village ▪ Galilaya Village 	79	55	134
4.	Konjora Primary School Grounds	Wednesday 7 th August 2019 2:30PM	<ul style="list-style-type: none"> ▪ Konjora 1 Village ▪ Konjora 3 Village ▪ Cassava Village ▪ Nyari Sub-Location ▪ Dida Sub-Location 	178	190	368
5.	Mongotini Secondary School Ground's	Friday 9 th August 2019 9:00AM	<ul style="list-style-type: none"> ▪ Kalia Papo A Village ▪ Kalia Papo B Village ▪ Mifundani Village ▪ Kibao Kiche Village 	86	61	147

Source - AWEMAC field Survey

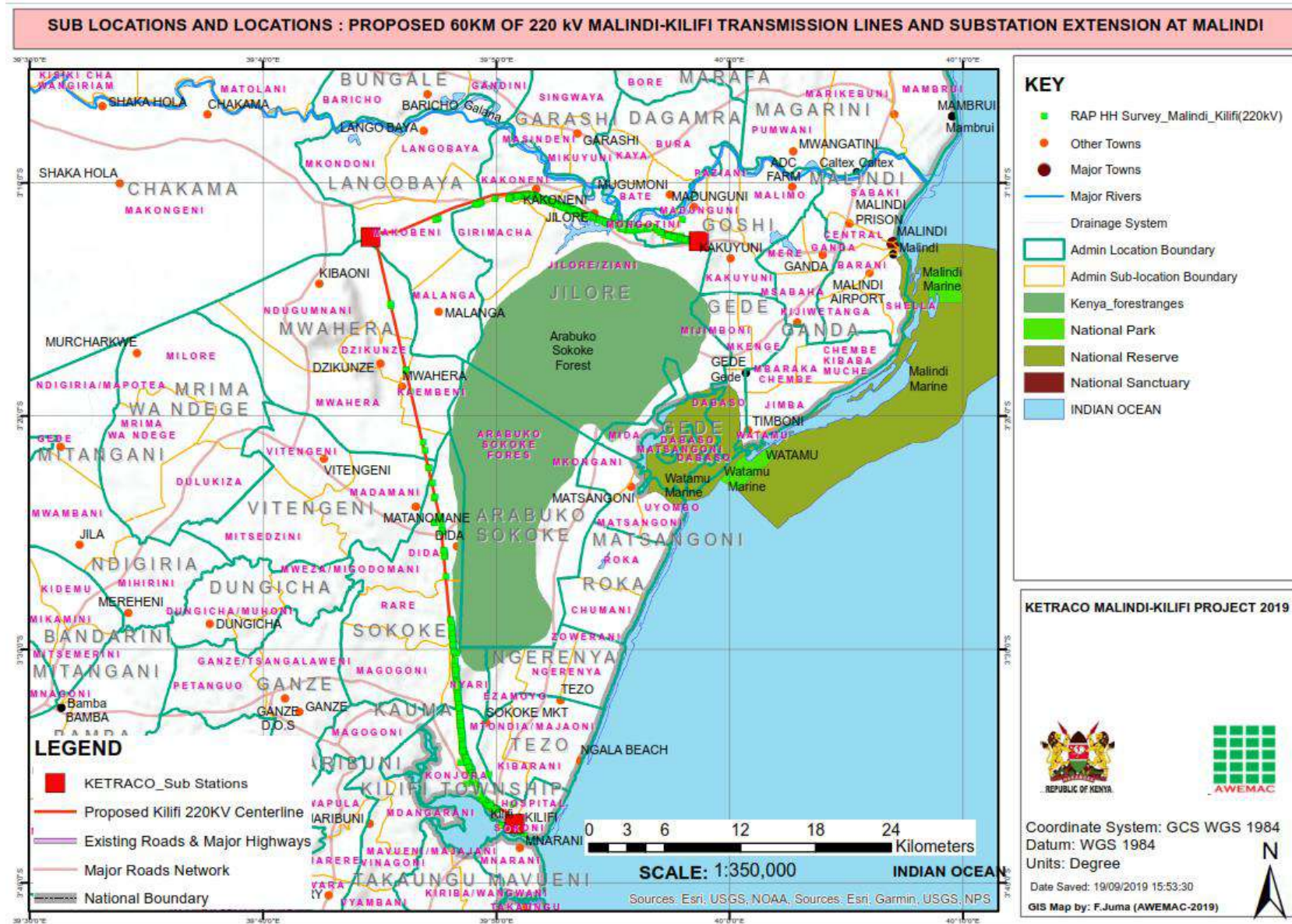


Figure 5-1 Locations and sub-locations along the RoW for proposed route
Source - AWEMAC GIS



Plate 5-3: A public meeting at Jilore Location Chief's Office Grounds
Source - AWEMAC field Survey



Plate 5-4: A public meeting at Lango-Baya Location Chief's Office Grounds
Source - AWEMAC field Survey



Plate 5-5: A Public meeting at Mgadini Football Grounds in Fumbini
Source - AWEMAC field Survey



Plate 5-6: A Public meeting at Konjora Primary School
Source - AWEMAC field Survey



Plate 5-7: A Public meeting at Mongotini Secondary School Grounds in Goshi Location
Source - AWEMAC field Survey

5.3.4 Key stakeholders' Meeting / Workshop

This engagement was conducted to incorporate key stakeholders' opinions to the study as well as ensure full representation of the respective County players in the project. Invitation letters were delivered to respective persons, organisations and/or institutions seven (7) days prior to the key stakeholders' workshop (See a sample invitation letter in Annex 12)

A key stakeholders' meeting was convened on 8th August 2019 in Kilifi town at Hotel Mnarani Beach Club with a total of 38 attendees (Table 5-3). This was carried out in form of a workshop in order to engage the technocrats and professionals' in a more exhaustive way as they have direct interest and contact with key issues identified on the ground. It also focussed on those who have access to people and/or key resources needed for the ESIA exercise. The workshop was held to:

- Add more input to the ESIA analysis findings;
- Fill information gaps identified during the ESIA study;
- Better understand the proposed project area context; and
- Assist in prioritising challenges that need to be addressed and communication channels;

The attendees mostly included representatives from: various government departments and parastatals; Non-governmental Organisations, Community Based Organisations, Private entities, Institutions of higher learning among others as indicated in table 5.2. Minutes of the key stakeholders' meeting and attendance sheets are attached in the appendices (Annex 13).

Table 5-3 Key Stakeholders' Meeting held during the ESIA study

S/N	Meeting Venue	Date & Time	Targeted Group	Attendance		
				Male	Female	Total
1.	Hotel Mnarani Beach Club	Thursday 8 th August 2019 9:30AM	Key stakeholders in Kilifi County	29	9	38

Source - AWEMAC



Plate 5-8: Key stakeholders' meeting held at Hotel Mnarani Beach Club on 8/8/2019

Source - AWEMAC field Survey

Some of the comments and suggestions given by the key stakeholders are as highlighted below. The detailed responses on specific issues can be obtained from Annex 13 - Minutes of the key stakeholders' meeting.

- (a) NMK representatives stated the following: Creation of job opportunities to the local communities; Improved economic activities and business opportunities along the proposed project area and; Improved development along the proposed project line as positive impacts.

Cutting down of indigenous trees; Disturbance to biodiversity near Arabuko Sokoke Forest especially insects and general invertebrates; Habitat destruction; Displacement of wild animals found in Arabuko Sokoke Forest; Cultural erosion due to an influx and interaction with workers from different areas/regions and; Possibilities of the proposed transmission line and associated facilities causing health issues such as emergence of cancer cases along the project area when proper mitigation measures are not put in place as the negative impacts.

Suggestions proposed were: caution to be exercised during the construction of the proposed transmission line and associated facilities to ensure endemic wildlife inside

Arabuko Sokoke Forest are not disturbed; Carry out a ecological assessment; Reforestation and alternative planting of fast-growing commercial trees; Distribution of tree seedlings to the locals; Ensure noise nuisance is minimized as much as possible; Use of proper chemicals where necessary that are approved by Kenya Bureau of Standards (KEBS); The local community should be sensitized on the do's and don'ts during both construction and operation phase; Provision of proper security along the proposed project area; Employ the locals to benefit from the proposed project; Compensate the PAPs before the project kicks off; Provision of alternative livelihoods to PAPs who will have lost their businesses. On health concerns, the proposed transmission line of 220KV has a wayleave of 40 metres which is a safe buffer zone for a transmission line of such electromotive force.

- (b) Representatives from KEFRI sited that the proposed transmission line and substation will increase the power supply of Kilifi County thereby spurring development. The proposed project was also expected to create employment opportunities for the locals. Negative impacts stated included: Destruction of terrestrial habitat; Disturbance to biodiversity; Land ownership disputes and; Displacement of the PAPs.

The following suggestions were proposed: Plant trees in the adjacent farms; Employ the local youth and; Continuous awareness creation on impacts of the transmission line and substation. The Consultant noted that the line has been designed to avoid sensitive ecological hotspots including Arabuko Sokoke Forest and a detailed ecological study along the proposed transmission line had been commissioned under ESIA to identify negative ecological impacts and their mitigation measures.

- (c) A KFS representative stated that: Indigenous trees along the RoW will be cut down leading to reduction of tree cover; Noise nuisance from the high voltage powerlines and; Loss of habitat to fauna along the proposed RoW as some of the anticipated negative impacts.

Suggestions proposed were: Proper waste management to reduce health hazards; Organize for tree planting exercises; Frequent monitoring to ensure the proposed transmission line and substation is in line with environmental and social wellbeing; Employ community scouts to convey any information and; Carry out proper awareness programmes on the impacts and effects of the proposed transmission line and substation. On Noise from the TL - a wayleave of 40 metres has been designed which is adequate buffer zone to reduce noise to households.

- (d) Views from a KWS Warden were also sought and included: Employment opportunities; Improvement of locals' livelihood due to increased business opportunities and increased investors as positive outcomes of the proposed project. Negative impacts anticipated were: Cutting down of indigenous trees during construction phase; Wildlife habitat destruction; Increased hazardous and non-hazardous solid and liquid wastes and Noise nuisance from the transmission lines and substation.

Suggestions such as: Proper waste disposal by engaging a licensed waste collection company; Ensure minimal air, water and land pollution; Ensure a safe distance from water bodies and riparian areas; Site the proposed transmission line and substation a safe distance of 40 metres - 20 on each side from centre line- from residential areas to minimize effects of noise nuisance and ensure insulation of the transmission lines were proposed.

- (e) A KCAA representative opined that the proposed transmission line is located outside the existing Rabai-Malindi-Gongoni flight path thus aligns well with Malindi International Airport. The representative added that plans are underway to expand the primary runway towards the Malindi-Tsavo Road (1.5km).

An assessment be carried out to ascertain the impacts especially on safety issues. Further assessment however showed that the Malindi Airstrip is approximately 12km away from the nearest point of the TL i.e Malindi substation which is far enough for the plane taking from the Airstrip to have gained enough height to avoid collisions. Mitigation measures are however recommended under aircraft navigation safety to enhance visibility of the TL pylons at night.

- (f) Input sought from a representative of Nature Kenya was that the proposed transmission and substations would bring about employment creation and technical skills transfer for the local youth. He added that there was a likelihood of primates from Arabuko Sokoke Forest being electrocuted; Loss of vegetation cover; Electromagnetic interference and influx of people from other areas as the anticipated negative impacts.

He suggested that the proposed transmission line and substation to have a 200m wayleave from residential houses – however clarification was made that the RoW of 40 metres (20 metres from centreline on each side) was adequate for the 220KvA and any household outside the RoW is safe from any Electromagnetic force ; awareness creation of the effects of high voltage lines should be carried out. More suggestions proposed included, employment of the local people through a fair process and sub-contracting of local companies. Other mitigation measures for the issues / concerns raised such were responded and issues full covered in the ESIA report.

Its worth noting that, the key stakeholder meeting was held as a workshop hence all concerns and suggestions raised by the stakeholders have been integrated and comprehensively addressed in the impacts chapter and respective mitigation measures proposed per impact. An adequate ESMP and ESMmp has also been established in Chapter 10 and 11 respectively.

5.3.5 PAPs Baraza’s / meetings

As per the Draft RAP report for Malindi Kilifi Transmission Line, a total of 8 Baraza’s / meetings targeting the Project Affected Persons (PAPs) were held attracting a total of 866 attendants. The PAPs Baraza’s were held in the following areas: Mongotini, Jilore, LangoBaya, Malanga, Sokoke, Konjora, Fumbini, and Dida. Summary of Baraza’s targeting PAPs is shown below. Present were resettlement/RAP expert, local administrator/Chief and any interested stakeholder.

The objectives of the Baraza’s were to

1. Gather comments, suggestions and concerns of project affected persons and incorporate them in the Environmental and Social Impact Assessment (ESIA) and Resettlement Action report (RAP).
2. Elaborate on the procedures and requirements for valuation, compensation and resettlement action plan (RAP) for households that will be directly affected by the transmission line project
3. Finalize the mechanisms for addressing grievances from project affected persons by constituting locational Grievances Resolution Committee (GRC) through election of representatives of PAPs, Village managers, local CBO/NGOs, churches, men and women, youth and people leaving with disability.

Table 5-4 Summary of Project Affected Persons (PAPs) Baraza’s / Meetings

Location Name	Date	Venue	Participants	Total Numbers Attended		
				Male	Female	Total
Jilore	7/8/2019	Chiefs Office Ground	<ul style="list-style-type: none"> • Consultant • PAPs • Local Administration • KETRACO 	140	72	212
Lango Baya	7/8/2019	Lango Baya Social Hall	<ul style="list-style-type: none"> • Consultant • PAPs 	35	12	47

Location Name	Date	Venue	Participants	Total Numbers Attended		
Fumbini	8/8/2019	Fumbini primary school grounds	<ul style="list-style-type: none"> Local Administration KETRACO 	41	32	73
Konjora	8/8/2019	Konjora primary school	<ul style="list-style-type: none"> Consultant KETRACO PAPs Local Administration 	106	72	178
Malanga	9/8/2019	Chiefs Office compound	<ul style="list-style-type: none"> Consultant PAPs Local Administration 	97	14	111
Dida	9/8/2019	Dida Primary School	<ul style="list-style-type: none"> Consultant PAPs Local Administration 	48	16	64
Mongotini	10/8/2019	Mongotini primary school	<ul style="list-style-type: none"> Consultant PAPs Local Administration 	71	79	120
Sokoke	10/8/2019	Chiefs Office		38	23	61
Total				546	320	866

Source – Draft RAP report for Malindi Kilifi Transmission Line

5.3.6 Vulnerable Persons meetings

A total of six (6) meetings targeting vulnerable persons were held along the proposed transmission alignment (*Annex 9i - Minutes and attendance sheets for Vulnerable Persons meetings*). The meetings were held at; Chief's Office Grounds in Jilore Location, Chief's Office/DO's Grounds in Longobaya Location, Mgandini Football Grounds (Fumbini Primary School) in Kilifi Township Location, Malanga sub-chiefs' Grounds - Malanga sublocation -Lango Baya Location, Dida Primary School – Dida Location and in Sub Chiefs' Camp in Mongotini Sublocation – Goshi Location. A schedule of Vulnerable Individuals and Households Vulnerable individuals and households meetings (*Annex 9ii – Schedule of Vulnerable Persons meetings*) was prepared with basic project information and dispatched to the project alignment prior to the meetings with vulnerable persons. Local chiefs, village managers were used to inform the vulnerable groups of the planned meetings as well as the venues. In addition, ESIA Public meetings and RAP PAPs meetings had been used to communicate information to the target Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households. Amongst those in attendance were various Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households such as people living with disabilities, elderly, and widows. A number of key informant were also interviewed to provided information on Vulnerable Individuals and Households Vulnerable individuals and households in the region (*Annex 9iii -List of key stakeholders Consulted on Vulnerable Persons*). In each meeting venue, the vulnerable persons were disintegrated into various focus groups such as PLWD, Widows, Elderly and Care givers of orphans, to effectively capture each groups views and concerns during the discussion. This approach helped galvanize clarify and capture the sentiments, opinions, priorities and recommendations for each category. A summary of participants is shown in the Table below and attendance sheets and recorded minutes for meetings held are annexed (*Annex 9i - Minutes and attendance sheets for Vulnerable Persons meetings*).

Table 5-5 Schedule of meetings with Vulnerable Persons

No.	Location/Venue	Date	PWD	Widowed	Elderly	Orphan (caregiver)	Total
1	Chief's Office Grounds Jilore Location	7-Aug-2019	10	46	80	4	140

2	Chief's Office/DO's Grounds Longobaya Location	7-Aug-2019	2	7	7	-	16
3	Mgandini Football Grounds (Fumbini Primary School) - Kilifi Township Location	8-Aug-2019	3	14	5	-	22
4	Malanga sub-chiefs' Grounds - Malanga sublocation - Lango Baya Location	9-Aug-2019	4	11	3	-	18
5	Dida Primary School - Dida Location	9-Aug-2019	2	12	11	2	27
6	Sub Chiefs' Camp-Mungotini Sublocation in Goshi Location	10-Aug-2019	3	29	5	-	37

Source – Draft RAP report for Malindi Kilifi Transmission Line

Plates below show the six (6) meetings held with vulnerable persons;



Plate 5-9 Vulnerable Persons meeting at Chief's Office Grounds -Jilore Location on 7/Aug/2019

Source – AWEMAC Filed Survey



Plate 5-10 Vulnerable Persons meeting Held at chiefs office grounds- Langobaya Location on 7/Aug/2019

Source – AWEMAC Filed Survey



Plate 5-11 Vulnerable Persons meeting held at Mgandini football Groups near Fumbini primary school grounds-Kilifi Township Location on 8-Aug-2019

Source – AWEMAC Filed Survey



Plate 5-12 Vulnerable Persons meeting held at Ass Chiefs Office Malanga in Lango Baya Location 9/Aug/2019
Source – AWEMAC Field Survey



Plate 5-13 Vulnerable Persons meeting held at Dida Primary School in Dida Location on 9/Aug/2019
Source – AWEMAC Field Survey



Plate 5-14 Vulnerable Persons meetings held at Mongotini primary school-Jilore Location on 10/Aug/2019
Source – AWEMAC Field Survey

5.3.6.1 Concerns Raised by Vulnerable Persons meetings

Vulnerable persons felt that the project was long overdue, and its implementation would expose the region to development. During consultations, these groups raised array of issues; of particular concern were; how they would benefit from the project; whether they would be considered for job opportunities; plans for future community consultations; if the project would consider CSR initiatives that could benefit them; and the adverse impacts of the project (displacements, weakened family ties, disputes). Views, comments, concerns, and suggestions are captured in the annex (*Annex 9i - Minutes and attendance sheets for Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households meetings*). Table below gives a highlight of the key concerns raised by vulnerable persons.

Plate 5-15 Concerns raised during vulnerable persons meetings

SN.	Issues/concern	Response
1.	Destruction of food crops which will set them back in terms of food security	<ul style="list-style-type: none"> • Compensation will be done according to the gross market value of the affected crops and in accordance with the RFP developed for the project. Gross market value makes full provision for owners' crops or users input already expended (labour, seeds, fertilizer, etc.).
2.	Wary of effects on health of the power line. Possible deaths of humans and animals in case of powerline accidents.	<ul style="list-style-type: none"> • It was explained that this is the reason why the distance between the line and the nearest dwelling should be 20 meters on either side of the line. • They were also assured that incase of any accident on the transmission line, it is set to automatically cut off the power to avoid possible casualties.
3.	Displacement of families that has Vulnerable members	<ul style="list-style-type: none"> • Valuation will be done and consider 15% disturbance allowance paid in addition to the full replacement value of the affected properties as required by law and in line with the project RPF

SN.	Issues/concern	Response
		<ul style="list-style-type: none"> Critically vulnerable people will be assisted by KETRACO to relocate/salvage their properties.
4.	HIV/AIDS transmission and Illicit behaviour	<ul style="list-style-type: none"> KETRACO will introduce a worker code of conduct as part of the employment contract, and including sanctions for non-compliance (e.g., termination) There will also be sensitization and awareness programs to create awareness among the locals on HIV/AIDs & STDs
5.	Importation of labour instead of employing locals	<ul style="list-style-type: none"> Locals will be considered for non-skilled jobs Further, the contractor will be advised to consider the locals for semi-skilled jobs if the workforce is locally available.
6.	Killing of the elderly under the pretext that they are witches	<ul style="list-style-type: none"> This is a criminal offense that will be referred to the Kenya Police and relevant national authorities for action.
7.	Disagreements between the project implementers and the locals	<ul style="list-style-type: none"> There will be a dispute or grievance resolution mechanisms (GRM) to handle community and vulnerable persons concerns
8.	Discriminatory treatment of PLWDs and Widows	<ul style="list-style-type: none"> The project contractor will give equal treatment to both men and women The Transmission line and associated facilities contractors will also be encouraged to uphold equal treatment of men and women during recruitment. In this regard, a local recruitment plan and gender mainstreaming plan will be prepared for implementation

5.4 Issues Raised during the public consultation meetings and PAPs Baraza's:

The public meetings and the key stakeholders' meeting enabled all stakeholders to air their views and perceptions about the proposed transmission line and associated facilities. In the meetings; various opinions, other information and recommendations were captured. There was good support for the proposed project in all the meetings held. During the public meetings, adequate time was allowed for the participants to make contributions, suggestions, recommendations and ask questions after presentation of the proposed transmission line and associated facilities information to the community. The consultant responded and made clarifications to the queries raised. In all the public meetings, the issues raised were almost similar given the homogeneous nature of the people in the project area. The most prominent environmental and social issues are depicted in the table 5-5 below. All the issues raised during the ESIA public meetings are captured in their respective minutes (*Annex 11*).

Table 5-6 Issues raised during public meetings

SN.	Issues raised by the members	Brief explanation	Response
1.	Loss of trees	The local community members raised concerns of loss of trees along the RoW which will be cut for the proposed transmission line to be set up. They stated fruit trees, medicinal trees and trees grown for timber	The members were informed that compensation for every tree cut down will be done according to, maturity and economic value of the tree with regards to KFS rates and in line with the RPF developed for this project. The compensated PAPs will be

SN.	Issues raised by the members	Brief explanation	Response
		products as resources found along the project's RoW.	expected to replant the lost trees in the surrounding areas.
2.	Loss of crops	Some of the areas traversed by the proposed transmission line are agricultural farms. Due to this, farmers in the areas expressed fears of losing maize, cassava and amaranth crops.	Farmers were informed that compensation for destroyed crops will be done according to the Ministry of Agriculture rates and in line with the RPF developed for this project to ensure that their previous state has been reinstated.
3.	Community health and safety	The residents were concerned of their health and safety from having a high voltage transmission line passing through their neighbourhood. This included concerns on whether there will be health implications to those living next to the proposed transmission line's RoW as a result of Electro-Magnetic Forces and cases of electrocution where a transmission line develops faults or falls off.	The public was informed that PAPs will be compensated to resettle outside the proposed project's 40m wayleave for their safety. They were also informed of the use of new technology in the proposed project by use of proper insulated transmission lines, earthing, and emergency shut down systems where a fault occurs, or a transmission line falls off to prevent electrocutions. The Environmental and Social Coordinator added that the ongoing ESIA study has proposed for safety awareness programmes to be carried out in the proposed project affected areas.
4.	Electrocution of birds and primates	Arabuko Sokoke Forest neighbouring the proposed transmission line's RoW is composed of numerous bird species and primates such as sykes' monkeys and yellow baboons. This poses a threat to these animals from electrocution in case they come into contact with high voltage transmission lines during their movements.	The local community members were informed of the use of new technology in the proposed project by use bird diverters and perch management techniques, earthing, and emergency shut down systems where a fault occurs, or a transmission line falls off to prevent electrocutions. The spacing between the conductor is sufficient and the perching birds cannot support the legs simultaneously on two conductors. They were also informed that a detailed ecological study is being carried out to propose more mitigation measures for the protection of both flora and fauna from any project related impacts.
5.	Noise pollution	Local community members raised noise concerns which they stated will increase in the	The community members were informed that proposed transmission line has been

SN.	Issues raised by the members	Brief explanation	Response
		proposed project's vicinity especially during the rainy seasons. This was from their previous experience with the existing Rabai-Malindi 220kV transmission line.	located away from residential areas as much as possible to minimise noise impacts.
6.	Displacement of families	Some of the public meeting attendees feared being displaced from their family members due to resettlement of PAPs.	The attendees were informed that where the main household is affected among dependents' households and remaining piece of land is not sufficient for resettling it the main household, compensation given will consider resettling the whole household (including dependents)
7.	Social ills	Members of the public in attendance to the public meetings stated that project contractors bring social ills in their villages for instance an increase in theft cases, teenage pregnancies and extramarital affairs causing marital disputes.	<p>Awareness and training programmes will be carried out as proposed in the ongoing ESIA study. These should be done for both the community members and proposed project contractor staff. That proponent should ensure strict monitoring of the contractor's activities in relation to the local communities.</p> <p>KETRACO will introduce a worker code of conduct as part of the employment contract, and including sanctions for non-compliance (e.g., termination)</p> <p>Proponent will adopt and implement a grievance redress mechanism for PAPs and project area community to address all emerging complaints including risks related to social ills such as Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH).</p>

5.5 Project impacts as raised during the consultative public participation

The following section provides a summary of the positive and adverse impacts of the proposed transmission line and associated facilities as expressed by those consulted during the ESIA public participation exercise:

5.5.1 Positive impacts

5.5.1.1 Creation of employment opportunities

The residents, males and females including the youth expressed that the construction and operation of the Malindi-Kilifi double circuit power line would create job opportunities for the locals. During construction, drivers, masons, engineers, steel-fixers, carpenters will get

employment. The local community members expressed that priority of employment opportunities for semi-skilled and unskilled labour should be given to the locals. Women highly expressed interest to supply vegetables and prepare food for the workers within the project site. A significant number of women indicated as having equal skills and hence should be considered for all available existing opportunities. In any of the cases, where local community do not have adequate or none of the semi-skilled labour, the communities agreed that such can be sourced from outside the region.

5.5.1.2 Compensation benefits

Most of the respondents, especially the PAPs, expressed great support for the proposed transmission line and substation since they are aware of a compensation phase for those who will be affected. Some stated financial achievements they had made due to compensations awarded from a similar transmission line project in their area. They were very supportive and welcomed the proposed project as they had witnessed an improved financial status and livelihood on those who had been compensated.

5.5.1.3 Increased business opportunities

The respondents and participants were optimistic that business opportunities will increase during construction and operation of the proposed transmission line and associated facilities. Small scale business-people such as food vendors and kiosk owners will benefit greatly during construction stage due to the expected population influx. The customer base for existing businesses will rise due to an influx of people and activities in the area as a result of the proposed development. During operation stage, in the long run the locals will be able to practice various business activities that require electricity such as vending of popsicles.

5.5.1.4 Improved power distribution

The local community believed with increased power distribution in Kilifi County, there will be an increase of households connected to the electricity grid hence improved supply of electricity in the area.

5.5.1.5 Transfer of skills

The public was optimistic that the construction of the Malindi-Kilifi double circuit transmission line and substation will bring people of different professions and skills to the area. They noted that skills such as electrical engineering, electronics engineering, project management, machines and equipment operations would be transferred to the local youth in the area, especially those being trained on technical courses in local vocational training institutes. Suggestions were also put forth for scholarships and trainings to be offered for the locals by the contractor.

5.5.1.6 Benefits to the education sector in Kilifi County

The locals expressed that improved access to electricity at the homestead level and schools will create opportunities for students to study. They expressed hope that technical schools in the project area will be connected to an improved power supply for practical projects that require electricity. Power shortages and blackout that would last for long periods was a significant issue in the learning institutions in the proposed project area. In case the communities and schools along the proposed project area are connected to improved power, students will use it for educational purposes. This benefit will imply that educational performance in the project area will improve.

5.5.1.7 Better standards of living

Improved energy sector, health, and educational achievement as well as economic activity as a result of the proposed project, implies that the locals, mainly the poor and vulnerable persons will, in the long run, have better standards of living. Access to electricity by households will transform the standard of living of the locals since they will start using better home appliances and equipment that might improve their health, sanitation, and information access. For instance, if power supply is improved, people in the project area will use television sets and computers to access information,

refrigerators to preserve perishable goods. Also, reduction in the use of kerosene lumps will reduce prevalence level of respiratory-related diseases.

5.5.1.8 Improved Food Security

The locals indicated that once the proposed transmission line and substation is set up to fulfil its objectives of increased power supply in the area, eventually all households will be connected to the power grid. Since a majority of the households practice farming, especially those living in the vicinity of River Sabaki, they will be able to utilise electric water pumps to facilitate irrigation of their farms and increase food production in the area.

5.5.2 Negative impacts

5.5.2.1 Loss of trees

The public stated that the proposed Malindi-Kilifi Double Circuit transmission line will lead to clearance of trees along its wayleave. They pointed out that some of the indigenous trees are sources of fruits, traditional medicine and construction materials. Some of the type of trees that will be affected include mango trees, neem trees, baobab trees, cashew nut trees and some eucalyptus trees planted by Komaza Ltd in the proposed project area.

5.5.2.2 Noise pollution

The public stated that construction activities would result to noise pollution. Vibrations and noise from the construction machinery may be excessive and result into noise around and within the area. Also, the proposed transmission line would cause a noise nuisance. The locals described the noise nuisance as a buzzing sound emanating from a similar transmission line in the area between Kakuyuni and Weru Group Ranch. This they expressed to be more pronounced during the rainfall seasons when humidity rates are high. This buzzing sound is due to a phenomenon called corona discharge that occurs when a fluid (like air) surrounding an electrically charged conductor becomes ionized.

5.5.2.3 Cases of electrocution

Members of the local communities expressed their concerns on cases of electrocution in the proposed project area. They stated that children while playing might climb the towers and accidentally touch the high voltage transmission lines and end up getting electrocuted. They also feared that in case where a transmission line develops faults and get cut off accidentally, it may electrocute the nearby locals. They also added that birds flying in the area and monkeys from Arabuko Sokoke area may get electrocuted from coming into contact with the transmission lines.

5.5.2.4 Community Health and Safety Impacts

The residents articulated their fears of negative health impacts as a result of electro-magnetic forces (EMF) from the proposed transmission lines and substation. They stated that they are not aware on which health implications are as a result of exposure to EMF thus feared for their health having such a project being set up near their areas of residence.

5.5.2.5 Displacement of local communities

Some of the respondents stated displacement of PAPs and loss of property as one of the negative impacts of the proposed transmission line. That this may cause disruptions of the PAPs lifestyle as they may relocate to a location that does not favour/support some of their initial livelihood activities such as farming or other commercial activities.

5.5.2.6 Social ills

The respondents pointed out that there will be an increase in social vices due to an influx of population in the project area as a result of contractor's work force. The social issues anticipated by the locals includes theft cases, teenage pregnancies, cases of school dropouts, extra-marital

affairs and introduction of illicit behaviour in the proposed project areas; such as Kakoneni trading centre, Bao-lala trading centre, Matano Manne trading centre and Kilifi town.

5.6 Suggestions from the respondents

The following are the suggestions proposed by the respondents during the ESIA study consultative public participation exercise;

- Give priority to the local youth in the proposed project area(s) for employment opportunities in semi-skilled and unskilled job categories.
- Replace lost trees along the RoW by planting more outside and providing the locals with tree seedlings,
- Ensure community health and safety from construction, EMF and electrical hazards
- Give sufficient notice period to PAPs to enable them to have ample resettlement period,
- Compensate for affected assets sufficiently to enable PAPs maintain, if not improve, their living standards,
- Carry out and promote community health and safety awareness programmes in the proposed project affected areas,
- Proponent to ensure engagement of a contractor(s) with good morals and good ethical behavior.
- Proponent to strictly monitor the contractor's(s) interaction with the local communities and put in place strict penalties where a contractor breaches a community's social-culturally accepted behavior,
- The contractors should heavily engage the technical schools during the proposed transmission line construction phase since they have a lot to offer in terms of technical capabilities such as engineering (Electrical, Civil, and Mechanical), masonry, metal smith and labour force. This will offer a platform for their students to apply knowledge and skills obtained from their training.

5.7 Corporate Social Responsibility (CSR) Proposals

In all the public meetings and engagements, the public expressed some of the challenges encountered in the project area. They proposed several CSR activities for their villages. They proposed the following as priority projects:

Table 5-7 CSR Proposals

Public meeting venue	Priority projects
Chief's Office Grounds Jilore Location	<ul style="list-style-type: none"> ▪ Construct a police post ▪ Construct ward units at Jilore Dispensary ▪ Improve classrooms at Jilore primary school. ▪ Construct a social hall on the land available at Kakoneni Chiefs' Camp
DO's/Chief's Office Grounds Bao Lala in Lango Baya	<ul style="list-style-type: none"> ▪ Construction classrooms for a new secondary school in Langobaya Sub-location ▪ Renovate existing classrooms and add more classrooms for primary schools in Langobaya location ▪ Construct a public toilet at Baolala ▪ Construct a public market at Baolala ▪ Improve power supply at Baolala centre and Weru Group Ranch and their environs ▪ Construct a maternity unit at Malanga Community Dispensary ▪ Initiate feeding Programme at Pishi mwenga primary school.
Mgadini Football Grounds (near Fumbini Primary School)	<ul style="list-style-type: none"> ▪ Establish a dispensary in Fumbini area, ▪ Construct classrooms for existing and proposed secondary schools in Fumbini area
Konjora Primary School Grounds	<ul style="list-style-type: none"> ▪ Renovation of classrooms in the area ▪ Construction of classrooms for a newly established secondary school in Konjora ▪ Provision of desks and water tanks in schools located in Kibarani Ward ▪ Help the locals plant more trees in the area used as sources of construction material (roofing) ▪ Assist orphans in Kibarani Ward by giving them scholarships ▪ Initiate a food programme for primary schools in Kibarani Ward as the pupils come from distant homes with no lunch to assist improve their academic performance ▪ Engagement of electrical and masonry students through internships and employment opportunities ▪ Establishment of a Resource Centre at Godoma Technical Training Institute ▪ Establishment of an Auto-electric garage at Godoma Technical Training Institute ▪ Establishment of a Modern electrical and electronic laboratory at Godoma Technical Training Institute ▪ Establishment of a solar lighting system around Godoma Technical Training Institute perimeter
Mongotini Secondary School Ground's	<ul style="list-style-type: none"> ▪ Build classrooms, library, and laboratory at Mongotini Mixed and Day Secondary School ▪ Construct a public market at Mongotini. ▪ Build classrooms at Kaliapapo ECD School ▪ Support River Sabaki Irrigation Scheme

Source – AWEMAC Filed Survey

6 CHAPTER SIX: ENVIRONMENTAL IMPACTS IDENTIFICATION AND ANALYSIS

6.1 Introduction

The proposed power transmission project will have both positive and negative environmental effects in terms of nature of impacts. Through an intensive and extensive field survey; key stakeholder consultation and public participation forums; literature review and professional judgement, impacts were identified and analysed. The impacts were categorised according to different phases/timing of the project i.e. construction, operation and decommissioning phases. Under the different phases, the impacts were further analysed into their corresponding nature i.e. either positive or negative and given a rating figure to depict its magnitude.

The negative and positive impacts likely to originate from the project have generally been linked to the social and biophysical environment and the economic aspects along the power transmission project area. Among the broad linkages are as follows:

- I. Biophysical Environment:
 - Biodiversity: Flora and Fauna.
 - Water: hydrology of the area.
 - Land and Soil.
 - Climate and Weather
- II. Social Environment:
 - Population characteristics.
 - Settlement trends.
 - Land use patterns.
 - Health and Safety.
 - Culture.
- III. Economic Issues:
 - Trade and industries.
 - Transportation and communication.
 - Income generation activities.

6.2 Quantification of the magnitude of impacts

The magnitude of each impact is described in terms of, no impact, minimal impact, moderate impact, high impact, very high impacts and those whose magnitude is not known. Each impact magnitude was assigned a corresponding value that expresses the scale of the impact. In order to make the following observation, expert knowledge based on the magnitude of the predicted impacts was relied upon. The scale that was applied in the analysis of impacts is highlighted in the table below.

Table 6-1 Levels of Scale used in analysing the magnitude of potential impacts

Value	Description	Scale Description
0	No impact	This means that to the best knowledge of the expert, the activity/action will not have any known impact on the environment. Such an impact will not in any way affect the normal functioning of either the human or the natural systems and does not therefore warrant any mitigation.
1	Minimal impact	Any activity with little impact on the environment calls for preventive measures, which are usually inexpensive and manageable. Such activities have minimum impacts on either natural or human environment or both.

2	Moderate impact	A moderate impact will have localized effect on the environment. If the effect is negative and cumulative, action in form of mitigation measures needs to be put in place to ensure that it doesn't become permanent and /or irreversible.
3	High impact	An impact is high if it affects a relatively high area (spatial), several biological resources (severity) and/or the effect is felt for a relatively long period (temporal) e.g. more than one year. In case the effect is negative, such an impact needs to be given timely consideration and proper mitigation measures put in place to prevent further direct, indirect or cumulative adverse effects.
4	Very high impacts	Such an activity rates highly in all aspects used in the scale i.e., temporal, spatial and severity. If negative, it is expected to affect a huge population of plants and animals, biodiversity in general and a large area of the geophysical environment, usually having trans-boundary consequences. Urgent and specialized mitigation measures are needed. It is the experts' opinion that any project with very high negative impacts MUST be suspended until sufficient effective mitigation measures are put in place.
5	Not known	There are activities for which impacts are not yet known e.g. some chemicals are suspected to produce carcinogenic effects, but this has not yet been confirmed.

Source – AWEMAC

6.3 Environmental impacts during construction phase

The environmental impacts have been discussed into detail including; Biodiversity related Impacts, and Cumulative Impacts.

6.3.1 Positive environmental impacts

The following are the expected positive environmental impacts for the proposed project during the construction phase:

6.3.1.1 Reforestation

The proponent / contractor will ensure replanting of trees along the proposed project surrounding area by compensating the PAPs for the lost trees to enable them to re-plant outside the RoW. As a corporate social responsibility (CSR) the contractor will engage in a tree planting exercise in collaboration with KFS to replant trees in Madunguni Forest land. This impact will be moderate hence a value of **2**.

6.3.1.2 Control of invasive species

The proponent / contractor will ensure only fast growing indigenous tree species / vegetation is re-planted along the RoW after clearance of the vegetation as part of environmental restoration of degraded areas and invasive species control. Control of invasive species will further be achieved through regular maintenance of the RoW. Local community members will also be empowered to adopt growing of commercial crops such as mango (*Mangifera indica*), cashew tree (*Anacardium occidentale*), neem (*Azadirachta indica*) and Nazi (*Ziziphus Mauritaniao*). This impact will be moderate hence a value of **2**.

6.3.2 Negative environmental impacts

The likely negative environmental impacts during the construction phase of the project are as discussed below:

6.3.2.1 Noise pollution and excessive vibrations

Because of excavation for tower foundations, and construction works, there will be increased noise levels and vibrations in the project area. Noise and vibrations will emanate from transportation vehicles, construction machinery, metal grinding and cutting equipment, and among others. Excavation works will also cause vibration and noise. This will be mostly felt in the locations namely; Goshi, Jilore, Lango-Baya, Vitengeni, Dida, Sokoke and Kilifi North Township; which have some residential settlement along the proposed transmission line. During construction process, rock blasting to create foundation for the pylons in rocky sections such as AP 1- AP4 will most likely be necessary. The process of stone blasting/crushing may lead to loss of excessive noise and vibrations. It is a contractual obligation for the contractor and the proponent to protect the communities from these impacts and restore the sites upon closure. Some of the noise sensitive receptors will be felt by schools such as Mongotini Primary and Secondary School; Jilore Vocational Training Centre, Pishi-Mwenga Primary School, Weru Technical Vocational College, Godoma Technical Training Institute, Kilifi Diocese Teachers Training College, Pwani University. Noise pollution may also affect Kazuri London Crocodile Farm production rates as this may affect how the crocodiles reared breed. This impact will be moderate hence value of **2**.

6.3.2.2 Air pollution due to dust and exhaust emissions

In the construction phase, the excavations for tower foundations and transportation of building materials will result in dust emissions from the access roads along the project route to the surrounding areas. The transportation of construction machines will also contribute to dust emissions. Dust and exhaust emissions may impact vegetations' growth rate especially in areas near Arabuko Sokoke Forest such as AP6, AP12, AP15 and AP16. Dust and exhaust emissions may also bring about respiratory infections especially to locals living in villages such as Kaliapapo, Kibao Kiche, Jilore, Kakoneni, Dida, Sokoke, Konjora and Fumbini. This impact will be moderate hence value of **2**.

6.3.2.3 Increased generation of solid waste

Solid wastes such as cement, metal cuttings (copper etc.), oil filters, waste tyres, wooden waste from the pellets and conductor drums, will be produced during the different phases of the project development. Solid waste materials will be generated as overburden from earth moving during foundation activities for transmission towers. Solid waste generation is also expected from workers' campsites (organic waste, metallic waste (tins), glass waste, e-waste and plastic waste); vegetation waste is expected from the clearance of RoW for fixing towers. The contractor would need to ensure that all solid wastes are collected and disposed appropriately to promote a clean and healthy environment along the transmission route corridor. This impact will be high hence a value of **3**.

6.3.2.4 Increased energy consumption / fossil fuels

The construction of the proposed Malindi -Kilifi transmission line and associated facilities is expected to cause an increase in energy consumption especially from construction campsites, and specific work sites. The campsites and worksites (offices) will require energy for lighting and operating electrical equipment.

It is also expected that there will be increased consumption of fossil fuel particularly petrol and diesel in operation of vehicles due to movement of workers, transportation of construction equipment and machinery. Increased fossil fuels are expected to lead to contribution of greenhouse gases (GHGs). However, the contribution of the GHGs against the available carbon sinks in the project area is expected to be insignificant. This impact will be moderate hence a value of **2**.

6.3.2.5 Increased discharge of wastewater, sewage and degradation of water quality

There will be a potential increase in the generation of wastewater and sewage during the construction phase of the project. The increases will take place at construction sites and in various

towns that will host construction workers (Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga) located along the transmission route. This is attributed to increased activities in these towns. There will be potential impact due to disposal practices of used oil, oil filters from vehicles and equipment after-service during the construction of the project. This impact will be moderate hence a value of **2**.

6.3.2.6 Increased water abstraction and consumption

During the construction of the transmission line and associated facilities there will be increased abstraction of water from groundwater resources for use in construction and for domestic use by workers. Notably, the main water body along the Malindi – Kilifi route is the Galana River which is approximately 200m from the RoW around Mungotini in Goshi Location AP2 -AP3. This asserts that the main sources of water for the larger proposed project is likely to be boreholes along the transmission alignment. This may further reduce availability of water, as discussed in chapter 3 section 3.4.4, including possibility of reduction in base flows in seasonal streams. This impact will be moderate hence a value of **2**.

6.3.2.7 Modification of hydrology

The increased water abstraction from underground sources (digging of boreholes) and where possible from River Galana may modify the hydrogeological / hydrological characteristics of the underground aquifers and surface water. Also, surface runoff may also accumulate along the sides of the access routes and transportation roads preventing direct flow to River Galana especially in areas near AP12 and AP13. This impact will be minimal hence a value of **1**.

6.3.2.8 Aquatic Habitat Alteration

The route of the proposed transmission line traverses a marsh land / flood zone for River Galana and seasonal watercourse such as Lake Jilore - a shallow marshland wetland in Jilore Location. These aquatic habitats are unlikely to be negatively affected by the construction of the electricity transmission line as the proposed line will not be passing directly through them. However RoW construction related activities such as access routes near these aforementioned aquatic habitats may disrupt these watercourses. This may lead to additional, sediment and erosion from construction activities and storm water runoff may increase turbidity of surface water courses however mitigation measures will be employed. This impact will be moderate hence a value of **2**.

6.3.2.9 Generation of storm water and impact on drainage

Widening and compaction of access roads increases the amount of impermeable surface area, which increases the rate of surface water runoff. Improvement of access roads in the project area is critical to the success of the project. Also, storm water generated on the road may be contaminated with oil and grease, metals (e.g. lead, zinc, copper, cadmium, chromium, and nickel), particulate matter and other pollutants released by transportation vehicles on the roads. This impact will be minimal hence a value of **1**.

6.3.2.10 Increased soil erosion risk and soil quality degradation

Construction of foundations for the transmission towers will lead to increased generation of surface runoff. Where the towers are fitted to bare steep slopes with loose soil, it can lead to soil erosion problems especially in areas near AP13, AP14, AP15, AP5 and AP6. Sediment and erosion from construction activities may also increase turbidity of surface waters. This impact will however be moderate (value of **2**) in view of the gentle nature of the landscape through which the transmission line will pass.

6.3.2.11 Loss of vegetation cover and biodiversity

The project will require a way-leave of 40 meters– 20 meters on both sides from the centre line. Within the way-leave, selective clearing of vegetation will be necessary to remove any tall trees that pose a risk to the transmission line, give way for the construction of the towers; and give room for workers to do stringing of the transmission line. The selective clearance of vegetation is likely

to be done in areas with thick vegetation and trees along the corridor to pave way for the proposed transmission line. Sokoke and Dida sections which are along the project route have thick bushes and shrubs which will require clearance of vegetation. Trees such as *Mangifera indica*, *Anacardium occidentale*, *Azadirachta indica* and *Ziziphus Mauritania* will be cut down along the proposed transmission line's RoW. These trees and bushes are also home to various fauna such as birds, insects and snakes. It is also expected that the project will require quantities of materials such as ballast, murram, stones, conglomerates / aggregate, sand, gravel, and soil, among others. In addition, the contractors require camp sites for workers and materials storage which will need vegetation clearance. The proponent is going to ensure that campsites are constructed in areas that are not high in vegetation density. Due to the need to clear vegetation, building of campsites will need to undergo a separate Environmental and Impact Assessment Study to ensure there will be no major negative impacts from them. Common problems with soil compaction include:

- Short, stunted roots.
- Increased water runoff and decreased availability of water to roots
- Limited air infiltration, which leads to high levels of carbon dioxide in soils, causing shallow and less stable root systems.
- Increased root conflicts with surface infrastructure and landscaping
- Reduced drought tolerance

This impact will be high hence a value of **3**.

6.3.2.12 Terrestrial Habitat Alteration

Forests and wildlife are critical natural assets for Kenya since the country is endowed with few other natural resources such as minerals. Forests (which comprise slightly less than 3% of the total land) are vital as wildlife habitats and water catchment areas as well as sources of water that support agriculture, the main Gross Domestic Product (GDP) earner. The construction (and maintenance) of transmission line rights-of-way, could also result in terrestrial habitat alteration and disruption mainly around Sokoke - Dida area. Construction of the right-of-way normally involves clearing of vegetation including some of the naturally occurring forests outside the Arabuko Sokoke Forest or to some extent grading rugged terrain. The savannah closed woodlots and the wooded bushland habitat that characterise the transmission line outside the Arabuko Sokoke Forest will be affected mainly during clearing of the right of way (RoW). Envisaged ecological impacts include loss of indigenous trees that take long to mature. There will also be loss of important commercial crops like coconut trees noted in several farmlands along the proposed transmission route. The clearing of the RoW will therefore bring disconnection of small habitats and creating an environment conducive to proliferation and persistence of invasive species and visual/auditory disturbance due to the presence of machinery and associated equipment. Specific impacts include loss of wildlife habitat (including for nesting), establishment of non-native plant species and visual/auditory disturbance due to the presence of machinery, construction workers, and transmission towers and associated equipment. This impact will be high hence a value of **3**.

6.3.2.13 Human Wildlife conflicts

Arabuko Sokoke Forest neighbouring the proposed transmission line in various sections as follows; AP6 (1.85km) to the East, AP12 (287m), AP13 (275) and AP16 (465m) to the South] has, dikdiks, elephants and buffaloes among other wildlife that roam within its periphery and at times crossing to adjacent areas. However, the main wildlife along the project RoW includes African Civet, Caracal, Syke's Monkeys, Yellow Baboons and Lesser Galago (or bushbaby), Golden-rumped Elephant-shrew, Sokoke Bushy-tailed Mongoose and Ader's Duiker, and they are mainly found in Arabuko-Sokoke forest section (AP6, AP12, AP13, and AP16) and its dispersion areas. Large mammals are found within the fenced Arabuko – Sokoke and include African buffalo and African elephants. Overall, a number of mammals, lepidopteran, avian, and reptilian were recorded along the proposed transmission line.

Escaping of wildlife or breaking through the fenced Arabuko Sokoke forest and finding their way into the proposed RoW is likely to occur as has been reported elsewhere. This highlights the need for precaution and mitigation measures to avert possible human wildlife conflicts. Some wildlife

such as baboons are noted to be attracted by poor waste management and mainly organic waste and food remains. Work sites within the Arabuko Sokoke region should therefore enhance precaution to avert attracting baboons.

The influx of many people working at the project alignment may also cause change in wildlife behavior. Reduced movement of wild animals may lead to concentration in certain areas inside the forest leading to overgrazing, damage to natural vegetation and general loss of ecological integrity. There would also be visual and auditory disturbance due to the presence of machinery, construction workers, and associated equipment outside the forest's neighbourhood. The contractor is however expected to mitigate associated impacts, however; due to the proximity of Arabuko Sokoke Forest, human wildlife conflicts could be high hence a value of 3.

6.3.2.14 Cumulative Impacts

Cumulative impacts are impacts which result from the incremental impact of a proposed activity on a common resource when added to the impacts of other past, present or foreseeable future activities. The ESMF for KESIP notes that for most part, cumulative impacts or aspects are too uncertain to be quantifiable, due to mainly lack of data availability and accuracy. This is particularly true of cumulative impacts arising from potential or future projects, the design, or details of which may not be finalized or available and the direct and indirect impacts of which have not yet been assessed. Given the limited detail available regarding such future developments, the analysis may be of a generic nature but should focus on key issues and sensitivities for the project and how these might be influenced by cumulative impacts with other activities. Although the individual impact of each separate project may be minor, the additive or synergistic effects of multiple projects could be significant. For instance during stakeholders consultation a KCAA representative opined that the proposed transmission line is located outside the existing Rabai-Malindi-Gongoni flight path thus aligns well with Malindi International Airport. The representative added that plans are underway to expand the primary runway towards the Malindi-Tsavo Road (1.5km) hence evoking the need for cumulative assessment to ascertain the impacts of TL especially on flight safety issues. Further assessment however showed that the Malindi Airstrip is approximately 12km away from the nearest point of the TL i.e Malindi substation which is far enough for the plane taking from the Airstrip to have gained enough height to avoid collisions. Mitigation measures are however recommended under aircraft navigation safety to enhance visibility of the TL pylons at night.

Existing conditions in the vicinity of the proposed transmission line project reflect minimal past changes brought about by long-term human occupancy and use of the project area. The transmission line wayleave clearing and grading and other construction associated activities along with other existing Rabai-Malindi 220kV transmission line that run parallel to the proposed would result in the removal of vegetation, alteration of existing herbivore habitats and other secondary effects such as increased population stress, and establishment of invasive plant species. The decrease in vegetation could also indirectly affect vegetation remaining adjacent to the wayleave. Much of the land along the wayleave that would be disturbed by construction of the proposed transmission line is presently agricultural land. The majority of land use impacts associated with proposed transmission line would be temporary, as most land owners and land users will be allowed to revert to prior uses following construction. These impacts on resources such as habitat alteration within the region might arise due to the needs for the simultaneous construction of other public facilities as development continues within the region. The ESMF for KESIP also notes that the potential cumulative impact associated with project including the proposed Malindi Kilifi transmission line and substation extensions is the potential loss of biodiversity through a decrease in vegetation and faunal habitat during the construction phase. The clearing of natural vegetation is occurring at an increasing rate because of human population growth and developments such as the proposed transmission line and associated substations. The clearing of vegetation may result in a decrease in biodiversity and suitable habitat for fauna. The proposed transmission line and associated substations is likely to exacerbate the loss of biodiversity through the direct loss of natural vegetation within the right of way, as well as indirectly through enabling the further construction of the ring feed powerlines and providing an additional supply of electricity to the area which may facilitate further development initiatives. However, with the implementation of

the proposed mitigation recommendations the cumulative impacts are anticipated to be minimal - a value of 1.

6.3.2.15 Pollution from Hazardous materials

Use of engines (construction vehicles) and other equipment on site has the potential to lead to spillage of petroleum products. Most of hazardous waste during the construction phase consist of liquid waste, generated from cleaning fluid, spent oils and solvent. The hazardous solid waste generated is expected from welding materials and dried paints as well as the hazardous waste packaging.

As a result of the spillage of lubricant, fuel, cement and other chemicals during construction, soil condition may deteriorate. The spillage of such chemicals will negatively impact the condition of the soil, as this cannot degrade without human intervention. Pollution in soils can further impact on the quality of groundwater and surface water. The construction machines on site may be containing moving parts which will require continuous oiling to minimize the usual corrosion or wear and tear. Possibilities of such oils spilling and contaminating the soil and water on site could occur. Likewise, moving vehicles on site may require oil change. This impact will be high hence a value of 3.

6.3.2.16 Occupational safety and health

The Occupational safety and health issues associated with the construction of the proposed transmission line and associated facilities will include; physical hazards, chemical hazards and noise hazards. The occupational health and safety hazards specific to the proposed electric power transmission and distribution project primarily include live power lines; working at height and exposure to chemicals such as oils. The power transmission construction personnel can be exposed to a variety of physical hazards from operating machinery and moving vehicles but also working at elevation on towers. Workers may be exposed to occupational hazards when working at elevation during construction of the towers. Occupational safety and health issues include:

i. Live Power Lines

Workers may be exposed to occupational hazards from contact with live power lines during construction, maintenance, and operation activities.

ii. Working at height on poles and structures

Workers may be exposed to occupational hazards when working at elevation during construction, maintenance, and operation activities.

iii. Electric and magnetic fields

Electric utility workers typically have a higher exposure to EMF than the general public due to working in proximity to electric power lines. Occupational EMF exposure should be prevented or minimized through the preparation and implementation of an EMF safety program.

iv. Ergonomics, Repetitive Motion, Manual Handling

Injuries due to ergonomic factors, such as repetitive motion, overexertion, and manual handling, take prolonged and repeated exposures to develop, and typically require periods of weeks to months for recovery. These OHS problems should be minimized or eliminated to maintain a productive workplace.

v. Exposure to chemicals

Occupational exposures to chemicals in this sector primarily include exposure to PCB in transformers and other electrical components.

Other physical hazards include exposure to weather elements, contact with overhead power lines, falls from machinery or structures, and risk of falling objects. There is also a possibility of accidents when transporting workers to the construction sites. This impact will however be low hence a value of 2.

6.3.2.17 Community health and safety impacts

Community health and safety issues will emerge during construction of the transmission line and associated facilities. The impacts will include dust, noise, and vibration from construction vehicle movements and communicable diseases associated with the influx of temporary construction labour work force. The key impact receptors will be trading centres such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga. Additionally, risk of falls of animals and human beings into open excavation pits, community unwanted access to active sites and security of equipment. Mitigation measures will however be put in place to prevent further direct, indirect or cumulative adverse effects. The impact scale is moderate hence a value of **2**.

6.3.2.18 Visual Impacts

Power transmission lines and associated accessories are necessary to transport energy from power facilities to residential communities but may be visually intrusive to residents. A case point is from loop In Loop Out at Weru (AP 8) to Malindi Substation (AP 16) where the proposed transmission line will run parallel to the existing Rabai-Malindi 220kV transmission line creating visual intrusion in Kalia Papo village, Mifundani village, Kwa hisia village in Goshi Location, Kibao Kuche Village in Mungotini sublocation in Goshi Location and Kakoneni trading centre in Jilore Location. Changes in landscape views negatively impact on visual amenity. Visual intrusion as a result of the transmission line and towers was however not a major issue of concern based on the public consultations held with communities in the project areas. Mitigation measures will be documented to mitigate visual impacts hence this impact will be moderate thus a value of 2.

6.3.2.19 Aircraft Navigation Safety

Power transmission lines, if located near an airport or flight paths such as the Malindi airstrip can impact air safety directly through collision or indirectly through radar interference. The Kenya Civil Aviation Authority (KCAA) were consulted and represented in the project key stakeholders consultative workshop / meeting. Baseline studies showed that nearby airstrips including Malindi Airstrip – approximately 12km to Malindi substation (closest point to the TL); Galana Ranch Airstrip– more than 60 Km away to the closest section of TL; and Kilifi Plantation - approximately 4.85Km to the Kilifi substation (closest section to TL); all distances are enough for the plane taking from Airstrip to have gained enough height to avoid collisions. Mitigation measures have been provided including ensuring continued engagement with KCAA during planning and construction to ensure installation of the towers / pylons is in line with air safety regulations. This impact could be high, hence value of 3 if not well mitigated.

6.4 Environmental impacts during operational phase

6.4.1 Positive environmental impacts

The following are the potential environmental impacts for the proposed transmission line and associated facilities during the operation phase:

6.4.1.1 Reduction in Greenhouse Gas emission

By provision of reliable electricity, the project will contribute towards reduction in the generation of greenhouse gasses from diesel powered generators and fossil fuels that are currently in use in parts of Kilifi County. The project will further reduce dependence on fuelwood by providing an alternative lighting and cooking source of energy to the residents of Kilifi County who are not connected to the National Grid. The reduced reliance on fuelwood would in turn result to more sustainable forests due to reduced logging for wood hence more carbon sink.

The Malindi Kilifi transmission line and substation is intended to tap into power generated through clean energy: mainly hydro power. Hydro power is considered green energy because its generation does not involve emission of green-house gases. Improved access to adequate and affordable energy for households in surrounding towns and industrial sectors will help in rolling back the rate of deforestation and thus help in conserving forest resources, biodiversity, soil conservation and water resources. In addition, access to affordable energy can improve efficiency in transportation, industrial production, and farming methods with the potential of reducing

global, regional, and local pollutants emissions such as carbon monoxide, carbon dioxide, particulate matter, oxides of nitrogen and sulphur oxides to the atmosphere. This will be a positive stride towards reduction of and management of greenhouse gases emission resulting to climate change mitigation.

6.4.1.2 Reduction of overreliance on fuelwood

The socio-economic survey showed that the dominant energy source in Kilifi County is fuelwood. The project will provide alternative energy source to the County and Country at large and thus reduce reliance on fuelwood thereby contributing towards among others, the national goal of meeting the minimum forest cover.

The project is anticipated to ensure transmission of power and enhance distribution of energy by Kenya Power at household levels. Provided electricity from the grid is cheaper than other forms of energy This is anticipated to provide an alternative energy source for the country and reduce over reliance on charcoal production. This will also reduce deforestation activities associated with fuelwood and lighting.

6.4.2 Negative environmental impacts

6.4.2.1 Noise (buzzing) pollution

Noise in the form of buzzing or humming can often be heard around transformers or high voltage power lines producing corona. Ozone (O₃), a colorless gas with a pungent odor, may also be produced, however the ozone in a relatively short time, turns back into oxygen (O₂). Research shows neither the noise nor ozone produced by power distribution lines or transformers carries any known health risks. The acoustic noise produced by transmission lines is greater with high voltage power lines and reaches its maximum during periods of precipitation, including rain, as the result of fog. Notable receptor for this impact will be villages where the transmission line will traverse. These villages are likely to include Kalia Papo village, Mifundani village, Kwa hisia village in Goshi Location (AP 14 AP15, AP 16); Kibao Kuche Village in Mungotini sublocation in Goshi Location (AP 12 to AP 13); Kakoneni trading centre in Jilore Location (AP 11); parts of Matano Manne Village in Vitengeni Location; Angaza Village, Kasava Nyari 1 and 2 in Sokoke Location (AP 4, AP 5 up to AP 6) and Kilifi Substation at Sea Horse Village; Fumbini Galilaya Konjora 1; and Konjora 3 village in Kilifi Township Location (AP 1, AP 2 AP 3 up to AP 4).

Worth noting, the acoustic noise produced by transmission lines is greater with high voltage power lines (400-800 kilo volts [Kv]) and even greater with ultra-high voltage lines (1000 Kv and higher) . However, the proposed Malindi -Kilifi transmission line has a voltage of 220kV with a 40 meters wayleave hence the acoustic noise is expected to negligible. Further noise from transmission lines reaches its maximum during periods of precipitation, including rain, or as the result of fog. Nonetheless, the sound of rain typically masks the increase in noise produced by the transmission lines, but during other forms of precipitation such as fog the noise from overhead power lines can be troubling to immediate residents. However, the buzzing noise decays very rapidly with distance from source hence no potential noise nuisance is expected for people living outside the allocated wayleave of 40 metres - 20 metres on both sides from centre line. The buzzing noise pollution is expected to be very minimal hence a value of 1.

6.4.2.2 Risk of Fires

Uncontrolled burning of wastes during operations may cause risk of fire, especially during the dry season as the surrounding area is characterized by bushes, trees and grass e.g. Between Kaliapapo and Kibao kiche villages; Dida and Sokoke.

During operations, high voltage power may also cause a fire risk in the event of electrical faults with equipment. If underlying vegetation growth is left unchecked, or slash from routine maintenance is left to accumulate within right-of-way (RoW) boundaries, enough fuel can accumulate that may promote bush / woodlots fires. Uncontrolled burning of wastes / bush clearing by farmers near the proposed transmission route could also cause risk of fire, especially during the dry season as the surrounding area is characterized by bushes, shrubs and grass. Also,

if underlying growth is left unchecked, or slash from routine maintenance is left to accumulate within right of way boundaries, sufficient fuel can accumulate and as such promote bush fires. This impact will be high hence a value of **2**.

6.4.2.3 Avian (Birds) Collisions and Electrocutions

The transmission line passes near Arabuko Sokoke Forest which is an Important Bird Area (IBA) therefore the line might have significant impacts on these migratory avians (ref. Chapter 3) mainly on the North Eastern part of Arabuko Sokoke Forest Sokoke . The impact on birds within the RoW neighbouring Arabuko Sokoke Forest including Kilifi Creek environs may be through:

- Risk of electrocution - electrocutions occur at poles when a bird completes a circuit by touching two energized parts or an energized and grounded part.
- Risk of collision - Power line collisions occur when birds fly into wires/cables.

The combination of the height of the transmission towers and transmission wires can pose potentially fatal risks to birds (including raptors) through collision and electrocutions. Birds may be electrocuted by power lines in one of three ways:

- i). simultaneously touching an energized wire and a neutral wire;
- ii). simultaneously touching two live wires and;
- iii). Simultaneously touching an energized wire and any other piece of equipment on a tower that is bonded to earth through a ground wire (IFC, 2007).

This impact will be moderate since most of the birds' migratory routes are concentrated to the North Eastern part of Arabuko Sokoke Forest (fig 3-9), hence a value of **2**.

6.4.2.4 Mammals (including Bats) Collisions and Electrocutions

Mammals can significantly be impacted by electricity transmission lines with bats being at higher risk due to collisions and electricutions from flying. The *ecological survey report annex 3* noted that the coastal Arabuko-Sokoke forest, in Kilifi County support over 20 species of bats (Musila et al., 2019b; Table 4-6). These bats may face threats brought about by transmission lines including: habitat alteration and fragmentation such as disturbance of crucial roosts, environmental toxins and destruction or fragmentation of their roosting and foraging habitats. The placement of power lines leads to habitat loss and fragmentation of many bats, especially narrow-space foraging species that can forage in the forest interior. Power lines can also lead to direct mortality via collisions for high-flying bat species and via electrocution of the large fruit bats that may perch on live wires during foraging bouts. Although a few species from the proposed project area may be at high risk due to potential collision with, or electrocution on, power lines (Ecological survey report - Table 4-6), it is likely that the area does not represent Critical Habitat for any bat species. For species such as the Harrison's Giant Mastiff Bat (*Otomops harrisoni*) and Hildegard's Tomb Bat (*Taphozous hildegardeae*) which are of global conservation concern, the area is unlikely to be Critical Habitat as the species are fairly ubiquitous and widespread (Patterson & Webala, 2012; Patterson et al. 2018, Musila et al., 2019a). Bats may be electrocuted by electric power lines when a part of their body, normally wing membranes simultaneously get in contact with energized wire and neutral, energized wire and earthed object or touching two energized wires same time. The probability of this happening is more likely when wires are close together, the size of wing span of a bat (10cm-60cm apart). Bats will not be electrocuted when they get in contact with a single wire, energized or otherwise. Further research show that resident bats have smaller wings span (<40cm), hence transmission over head cables should be 60cm or more apart to eliminate any chance of electrocuting bats. Primates such as monkeys may also fall victim to electrocution by the proposed high voltage transmission line. This could possibly happen where monkeys climb the towers and simultaneously touch the transmission wires. However, mitigation measures have been recommended for this impact. This impact will be moderate hence a value of **2**.

6.4.2.5 Disruption and alteration of Wildlife habitat during RoW maintenance

Regular maintenance of vegetation within the right-of-way must be carried out to avoid disruption to overhead power lines and towers. Regular maintenance may involve the use of mechanical

methods (mowing machines) that may disrupt wildlife and their habitats especially between Dida and Sokoke areas. Excessive vegetation maintenance may also remove unnecessary amounts of vegetation resulting in the continual replacement of succession species and an increased likelihood of the establishment of invasive species. This impact will be medium and has a value of **2**.

6.4.2.6 Cumulative Impacts

Cumulative impacts are likely to emerge attributed to interference with migratory routes or wildlife movement which could result to human wildlife conflict. Clearing of vegetation and trees along the RoW could impact on climate change in the long time due to reduced carbon sequestration. The loss of vegetation could also indirectly affect vegetation remaining adjacent to the wayleave. These impacts on resources such as habitat alteration within the region might arise due to the needs for the periodic clearing of the RoW as part of the maintenance works. The ESMF for KESIP also notes that the potential cumulative impact associated with project including the proposed Malindi Kilifi transmission line and substation extensions is the potential loss of biodiversity through a decrease in vegetation and faunal habitat likely to be exacerbated by periodic clearing of the right of way. The clearing of natural vegetation is occurring at an increasing rate because of human population growth and developments such as the proposed transmission line and associated substations. The clearing of vegetation along the RoW as part of the maintenance works may result in a decrease in biodiversity and suitable habitat for fauna. During the operational phase, the proposed transmission line and associated substations are likely to exacerbate the loss of biodiversity through enabling the further construction of the ring feed powerlines to provide additional supply of electricity to the area which may facilitate further development initiatives. However, mitigation measures have been recommended hence this impact will be minimal - a value of **1**.

6.4.2.7 Occupational safety and health

The occupational health and safety hazards specific to the operation phase of the proposed electric power transmission and distribution project primarily include live power lines; working at height; electric and magnetic fields (EMF) and exposure to chemicals such as oils. Maintenance workers may be exposed to occupational hazards from contact with live power lines during operation and maintenance schedules. Workers may also be exposed to occupational hazards when working at elevation during repairs and maintenance of the towers. Electric utility workers typically have a higher exposure to EMF than the general public due to working in proximity to electric power lines.

Occupational safety and health issues include:

(a) Live Power Lines

Workers may be exposed to occupational hazards from contact with live power lines during construction, maintenance, and operation activities.

(b) Working at height on poles and structures

Workers may be exposed to occupational hazards when working at elevation during construction, maintenance, and operation activities.

(c) Electric and magnetic fields

Electric utility workers typically have a higher exposure to EMF than the general public due to working in proximity to electric power lines. Occupational EMF exposure should be prevented or minimized through the preparation and implementation of an EMF safety program. Studies on High Voltage electric overhead lines have not come up with any conclusive evidence of impacts on human health as a result of EMF (McCann, 1993)

(d) Ergonomics, Repetitive Motion, Manual Handling

Injuries due to ergonomic factors, such as repetitive motion, overexertion, and manual handling, take prolonged and repeated exposures to develop, and typically require periods of weeks to months for recovery. These OHS problems should be minimized or eliminated to maintain a productive workplace.

(e) Exposure to chemicals

Occupational exposures to chemicals in this sector primarily include exposure to PCB in transformers and other electrical components.

Other physical hazards include exposure to weather elements, contact with overhead power lines, falls from machinery or structures, and risk of falling objects. This impact will however be low hence a value of 2.

6.4.2.8 Community Health and Safety

The operation of live power distribution lines and substations may generate the following industry-specific impacts:

(a) Electrocutation

Hazards most directly related to power transmission and distribution lines and facilities occur as a result of electrocution from direct contact with high-voltage electricity or from contact with tools, vehicles, ladders, or other devices that are in contact with high-voltage electricity.

(b) Electromagnetic Interference

The corona of overhead transmission line conductors and high frequency currents of overhead transmission lines may result in the creation of radio noise. Typically, transmission line rights-of-way and conductor bundles are created to ensure radio reception at the outside limits remains normal. However, periods of rain, sleet or freezing rain sharply increases the streaming corona on conductors and may affect radio reception in residential areas near transmission lines.

(c) Visual Amenity

Power transmission and distribution are necessary to transport energy from power facilities to residential communities but may be visually intrusive and undesirable to local residents.

(d) Noise (Buzzing) and Ozone

Noise in the form of buzzing or humming can often be heard around transformers or high voltage power lines producing corona. Ozone (O₃), a colourless gas with a pungent odour, may also be produced, however the ozone (O₃), in a relatively short time, turns back into oxygen (O₂). Research shows neither the noise nor ozone produced by power distribution lines or transformers carries any known health risks. Neither the noise nor ozone produced by power distribution lines or transformers carries any known health risks. The acoustic noise produced by transmission lines is greater with high voltage power lines (400-800 kilo volts [kV]) and even greater with ultra-high voltage lines (1000 kV and higher). However the proposed Malindi-Kilifi transmission line has a boltage of 220kV with a 40 meters way leave hence the acoustic noise is expected to very minimal. Further noise from transmission lines reaches its maximum during periods of precipitation, including rain, or as the result of fog. Nonetheless, the sound of rain typically masks the increase in noise produced by the transmission lines, but during other forms of precipitation such as fog the noise from overhead power lines can be troubling to nearby residents. However, with the allocated wayleave of 40 metres - 20 metres on both sides from centre line -the buzzing noise is expected to be very minimal.

6.5 Environmental impacts during decommissioning phase

Due to the national and international significance of this project, the likelihood of decommissioning is minimal, therefore impacts discussed below are almost unlikely.

6.5.1 Positive Environmental Impacts

6.5.1.1 Rehabilitation and restoration of the site to its original status

During the decommissioning of the project the area will be rehabilitated to its original status by re-vegetating areas where vegetation is cleared, making sure that all towers are removed.

6.5.1.2 Reduced negative environmental impacts of operation

At the operation phase of the project many negative environmental impacts will arise. Such impacts include; alteration of habitat, noise pollution, avian and bats collision impact etc. All these impacts will subsequently be eliminated when the project is decommissioned.

6.5.2 Negative environmental impacts

6.5.2.1 Excessive noise and vibration

There will be noise and vibration from vehicles and machines that will be used during the decommissioning phase.

6.5.2.2 Air Pollution due to dust emission

Dust will be emitted by moving vehicles and from the decommissioning works through movement of machinery.

6.5.2.3 Increased solid waste generation

A lot of solid waste such as steel and vegetation clearance and among other wastes will be generated during decommissioning of the project.

6.5.2.4 Occupational safety and health

The occupational health and safety hazards may include working at height; electric and magnetic fields (EMF) and exposure to chemicals. Maintenance workers may be exposed to occupational hazards from contact or risk of falling objects

6.6 Risks and impacts as a result of climate change

The proposed transmission line and substation is expected to significantly cut on emission of green house gases which result to climate change. However, like any development project, climate change may pose a risk and impact to the proposed project during construction. Climate change may impact on electric power infrastructure such as power generation technologies, transmission lines, and substations, and building loads. Climate change impact during construction period may affect infrastructure systems by changing the weather conditions in the project area. For instance increased precipitation may delay construction work due to; interference with work schedules due to prolonged rains, degradation of roads affecting transportation of construction materials amongst other impacts.

During the operational stage, climate change may affect the project electric service reliability. Severe weather changes such as increased precipitation may result into a sequence of faults in the delivery network, causing interruptions in power transmission. Extreme storms may also result into flooding which could damage the physical hardware of above and below ground such as proposed project substations and transmission pylons / towers, if that hardware is not sufficiently shielded. Flooding can erode or short the hardware in substations and ground connection lines at the substations. High winds associated with storms may cause physical damage as winds make trees fall on transmission lines and pylons. Severe storms can also blow trees, and other foreign materials, into power lines and cause outages.

The power transmission infrastructure can be affected by climate change due to higher temperatures increasing risks of wildfires that can render power lines inoperable due to ionized air (Daniel, 2018). Additionally, higher temperatures can result in reduced capacity for power lines to safely carry electricity. Daniel (2018), notes that rising temperatures may impact the transmission power lines by reducing their thermal rating (i.e. the maximum current allowed at a given temperature) and causing lines to sag to dangerous levels - reducing their clearance from land – to the general public. Sagging may also result in contact with trees and other structures, which could result in electrocution or fires. Moreover, transmission lines can sag to the point that

they permanently deform. Alternatively, if protection devices are not properly insulated, high temperatures may cause power components to degrade or wear out.

Further, if the water levels in the natural hydropower sources are too low (e.g., low river flow during droughts), then production capacity and efficiency of the proposed power transmission project could be reduced. The power transformers expected to be installed in the proposed project substations may also be vulnerable to increase in temperature, as the air cooling circulation systems become inefficient. These impacts are compounded by increasing electricity demand during heat episodes, for example due to air conditioning.

6.7 Characteristics of the Environmental Impacts

The characteristics of environmental impacts vary depending on several typical parameters in addition to the ones discussed in chapters 6.1 to 6.5. These additional parameters were also considered in impact prediction and decision-making during the ESIA study and they include:

- Likelihood (probability, uncertainty);
- Significance (local, regional, global);
- Extent/location (area, distribution);
- Duration (short term, long term, intermittent, continuous) and;
- Reversibility (Reversible, irreversible).

Table 6-2: Environmental Impacts Characteristic Summary

		Likelihood		Significance			Extent/ Location		Duration				Reversibility	
		Probability	Uncertainty	Local	Regional	Global	Area	Distribution	Short term	Long term	Intermittent	Continuous	Reversible	Irreversible
Type of Impacts		Construction Phase												
	Noise pollution and excessive vibrations	H		√			Along proposed project area		√					√
	Air pollution due to dust and exhaust emissions	H		√			Along proposed project area		√					√
	Increased generation of solid waste	H		√			Along proposed project area		√				√	
	Increased energy consumption	H		√			Ganze, Kilifi North and Malindi Sub-Counties		√					√
	Increased discharge of wastewater, sewage and degradation of water quality	L		√			Along proposed project area		√				√	
	Increased water abstraction and consumption	M		√			Along proposed project area		√				√	
	Modification of hydrology	L			√		Along proposed project area		√				√	

Type of Impacts	Likelihood		Significance			Extent/ Location		Duration				Reversibility	
	Probability	Uncertainty	Local	Regional	Global	Area	Distribution	Short term	Long term	Intermittent	Continuous	Reversible	Irreversible
Aquatic Habitat Alteration	M		√			At AP12 & AP13 near R. Sabaki		√				√	
Generation of storm water and impact on drainage	L		√			Along proposed project area		√				√	
Increased soil erosion risk and soil quality degradation	M		√			Along proposed project area		√				√	
Loss of vegetation cover and biodiversity	H				√	Along proposed project area			√				√
Terrestrial Habitat Alteration	H				√	Along proposed project area			√				√
Pollution from Hazardous materials	M		√			Along proposed project area			√			√	
	Operation Phase												
Noise and Ozone pollution	L		√			Along proposed project area					√		√
Impact on migratory fauna	M				√	Between AP7 & AP9					√		√

Type of Impacts	Likelihood		Significance			Extent/ Location		Duration				Reversibility	
	Probability	Uncertainty	Local	Regional	Global	Area	Distribution	Short term	Long term	Intermittent	Continuous	Reversible	Irreversible
Risk of Fires	L		√			Along proposed project area			√				√
Avian Collisions and Electrocutions	H				√	Between AP7 & AP9				√			√
Mammals (including Bats) Collisions and Electrocutions	H			√		Between AP7 & AP9				√			√
Disruption and alteration of habitat during RoW maintenance	H				√	Along proposed project area				√			√
Cumulative Impacts	L		√			Along proposed project area					√		√
	Decommissioning Phase												
Excessive noise and vibration	H		√			Along proposed project area		√					√
Air Pollution due to dust emission	M					Along proposed project area		√					√
Increased solid waste generation	H		√			Along proposed project area		√				√	

Source – AWEMAC

7 CHAPTER SEVEN: SOCIAL IMPACTS IDENTIFICATION AND ANALYSIS

7.1 Introduction

During the ESIA study, social impacts were categorized and discussed into detail as; community impacts, cultural impacts, health impacts, lifestyle impacts, and quality of life impacts. Based on the social impact assessment that was carried out on the proposed site; this chapter discusses both the positive and negative issues which were identified.

The ESIA study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line and substation. Parcels of land traversed by the proposed RoW range in various sizes of private land, and public land. It was noted that approximately 603 registered landowners will also be affected. Further, it is estimated approximately 1,083 structures which include permanent (136), semi-permanent (71), temporary (793), services (watering points) (51), burial sites (24) and dug open pits meant for pit latrines (8) will be affected. The displacements will occur throughout the ROW with significant impact on structures likely to be experienced in the densely populated Jilore Location and Kilifi Township location. An approximate 22 business structures mainly retail shops owned by households ranging from four (4) permanent, four (4) semi-permanent, and fourteen (14) temporary are also affected by the RoW.

Further, some physical cultural resources such as baobab tree and an approximate total of 24 graveyards were observed. The graves were distributed along the RoW as follows; (14) in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location. The highlighted social -cultural and economic issues underpins the need for a comprehensive resettlement action plan (RAP) that would ensure compensation and livelihood restorations for projected affected persons.

7.2 Potential social impacts during construction phase

The following are the expected positive social impacts for the proposed project during the construction phase:

7.2.1 Positive social impacts

7.2.1.1 Creation of employment opportunities

The construction phase of the power transmission will offer temporary job opportunities for males and females including the youth both semi-skilled and unskilled locals in the Kilifi County area. Drivers, masons, civil engineers, steel-fixers, welders and other casuals such as carpenters will gain employment during the construction phase of the power transmission line and substation. Some short-term employment opportunities during the construction phase include: Right of way (ROW) clearance, pit dressing, loading and offloading of construction materials and deliveries, record keeping and provision of security at active sites and temporary campsites and stores. Also, there will be some indirect job opportunities such as catering, kiosks, barber shops, etc., to service the crew. Some maintenance activities such as clearing of vegetation clearance along the RoW will still provide seasonal jobs to the transmission alignment community members. These jobs are expected to improve the economy of the area and improve the livelihoods of the local people. Unskilled labour will recruited as per administrative unit- locational level. This impact will be very high hence given a value of 4.

7.2.1.2 Gains in the local and national economy

Through the provision of employment to the locals, income from the salaries and wages will improve the economy of the trading centres such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga around the transmission line right of way and the county at large. The contractor is also expected to purchase some of the materials from the project area and as such contribute positively to the local and national economy. The workers will need basic amenities such as food, shelter and clothing during construction period. They will as well need

recreation for time off. All these goods and services will be sourced from providers in the transmission area thus increasing the economic activity around the region. At the national level, indirect economic gains will be realised too. Construction materials and services locally available will be put into use. These include: materials such cement, sand ballast, reinforcement steel personal protective equipment and services such as transportation of materials and warehousing and logistics. The materials for construction will also be sourced from other areas within the nation hence positively affecting the national economy. This impact will be very high hence given a value of **4**.

7.2.1.3 Transfer of skills

There will be transfer of skills as semi-skilled labour will be sourced from within and where unavailable outside the project area to provide different services. As such, the local people will learn new skills from the transferred skills and knowledge. This impact will be moderate hence a value of **2**.

7.2.1.4 Provision of market and supply for building materials

The contractor will purchase building materials such as sand, cement etc. from suppliers within or outside the project area trading centres such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga. This is anticipated to temporarily improve on business due to increased income within the aforementioned towns. This impact will be moderate hence a value of **2**.

7.2.1.5 Improvement of local trade and business opportunities

The transmission line and associated facilities will lead to the permanent growth of local trade. In the construction phase, building materials for construction will be purchased both locally and regionally. Other small-scale businesspeople such as food vendors, kiosk owners will also benefit during the construction of the transmission line and associated facilities. This impact will be moderate hence value of **2**.

7.2.1.6 Improved security

In the wake of insecurity incidences in the project area, the proposed power transmission project is anticipated to improve security. There will be deployment of police and private security services along the project RoW during the construction. This impact will be moderate hence value of **2**.

7.2.1.7 Corporate social responsibility (CSR)

The proponent is anticipated to identify the needful areas in the project route and participate in CSR activities. Section 5.7 has highlighted some of the noted challenges in the area which include unavailability of water, inadequate / dilapidated infrastructure for both primary and secondary education and health infrastructure, among others. Therefore, the proponent is expected to assist in any of these areas as part of CSR, where possible depending on the availability of funds. The proponent should however align CSR initiatives with respective county governments to avert duplication of development efforts. This impact will be high hence a value of **4**.

7.2.1.8 Training and Capacity Building

It is anticipated that the proposed project will lead to training and capacity building of the locals, the employees, project contractors and even KETRACO staff seconded to the project. The locals will benefit from on job trainings including livelihood restoration trainings such as entrepreneurial training for existing small businesses. Additionally, locals will be made aware of the impacts of HIV/AIDs, GBV-SEA/SH etc., and their management protocols; project plans (SEP, GRM etc), among others.

Employees are likely to benefit from health and safety related trainings such as health and safety awareness (use of the available information (such as MSDSs), safe work practices including fall

protection program that includes training in climbing techniques and use of fall protection measures and appropriate use of PPE, fire safety trainings, first aid, emergency evacuation, and trainings regarding code of conduct for the workforce, HIV/AIDS and GBV -SEA/SH. Project contractors will attain capacity building to implement both the ESMP and ESMnP. It is anticipated that KETRACO staff seconded to the project will also gain capacity building from on job training skills. Other general training and capacity building will entail creation of awareness through sensitization on COVID-19 prevention strategies such as hand washing, physical distancing, use of masks, adherence to restrictions as per GoK directive. This impact will be high hence a value of 3.

7.2.2 Negative Social Impacts

The following are the expected negative social impacts for the proposed project during the construction phase:

7.2.2.1 Displacement of households and businesses

During the field survey, it was noted that there are households, small-scale businesses and temporary structures within the proposed RoW. Households were observed to be concentrated mainly at the beginning of the transmission line in Malindi - Kalia Papo, Kibao Kiche, Jilore - and towards the termination point in Kilifi station – Sokoke, Angaza, Konjora 1, Konjora 3 and Fumbini. There will be likely loss of income based on evidence of ongoing small scale businesses within the wayleave corridor. The monthly income (profits) accruing from these businesses will be determined during the detailed asset inventory survey. As part of income restoration, compensation will be paid for the affected businesses to cushion the business owners from the effects of resettlement interruption. The households will be displaced from the RoW to pave way for construction of the proposed transmission project. It is anticipated that the affected developments and housing structures will be compensated at current replacement value; this will be the cost of building a new house of similar nature at the current market value. There will be an additional disturbance allowance paid to the affected house owners based on the Resettlement Policy Framework (RPF) and Entitlement Matrix established for the project. Although, it is anticipated that a full resettlement action plan (RAP) will be prepared, this impact will be high hence a value of 3.

7.2.2.2 Land (wayleave, contractor facilities sites, workers camp sites, and sub-station sites) acquisition and resettlement

The main negative impacts of the proposed project will arise from the need to put land under easement and acquire land for the substation and other associated infrastructure like access roads for use during construction and maintenance. The ESIA study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line. Parcels of land traversed by the proposed RoW range in various sizes of private land, and public land. The impacts of land acquisition will vary from one affected person or entity to another but may include (in part or full land acquisition):

- The permanent loss of the market value of acquired land and assets;
- The permanent loss of the productive potential of the acquired land and resources and, therefore, the loss of future food supplies or business income (including farming income);
- The permanent loss of recreational, community and other use of acquired land;
- The permanent loss of residential accommodation and business (including farming) premises and structures acquired by the project;
- The temporary loss of land and assets during the construction phase of the project (e.g. damage to property outside the wayleaves); and
- The limited use of acquired land along the RoW.
- The possible loss of social cohesiveness and social networks when affected people or entities are required to move away from the project area.

The most extreme impacts will be felt by people who will have to relinquish all or most of their land and other property and move to other locations which may be some distance away from the affected project area. However, only approximately 7% of the landowners will have their land parcels fully affected / totally displaced. Full impact entails land parcels affected more than 70% of the total parcel area. The PAPs can still use the remaining 30% land for farming and other

economic activities.

Nonetheless, the study identified that the location of the Transmission line traverses almost 99.9% in rural setting, which is a major advantage in terms of resettlement and land availability. This largely means that although communities have settled along the route, the prospects including adequacy of the land, quality of land and accessibility of resettlement land (where compensation is provided) in the vicinity (cost allowing) will not be a major challenge.

Less extreme impacts will be felt by people who will lose smaller portions of their land and assets and who will not need to physically relocate. Losses will not only be limited to property owners with legally recognized property rights, but some impacts could possibly be felt by people without ownership rights, such as tenants and informal or itinerant land users.

Although not directly related to the acquisition of land for project purposes it is possible that construction teams may adversely impact on (e.g. damage) land or property located outside the wayleave. This impact will be high hence a value of **4**.

7.2.2.3 Loss of Agricultural land produce / Restriction to access pasture / Impact on Apiculture

Apart from loss of agricultural land, the residents sited permanent loss of agricultural produce such as maize farms and fruit crops such as coconut tree which serves as a major source of revenue and food. It is expected that the trees affected by the transmission line corridor will be recorded according to the size (young, medium, or mature) and valued at the current market value based on replacement costs of similar or comparable trees depending on age and its future potential. Compensation of affected crops will align to the RPF developed under this project. Although there will be limited use of eased land along the RoW, the land under the ROW will still be used for crops that may not grow to more than 12ft high (3.65m). Notably the RoW will pass through various fields of maize crops and coconut trees mainly in Sokoke location and parts of Kilifi North Township.

Generally, in Kilifi County natural pastures occupy almost half of farmlands. Since the project is rural, with transmission lines being approximately 33.5 and 46 meters high, coupled with its inherent nature that only requires wayleave instead of land acquisition to pave the way for the transmission line, no significant impact is expected on pasture land and animal grazing. Pasture land will only be temporary affected during construction, and afterward farmers will be able to continue utilizing the portion of land in the area as before, e.g. for natural pasture or animal grazing. For households where transmission line towers / pylons will be constructed on their land, the affected portion of land will permanently remain unutilized for the entire period of existence of the transmission line hence negatively impacting on pasture and agricultural land.

Field survey highlighted existence of beehives - approximately 1% of farmers - along the proposed transmission line areas mainly in Dida area. The beehives are a source of livelihood to the households hence where possible, it will be important to avoid any interference of the beehives if outside the RoW. Studies on bees expounded in section 3.2.9 found that transient exposure to EMF reduces a bee's ability to learn, reduces their memory retention, and affects flight and foraging behaviour all of which could potentially reduce their ability to pollinate. This impact will be moderate hence a value of **2**.

7.2.2.4 Health Impacts such as spread of STD, HIV and AIDS

The residents along the proposed project corridor expressed concern that there would be likely temporary increase in incidences of health impacts such as sexually transmitted diseases including HIV and AIDS especially during construction of the transmission line and associated facilities due to increased prostitution. This impact is likely anticipated in areas such as Kakoneni, and Fumbini. The project proponent will need to work jointly with appropriate county and national government health agencies to mitigate STD, HIV and AIDs during the construction and operational phases of the project. This impact will be moderate hence a value of **2**.

7.2.2.5 Interference of existing development infrastructure

During the field survey, it was noted that the proposed project would temporary interfere with other infrastructural public utilities already existing along the proposed RoW such as power lines. These lines may have to be relocated or interfered with during the deployment of the power towers. This impact will be moderate hence a value of **2**.

7.2.2.6 Insecurity

There were concerns that due to an influx of people as construction workers at the project, insecurity is likely to increase especially in Kaliapapo, Kibao Kiche, Jilore, Kakoneni, Dida, Sokoke and Fumbini. There may be increased risk of poaching of wild animals especially elephants near Arabuko Sokoke forest. Also, construction workers may be attacked by wild animals like buffaloes which are prone in areas where the proposed transmission line passes. This impact will however be low hence a value of **1**.

7.2.2.7 Gender and equality biases

Gender and equality biases in the proposed project may be the basis of differential treatment of persons based on their sex roles, ethnicity, status, religion, race, age, beliefs and disability among other attributes. The proponent should put measures in place to address issues of gender equality and freedom from discrimination among all Kenyans that will be involved in the project with a focus on Special Interest Groups, namely; women youth, children, persons with disabilities (PWDs), the elderly and minority and marginalized groups and communities. The proponent is expected to roll out programs and activities including employment, resettlement, compensation and livelihood support programs during the project implementation. The overall goal will be the reduction of gender inequalities and the discrimination against all interest groups during the project cycle. Therefore, this impact will be low hence a value of **1**.

7.2.2.8 Cultural impacts

The project area is largely dominated with the Agiriama tribe from the Mijikenda community. The Agiriama community has strong ancestral, and family ties with a strong sense of community entitlement. Erosion of shared customs, obligations and values due to displacement and relocations especially in areas such as Kaliapapo and Sokoke is likely to be noted. Although the Giriama community is rapidly abandoning traditions and cultural practices, certain values such as significance of baobab tree, locally referred to as “Mbuyu”, with a pretext that the tree symbolises peace and harmony exists. The tree is also used to host cleansing ceremonies. Further the Agiriama community highly value burial sites, which they use to perform various burial ceremonies and rites. In this respect a baobab tree in Konjora, approximate of 24 graveyards (fourteen (14) in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location) noted along the RoW should be preserved and avoid any interference either during construction works or clearing access routes, since the graves hold cultural values and social ties to the bereaved whereas the baobab tree is a sign of peaceful co-existence and harmony. Though under private ownership, there are three (3) churches which include Word Celebration Centre Church in Jilore Location, Sokoke PEFA Church in Nyari Location, and Barikiwani Church in Konjora location that are along the right of way. The churches are of religious value to the community and society at large hence need for timely, fair and adequate compensation to reduce on disruption of community worship. This impact will be moderate hence a value of **2**

7.2.2.9 Quality of life impacts

This will likely result from loss of sense of place, aesthetics and heritage, perception of belonging, security and liveability, and aspirations for the future, especially to displaced households in Kaliapapo and Sokoke. However, not all PAPs will be permanently displaced; others will be restricted from accessing and prohibited from e.g. constructing buildings and farming especially some cadre trees, thus their quality of life will change. This impact will however be low hence a value of **1**

7.2.2.10 Social-political disputes exacerbated by the Project

Due to the perceived marginalization of the region, there is a likelihood of social – political interference attributed to land and historical relations along the proposed project area. The communities are likely to raise grievances based on land displacement and compensation. The residents also highlighted possibility of socio-political disputes as political leaders try to portray their influences in the region. The impact scale is moderate hence a value of **2**.

7.2.2.11 Loss of social fabrics

The proposed project would cause breakdown of social ties /fabrics which holds a society together hence weaken family and community ties. Possible permanent land parcels displacement of people from their land will break bonds which locals share forming culturally rich and socially cohesive community. The residents noted such displacements would also take away and interfere with the existing settlements and land of origin. The locals noted that social organisations such as churches; social networks including *chamas*, family structure as well as community ties would be weakened.

However, according to the Draft RAP report for Malindi – Kilifi only approximately 7% of the landowners will have their land parcels fully affected / totally displaced. Full impact entails land parcels affected more than 70% of the total parcel area. The PAPs can still use the remaining 30% land for farming and other economic activities. The study further identified that the location of the Transmission line traverses almost 99.9% in rural setting, which is a major advantage in terms of resettlement and land availability. This largely means that although communities have settled along the route, the prospects including adequacy of the land, quality of land and accessibility of resettlement land (where compensation is provided) in the vicinity (cost allowing) will not be a major challenge. This impact will therefore be low hence impact rating value of 1.

7.2.2.12 Illicit behaviour / drug and alcohol abuse

The residents highlighted that the project, especially during resettlement and compensation, was likely to increase illicit behaviour and drugs abuse. Women cited that their men, youths would resort to substance abuse (alcoholism and smoking). Men highlighted the possibility of prostitutes migrating to the area due to availability of money. The community explained that alleged behaviors might jeopardise marriages and family wellbeing, and harmonious existence. The impact scale is moderate hence a value of 2

7.2.2.13 Domestic Conflicts exacerbated by project

The proposed project is likely to cause family displacements, the disintegration of settlements and homes, which will also instigate conflicts, especially to the population being permanently resettled/compensated. Disputes might emerge whereby some family members might be angered after feeling they are short-changed during the compensation process. The elderly and the disabled for instance noted that the caregivers might disappear with the compensation funds. Residents noted that the land compensation will attract various forms of conflicts as everyone in the project area wants to benefit from the compensation even if they are not property owners. As such, there might be situations of illegal land ownership, an influx of impersonators, and regeneration of unresolved land cases, which might degenerate into domestic conflicts. Women generally expressed pessimism that the proposed project resettlement process was likely to degenerate into hostility among relatives and community members. The women stated spouses might escape with their compensation money while some widows indicated that their relatives, in-laws would be hostile to them overcompensations. This situation would deprive the victims of properties owned and compensation, which might also subject them to abject poverty. The impact scale is moderate hence a value of 2

7.2.2.14 Sexual Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV)

The residents and mainly female participants were worried that the construction phase would result to influx of workers from other regions hence increase occurrences of gender-based violence (GBV) such as sexual harassment (SH) and sexual exploitation and abuse (SEA). The large influx of workers may lead to an increase in sexual exploitation and abuse and the demand for prostitution (sex work) —even increase the risk for trafficking of women for the purposes of sex work—or the risk of forced early marriage in the community where marriage to employed men may be seen as the best livelihood strategy for adolescent girls. The men highlighted that labor influx might result to perceived foreigners interacting and engaging in extra-marital affairs with their women. Such could result to domestic violence and sexual exploitation and abuse between project staff and those living in and along the RoW of the project, but also within the homes of those affected by the project i.e GBV at family and community level. Other forms of GBV mentioned by men and women included inflicting bodily harm, physical assault, verbal abuse and rape. A key informant noted that the most fundamental cause of GBV is the traditional belief in the area about men’s dominance over women.

Furthermore, locals noted that perceived project benefits such as higher income for spouses in the community could lead to an increase in prostitution and extra-marital affairs. The risk of incidents of sexual exploitation and abuse for minors, even when it is not transactional / prostitution, could also increase. For instance, the women noted that child neglect, irresponsible spouses, marriage breaks, and gender based violence might arise due to perceived ‘greener pastures’ of spouses from the project. The situation, if not mitigated, would mostly hurt the children and women. The women stated that land titles are mostly held by their spouses and hence feared that men might chase them away from marriage or escape with the compensation money while some widows indicated that their relatives, in-laws would be hostile to them over land compensations. Such scenarios are likely to escalate to gender based violence with women and girls being most at risk. The locals and mainly women expressed concerns over possible risks of sexual exploitation and abuse through request of sexual favors while seeking for employment from the project. There was also highlight of possible risk of sexual exploitation and abuse through unwanted sexual advances to women and also men mainly by project workers, contractors, and service providers.

Interviews with key informants also noted the possibility of sexual harassment (SH) between workers / staff working on the project. The key informant stated that unwelcome sexual advances, requests for sexual favours, and other unwanted verbal or physical conduct of a sexual nature might arise at the project workplaces. The informant noted that the potential perpetrators of SH can be any individuals associated with the proposed project including construction workers and other personnel of the contractor, consultants supervising the project or undertaking technical assistance activities relating to the project or even the security personnel hired for the project.

Dimensions of GBV and COVID-19 Pandemic: A policy brief by CARE (2020), noted that during times of crisis such as the current COVID-19 pandemic, women and girls face an increased risk of exposure to gender-based violence (GBV). In light of the COVID-19 physical distancing and movement restrictions that have been put in place across the world to curb the pandemic, women and girls face an increased risk of experiencing violence at the hands of family members, intimate partners or others living within their homes. CARE (2020) notes that in all emergency-affected settings, the majority of cases of GBV are perpetrated by known individuals as opposed to strangers. The risks of experiencing household violence during times of crisis are often exacerbated by factors such as emotional stress, economic strain, and shifting roles and responsibilities among family members. All of these factors are likely to increase within the context of COVID-19, in light of the widespread job loss, economic strain, disruption of normal routines, and ongoing stress associated with actual or potential illness that have resulted in Kenya including Kilifi County and other affected regions across the world. When combined with lockdowns and other movement restrictions, homes within the context of COVID-19 can become potential

pressure cookers of GBV, as drivers of violence increase, while survivors and those at risk are more restricted than ever in terms of their ability to seek safety or other necessary forms of support.

In light of the highly contagious nature of COVID-19, GBV survivors are exposed to an increased risk of infection if they experience violence at the hands of individuals who are currently transmitting the disease. In this way, GBV incidents in the context of COVID-19 carry with them an added layer of potential harm in the form of COVID-19-related illness—in addition to the substantial impacts associated with violence itself. In light of the tendency for perpetrators to restrict the freedoms and daily behaviors of survivors, those living in abusive households may also be less likely to have access to necessary hygiene materials, life-saving information, or the ability to take necessary steps to protect themselves from infection. In this way, the circumstances of COVID-19 not only increase the risk of experiencing GBV, but survivors of GBV also face an increased risk of COVID-19 infection—compounding the layers of potential harm experienced by affected women and girls.

In light of the widespread economic uncertainty that has emerged as a result of COVID-19, there is also an increased risk of exposure to sexual exploitation and abuse (SEA), as women, girls and their households are more likely to face shortages of necessary resources such as food. In the Kenyan setting where schools have been closed nationally as a result of the pandemic, girls miss out of the protective elements associated with formal education such as life skills, access to essential information, and connections with existing referral pathways and forms of support. Without the daily routine of education, out-of-school girls are also more likely to experience various forms of violence at the hands of relatives, neighbors, or those within their communities. Girls not in school are also more at risk of resorting to harmful work or falling prey to various forms of exploitation. Families facing limited financial resources are also more likely to place girls in situations of child, early and forced marriage as a possible coping mechanism, an issue itself considered to be a form of GBV, and one that is widely associated with increased rates of violence, restricted access to education, and negative health and developmental outcomes. In light of these circumstances, COVID-19 creates a perfect storm of complications, whereby cases of GBV are likely to rise significantly, while at the same time the ability of survivors to seek help, or the capacity of providers to respond effectively, is more limited than ever. The impact scale of GBV – SEA / SH was considered high hence a value of 3.

7.2.2.15 Land and property disputes exacerbated by the project / related to the project

During the baseline survey, qualitative sources of information confirmed that most land and property owners in the project area have no legal land ownership documents, while squatters live on the land of absentee landlords. Absentee landlords were also noted mainly in the outskirts of Arabuko Sokoke Forest (AP5 to AP6) which could cause delays in compensation process. The socio-economic survey also noted, a majority of the interviewed PAPs did not have legal documents. Land disputes (including family disputes) and lack of land ownership documents may pose a challenge of ownership confirmation during RAP implementation which might delay compensation of some of the PAPs. Elderly participants in various locations noted land and property disputes would be too stressful for them to handle, and in some cases, they might experience psychological and health problems such as trauma, stroke, and blood pressure, and mental distress. On the other hand, women alleged that they might be evicted from their lands or deprived of properties they legally own. The property disputes might also escalate into family, community conflicts, and the vulnerable persons will be the most affected. The impact scale / risk level is moderate hence a value of 2.

7.2.2.16 Labour influx

Although labour influx of workers (skilled, semi-skilled and unskilled) is likely to result to both negative and positive social benefits, the locals stated that the temporary influx of non-locals might expose the project area to illicit behaviours, which might undermine the existing socio-cultural aspects, values, and norms of the locals. The situation would cause animosities between the locals

and the outsiders, degenerating into conflicts and scramble for scarce resources such as accommodation in town centres, water, and food as well as job opportunities. Also, labour influx may arouse exorbitant land brokers and conmen whose motive is to make abnormal profits or engage in fraudulent transactions at the expense of locals and vulnerable members of the community who are already burdened. Further, the situation may trigger inflation of prices of goods and services because of the high demand for such commodities and services, degenerating into hard economic times. The impact scale is moderate hence a value of 2.

7.2.2.17 Community Impacts

Community impacts conceived as being anything linked to the proposed project that might affect or concern the project host community / persons including their cohesion / networks, stability, character, services and facilities. In the context of proposed transmission line and associated facilities, some anticipated impacts likely to affect host community include interference with public facilities such as watering points, water pipelines, existing electricity lines, churches, schools and dilapidation of road infrastructure. Impact on such facilities may be viewed as infringement to community rights leading to community tensions, protests and may escalate to resentment including rejection of the project. The impact scale is low hence a value of 1.

7.2.2.18 Community Expectations on CSR

During the stakeholders engagement and public consultation and participation exercises, the local community highlighted various corporate social responsibility (CSR) proposals outlined in section 5.7. Some of the expectations varied in sectors such as education, health, security, social services, power supply, water and agriculture. Notably most of the expectation require establishment of infrastructures hence falling short of the proponent legal mandate. Further constraints brought about by COVID-19 Pandemic may end up exacerbating community expectations on the project including jobs, compensation monies, and high salaries. It is therefore imperative to ensure community expectations are well managed throughout the project cycle in order to reduce on level of dissapointment and tensions. The impact scale is moderate hence a value of 2.

7.2.2.19 Risks and Impacts on Vulnerable populations

The Draft Malindi Kilifi RAP registered 209 vulnerable persons accounting for 5.9% of the PAPs. Consultations with vulnerable populations indicated they are faced by various challenges. For instance, PLWDs highlighted discrimination on jobs and feared they might lose their compensation; the elderly cited that the project would cause unnecessary disruptions of their lifestyle, displacement to households and result into hostilities over land compensations. The widows indicated that their relatives, in-laws would be hostile to them over land compensations. Such discrimination limits widow's access to resources, opportunities, and public services necessary to improve the standard of living for themselves and their families. The widows also expressed concerns over possible risks of sexual exploitation and abuse (SEA) through request of sexual favours while seeking for employment from the project.

COVID-19 impacts on vulnerable persons: As the COVID-19 pandemic deepens economic and social stress coupled with restricted movement and social isolation measures, gender-based violence is increasing exponentially. Many women, orphans, widows, the elderly and PLWD are being forced to 'lockdown' at home with their abusers while services to support survivors are being disrupted or made inaccessible.

The pandemic is deepening pre-existing inequalities, exposing vulnerabilities in social, political, and economic systems. Across every sphere, from health to the livelihoods, security to social protection, the impacts of COVID-19 are exacerbated for Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households such as widows, orphans, PLWD and elderly simply by virtue of their vulnerabilities. Compounded economic impacts are felt especially by vulnerable people who are generally earning less, saving less, and holding insecure jobs or living close to poverty. A policy brief by UN (April 2020) on the impact on COVID-19 on women notes that although more men are dying as a result of COVID-19, the health of women generally is adversely impacted through the reallocation of resources and priorities, including sexual and reproductive health services. Further unpaid care work has

increased, with children including orphans out-of-school such as in Kenya including the proposed project area, heightened care needs of the elderly persons and PLWD, and overwhelmed health services.

Notably, temporary school closures that have affected Kenya including the proposed project area can have acute negative effects for orphans for whom school can provide a safe space for interaction with peers, psychosocial support, and even a reliable source of food. When schools are closed, the orphan's mental health issues might be exacerbated by the lack of peer support and alternatives for mitigation of risks.

The COVID-19 pandemic is causing untold fear and suffering for older people across the world. Kenya's Centres for Disease Control and Prevention notes that the elderly and people of any age who have serious underlying medical conditions might be at higher risk for severe illness from COVID-19. Across society, COVID-19 presents a range of particular risks for older persons. A policy Brief by UN (2020) on Impact of COVID-19 on the elderly notes that although all age groups are at risk of contracting COVID-19, older persons are at a significantly higher risk of mortality and severe disease following infection, with those over 80 years old dying at five times the average rate. An estimated 66% of people aged 70 and over have at least one underlying condition, placing them at increased risk of severe impact from COVID-19. Older persons may also face age discrimination in decisions on medical care, including development opportunities such as the proposed power project. The pandemic may also lead to a scaling back of critical services unrelated to COVID-19, further increasing risks to the lives of older persons. Older persons who are quarantined or locked down with family members or caregivers may also face higher risks of violence, abuse, and neglect. Furthermore, older persons are also often among the caregivers responding to the pandemic, increasing their risk of exposure to the virus. This is particularly true of older home-based carers, most of them women, who provide care for older persons, especially in contexts such as proposed project area where health system and long-term care provisions are weak. The virus is not just threatening the lives and safety of older persons, it is also threatening their social networks, access to health services, and livelihood opportunities likely to emerge from developments such as the proposed power transmission project.

COVID-19 is not only a challenge for global health systems, but also a test of our human spirit. Recovery must lead to a more equal world that is more resilient to future crises. It is crucial that the proposed power transmission project place the vulnerable persons - their inclusion, representation, rights, social and economic outcomes, equality, and protection - at their centre to enjoy project benefits and opportunities. To achieve this, the project should ensure that amidst COVID-19, the vulnerable persons should be equally represented in project planning and decision-making. Further there needs to be targeted interventions for vulnerable persons to ensure they benefit from the project opportunities vis-à-vis COVID-19. It will be also important to apply gender lens to the project activities to achieve greater equality, opportunities, and social protection of women.

The project should therefore ensure key measures are established. This should include identifying the individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status to ensure they have access to development benefits and opportunities. Further the compensation process should be managed to ensure the vulnerable especially orphans, PLWD, widows and elderly are clearly identified and receive funds without losing them to care givers.

7.2.2.20 Child Labour and Forced labour

A key respondent in the Kilifi County, familiar with children matters stated that most orphans and vulnerable children in the proposed project area are likely to be exposed to child victimisations such as forced child labour as well as child neglect. A key respondent familiar with children matters also stated that most orphans in the project area may be exposed to child labour and neglect as caregivers get attracted to employment opportunities in the project. The informant observed that there is need for proper and continuous consultations with the entire community to sensitise on respecting the rights and welfare of children and refrain from violating them. Further, due to perceived temporary increased opportunities for the local community to sell goods and services to

the incoming workers, pupils may drop out of school to produce and deliver such goods and services, which in turn can result to child labour .

Findings suggest that child labour is apparently more common in rural than in urban settings with commercial agriculture being cited as the greatest consumer of child labour in rural areas while domestic labour demands the use of child labour mainly in urban areas. A key informant in noted that in rural areas, poverty drives some families to engage in trafficking children for domestic work in urban centers. Further children in Kenya scavenge dumpsites and streets for scrap material, including metal and glass while often risking injury and exposing themselves to infectious diseases. Although child labour may not be so heavily pronounced in the proposed project due to existing laws that prohibit the act, there are possible risks hence need for establishing stringent mitigation measures.

COVID-19 impacts on child labour and forced labour: COVID-19 pandemic has exacerbated the root causes of child labour and forced labour including poverty, limited access to decent work opportunities for those of legal working age, social marginalization, discrimination, the lack of universal quality education, the prevalence of the informal economy and weak social dialogue (ILO 2020). The COVID-19 pandemic economic and social crisis is expected to hit children particularly hard. With Kenya and the proposed project area being of no exemption in the massive global disruption to education caused by confinement measures and the lack of distance or e-learning solutions could drive child labour numbers up. The closure of schools in Kenya including the project area could lead to households resorting to child labour to cope with job loss and health shocks associated with COVID-19. ILO (2020) notes that Children, and particularly girls in addition to the risk of child labour, might be burdened by increased domestic chores and caring responsibilities. Vulnerable individuals and families who have lost their jobs in the informal economy, in urgent need of funds for household survival but with few savings and limited access to social protection or other forms of government support, are likely to be at greater risk of falling prey to lenders providing credit on terms constituting debt bondage / forced labour. Vulnerable persons are more likely to get tricked and trapped in forced labour. With more workers in the project area likely to contract debts to survive, the risk of increasing debt bondage is high. Restrictions on movement may shift forms of exploitation, women and children for example may be commercially sexually exploited by their abusers within their homes.

7.2.2.21 Livelihood disruptions

The socio-economic baseline study showed that the project is likely to affect activities such as peasant crop farming including small-scale / household irrigation schemes (vegetables, fruits), trees, apiculture (displacement of beehives) and various entrepreneurial activities, with the most prominent being small retail trading. Stakeholders' consultations also indicated that the proposed project would temporary affect agriculture during the construction period. In specific, the resident noted crops mainly coconut trees that are in the wayleave would be destroyed which locals claimed that are of great financial and domestic value.

7.3 Social impacts during operation phase

The following are the potential social impacts for the proposed transmission line and associated facilities during the operation phase:

7.3.1 Positive Social Impacts

7.3.1.1 Creation of employment opportunities

Both direct and indirect temporary employment opportunities will emerge during the operation phase. For the direct employment, people will be employed for the normal and continuous transmission line and substation maintenance whereas for the indirect employment, locals will

benefit from improved and increased business activities including increased investments along the proposed project area. The impact scale in this stage is low hence a value of 1.

7.3.1.2 Gain to the county and national economy through Power distribution

The proposed project development objectives are aimed to increase the capacity / adequacy of the transmission system and access to electricity in the country. This is expected to lead to gain to the national economy from revenue generation. The proposed project will aim to support mostly grid densification and intensification and some grid expansion to reach about various households. With improved power distribution, it is expected that there will be improved livelihood likely to benefit the local and regional economy in the short term and the national economy in the long term. This will boost industrialization, education and manufacturing sectors.

7.3.1.3 Health benefits of the project

Kilifi CIDP notes that, over 80% of the population in Kilifi County relies on wood fuel for their energy needs both lighting and cooking. In addition a significant number relies on paraffin lanterns as their main source of lighting. This poses health problems as reported by WB in 2008 on the Welfare of Rural Electrification. The report notes that kerosene lamps emit particles that cause air pollution as measured by the concentration of the smallest particles per cubic meter (PM10). Burning a liter of kerosene emits PM₅₁ micrograms per hour, above the World Health Organization (WHO) 24-hour mean standard of PM₁₀ of 50 micrograms per cubic meter. But these particles do not disperse, so burning a lamp for four hours can result in concentrations several times the WHO standard. The health risks posed by this indoor air pollution mainly include acute lower respiratory infections, but also low birth weight, infant mortality and pulmonary tuberculosis. Additionally, available data suggest that insufficient illumination (low light) conditions can cause some degree of eye strain, and reading in these conditions over long periods of time may have the potential to increase the development of near-sightedness (myopia) in children and adults. Further, according to the World Health Organization, household air pollution from cooking with traditional fuels contributes to more than four million premature deaths every year. Mainly women and young girls are affected, who do the cooking and fuel gathering. This project will result in many families replacing kerosene lamps for lighting with electricity thereby reducing disease burden at the family level and on the government.

7.3.1.4 Increased access and distribution of electricity

The increase in the capacity of the transmission system will increase access and distribution of electricity at the homesteads and institutional level within Kilifi County. Various institution such as primary and high schools will create opportunities for students to study. Technical and vocational schools in the project area will be connected to an improved power supply hence imply that educational performance in the project area will improve. Improved energy sector will lead to improved health, and as well as large-scale and small-scale economic activities which in the long run will lead to development. Key informants noted that an improved power supply is imminent to power distribution leading to food security.

7.3.1.5 Increased access to information

It is anticipated that that the proposed project would boost power transmission within Kilifi County and surrounding areas. Upon completion, KETRACO would then liaise with Kenya Power through Ministry of Energy to support grid densification, intensification, and grid expansion to reach various households and town centres within the project region. Further, KETRACO will ensure building and expansion of the Malindi Substation which will result to ease of power distribution in the area. The project will hence lead to grid diversification will make it easy for more locals to access information by charging and acquiring electronic devices such as phones, radios, and televisions.

7.3.2 Negative Social impacts

7.3.2.1 Spread of STD, HIV and AIDS

There is likely to be an upsurge of sexually transmitted diseases including HIV and AIDS especially during maintenance works for RoW as migrant workers get attracted to prostitution. The project proponent will need to work jointly with appropriate county and national government health agencies to mitigate STD, HIV and AIDS during the operational phases of the project. This impact will be moderate hence a value of 2.

7.3.2.2 Insecurity

The operation stage may result into few cases of insecurity concerns due to an influx of people seeking employment as repairs and maintenance workers. Insecurity is likely to increase especially in Kaliapapo, Kibao Kiche, Jilore, Kakoneni, Dida, Sokoke and Fumbini. Also, there is potential increased risk of vandalism of the transformers, electrical facilities and equipment mainly in the proposed sub-stations (Malindi SS, and Loop In and Loop Out - switch station at Weru. This impact will however be low hence a value of 1.

7.3.2.3 Gender and equality biases

Gender and equality biases in the proposed Malindi – Kilifi TL project may be the basis of differential treatment of persons based on their sex roles, ethnicity, status, religion, race, age, beliefs and disability among other attributes. Notably, in the operation phase, gender and equality biases may rise during employment if recruitment procedures are not established. In specific Persons living with Disabilities (PWLDS) along then project route may be discriminated on available job opportunities due to their physical limitation. More so, women could also be discriminated over labour intensive assignments over their male counterparts during employment opportunities, and compensation for work done. It will be important for the proponent to apply gender lens to the project activities to achieve greater equality, opportunities, and social protection of women. The overall goal should be the reduction of gender inequalities and the discrimination against all interest groups during the entire project cycle.

7.3.2.4 Illicit behaviour / drug and alcohol abuse

Illicit behaviours mainly drugs, and alcohol abuse may emerge in the operation phase attributed to presence of maintenance labour force (of both skilled, semi-skilled and unskilled workers) for repair and maintenance of the transmission line including bush and vegetation clearing along RoW. Such job opportunities are likely to result to overindulgence in substance abuse (alcoholism and drugs abuse) which might jeopardise marriages and family wellbeing, and harmonious existence within the society.

7.3.2.5 Sexual Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV)

The operational phase of the Malindi to Kilifi TL project may result to influx of maintenance labour force (of both skilled, semi-skilled and unskilled workers) from other regions hence increase occurrences of gender-based violence (GBV) such as sexual harassment (SH) and sexual exploitation and abuse (SEA). SH may manifest between workers / staff working on the project. This could include unwelcome sexual advances, requests for sexual favours, and other unwanted verbal or physical conduct of a sexual nature at the project workplaces. The potential perpetrators of SH can be any individuals associated with the proposed project including maintenance workers, security team and other personnel undertaking technical repairs and maintenance activities. SEA may manifest in form of demand for prostitution (sex work) between project staff and those living in and along the RoW of the project. It is likely to be even more preferent during times of crisis such as the current COVID-19 pandemic, that has triggered economic strains. The women and girls perceived as caregivers may be at a higher risk to SEA as they face shortages of necessary resources such as food. Families facing limited financial resources are also more likely to place girls in situations of child, early and forced marriage as a possible coping mechanism, an issue itself considered to be a form of GBV, and one that is widely associated with increased rates of violence,

restricted access to education, and negative health and developmental outcomes. Furthermore, locals noted that perceived project benefits such as higher income 'greener pastures' for spouses in the community could lead to an increase in prostitution and extra-marital affairs, a situation, if not mitigated would turn violent and mostly hurt the children and women. In addition, SEA is likely to manifest on both local men and women while seeking employment from the project through request of sexual favors including unwanted sexual advances by project workers, contractors, and service providers. The impact scale of GBV – SEA / SH was considered high hence a value of 3.

7.3.2.6 Labour influx

The operation phase of the project is likely to attract migrant workers including skilled, semiskilled, and non-skilled to nearby towns such as Kaliapapo, Kibao Kiche, Jilore, Kakoneni, Dida, Sokoke and Fumbini. from other regions of Kenya. Such influx of non-locals during construction period might expose the project area to illicit behaviours, which might undermine the existing socio-cultural aspects, values, and norms of the locals. The situation may trigger inflation of prices of goods and services because of the high demand for such commodities and services, degenerating into hard economic times.

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The job seekers and can be at risk of exposure to the COVID-19 pandemic and its impacts mainly while seeking for accommodation facilities. Notably, migrant workers tend to be younger than the local population, they tend to live and work in crowded conditions that do not permit social distancing, putting them at increased risk of contracting COVID-19. There is also concern that contracted workers are kept safe from being exposed to COVID -19 in the project areas.

7.3.2.7 Community Expectations on CSR

The locals highlighted key expectations during the stakeholder's engagement and public consultation and participation exercises. The expectation varied in sectors such as education, health, security, social services, power supply, water and agriculture. Notably most of the expectations require establishment of infrastructures hence falling short of KETRACO legal mandate. Further constraints brought about by COVID-19 Pandemic may end up exacerbating community expectations during the operational phase of the project including jobs, and higher salaries. It is therefore imperative to ensure community expectations are managed throughout the project cycle including the operation phase to reduce on level of disappointment and tensions. The impact scale is moderate hence a value of 2.

7.4 Social impacts during decommissioning phase

Due to the national and international significance of this project, the likelihood of decommissioning is minimal, therefore impacts discussed below are almost unlikely.

7.4.1 Positive Social Impacts

7.4.1.1 Employment opportunities

In the event of decommissioning locals will gain employment from the various jobs that will arise.

7.4.1.2 Improvement of local business opportunities

The transmission line and substation decommissioning will lead to the growth small-scale businesspeople such as food vendors, kiosk owners.

7.4.2 Negative Social impacts

7.4.2.1 Reduced/ loss of positive impacts to the project

During decommissioning people will lose employment.

7.4.2.2 Spread of STD, HIV and AIDS

There is likely to be an upsurge of sexually transmitted diseases including HIV and AIDS as migrant workers indulge in prostitution.

7.4.2.3 Theft and Vandalism

Decommissioning phase will entail demolition of concrete joints, removal of conductors, steel and other civil works. Such materials could be at an increased risk of theft due to perceived benefits from sale of scrap metal and electrical facilities. This impact will be high hence a value of 3.

7.4.2.4 Gender and equality biases

Gender and equality biases may rise during the decommissioning phase if recruitment procedures are not established. The vulnerable including Persons living with Disabilities (PWLs) along the project route may be discriminated on available job opportunities due to their physical limitation. More so, women could also be discriminated over labour intensive assignments over their male counterparts during employment opportunities, and compensation for work done. It will be important for the proponent to apply gender lens to the project activities to achieve greater equality, opportunities, and social protection of women. The overall goal should be the reduction of gender inequalities and the discrimination against all interest groups during the entire project phase.

7.4.2.5 Illicit behaviour / drug and alcohol abuse

Illicit behaviours mainly drugs, and alcohol abuse may emerge in the decommissioning phase attributed to presence labour force (of both skilled, semi-skilled and unskilled workers) for decommissioning works of the transmission line. Such job opportunities are likely to lead to perceived high incomes and result to overindulgence in substance abuse (alcoholism and drugs abuse) which might jeopardise marriages and family wellbeing, and harmonious existence within the society.

7.4.2.6 Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV)

The decommissioning phase of the project may result to influx of labour force (of both skilled, semi-skilled and unskilled workers) from other regions hence increase occurrences of gender-based violence (GBV) such as sexual harassment (SH) and sexual exploitation and abuse (SEA). SH may manifest between workers / staff working on decommissioning the project. This could include unwelcome sexual advances, requests for sexual favours, and other unwanted verbal or

physical conduct of a sexual nature at the project workplaces. The potential perpetrators of SH can be any individuals associated with the proposed project including maintenance workers, security team and other personnel undertaking decommissioning activities. SEA may manifest in form of demand for prostitution (sex work) between project staff and those living in and along the RoW of the project. Furthermore, perceived project benefits such as higher income 'greener pastures' for spouses in the community could lead to an increase in prostitution and extra-marital affairs, a situation, if not mitigated would turn violent and mostly hurt the children and women. In addition, SEA is likely to manifest on both local men and women while seeking employment in the project decommissioning works through request of sexual favours including unwanted sexual advances by project workers, contractors, and service providers.

7.4.2.7 Labour influx

The decommissioning phase of the project is likely to attract migrant workers including skilled, semiskilled, and non-skilled to nearby towns from other regions of Kenya. Such influx of non-locals during decommissioning period might expose the project area to illicit behaviours, which might undermine the existing socio-cultural aspects, values, and norms of the locals. The situation may trigger inflation of prices of goods and services because of the high demand for such commodities and services, degenerating into hard economic times. Notably, migrant workers tend to be younger than the local population, they tend to live and work in crowded conditions that do not permit social distancing, putting them at increased risk of contracting communicable diseases. There is also concern that contracted workers are kept safe from being exposed to communicable diseases in the project areas.

7.5 Potential Risks to the project

7.5.1 Community demonstrations in pursuit for employment opportunities

The local community members will want to benefit from the proposed transmission line and substation project through employment opportunities. Wherever they will feel not to have been adequately provided for in terms of employment, demonstrations may arise. During such demonstrations the construction progress may be interfered with where access roads and construction sites are blocked.

7.5.2 Theft and Vandalism

Theft and property destruction are a problem that can affect productivity and drain profits during construction and operational stages of the project. Firms engaging in all types of projects are susceptible to theft and vandalism from outsiders and employees who can easily retrieve materials from construction sites without being noticed by anyone due to lack of security measures.

7.5.3 Terrorism

According to the project site location, likelihood of terror attacks is minimal, as from previous occurrence, terrorism is mainly experienced at the Kenya-Somali border such as Boni Forest in Kiunga, Kenya and the major cities i.e. Nairobi and Mombasa. Nonetheless this being a key government project, security measures will be put in place to ensure safety of the workers.

7.5.4 False information for land compensation / fraudulent activities

The locals expressed fears over possible speculation including rumors and sensational reports on land compensation issues. They for instance highlighted that the line might finally take a different route from the proposed one denying resident the opportunity to be compensated by the project. Others highlighted concerns over inaccurate and false information likely to emerge from conmen and brokers. It was noted that conmen might pretend to be representatives of the project proponent and offer to intervene to negotiate better compensation terms for the affected persons at a fee. Residents who might fall for such tricks end up losing money to the conmen and fraudsters.

7.5.5 Encroachment of RoW and land Speculation

Due to a number of land owners lacking land documentation, their displacement may result into encroachment into the RoW during operational phase of the project. There was concern on possible emergence of brokers willing to purchase land from the locals on speculation of hike in prices /value of land.

7.5.6 Lack of land documentation and formal land rights

According to the RAP report (Malindi -Kilifi Draft RAP) the baseline data showed that 73% of landowners affected did not have title deed irrespective of whether they were purchasers, inheritors or illegal occupiers. The data further implied that there might be numerous issues of unregistered land / lack of land documentation which might pose a challenge of ownership confirmation during RAP implementation hence delay compensation of some of the PAPs or escalate into property disputes.

7.5.7 Political interference

The transmission line is within Kilifi and Malindi areas which are perceived to be marginalized in terms of development including land historical injustices. Such may result into socio-political disputes as political leaders try to portray their influences and authority in the region hence a risk for the proposed project.

7.5.8 High expectations for CSR

The locals expressed high expectation for social investment projects and specifically corporate social responsibility (CSR) during the stakeholders engagement exercises. Some of the CSR expectations varied in sectors such as education, health, security, social services, power supply, water and agriculture. Notably most of the expectation require establishment of infrastructures hence falling short of the proponent legal mandate. COVID-19 pandemic has also resulted into constraints that may end up exacerbating community expectations on the project including jobs, compensation monies, and expectation of high salaries.

8 CHAPTER EIGHT: PROPOSED MITIGATION MEASURES

8.1 Introduction

The construction of the proposed Malindi -Kilifi electricity transmission project will have a wide range of impacts on the biophysical environment, health and safety of employees and members of the public, and socio-economic well-being of the local communities and households. It is usually impossible to mitigate all the expected negative environmental and social impacts. Thus, in this chapter, an attempt was made to formulate mitigation measures for the most significant negative environmental and socio-economic impacts. The aim is to ensure that the most significant negative impacts are minimized as much as possible while maximizing on the positive benefits of the project. The mitigation measures will be presented in the environmental management and monitoring plan that is intended to assist the proponent in the management of the adverse environmental impacts associated with the life cycle of the project.

8.2 Mitigation measures for environmental impacts during construction phase

The following section provides a discussion on the mitigation measures for environmental impacts that will be undertaken during construction of the project. It is important to note that a special focus has been given to the negative impacts that are considered moderate and significant and that warrant intervention to reduce the level of impact to the local communities and the environment.

8.2.1 Mitigating noise pollution and excessive vibrations

Noise pollution and excessive vibrations should be mitigated as follows:

- Sensitize drivers of construction vehicles and machinery operators to switch off engines or machinery that are not being used.
- Ensure that all vehicles and construction machinery are kept in good condition all the time to avoid excessive noise generation.
- Ensure that all workers wear earmuffs and other personal protective gear/equipment when working in noisy sections.
- Undertake loud noise and vibration level activities during off-peak hours during the day (i.e. preferably between 12.00 noon and 2.00 pm).
- Comply with conditions provided by the Environment Management and Coordination, Noise and Excessive Vibrations Pollution Control Regulations 2009.

8.2.2 Mitigating air pollution due to dust generation and air emissions

This negative impact of dust should be mitigated as follows:

- Sprinkling of water on dry and dusty surfaces regularly including the access road.
- Add suitable soil stabilizers on access road to control dust.
- Erection of dust screens around buildings under construction especially at the workers' camps and substations. Dust control measures should be adopted at concrete batching plants, providing adequate PPE to staffs, canopying loading points and erecting dust screens around the plant.
- Collecting storm water and use to de-dust the construction site
- Comply with personal protective clothing requirement for dusty areas such as dust masks and protective glasses.
- Enforce onsite speed limit regulations for construction vehicles along access routes.
- Re-vegetating exposed areas during the operation phase of the project.
- Sprinkling water along the diversion routes or earth within the project site.
- Slowing the speed of traffic by using clearly marked road signs may contribute to reducing dust levels.
- Covering heaps and berms of soil.
- Adhere to the Environmental Management and Co-ordination (Air Quality) Regulations, 2014.

To mitigate exhaust emissions, it will be mandatory to:

- Procure machines, equipment and vehicles which are environmentally friendly.
- Ensure machines and vehicles are properly and regularly maintained.
- Discourage plant operators and drivers of construction vehicles from unnecessary revving and idling.
- Limit construction traffic movement and operations to the most necessary activities through adequate site planning.
- Sensitize construction drivers and machinery operators to switch off engines when not being used.
- Ensuring that the construction machines, equipment and vehicles have the requisite inspection certificate.
- Control the speed of the traffic movement by through adequate policing and monitoring.
- Adhere to the Environmental Management and Co-ordination, Air quality regulations of 2014.

8.2.3 Mitigating increased generation of solid waste

All storage and construction sites are to be kept clean, neat and always tidy. No burying or dumping of any waste materials, metallic waste, litter or refuse shall be permitted. The Contractor must adhere to Environmental Management and Co- ordination (Waste Management) Regulations 2006. The Contractor shall implement measures to minimize waste and develop a waste management plan to include the following: -

- Use of an integrated solid waste management system i.e. the 3 R's: 1. Reduction at source 2. Reuse 3. Recycle;
- Accurate estimation of the dimensions and quantities of materials required;
- Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time;
- Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage;
- Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste;
- Reuse packaging materials such as cartons, cement bags, empty metal and plastic containers to reduce waste at site;
- Waste collection bins to be provided at designated points on all active sites;
- Dispose waste more responsibly by contracting a NEMA registered waste handler who will dispose the waste at designated sites or landfills only and in accordance with the existing laws.
- Composting of vegetation waste for reuse as a landscaping fertilizer.
- Develop and implement a Construction Waste Management Plan before start of the project.
- Comply with provisions of the Environmental Management and Co-ordination, Waste Management Regulations 2006.

8.2.4 Mitigating increased energy consumption

This should be mitigated as follows:

- Promote the use of solar energy and energy efficient bulbs in work site
- Switch off lights when not in use.
- Installation of pertinent signage at sites and offices on efficient energy consumption.
- Install electricity meters to monitor the consumption of electricity in work site
- Ensure construction machinery and trucks are well maintained.

- Use energy-efficient construction machinery and trucks during construction phase of the project.
- Ensure compliance with Energy Management Regulations of 2012.

8.2.5 Mitigating discharge of wastewater, sewage and degradation of water quality

The contractor should develop appropriate measures to ensure all wastewater is treated, handled and disposed appropriately to avoid contamination of water bodies (both open and underground), and soils.

No grey water runoff or uncontrolled discharges from any site or working areas (including wash-down areas) to adjacent watercourses and/or water bodies shall be permitted. This should be mitigated as follows

- Water containing pollutants such as cements, concrete, lime, chemicals and fuels shall be discharged into a conservancy tank for removal from site. This particularly applies to water emanating from concrete batching plants and construction vehicles wash area.
- The Contractor shall also prevent runoff loaded with sediment and other suspended materials from the site/working areas from discharging to adjacent watercourses; This can be done by use of sediment traps and use of drainage to control the flow and velocity of the runoff
- Potential pollutants of any kind and in any form, shall be kept, stored and used in such a manner that any escape can be contained, and the water table not endangered;
- Promote recycling of wastewater and storm water.
- Install meters to monitor consumption rates of water, where possible.
- Provision of mobile toilets on all active sites fitted with water and soap.
- Ensure regular maintenance of plumbing systems to avoid spillage of raw sewage.
- Comply with the Environment Management and Coordination, Waste Management and Water Quality Regulations 2006.

8.2.6 Mitigating Increased water abstraction and consumption

This should be mitigated as follows:

- Harness rainwater (install gutters on the roof of the site offices to harvest rainwater) and storm water whenever possible for use in dust prevention, gardening and other site specific uses;
- Conduct regular checks at campsite and substations for sewage pipe blockages or damages since such vices can lead to release of the effluent into the land and water bodies;
- Install water efficient dual flush toilet cisterns and water conserving taps that turn-off automatically when water is not being used at campsites, and substations;
- Promote recycling and reuse of water as much as possible at the workers campsites and substations;
- Develop a leakage detection and repair system to promptly detect and repair water pipe and tank leaks at the workers campsites and substations;
- Sensitise construction workers to conserve water by avoiding unnecessary wastage;
- Ensure taps at the workers campsites and substations are not running when not in use;
- Ensure all taps and cisterns are optimally working.
- Drilling of borehole for use to reduce over reliance on water from existing sources. This avert any competition with the local community or be a potential for water resource conflict between residents, livelihood sources (livestock, irrigation, cropping) and the transmission projects. Establishing of water sources (boreholes) should be preferably done in mindful of community needs and accessibility in the future.
- The Contractor must adhere to water quality regulations described in Legal Notice No. 120 of the Kenya Gazette Supplement No. 68 of September 2006 and Water Act 2016.

8.2.7 Mitigating the Modification of hydrology

This could be mitigated as follows:

- Undertake standalone EIA for each borehole and apply for a permit for all water abstractions (rivers, dams, boreholes etc.).
- Control excessive abstraction of water from boreholes by ensuring compliance with the prescribed volume as stipulated in the permits issued by WRA.
- Surface runoff should be channelled to areas with gentle slopes to avoid excessive erosion.

8.2.8 Mitigating Aquatic Habitat Alteration

This could be mitigated as follows:

- Ensure power transmission pylons are not erected on critical aquatic habitat such as wetlands including the marshland / riparian section near River Sabaki (AP2 -AP3)
- Minimizing clearing and disruption to wetland including riparian vegetation;
- Adjust tower placements to span wetlands or limit equipment access in wetlands, including the marsh land /flood zone near River Galana wherever possible;
- Avoid use of heavy machinery where possible in order to reduce on siltation of the aquatic habitats
- Working in close consultation with line agencies such as the Water Resources Authority.

8.2.9 Mitigating increased generation of storm water and impact on drainage

This should be mitigated through the following:

- Use of storm water management practices that slow peak runoff flow, reduce sediment load, and increase infiltration.
- Regular inspection and maintenance of permanent erosion and runoff control features.
- Adopt and implement a storm water management plan.

8.2.10 Mitigating increased soil erosion risk and soil quality degradation

This should be mitigated through the following:

- Soils excavated for the erection of towers should be used for re-filling and should not be left exposed to wind or water for long periods;
- The contractor should avoid steep terrain during the transportation of construction material by using alternative routes, use light vehicles or existing routes where appropriate;
- Riverine vegetation such as around AP 2 -AP 3 (confines of River Galana) should be minimally disturbed during the construction phase to reduce soil erosion and safeguard riverbank protection;
- Ensure timely revegetation of disturbed areas with local species common in the area to complement natural vegetation along the RoW to improve ground cover;
- A storm water management plan that minimizes impervious area infiltration by use of recharge areas and use of detention and/or retention with graduated outlet control structure should be adopted within substations;
- Apply soil erosion control measures such as levelling of the substation and project site to reduce run-off velocity and increase infiltration of storm water into the soil;
- Ensure that construction vehicles are restricted to use existing graded roads
- Ensure drains maintenance and ripping off compacted areas to reduce run-off especially in mountainous topography – AP 5 to AP 6 and AP2 -AP 3 of the wayleave in order to avoid soil erosion and soil quality degradation of productive lands along the wayleave.
- Ensure construction activities are kept outside the tree and vegetation protection zone, for any trees and vegetation that will be maintained on project work sites.

8.2.11 Mitigating loss of vegetation cover and biodiversity

This should be mitigated as follows:

- Provide adequate protection against scour and erosion; and consider the onset of the rainy season with respect to construction schedules.
- Minimize clearing of indigenous plant species and ensure replanting of indigenous plant species in disturbed areas by liaising with experts from Kenya Forest Services (KFS)
- Employ vegetation rehabilitation techniques to recover lost land cover such as planting indigenous grass species in areas where the RoW will traverse.
- Ensure proper demarcation and delineation of the project area to be affected by construction works;
- Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage;
- Designate access routes and parking within the site;
- Implement a landscaping programme for the substation site;
- Consider to support community initiatives in tree planting initiatives such as in surrounding primary schools as part of CSR and for reforestation purposes.

8.2.12 Mitigating Terrestrial Habitat Alteration

- Use of existing utility and transport corridors along RoW for transmission and distribution, and existing roads and tracks for access roads, whenever possible to avoid habitat alteration.
- Undertaking selective clearance by removing tall woody species leaving saplings, for quick regeneration of vegetation along the wayleave;
- Installing transmission lines above existing vegetation to avoid land clearing especially between Konjora and Sokoke location by doing design variations to towers through leg and body extensions;
- Avoiding construction activities during the breeding season and other sensitive seasons or times of day especially at AP16, AP15, AP13 and AP6;
- Management of construction site activities by limiting access road gradients to reduce runoff-induced erosion
- Re-vegetation of disturbed areas with native / indigenous plant species;
- Working in close coordination with pertinent agencies (KWS and KFS) when undertaking construction of towers especially in the outskirts of Arabuko Sokoke: AP16, AP15, AP13 and AP6.

8.2.13 Mitigating human - wildlife conflict

Site management is a key factor in reducing the overall environmental impact of the project, by controlling the risks of environmental contamination, soil compaction, and damage to trees and other natural features intended for retention. It also helps to reduce the risks to wildlife, by controlling the activities on-site that could directly or indirectly harm them. All personnel should be briefed about wildlife protection measures at the outset of the project, in order to ensure that these measures are clearly understood and appropriately implemented. The briefing needs to provide an overview of the mitigation measures that are being used at the site, as well as instructions on what to do if and when wildlife are encountered during the work. It should also include information on any species at risk that may be present, and what to do if one is seen. A laminated handout summarising key information on wildlife protection should be kept on-site at all times for reference by staff. The handout should be tailored to suit the needs of each specific project, but should address the following subjects:

- ✓ General provisions – e.g., do not harm, feed or unnecessarily harass wildlife; drive slowly and avoid hitting wildlife where possible; keep site tidy and secure
- ✓ Species at risk – basic identification tips and recommendations (needs to be modified to address species most likely to be encountered at the site)
- ✓ Contact information for:
 - Project biologist / wildlife service provider

- Ministry of Natural Resources and Forestry, KFS (for species at risk)
- Wildlife rehabilitators (KWS) and veterinarians (for orphaned or injured wildlife)

The management of the site needs to specifically address how to avoid attracting wildlife to the workspace. Although on-site activities will generally discourage wildlife from entering the workspace during the day, they may be drawn to the site at night (or on weekends) if it appears to provide sources of food, water or shelter. The following common attractants should be controlled or eliminated:

- ✓ Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the site (especially in warm weather).
- ✓ Water – effective mitigation measures include ensuring proper site drainage to limit standing pools of water; fencing off temporary storm ponds and other waterbodies within the work space (and not permitting wildlife access to any potentially contaminated waterbodies); and, use appropriate sediment and erosion control measures to protect the quality of surface water adjacent to or downstream of the work space.
- ✓ Shelter – effective mitigation measures include covering or containing piles of soil, fill, brush, rocks and other loose materials; capping ends of pipes where necessary to keep wildlife out; ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each work day to prevent access by wildlife.

While all personnel need to be aware of the wildlife protection measures, one or more people should be specifically tasked with ensuring that those measures are properly implemented, by performing the following duties:

- ✓ Checking the work site (including previously cleared areas) for wildlife, prior to beginning work each day;
- ✓ Regularly inspecting protective fencing or other installed measures to ensure their integrity and continued function; and,
- ✓ Monitoring construction and worker activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements.

8.2.14 Mitigating Cumulative Environmental Impacts

Specific actions that may be needed to effectively manage cumulative impacts include the following:

- Make deliberate efforts to reduce or prevent emission of greenhouse gases throughout the project that can cumulatively exacerbate climate change impacts. This can be attained by adopting new technologies and renewable energies including use of low and zero carbon emitting project machinery, vehicles and equipment.
- Ensure the project route is retained as it or any designs alterations avoids towns and market centres.
- Ensure construction including RoW clearing and maintenance works are scheduled to avoid rainy seasons.
- KETRACO to ensure regional mitigation or offset management engagement strategies such as regional liaising with other government line agencies including KFS, Kilifi County Government and local community to participate in tree replanting program activities (plant in alternative public places such as schools, water towers in Kenya, promotion of livelihood restoration activities such as agroforestry to PAP)
- Adaptive management approaches to project mitigation including: using existing utility transport corridors for transmission and distribution as much as possible to reduce on habitat alteration; undertaking selective clearance by removing tall woody species leaving saplings, for quick regeneration of vegetation along the wayleave; installing transmission lines above existing vegetation to avoid land clearing; re-vegetation of disturbed areas with native plant species; reduce proliferation of the invasive species through active periodic way leave management
- Ensure adequate project impacts monitoring to assess efficacy of management efforts.

8.2.15 Mitigating Pollution from Hazardous materials

The following should be done:

- Use of designated areas of hard standing for repair and maintenance of machinery e.g. garages to avoid fuels and lubricant spills at the RoW construction sites;
- Install oil trapping equipment and remedial measures in areas where there is a likelihood of oil spillage e.g. during maintenance of machines and construction equipment;
- Implement the Spill Prevention & Counter Measures Management Plan (SPCMMP) – Annex 14 section 3.4 to deal and prevent hazardous material spills
- Storage and liquid impoundment areas for fuels, raw and in-process material solvents, wastes and finished products should be designed with secondary containment to prevent spills and the contamination of soil, ground and surface water;
- A written response plan should be prepared and retained on the site and the workers should be trained to follow specific procedures in the event of a spill;
- Regular inspection of vehicles and machines for oil and fuel leaks. Leaking vehicles and machines to be removed from site until repaired;
- Spill response kit (e.g. absorbents) to be readily available at the construction site;
- Hazardous substances to be stored only in specialized/labelled containers and designated storage facility with warning signs;
- Hazardous materials storage facilities should be located as far as possible from sensitive areas (e.g. groundwater wells, surface water) and well secured from the public;
- Storage and handling facilities of hazardous liquid should be bounded with an impermeable base;
- The personnel involved in the handling of hazardous waste including fuel and used oil should undergo specific training in hazardous material handling procedures and fuel / lubricant and used oil handling procedures;
- Contract a NEMA registered waste handler to dispose hazardous materials including waste oil in designated manner;

8.2.16 Mitigating Occupational safety and health risks

The following should be undertaken including adopting and implementing the Occupational, Health and Safety Management Plan (OHSMP) – Annex 14 -section 3.14

- Live power lines**
- Only allowing trained and certified workers to install, maintain, or repair electrical equipment;
 - Deactivating and properly grounding live power distribution lines before work is performed on, or in proximity, to the lines;
 - Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards. Qualified or trained employees working on transmission or distribution systems should be able to achieve the following-
 - Distinguish live parts from other parts of the electrical system
 - Determine the voltage of live parts
 - Understand the minimum approach distances outlined for specific live line voltages
 - Ensure proper use of special safety equipment and procedures when working near or on exposed energized parts of an electrical system
 - Workers should not approach an exposed energized or conductive part even if properly trained unless:
 - The worker is properly insulated from the energized part with gloves or other approved insulation; or,
 - The energized part is properly insulated from the worker and any other conductive object; or,
 - The worker is properly isolated and insulated from any other

conductive object (live-line work).

- Specific training, safety measures, personal safety devices, and other precautions should be defined in a health and safety plan.
- Workers not directly associated with power transmission and distribution activities who are operating around power lines or power substations should adhere to local legislation, standards, and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities;

Working height

- at**
- Testing structures for integrity prior to undertaking work;
 - Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers, among others;
 - Establishment of criteria for use of 100 percent fall protection (typically when working over 2 meters above the working surface, but sometimes extended to 7 meters, depending on the activity). The fall protection system should be appropriate for the tower structure and necessary movements, including ascent, descent, and moving from point to point;
 - Installation of fixtures on tower components to facilitate the use of fall protection systems;
 - Provision of an adequate work-positioning device system for workers. Connectors on positioning systems should be compatible with the tower components to which they are attached;
 - Hoisting equipment should be properly rated and maintained and hoist operators properly trained;
 - Safety belts should be of not less than 16 millimeters (mm) (5/8 inch) two-in-one nylon or material of equivalent strength. Rope safety belts should be replaced before signs of aging or fraying of fibers become evident;
 - When operating power tools at height, workers should use a second (backup) safety strap;
 - Signs and other obstructions should be removed from poles or structures prior to undertaking work;
 - An approved tool bag should be used for raising or lowering tools or materials to workers on structures;
 - No drunk worker should be allowed on site to reduce risk falling from height and ensuring proper communication on site.
 - Identification of potential exposure levels in the workplace, including surveys of exposure levels in new projects and the use of personal monitors during working activities;

Electric and magnetic fields

- ✓ Training of workers in the identification of occupational EMF levels and hazards;
- ✓ Establishment and identification of safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers;
- Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP), and the Institute of Electrical and Electronics Engineers (IEEE). Personal

- exposure monitoring equipment should be set to warn of exposure levels that are below occupational exposure reference levels (e.g. 50 percent). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials.
- Exposure chemicals** to
- Replacement of the hazardous substance with a less hazardous substitute;
 - Implementation of engineering and administrative control measures to avoid or minimize the release of hazardous substances into the work environment keeping the level of exposure below internationally established or recognized limits;
 - Keeping the number of employees exposed, or likely to become exposed, to a minimum;
 - Communicating chemical hazards to workers through labeling and marking according to national and internationally recognized requirements and standards, including the International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS), or equivalent. Any means of written communication should be in an easily understood language and be readily available to exposed workers and first-aid personnel;
 - Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE.
- Risk of occupational accidents and diseases/physical hazards**
- Set up a health and safety committee and periodic site inspections, training and annual safety audits;
 - Provide appropriate PPEs to workers and visitors to the proposed route;
 - Adhere to the provisions of the occupational Health and Safety Act of 2007;
 - Have a qualified EHS Officer; first aider/ medic on site.
- Incidents, accidents and dangerous occurrences**
- Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction and operation is as per prescribed forms obtainable from the local Occupational Safety and Health Office are in place.
- Ergonomics, Repetitive Motion, Manual Handling**
- Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds ·
 - Selecting and designing tools that reduce force requirements and holding times, and improve postures ·
 - Providing user adjustable workstations ·
 - Incorporating rest and stretch breaks into work processes, and conducting job rotation ·
 - Implementing quality control and maintenance programs that reduce unnecessary forces and exertions
 - Taking into consideration additional special conditions such as left-handed persons

8.2.17 Mitigating Risks on Community health and safety

The following should be undertaken:

- Proponent to engage local persons as Wayleave Officers / Community Liaison Officers (CLOs) to work with the contractor on local engagements. They act as the focal point for communications between local population and the project management team.
- Proponent to establish an effective grievance redress mechanisms for community members as early as possible in the project development for reporting complaints and grievances;
- Electrocutation:
 - Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding substations, particularly in Kilifi and Malindi sub-stations).
 - Sensitization / public outreach on community health and safety awareness to prevent public contact with potentially dangerous equipment along RoW;
 - Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock.
- Electromagnetic Fields (EMF):
 - Ensure the recommended wayleave of 40m (20m on both sides of the centerline) is observed for the proposed 220kv transmission line. The EMF decays very rapidly with distance from source and there should be no potential health risks for people living outside the 40 m wide wayleave corridor.
- Noise (Buzzing)
 - The recommended wayleave of 40m (20m on both sides of the centerline) to be observed for the proposed 220kv transmission line.
 - The acoustic noise produced by transmission lines is only greater with high voltage power lines of above 400-800 kilo volts [kV] whereas the proposed Malindi Kilifi is 220KV hence expected to be minimal
 - The buzzing noise decays very rapidly with distance from source hence no potential noise nuisance is expected for people living outside the 40 m wide wayleave corridor.
- On Traffic / Access roads safety
 - Adoption of best transport safety practices across all aspects of project operations with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public;
 - Develop a robust transport management plan;
 - Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present;
 - Using locally sourced materials, whenever possible, to minimize transport distances.
 - Locating workers campsites close to project sites and arranging bus transport to minimize on external traffic
 - Emphasizing safety aspects among drivers
 - Improving driving skills and requiring licensing of drivers
 - Adopting limits for trip duration and arranging driver rosters to avoid overtiredness
 - Avoiding dangerous routes and times of day to reduce the risk of accidents
 - Use of speed control devices (governors) on trucks, and remote monitoring of driver actions

8.2.18 Mitigating Visual Impacts

To mitigate the visual impact of power distribution, the following mitigation measures should be implemented:

- Restore excavated site area through proper backfilling
- Removal of any overburden ripped material along the RoW
- Explore the form, colour, or texture of the line and pylons to minimize aesthetic impacts and mimic / blend in the surrounding;
- Implement a landscaping programme especially for substation
- Ensure planting of indigenous short growing shrubs and grass on the open spaces to re-introduce visual barriers along RoW

8.2.19 Mitigating Aircraft Navigation Safety Risks

- Continued engagement with regulatory air traffic authorities such as KCAA prior and during construction of pylons for safety purposes and to acquire prerequisite permits;
- Installation of flight (aviation) colored balls and infrared lighting to enhance visibility of masts especially near Kilifi Substation AP 1 – AP 3 and Malindi substation AP 12 – AP 16 to warn off any ascending or discerning flights in the nearby airstrips
- Adherence to Civil Aviation Act No. 21 of 2013 and subsequent regulation for compliance with aviation safety guidelines

8.2.20 Mitigating Risks and impacts as a result of climate change

Adaptation options to deal with these risks and impacts include:

- Ensuring higher installation of power lines within 33.5metres to 46 metres to keep away from foreign objectives blown by winds during storms
- Installing conductors with hotter operating limits or implementing the use of 'low-sag' conductors.
- Technology implementations such as developing a software tool to optimise overhead line ratings.
- Use more heat-resistant materials to mitigate reduced carrying capacity of lines and transformers caused by increase temperatures
- Implement more effective cooling for transformers such as air efficient chillers for cooling down the transformers during high temperatures
- Develop and implement a storm water management plan to ensure flood protection of equipment at ground level in substations
- Use covered and/or insulated conductors to prevent erosion
- Include lightning protection (e.g., earth wires, spark gaps) in the distribution network to prevent lightning damages
- Raise structure levels at substations to prevent flooding or spillage of fuel from transformers.
- Implement more rigorous structural standards such as concrete-sided buildings and pylons
- Implement porous materials for better wind flow to prevent damaged infrastructure
- Schedule construction work in dry months to prevent delays during construction works

8.3 Mitigation measures for negative environmental impacts during operation phase

8.3.1 Mitigating risks of noise (buzzing) pollution

This should be mitigated as follows:

- Ensure the recommended wayleave of 40m (20m on both sides of the centerline) is observed throughout the proposed 220kv transmission line. The acoustic noise produced by transmission lines is only greater with high voltage power lines of above 400-800 kilo volts [kV] whereas the proposed Malindi Kilifi is 220KV hence expected to be negligible.
- Ensure no households encroach within the project 40m RoW. The buzzing noise decays very rapidly with distance from source hence no potential noise nuisance is expected for people living outside the 40 m wide wayleave corridor.

8.3.2 Mitigating Risk of Fires

The following should be undertaken:

- Conduct a fire risk assessment for project at hand especially in areas with fire receptors such as area with canopies with a potential to touch the conductors such as at AP16, AP15, AP13 and AP6;
- Conduct regular trainings and fire drills for the operation and maintenance employees both at the line and substation;
- Removing blow down and other high-hazard fuel accumulations;
- Time thinning, slashing, and other maintenance activities to avoid forest fire seasons especially at the following areas: AP16, AP15, AP13 and AP6;
- Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access.
- Create fire breaks (ploughed strips) on strategic areas of the proposed RoW to prevent fire spreading to other pasture lands or from pasture lands to the Arabuko Sokoke Forest and substations.
- Periodic maintenance to ensure that, there are; - no overloaded electrical systems; no incorrectly installed wiring; no live naked wires; and fuel store areas are continuously monitored.
- Build capacity for community on fire related issues including fighting and vigilance;
- Ensure compliance with fire safety rules under OSHA 2007 at the substations.

8.3.3 Mitigating Avian (birds) Collisions and Electrocutions

The following should be undertaken especially within Arabuko Sokoke Forest (ASF) environs and Kilifi Creek:

- Engineering solutions including installing visibility enhancement objects such as wire marker balls, bird perch deterrents, or diverters; especially at Arabuko Sokoke environs AP16, AP15, AP13 and AP6 locations including Kilifi Creek environs AP 2 -AP 3 to alert birds to the presence of power line, allowing them time to avoid the collision;
- Building raptors platforms on top of towers for roosting and nesting;
- Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware ;
- Insulation through covering energised parts and/or covering grounded parts with materials appropriate for providing incidental contact protection to birds. It is best to use suspended insulators and vertical disconnectors, if upright insulators or horizontal disconnectors are present, these should be covered;
- Installing elevated perches, insulating jumper loops, placing obstructive perch deterrents (e.g. insulated “V’s”) on the transmission line.
- Working with line agencies such as NMK, KWS and relevant NGOs such as Birdlife International and Nature Kenya for expert opinion and specialized monitoring studies (ornithological studies).
- The proponent to consider a wider berth to the ASF boundary than currently proposed since birds are not confined to buffer zones.

8.3.4 Mitigating impact on Mammals including Bats Collisions and Electrocutions

The following should be undertaken mainly within the Arabuko Sokoke Forest environs [AP6 (1.85km) to the East, AP12 (287m), AP13 (275) and AP16 (465m) to the South] where mammals and bats are likely to be found. Worth noting, echolocating bats are less likely to fall victim of crushing into overhead cables.

- Implementation of an integrated vegetation management approach (IVM) during repairs and maintenance of RoW. The selective removal of tall-growing tree species and the encouragement of low-growing grasses and bushes to avoid alteration and disturbance to critical natural habitats such as bat foraging corridors, roosting and breeding areas.
- Provision of engineering solutions such as wire-marking through installing visibility enhancement objects such as marker balls

- Ensuring towers / pylons are insulated to act as bats roosting places.
- Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware;
- Insulation: covering energized parts and/or covering grounded parts with materials appropriate for providing incidental contact protection to bats. It is best to use suspended insulators and vertical disconnectors, if upright insulators or horizontal disconnectors are present, these should be covered;
- Work with line agencies such as KWS and relevant NGOs such as Nature Kenya for expert opinion and specialized bat survey. The data acquired may inform other studies in future and document which bat species exist in the area.

8.3.5 Mitigating Disruption and alteration of Wildlife habitat during RoW maintenance

The recommended mitigation measures are as below including those presented in section 8.2.12 above.

- Implementation of an integrated vegetation management approach (IVM). The selective removal of tall-growing tree species and the encouragement of low-growing grasses;
- Removal of invasive plant species, whenever possible, cultivating native plant species;
- Observing manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response;
- Avoiding clearing in riparian areas such as near River Galana (AP2 – AP 3) ;

8.3.6 Mitigating Cumulative Impacts

The recommended mitigation measures are similar as those presented in section 8.2.14 above.

8.3.7 Mitigating Occupational safety and health risks

The recommended mitigation measures are similar as those presented in section 8.2.16 above.

8.3.8 Mitigating risks on Community health and safety

The recommended mitigation measures are similar as those presented in section 8.2.17 above.

8.4 Mitigation measures for negative environmental impacts during decommissioning phase

8.4.1 Mitigating noise and vibration

The recommended mitigation measures are similar as those presented in section 8.2.1 above.

8.4.2 Mitigating air pollution due to dust emission

The recommended mitigation measures are similar as those presented in section 8.2.2 above.

8.4.3 Mitigating increased solid waste generation

The recommended mitigation measures are similar as those presented in section 8.2.3 above.

8.4.4 Mitigating Occupational safety and health risks

The recommended mitigation measures are similar as those presented in section 8.2.16 above.

8.5 Mitigation Measures for Negative Social Impacts during construction

8.5.1 Mitigating risks and impacts from displacement of households and businesses

The location of the Transmission line is significantly in a rural setting, which is a major advantage in terms of resettlement. This largely means that although communities have settled along the route, the prospects of getting resettlement land (where land or cash compensation is provided) in the vicinity (cost allowing) will not be a major challenge. This means social support systems and networks will not be greatly disrupted, affected persons can still consider themselves as part of their current communities and still access the same services and advantages from the original areas. Since the project is rural, coupled with its inherent nature that only requires wayleave instead of land acquisition to pave the way for the transmission line, no significant resettlement is envisaged. Since displacement of communities is consequent to increase in poverty; the following should be enacted:

- Resettlement and compensation of PAPs to align to the RPF developed under this project.
- Apply RAP compensation procedures in a transparent and consistent way to all persons affected by the project.
- Provide compensation at full replacement cost in accordance to project RPF;
- Where possible, avoid involuntary resettlement; and where avoidance is not possible, minimize involuntary resettlement
- Carry out timely-before project commencement, fair and adequate compensation as per Kenyan law, WB guidelines and provide assistance as appropriate, (allowances and livelihood restoration programs) to PAPs until such a time that their livelihoods and incomes are restored to pre-project levels or better;
- Implement internal and external monitoring to ensure the RAP is implemented appropriately;
- Identify individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status including women household heads, minority groups, OVCs, widows, and PLWD, and put measures in place to ensure they have equal access to project benefits and opportunities;
- Apart from cash compensation, consider other alternatives such as in-kind or land to land compensation especially for vulnerable people such as orphans, PLWD, widows and elderly
- Provide a choice of options to affected persons and consult with communities over community assets and resources;
- Provide opportunities to displaced communities and persons to derive development benefits from the project;
- Provide transitional support for a reasonable period of the time to enable PAPs whose livelihoods have been affected, to restore their income-earning capacity, production levels, and standards of living;
- Ensure displaced persons are informed of their full rights and entitlement to e.g. their right to compensation and compensation options, GRM *Annex 14 chapter 7*.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to engage host communities as well, in addition to PAPs where appropriate.
- In addition to land owners, with formal rights the project identified squatters, absentee landlords, tenants, and those without formal land rights in the project area, and their compensation will align to the RPF developed under this project.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to address all emerging complaints and grievances from the PAPs and project area community.
- Adopt and implement the livelihood restoration plan (LRP) to improve the lives of those affected and ensure they benefits from the project.
- Ensure that the displaced persons are:
 - a) Informed about their options and rights pertaining resettlement and compensation
 - b) Consulted on, offered choices among, and provided with alternatives;
 - c) Provided prompt, adequate and effective compensation at full replacement cost for losses of assets attributable directly to the project in accordance to project RPF.

- d) Offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living;
- e) Provided with development assistance in addition to compensation measures.

8.5.2 Mitigating Land acquisition (way-leave, contractor facilities sites, workers camp sites, and sub-station sites) and resettlement conflicts

- Resettlement and compensation of PAPs to align to the RPF developed under this project.
- A project Grievances Redress Mechanism (*GRM: Annex 14 in chapter 7*) including a GRM committee to be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level, to address all emerging complaints and grievances from the PAPs and project area community.
- If the Locational Grievance Redress Committee is not able to reach a resolution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters.
- Loss of land and crops will be compensated; the amount of compensation to be paid for private and public land will be as per the Kilifi County land registry rates provided by National Land Commission (NLC). However, the rates must be in line with the RPF developed for the project.
- A Resettlement Action Plan (RAP) study has been commissioned for the proposed project. The RAP has been carried out in accordance with the legal framework of the Government of Kenya, the requirements of the World Bank's OP 4.12 (Involuntary Resettlement) and RPF developed for this project for compensation purposes.
- Surveys have been conducted to establish which properties (land and buildings) lie within the RoW for compensation of PAPs.
- The exact number of PAPs affected and the types of properties affected should be determined for compensation.
- In addition, potential sites for the relocation of the PAPs should be identified, and an estimation of the total cost for the RAP obtained for compensation.
- Where possible avoid involuntary resettlement and where avoidance is not possible, minimize impacts on people/households and livelihoods.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication, community buy in and ownership of the project. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive

8.5.3 Mitigating Health Impacts such as Spread of STD, HIV and AIDS

- Review activities of the proposed electric power transmission and distribution project to integrate with HIV/AIDS campaigns.
- Develop appropriate training, awareness content and implement awareness sessions for communities and workers on HIV/AIDs and other STDs, as well as GBV-SEA and sexual harassment at workplaces.
- Support HIV/AIDS and STD awareness and education. This can be done through the use of educative posters, offering free HIV/AIDS testing services and HIV/AIDS counselling in main towns situated along the RoW.
- Ensure an adequate and accessible provision of condoms to workers both male and female.
- Providing health services (treatment through standard case management in on-site or community health clinic).
- Promoting collaboration with local authorities to enhance access of workers families and the community to public health services.

- Liaise with relevant health agencies both at national and County level (Kilifi County) (Ministry of Health, National AIDS Control Council (NACC)), including NGOS (AHF Kenya), and CBOs (youth, men, and women groups) on awareness creation
- Periodic sensitization forums for workers on ethics, morals; general good behaviour and the need for the project to co-exist with the neighbours.
- Ensure sensitization of workers and communities on HIV/AIDs and other STDs including ethics, morals; general good behaviour in accordance to the stakeholder engagement plan (SEP) (*Annex 14 section 3.14*) prepared under this project. Such sensitizations or trainings should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and limiting gatherings as per Gok directive.
- Adhere to and implement the HIV and AIDS Prevention and Control Act, 2006 and the Sexual Offences Act, 2006 and its amendment 2012.
- Contractors to develop a code of conduct and ensure its signed by all workers with physical presence on site as well as within the project area. The code of conduct will address worker and community interactions considering risks of GBV-SEA and sexual harassment in workplaces, HIV/AIDs and other STDs resulting from population/labour influx. Labour influx impacts will be managed through a Labour Influx Management Plan – *Annex 14 section 3.13*.
- Adopt and implement a Grievances Redress Mechanism (*Annex 14 in chapter 7-GRM*) to receive and address complaints from the PAPs and host community.

8.5.4 Mitigating Agricultural produce loss / restriction to access Pasture / Impact on Apiculture

- Enumeration of destroyed farm crops including those under irrigation schemes through a Crop destruction Register in the presence of crop owner.
- Identify, address, and document concerns such as agricultural produce loss, restrictions to access to pasture and impacts on apiculture before construction begins.
- Using transmission structures with longer spans to avoid clearing the agricultural fields and impacting on pasture.
- Using existing roads or lanes utilized by the farm owner;
- Avoiding construction and maintenance activities during times when soils are saturated.
- Ensuring construction is scheduled after crop harvesting (when farms are largely with no produce)
- Sensitise contractors / workers / local community to avoid any interference of the beehives if outside the RoW
- Ensure relocation of beehives that are directly on the proposed transmission line RoW
- Identify and ensure compensation of the beehives, restriction on access to pasture for affected households as per RAP, and RPF developed for the project.
- Adopt and implement the livelihood restoration plan (LRP) to improve the lives of those affected and ensure they benefits from the project.
- Implement the stakeholder's engagement plan (SEP) (*Annex 14 -section 3.16 SEP*) to ensure effective communication. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive
- Adopt and implement a Grievances Redress Mechanism (*Annex 14 in chapter 7-GRM*) to receive and address complaints from the PAPs and host community.

8.5.5 Mitigating Interference of existing development infrastructure

- a) Implement the stakeholder's engagement plan (SEP) (*Annex 14 -section 3.16 SEP*) for effective communication to host community.

- b) Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from the host community.
- c) Impact on road usage
 - Construction contractor to prepare Road Use Restriction Management Plan in case of such needs and inform the Kilifi County Government, local administration and community in advance;
 - Liaison with the pertinent road agencies at design stage as well as in case of any partial closure during construction phase;
- d) Impact on Kenya Power utility lines
 - Liaison with Kenya Power on planned shutdowns;
 - Construction contractor to prepare Kenya Power utility line shut-down management plan

8.5.6 Mitigating Insecurity

The proponent should integrate both physical and technological security solutions to provide advanced security surveillance system. This should include, but not limited to;

- Thoroughly screen workers, suppliers and distributors;
- vehicle scanning systems;
- Ensure 24-hour surveillance by engaging the Administration Police services during the day and night;
- Install CCTV cameras in strategic locations in workers' camps;
- Ensure close liaison with the local Police Department.
Engage stakeholders throughout the project cycle to ensure project ownership, and mitigate the risk of insecurity-theft, vandalism.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure project ownership, and mitigate the risk of insecurity-theft, and vandalism.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from the PAPs and host community.

8.5.7 Mitigating Gender inequality

- Applying all Kenyan Constitutional requirements on gender throughout the project.
- Apply all guidelines under the National Gender and Equality Commission Act, 2011 and adhere to Gender Strategy (FY16-23).
- Developing the project sustainably by transforming the distribution of opportunities, resources and choices for males and females so that they have equal power to shape their own lives and contribute to their families, communities, and country.
- Undertake gender mainstreaming at project design, implementation/ construction, operation and decommissioning stages.
- KETRACO to give equal treatment to both men and women recruitment and doing business with the community. The Transmission line and associated facilities contractors will be expected to implement Labour Management Plan section 3.13 of annex 14 and uphold equal treatment of men and women during recruitment.
- Developing the project sustainably by transforming the distribution of opportunities, resources and choices for males and females so that they have equal power to shape their own lives and contribute to their families, communities, and country.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication for both men and women.
- Adopt and implement a Gender Mainstreaming Plan (Annex 14 – section 3.23) to ensure that both men and women have equal opportunities to participate in and benefit from the proposed power transmission project
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from both men and women.

8.5.8 Mitigating Cultural impacts

The following should be undertaken:

- Avoid constructing substations or tower spotting by transmission line design changes / changing tower spans to avoid spotting the pylons in areas of archaeological or cultural heritage importance; in this case the baobab tree in Konjora and approximate of 24 graveyards within the proposed RoW. Fourteen (14) graves in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location.
- Avoid spotting towers by changing transmission line design (changing tower spans) specifically on the three (3) churches grounds: Word Celebration Centre Church in Jilore Location, Sokoke PEFA Church in Nyari Location, and Barikiwani Church in Konjora location including any other areas of cultural or religious importance.
- Work together with local elders to identify and map any other physical cultural resource and other areas of cultural heritage importance, not identified during the ESIA process.
- Avoid any interference with all existing graves either during construction works or clearing access routes, since the graves hold cultural values and social ties to the bereaved. Avoidance to cultural resources can be attained by design changes such as changing tower spans to avoid spotting the pylons or seeking other appropriate alternative access routes during construction.
- Use existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible.
- Work in close liaison with national agencies that deal with areas of archaeological and cultural importance such as the National Museums of Kenya (NMK) to offer guidance in chance finds procedure if unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication in relation to cultural resources with the host community
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from host community.

8.5.9 Mitigating Community impacts

The following should be undertaken:

- Site transmission and distribution rights-of-way, lines, towers, and substations to avoid cultural sites, communal watering points, churches and water pipelines.
- Provide opportunities to displaced communities and persons to derive development benefits from the project;
- Provide Corporate Social Responsibility (CSR) / a social return on investment to improve the well-being of the host community. Such could include provision of support for supplies and movable items for institutions or sector needs identified by the community; donation to community of any facilities used by the contractor at the conclusion of the project such as buildings, and boreholes.
- Ensure engagement on CSR implementation (further consultations on priority projects and implementation plans) are done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive.
- Provide training programmes to the community to cope with changes brought by establishment of transmission line and associated facilities
- Establish effective grievance mechanisms as early as possible in the project development;
- Proponent to engage local persons as Wayleave Officers to work with the contractor, to ensure the project is implemented smoothly

- Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) as early as possible in the project development to receive and address complaints from host community.

8.5.10 Mitigating Loss of Quality of life and lifestyle impacts

The following should be undertaken for quality of life impacts:

- Ensure a fair process of compensation and livelihood replacement / RAP and enhancement;
- Provide benefits to affected communities;
- Identify individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status, including women, minority groups, OVCs, widows, and PLWD, and put measures in place to ensure they have access to equal development benefits and opportunities;

The following should be undertaken to mitigate lifestyle related impacts:

- Resettlement and compensation to be implemented in line with the RPF develop under this project;
- Improve the livelihoods and standards of living of displaced persons by providing transitional support for a reasonable period of the time to enable people to restore their income-earning capacity, production levels, and standards of living.e;
- Improve the livelihoods and standards of living of displaced persons by providing transitional support for a reasonable period of the time to enable people to restore their income-earning capacity, production levels, and standards of living
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication

8.5.11 Mitigating socio-political disputes exacerbated by the Project

- Ensure all stakeholders and the public are involved in the planning process and sensitized to understand that increase in the capacity of transmissions system will increase access and distribution of electricity at homesteads and institutional level within Kilifi county.
- Ensure proper identification and compensation of all persons who will lose businesses and land.
- Obtain necessary permissions and approvals from the County Governments.
- Ensure EIAs are conducted for specific project activities such as workers campsites, quarries, materials sites, boreholes etc.
- Largely involve the community in the project through their leaders, take keen in timely addressing their grievances and ensure a good percentage of the local community members are employees in the project.
- Proponent to engage local persons as Wayleave Officers to work with the contractor, in order to ensure the project is implemented smoothly
- Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure all stakeholders and the public are involved during the project cycle

8.5.12 Mitigating Loss of social fabrics

The following should be undertaken;

- Where possible, avoid involuntary resettlement and where avoidance is not possible, minimize project impacts on social fabric/networks
- Consider the prospects of getting resettlement land for the 7% land owners who are permanently displaced in the vicinity (cost allowing) to deter disruption of social support systems and networks.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with PAPs.

8.5.13 Mitigating illicit behaviour / drug and alcohol abuse

On illicit behaviour; women cited that their men, youths would resort to substance abuse (alcoholism and smoking). Men highlighted the possibility of prostitutes migrating to the area due to availability of money. The community explained that alleged illicit behaviors might jeopardise marriages and family wellbeing, and harmonious existence.

The following should be undertaken:

- Elders and local administration in the project area to manage illicit behaviour / drug and alcohol abuse at the community and family level whereas the contractor and proponent should be responsible for worker conduct on site.
- Contractors, subcontractors and all project staff to behave in a culturally appropriate manner.
- The contractor and proponent to establish a code of conduct and ensure workers conduct at site adheres to set rules and regulations e.g. on drug use and alcohol, interactions with locals and Gender Based Violence (GBV) – Sexual Exploitation and Abuse (SEA) / workplace sexual harassment (SH).
- Civic and health education on HIV/AIDS and STIs
- Ensure an adequate and accessible provision of condoms to workers both male and female.
- Elderly and social protection officers can be used to uphold moral standards and dignity in the affected community
- Establish Grievance Redress Committee (GRC) and have in place the elderly to liaise and identify such situation and address them before escalating to pressing social problems
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address illicit behaviour / drug and alcohol abuse complaints before escalating to pressing social problems
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with the host community.
- Adhere to and implement the HIV and AIDS Prevention and Control Act, 2006 and the Sexual Offences Act, 2006 and its amendment 2012.

8.5.14 Mitigating Domestic Conflicts exacerbated by project

The following should be undertaken:

- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with the host community and PAPs where appropriate.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address domestic conflicts exacerbated by project.
- Resettlement and compensation to align to the RPF developed under this project.

- Grievances should be received and recorded at the Sub-location level by Community Liaison Officers (CLOs) or wayleaves officer and handled by the Grievance Redress Committees (GRC).
- If the Grievance Redress Committee is not able to provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters.
- Involve CLOs and GRCs to ensure the vulnerable especially orphans, widows and elderly. Access project benefits and opportunities.
- The project to slowly engage the elderly and Social workers to guide and mediate case of domestic violence
- Encourage the spouse to open a joint bank account to avoid mistrust.

8.5.15 Mitigating Gender-Based Violence (GBV) - Sexual Exploitation and Abuse (SEA) / Workplace Sexual Harassment (SH) (GBV-SEA/SH)

The following should be undertaken:

- Ensure sensitization of the contractor, their sub-contractors and consultants on GBV - SEA/SH issues including refraining from unacceptable conduct towards local community members.
- Introduce a worker Code of Conduct as part of the employment contract, to be signed by all with physical presence on site as well as within the project area, and to include sanctions for non-compliance (e.g., termination).
- Ensure mandatory trainings regarding GBV -SEA/SH to be provided to all project workers including temporary and casual workers.
- Undertake awareness meetings for the project affected communities on GBV-SEA/SH issues. Participants should be informed about the Code of Conduct, related national legislations and available GRM including available services/referral mechanism mechanisms for seeking help within the context of the COVID-19 pandemic
- Adopt and implement a grievance redress mechanism (GRM) and referral mechanism to address all emerging complaints including risks such as COVID 19 related to Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH).
- Implement the GBV-SEA/SH Management Plan (Annex 14 section 3.19) and Labour Influx Management Plan (Annex 14 section 3.13)
- Ensure establishment and Implementation of a GBV-SEA/SH Action Plan by the contractor which should reflect the unique dimensions of COVID-19.
- Ensure separate sanitation and hygiene facilities (toilets, utility rooms and changing rooms) for men and women in the workers' camps / workplaces are provided.
- Prioritize GBV -SEA/SH prevention, response, and risk mitigation approaches as essential parts of COVID-19- related measures.
- Adopt a policy to cooperate with law enforcement agencies in investigating complaints about GBV-SEA/SH should a survivor choose the legal redress. Survivors should be facilitated to understand that this may require them to commit to cooperate with the agencies.
- Inform workers and local community about national laws such as the Sexual Offences Act. No 3 of 2006 that make GBV-SEA/SH a punishable offence which is prosecuted.
- Apply all Kenyan Constitutional / legal requirements on gender and sexual based violence throughout the project.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication on GBV-SEA/SH. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive

8.5.16 Mitigating Land and property disputes exacerbated by the project/ related to the project

The following should be undertaken: compensation and resettlement disputes and land disputes

- Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project.
- Where possible, avoid involuntary resettlement; and where avoidance is not possible, minimize impacts on people/households and livelihoods. Carry out timely (before project commencement), fair / just and adequate compensation as per the provisions in the RPF developed under this project,. Implement internal and external monitoring in collaboration with PAPs and other stakeholders e.g. county, local leadership, local NGOs etc to ensure the RAP is implemented appropriately;
- Map vulnerable households and individuals in the project area and implement specific interventions as appropriate to ensure equal benefits sharing.
- Proponent to engage local persons as Wayleave Officers to work with the contractor, to ensure the project is implemented smoothly.
- KETRACO to engage affected persons as outlined in the Stakeholder Engagement Plan (SEP) (Annex 14 section 3.16 – SEP).
- Where there are land disputes and lack of land ownership documents, which might delay compensation of PAPs. KETRACO should deposit compensation monies on an interest earning escrow account until such cases are resolved. The proponent will ensure that information regarding interest earning escrow account is timely disseminated to all PAPs in subsequent consultation forums, to avoid project delays and compensation disputes.
- Ensure relocation and compensation is in accordance to provisions within RPF developed under this project.
- Stakeholder engagement as per Stakeholders Engagement Plan (SEP) (Annex 14 section 3.14) and full information disclosure to PAPs as well as host communities where appropriate. Information disclosure should be done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive.
- A project Grievances Redress Mechanism (GRM: Annex 14 in chapter 7) including a Grievance Redress Committees. to be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level by Community Liaison Officers (CLOs), to address all emerging complaints and grievances from the PAPs and project area community.
- If the Grievance Redress Committee is not able to provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters.
- Acquisition of land for contractor's camp and worker accommodation, will require a land use and restoration agreement between community and contractor.

8.5.17 Mitigating Labour influx

The following should be undertaken:

- Establish a local recruitment policy to engage local populace for all unskilled labour / casual labourers in order to reduce on population influx in search of jobs including creating slots for locals on semi-skilled employment if available. The local recruitment policy should be carefully developed with relevant stakeholders such as the local administration before the commencement of project activities.
- Encourage community business interaction within project where possible e.g. local procurement where possible, selling of consumable like food etc. to discourage influx.
- Provision of workers camps to alleviate pressure on existing community housing infrastructure and basic services viz., food, water, and sanitation. This will minimise the

interactions with the locals, consequently reducing competition for resources and the spread of diseases.

- Provision of worker transport for locals to reduce the impetus for migration towards the project site which creates demand for local housing, pressure on local infrastructure, services, and utilities, and thus pre-empt the development of larger population centres close to the project site.
- Ensure induction of all immigrant workers to abide by the code of conduct and respect the community cultural norms and values.
- All Contractors to develop & implement a Labour Influx Management Plan and Workers' Camp & Accommodation Management Plans, GBV-SEA/SH plan, as part of C-ESMP.
- Contractors to develop a code of conduct and ensure its signed by all workers with physical presence on site as well as within the project area. The code of conduct will address worker and community interactions considering risks of GBV-SEA and sexual harassment in workplaces, HIV/AIDs and other STDs resulting from population/labour influx.
- Establish and ensure early uptake of a Grievance Redress mechanism for local community and Workers. The Grievance Redress Committee to act as link between community and the project; and should be sought as a priority in solving issues.
- Undertake stakeholder engagement / awareness to prepare local communities psychologically. Awareness should include efforts toward instilling attitudes of tolerance, support and understanding of labour immigrants by the local communities. Discuss issues, risks and opportunities linked to in-migration; Understand the concerns of local communities; Raise awareness of risk and opportunities; and Identify solutions to issues relating to in-migration
- Ensure implementation of a livelihood restoration plan (LRP) that create alternative economic opportunities for the locals.
- **Minimizing exposure of to COVID-19, the following should be undertaken:**
 - Develop and communicate to all employees (skilled, semi-skilled and unskilled), a COVID-19 Preparedness management plan that addresses all aspects of COVID-19 readiness including but not limited to Policy, Planning and Organizing project activities vis-à-vis COVID-19.
 - Sensitize all workers (skilled, semi-skilled and unskilled) on COVID-19 risk mitigation measures with sufficient information to keep them and local community safe.
 - Establish prevention and mitigation measures against COVID-19 and arrangements for dealing with suspected and confirmed COVID-19 cases for all workers. The measures should include but not limited to;
 - ✓ Infection control plans,
 - ✓ Ensuring social distancing of not less 1.5 meters between employees (skilled, semi-skilled and unskilled) in all directions,
 - ✓ Hygiene promotion through suitable hand sanitizing facility or handwashing soap and water
 - ✓ Strict and proper use of face masks throughout all working hours and public places.
 - ✓ Implement Ministry of Health guidelines for staff safety and health, including daily temperature checks for everyone in the workplace
 - ✓ Increase frequency of cleaning commonly touched surfaces / objects

8.5.18 Mitigating Theft and Vandalism

- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community.
- Minimize overcrowding at the construction site so as to prevent double handling of materials and equipment.
- Provision of proper management of materials by allocation to specific persons involved.
- Advanced tracking of on-site construction machinery which facilitate an improvement in the safety performance job site layout and prevent theft
- Optimize the utilization of construction equipment.

- Proponent to engage local persons as Wayleave Officers to work with the contractor, in order to ensure the project is implemented smoothly
- Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team.
- Liaise with law enforcement in the project area to ensure theft and vandalism perpetrators are held to account.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community. Acts of vandalism and theft are less likely to happen if the project has demonstrated a genuine interest in the well-being of the host community.

8.5.19 Mitigating speculation for land compensation

- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from PAPs and host community
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs

On false information:

- KETRACO to engage affected persons as outlined in the Stakeholder Engagement Plan (SEP) (Annex 14 section 3.16 – SEP).
- The planning and implementation of the transmission line and associated facilities remains as publicly shared. Any changes necessitated by unforeseen circumstances should be communicated and a new census of affected persons conducted.

On hike in prices / Value of Land:

- KETRACO to adopt compensation rates established by the RAP as per cutoff date
- Compensation to be made to bonafide land owners with official land documents

8.5.20 Mitigating impacts of community expectations on CSR

The following should be undertaken:

- Adopt and implement a CSR plan (Annex 14 section 3.20 CSR) targeting activities within KETRACO's mandate for implementation during the project
- Provide support for supplies and movable items for institutions or sectors identified by the community.
- KETRACO to establish deliberations / procedures on donation to local community of facilities used by the contractor, at the conclusion of the project. Such facilities could include campsite buildings, and boreholes.
- Implement the stakeholder's engagement plan (SEP) to ensure effective communication, community buy in and ownership of the project without lowering realistic expectations.
- KETRACO to consider liaising with or bringing to attention the relevant Ministries and County departments on critical community needs. For instance, linking vulnerable populations at project locational levels for registration in local government support programs
- Ensure implementation of plans in Annex 14 such as vulnerable peoples plan, local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Social Impacts Management Plan, Livelihood Restoration Plan to ensure host community accesses the project benefits.
- Ensure engagement on the project and CSR implementation (further consultations on priority projects and implementation plans) are done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive.

- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from host community

8.5.21 Mitigating risk and impacts on Vulnerable populations

The following should be undertaken to cushion the vulnerable populations such as the elderly, orphans, PLWD, and widows amidst COVID-19 pandemic from the project risks:

- Amidst COVID-19, clearly identify / map vulnerable households and individuals such as orphans, PLWD, widows and elderly to ensure they have access to development benefits and opportunities.
- Apart from cash compensation, consider other alternatives such as in-kind or land to land compensation especially for vulnerable people such as orphans, PLWD, widows and elderly to cushion them from projects impacts that are likely to be exacerbated by COVID 19 pandemic
- Implement livelihood restoration plan (LRP) with specific targeted interventions for vulnerable persons to respond to the project impacts and COVID-19 pandemic effectively
- Establish and implement targeted interventions / support for Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households during RAP. Such could include protection support against sexual exploitation & abuse, placement assistance for PLWD to secure project jobs, Widows protection against hostile family members on account of eligibility for compensation.
- Establish and implement a GBV -SEA/SH action plan for the project to mitigate GBV that has been exacerbated by COVID-19 against the vulnerable population.
- Offer extra assistance during displacement / relocation of houses and structures. Procurement and delivery of construction material as well as supervision of construction; assisted mobility for elderly / PLWD while observing
- In the context of COVID-19 and various vulnerabilities, offer transitional assistance in consultations with vulnerable persons / households to cushion them from displacement / relocation hardships.
- Involve Grievance Redress Committees (GRCs) and Community Liaison Officers (CLOs) to ensure protection of rights of the vulnerable especially orphans, PLWD, widows and elderly.
- Implement the Stakeholders Engagement Plan while ensuring adequate, meaningful, and continued consultation with Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive.
- Implement a Local Recruitment Plan and while at it prioritise and reserve certain employment opportunities for Vulnerable PAPs such as, PLWDs and widows.
- Implement the Vulnerable Persons Plan to ensure that vulnerable persons are cushioned from the project impacts and have equal opportunities to participate in and benefit from the proposed project.
- Implement the Gender Mainstreaming Plan to cushion vulnerable women including widows and PLWD from discrimination in project opportunities and COVID 19 impacts.
- KETRACO to liaise with relevant national and County Government agencies to register vulnerable persons in the National Safety Net programs for Vulnerable persons / Government support programs to cushion them from project impacts and COVID 19 impacts. Such could include:
 - Orphans: Link up orphans with government scholarship opportunities by liaising with County Government; and with county government for registration under Cash Transfer for Orphans and Vulnerable Children to cushion them from both project impacts and COVID-19 impacts.

- PLWD: Liaise with County Government Social protection department to register PLWD with Cash Transfer for Persons With Severe Disabilities (PWSD-CT) to cushion them from project impacts and the impacts exacerbated by COVID-19
- Elderly: Link up the elderly (65 years and above) with Social protection department at County level for registration with Older Persons Cash Transfer (OPCT) program to cushion them from both project impacts and the health impacts exacerbated by COVID-19
- Link up the extremely impoverished households with Hunger Safety Net Programme (HSNP) via social protection department and vulnerable households' children to County / constituency scholarships program to cushion them from both project impacts and impacts exacerbated by COVID-19.

8.5.22 Mitigating Child labour and forced labour

The following should be undertaken to protect the rights of children and elimination child labour and forced labour:

- The following should be undertaken to protect the rights of children and elimination of forced labour:
- No employment for anyone under the age of 18
- All persons seeking employment (contractor, subcontractor) should be required to provide a national identity card.
- The client and contractor should not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty.
- Implement a labour management plan – Annex 14 section 3.12 to promote fair and equitable labour practices during the COVID 19 pandemic including the project cycle for the fair treatment, protection of workers' rights, non-discrimination and equal opportunity of workers
- Implement a local recruitment plan - Annex 14 section 3.14 – to create opportunities for local employment and to adopt a fair and consistent approach to the recruitment, assessment and selection of local employees during the COVID 19 pandemic including the project cycle.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from host community during the COVID 19 pandemic including the project cycle.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community on raising awareness to prevent child labour and forced labour, with particular attention given to domestic work and the worst forms of child labour during the COVID 19 pandemic including the project cycle.
- Adopt and implement livelihood restoration plan (Annex 14 -section 3.22 LRP) to ensure host community and particularly vulnerable persons have access to livelihood interventions including access to National Safety Net programs for Vulnerable persons / Government support programs
- Implement the Vulnerable Persons Plan to ensure that vulnerable persons including women and girls are cushioned from the project impacts and have equal opportunities to participate in and benefit from the proposed project.

8.5.23 Mitigating Livelihood disruptions

The following should be implemented to deal with livelihood disruption and ensure livelihood restorations:

- Implement the Livelihood Restoration Plan (Annex 14 section 3.22) for the proposed project
- Implement Crop based Livelihoods by regeneration of food crops – such as household irrigation schemes, and cash crops including fruits (such as mangoes, coconut), and vegetables through better extension services in partnership with the County Ministry of Agriculture.

- Implement tree planting to reclaim forestry by liaising with KFS to train farmers and offer seedlings on sustainable tree planting and management in all the 10 Locations / Settlements
- Implement Enterprise Based Livelihoods by maximizing the available project-based opportunities. The livelihood restoration plan recommends:
 - A Local Buying Program during the construction period to assist in building capability and capacity in the local supply chain. Local businesses in the region of the project are prioritized as suppliers of various materials, goods, and services.
 - Offering Micro Loans/Small Business Grants by liaising with Government agencies such as Ministry of Trade to support small business enterprises such as green grocers. Such initiatives could lead to increased access to quality services.
 - Apiculture – Linking farmers with Ministry of Agriculture for training in commercial oriented beekeeping enterprises.
 - Implement Financial Literacy Training / Entrepreneurial training by liaising with relevant County and National Government agencies to cushion against loss of existing retail businesses. Small grants could be offered to Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households to sustain their livelihoods.
- Brings to the attention of the community the existence/availability of National Safety Net programs /projects, their cycles and application process and requirements.
- Link Vulnerable persons with National Safety Net programs / Government support programs by liaising with respective county departments/ministries of Social Services to come to project Location levels to register the vulnerable persons. Some of the National Safety Net programs for Vulnerable persons include Cash Transfer for Orphans and Vulnerable Children; Cash Transfer for Persons With Severe Disabilities (PWSD-CT); Older Persons Cash Transfer (OPCT) program and Hunger Safety Net Programme (HSNP)
- Provision of employment: semi-skilled and unskilled jobs should be reserved for project affected persons and the community in general, by implementing a local recruitment plan through liaising with local administration at location levels.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address PAPs and host community complaints.
- Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication on livelihood restoration. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive.

8.6 Mitigation Measures for Negative Social Impacts during operation

8.6.1 Mitigating spread of STD, HIV and AIDS

The recommended mitigation measures are similar as those presented in section 8.5.3.

8.6.2 Mitigating theft and vandalism

The recommended mitigation measures are similar as those presented in section 8.5.18.

8.6.3 Mitigating gender and equality biases

The recommended mitigation measures are similar as those presented in section 8.5.7.

8.6.4 Mitigating Illicit behaviour / drug and alcohol abuse

The recommended mitigation measures are similar as those presented in section 8.5.13.

8.6.5 Mitigating Sexual Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV)

The recommended mitigation measures are similar as those presented in section 8.5.15.

8.6.6 Mitigating Labour influx

The recommended mitigation measures are similar as those presented in section 8.5.17.

8.6.7 Mitigating Community Expectations on CSR

The recommended mitigation measures are similar as those presented in section 8.5.20.

8.7 Mitigation Measures for Negative Social Impacts during decommissioning

8.7.1 Mitigating spread of STD, HIV and AIDS

The recommended mitigation measures are similar as those presented in section 8.5.3

8.7.2 Mitigating theft and vandalism

The recommended mitigation measures are similar as those presented in section 8.5.18.

8.7.3 Mitigating gender and equality biases

The recommended mitigation measures are similar as those presented in section 8.5.7.

8.7.4 Mitigating illicit behaviour / drug and alcohol abuse

The recommended mitigation measures are similar as those presented in section 8.5.13.

8.7.5 Mitigating Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV)

The recommended mitigation measures are similar as those presented in section 8.5.15.

8.7.6 Mitigating labour influx

The recommended mitigation measures are similar as those presented in section 8.5.17.

8.8 Mitigating potential risks to the project

8.8.1 Mitigating community demonstrations in pursuit for employment opportunities

- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from PAPs and host community.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs
- Ensure implementation of plans in Annex 14 such as local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Livelihood Restoration Plan to ensure host community accesses the project benefits.
- Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team.
- KETRACO to ensure direct employment opportunities such as wayleave officers, community liaison officers (CLOs) and vacancies emanating from the project are recruited locally in a fair, consistent, and transparent process.

8.8.2 Mitigating theft and Vandalism

The recommended mitigation measures are similar as those presented in section 8.5.18.

8.8.3 Mitigating terrorism

- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from PAPs and host community.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs.
- Thoroughly screen workers, suppliers and distributors to ensure security enhancement.
- Provide vehicle scanning systems.
- Ensure 24-hour surveillance by engaging the Administration Police services during the day and night;
- Install CCTV cameras in strategic locations in workers' camps, offices, and substation areas.
- Ensure close liaison with the local Police officers.

8.8.4 Mitigating false information for land compensation / fraudulent activities

- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from PAPs and host community
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs
- On false information:
- KETRACO to engage affected persons as outlined in the Stakeholder Engagement Plan (SEP) (Annex 14 section 3.16 – SEP).
- The planning and implementation of the transmission line and associated facilities remains as publicly shared. Any changes necessitated by unforeseen circumstances should be communicated and a new census of affected persons conducted.
- On hike in prices / value:
- KETRACO to adopt compensation rates established by the RAP as per cutoff date
- Compensation to be made to bonafide land owners with official land documents

8.8.5 Mitigating encroachment of RoW and land Speculation

- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure all stakeholders and the public are involved during the project cycle.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community on possible encroachment of RoW
- Ensure sensitisation of PAPs and host community on the dangers of encroachment to the RoW
- KETRACO to ensure maintenance and adequate clearance of the right of way (RoW)
- KETRACO to undertake periodic RoW monitoring through the environment and social safeguards team including the operation and monitoring teams.
- Gazettlement of the 40metres RoW.

8.8.6 Mitigating lack of land documentation and formal land rights

- Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project, guided by the provisions of the KESIP RPF.
- Ensure relocation and compensation is in accordance to provisions within RPF developed under this project.
- KETRACO should deposit compensation monies on an interest earning escrow account until cases such as lack of documentation and formal land rights are resolved. The proponent will ensure that information regarding interest earning escrow account is timely disseminated to all PAPs in subsequent consultation forums, to avoid project delays and compensation disputes.
- A project Grievances Redress Mechanism (GRM: Annex 14 in chapter 7) including a Grievance Redress Committees. To be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level by Community Liaison Officers (CLOs), to address all emerging complaints and grievances from the PAPs and project area community. If the Grievance Redress Committee is not able to

provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters.

- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs

8.8.7 Mitigating political interference

- Ensure all stakeholders and the public are involved in the planning process and sensitized to understand that increase in the capacity of transmissions system will increase access and distribution of electricity at homesteads and institutional level within Kilifi county.
- Obtain necessary permissions and approvals from the County Governments.
- Ensure EIAs are conducted for specific project activities such as campsites, quarries, materials sites, campsites, boreholes etc
- Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project.
- Ensure relocation and compensation is in accordance to provisions within RPF developed under this project.
- Proponent to engage local persons as Wayleave Officers to work with the contractor, in order to ensure the project is implemented smoothly
- Largely involve the community in the project through their leaders, take keen in timely addressing their grievances and ensure a good percentage of the local community members are employees in the project.
- Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community.
- Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure all stakeholders and the public are involved during the project cycle

8.8.8 Mitigating high expectations for CSR

- Adopt and implement a CSR plan (Annex 14 section 3.20 CSR) targeting activities within KETRACO's mandate for implementation during the project
- Provide support for supplies and movable items for institutions or sectors identified by the community.
- KETRACO to establish deliberations / procedures on donation to local community of facilities used by the contractor, at the conclusion of the project. Such facilities could include campsite buildings, and boreholes.
- Implement the stakeholder's engagement plan (SEP) to ensure effective communication, community buy in and ownership of the project without lowering realistic expectations.
- KETRACO to consider liaising with or bringing to attention the relevant Ministries and County departments on critical community needs. For instance, linking vulnerable populations at project locational levels for registration in local government support programs
- Ensure implementation of plans in Annex 14 such as vulnerable peoples plan, local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Social Impacts Management Plan, Livelihood Restoration Plan to ensure host community accesses the project benefits.
- Ensure engagement on the project and CSR implementation (further consultations on priority projects and implementation plans) are done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive.
- Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from host community.

9 CHAPTER NINE: ANALYSIS OF PROJECT ALTERNATIVES

9.1 Introduction

This section analyses the project alternatives with respect to the project route and no project alternatives. It will also involve studying the design alternatives based on their respective environmental cost. The best alternative, usually that with the least adverse impacts was chosen. The following alternatives have been considered.

9.2 Transmission line route options

Relocation option to a different route is an option available for the project implementation. At present, the developer has the following options as the transmission routes for the Project: -

9.2.1 Option 1

Establishment of 220kV single circuit transmission line from Malindi 220/33kV substation to Kilifi substation with extension of Malindi Substation. This will accommodate one 220kV line bay and establishment of a new 220/132kV substation at Kilifi with a 132kV line link from the new Kilifi substation to the existing 132/33kV Kilifi substation.

This option is not favourable since it does not cater power demand for a switch station (Loop In Loop Out) for future power supply to Galana area. Galana area is currently not connected to the National Grid. Expected loads comprise mainly of pumping loads for the Galana Kulalu Food Security Project(KETRACO Team 3, 2018). The objective of the food security project is to bring down the price of Kenya's staple food (Maize) and reduce cases of maize shortage. There are also hotels are along the river Galana and Tsavo East that stand to loose from the stable supply of power.

9.2.2 Option 2

The second option involves establishment of a 220kV Switch Station at Kakoneni by Loop-in Loop-out (LILO) of Rabai-Malindi 220kV transmission line, approximately 22.2km from existing Malindi 220/33kV substation.

Then establishment of a 220kV double circuit transmission line from Kakoneni (Switch Station) to Kilifi with establishment of a new 220/132kV substation at Kilifi with a 132kV line linking the new substation to the existing 132kV Kilifi substation.

This option is not favourable due to the social impacts anticipated from the densely populated / residential Kakoneni area. This option would lead to high livelihood disruptions and need for relocations to cater for the switch station land and right of way for three lines; the existing Rabai – Malindi, proposed Kakoneni (switch station) to Galana, and the Kakoneni (switch station) to Kilifi. The financial costs for this option would also be high.

9.2.3 Option 3

The third option involves establishment of a 220kV double circuit line from Malindi 220/33KV substation to Kilifi substation through Arabuko Sokoke Forest with extension of Malindi Substation. This will include a Switch Station in Arabuko Sokoke Forest near Sokoke village by Loop-in Loop-out (LILO), approximately 28km from existing Malindi 220/33kV substation.

Then establishment of a 24km 220kV double circuit transmission line from the Switch Station in Arabuko Sokoke Forest near Sokoke village to Kilifi with establishment of a new 220/132kV substation at Kilifi with a 132kV line linking the new substation to the existing 132kV Kilifi substation.

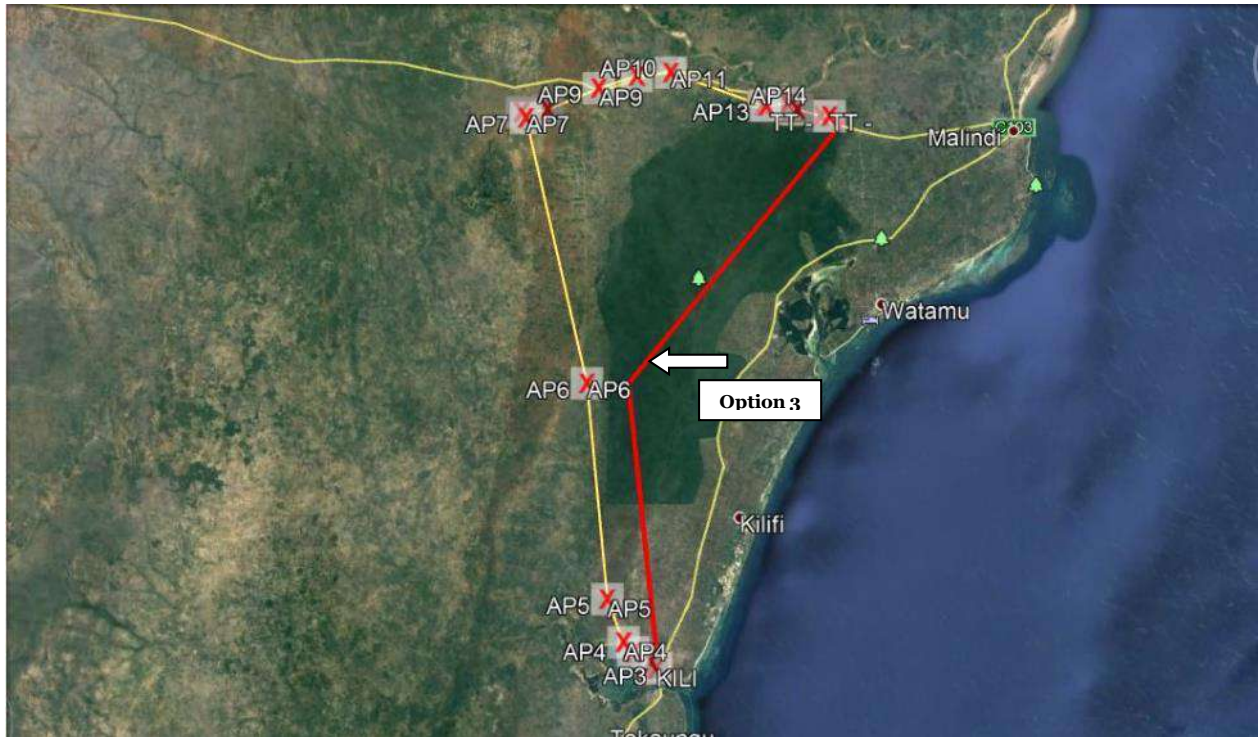


Figure 9-1 Alignment of Option 3 (Red line)

Advantages

This option avoids residential areas as much as possible hence there will be minimized resettlement of households.

Disadvantages

- (a) A high number of indigenous trees will be cut down to pave way for the proposed transmission line.
- (b) Arabuko Sokoke Forest is an Important Bird Area (IBA), home to several endangered species as described in the baseline chapter. The endangered bird species will be adversely impacted by construction of a high voltage power line through it and could even contribute to extinction of these birds.
- (c) Several habitats for the numerous fauna found in Arabuko Sokoke Forest will be lost making part of the forest uninhabitable to these animals. This will eventually bring about human-wildlife conflicts as some of these animals, for instance elephants, will move into the local community's farms to seek for new habitats.

9.2.4 Option 4

The fourth option involves establishment of a 220kV Switch Station at Ganda by Loop-in Loop-out (LILO), approximately 9.91km from existing Malindi 220/33kV substation.

Then establishment of a 51.19km 220kV double circuit transmission line from the Switch Station at Ganda to Kilifi with establishment of a new 220/132kV substation at Kilifi with a 132kV line linking the new substation to the existing 132kV Kilifi substation. This line will cross highway B8 at Gede and run parallel to the Indian Ocean coastline from Uyombo to Kilifi.

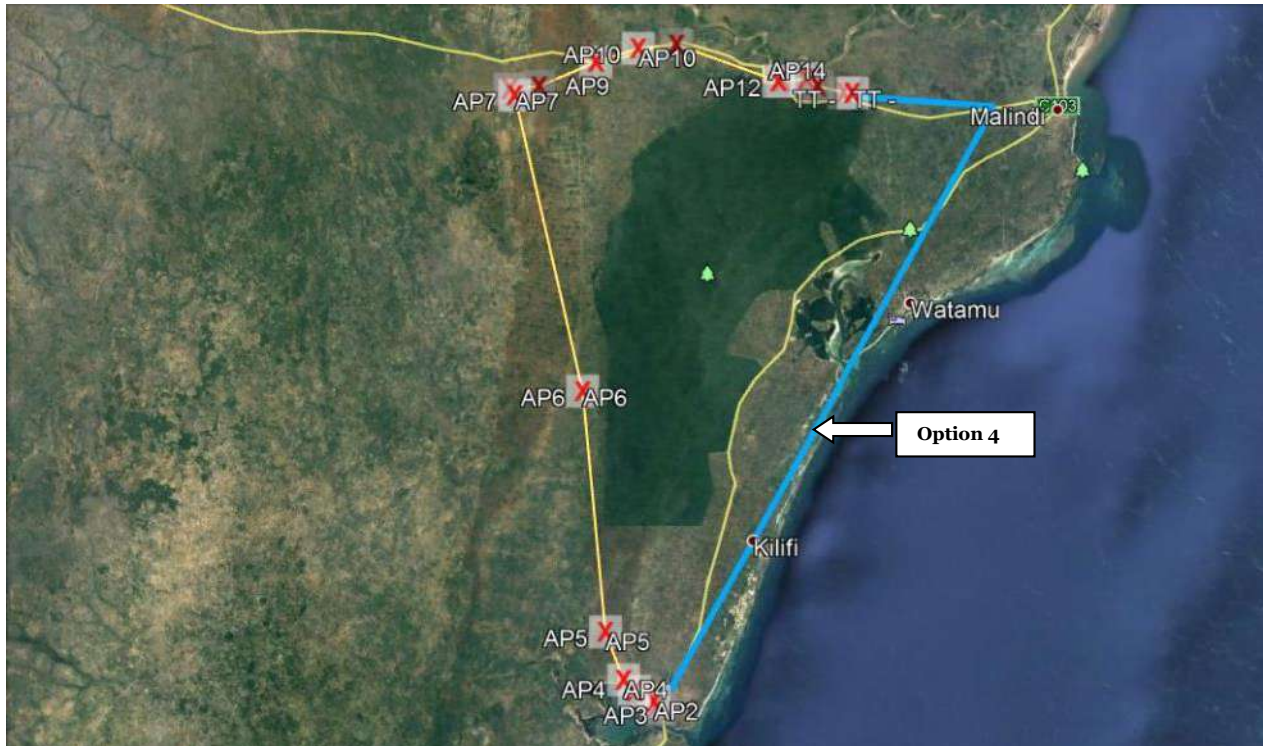


Figure 9-2 Alignment of Option 4 (Blue line)

As much as this option will minimise on the number of resettled PAPs, its proximity to the Indian Ocean will cause negative impacts to the mangrove ecosystem and aquatic biodiversity especially during the construction stage. This option will also interfere with movement of birdlife between the Arabuko Sokoke Forest and Mida Creek which are both Important Bird Areas (IBA), and home to several endangered species. The endangered bird species will be adversely impacted by construction of a high voltage power line through it and could even contribute to extinction of these birds.

9.3 Laying of Underground Transmission Cables

High voltage electricity transmission lines can be laid underground instead of overhead transmission lines. The most common types of underground electric power transmission cables include the following.

- i). HPPF (High-Pressure Fluid Filled Pipe)
- ii). HPGF (High-Pressure Gas Filled Pipe)
- iii). SCFF (Self Contained Fluid Filled)
- iv). XLPE (Solid Cable Cross-Linked Polyethylene)

Generally, the step by step procedure of installing underground electric power transmission lines includes the following series of events.

- Row Clearing
- Blasting (or) Trenching
- Welding Pipe (or) Arranging
- Installation of Vault & Duct Bank
- Backfilling
- Installation of Cable
- Adding gas (or) Fluids
- Restoration of land

In urban areas, this type of transmission line is enclosed/shielded with dielectric liquid and a metal pipe that is either fixed or spread through pumps.

Advantages

- (a) Post-construction issues such as aesthetics, concerns regarding electric and magnetic fields (EMF), and property values are usually less of an issue for underground electricity transmission lines. Underground electricity transmission lines are not visible after construction and have less impact on property values and aesthetics.
- (b) The underground electric power transmission cables are very safe to the environment, public, animals, etc. These cables are not impacted and affected by the weather conditions as well as trees, accidents, animals, storms, physical interference etc.
- (c) The underground electric power transmission cables have less voltage drop since these cables are much larger in diameter than overhead cables for the same power delivery.
- (d) Underground electricity transmission lines don't interfere with proximity communication lines, television frequencies, radio frequencies and corona discharge.
- (e) The underground electric power transmission cables are beneficial in terms of noise reduction.
- (f) Additionally, these cables have low loss of transmission, reduced harm, and accidents.

Disadvantages

- (a) Underground lines generally cause greater soil disturbance due to trenching requirements, while overhead lines disturb the soil primarily at the location of the transmission poles.
- (b) Trenching an underground line through farmlands, forests, wetlands, and other natural areas causes significant land disturbances. The ROW for underground transmission lines must be kept clear of trees and bushes, while small trees and bushes are allowed within the ROW under overhead lines.
- (c) The underground electric power transmission cables are limited by the costly construction and dissipation of heat. Due to these reasons, an underground cable transmits up to 33-kilovolts.
- (d) It is complicated to recognize the faults in underground electric power transmission. It takes much more time as well to repair the underground transmission cables.
- (e) The lifespan of underground electric power transmission cables is low compared to overhead cables.
- (f) The installation of underground transmission lines costs more per foot than most overhead lines. Costs of underground construction can range from four to ten times as much as an equivalent length of overhead line. However, generalized cost ratios of underground to overhead options should not be used because costs are site-specific. The cost of constructing underground transmission lines is determined by the local environment and the distances between splices and termination points. But, the cost of these cables is high and laying process is time-consuming as compared to overhead transmission lines.
- (g) Challenges of right-of-way access and maintenance (accessibility),
- (h) Construction limitations in urban areas which includes conflicts with other utilities (this may be complicated by another type of value services like pipelines of gas, oil, and sewer lines),
- (i) Trenching construction issues which may include blasting due to hard rock surfaces encountered in the RoW. This attracts other construction related impacts such as noise and vibrations; faulting of nearby structures; increased health and safety hazards from fly rocks as a result of blasting.
- (j) Challenges of crossing natural or manmade barriers, and
- (k) the potential need for forced cooling facilities.

From the analysed advantages and disadvantages of laying an underground electricity transmission line, the disadvantages outweigh the advantages. This is therefore not a viable option at this stage.

9.4 No Project Alternative

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will, however, involve several losses both to the proponent, government and the society. The No Project Option is the least preferred from the socio-economic and partly environmental perspective. It is apparent that the No Project Option is no alternative to the proponent, local people, Kenyans, and the government of Kenya.

The No project alternative means that the status quo in Kilifi County which is currently supplied via a radial 132kV line from Rabai and 33kV lines from new Bamburi substation, remains. The 132kV line is currently on wooden poles and has three intermediate substations at New Bamburi, Vipingo Ridge and Mombasa Cement Ltd (KETRACO Team 3, 2018). As a result, any interruption on this line takes out all the customers in entire Kilifi and environs since it forms the major supply for the County. Poor quality of supply (Low voltage) has been reported repeatedly and notably as a result of major industries that are supplied from this line. There is anticipated growth in county electricity demand expected to result from electrification of the various county development projects alongside private industrial project majorly related to cement processing. This alternative is therefore not favourable since Kilifi county also requires steady supply of power to serve the demand.

9.5 The Proposed Development Option

The proposed development involves establishment of a 220kV Switch Station at Weru by Loop-in Loop-out (LILO) of Rabai-Malindi 220kV transmission line, approximately 27.2km from existing Malindi 220/33kV substation. The Switch Station to be established at Weru Group Ranch.

Then establishment of a 48km 220kV double circuit transmission line from Weru (Switch Station) to Kilifi with establishment of a new 220/132kV substation at Kilifi with a 132kV line linking the new substation to the existing 132kV Kilifi substation.

In conclusion, the proposed route was analysed to be the better option because of the following reasons:

- (a) It avoids by veering off the Arabuko Sokoke Forest an IBA, an important habitat to several other mammals unique to the forest and comprised of several indigenous tree species;
- (b) It affects a smaller number of households in the wayleave hence minimises the number of PAPs to be resettled;
- (c) The proposed route was also analysed to have fewer impacts on marine flora and fauna as it does not affect;
 - the aquatic environment of Indian Ocean and Sabaki River,
 - Mangrove ecosystem along the Indian Ocean Coastline

Under the *Proposed Development*, the developer of the proposed project would be issued with an EIA License. In issuing the license, NEMA would approve the proponent's proposed development of the Project, provided all environmental and social measures are complied with during the construction period and operational phases.

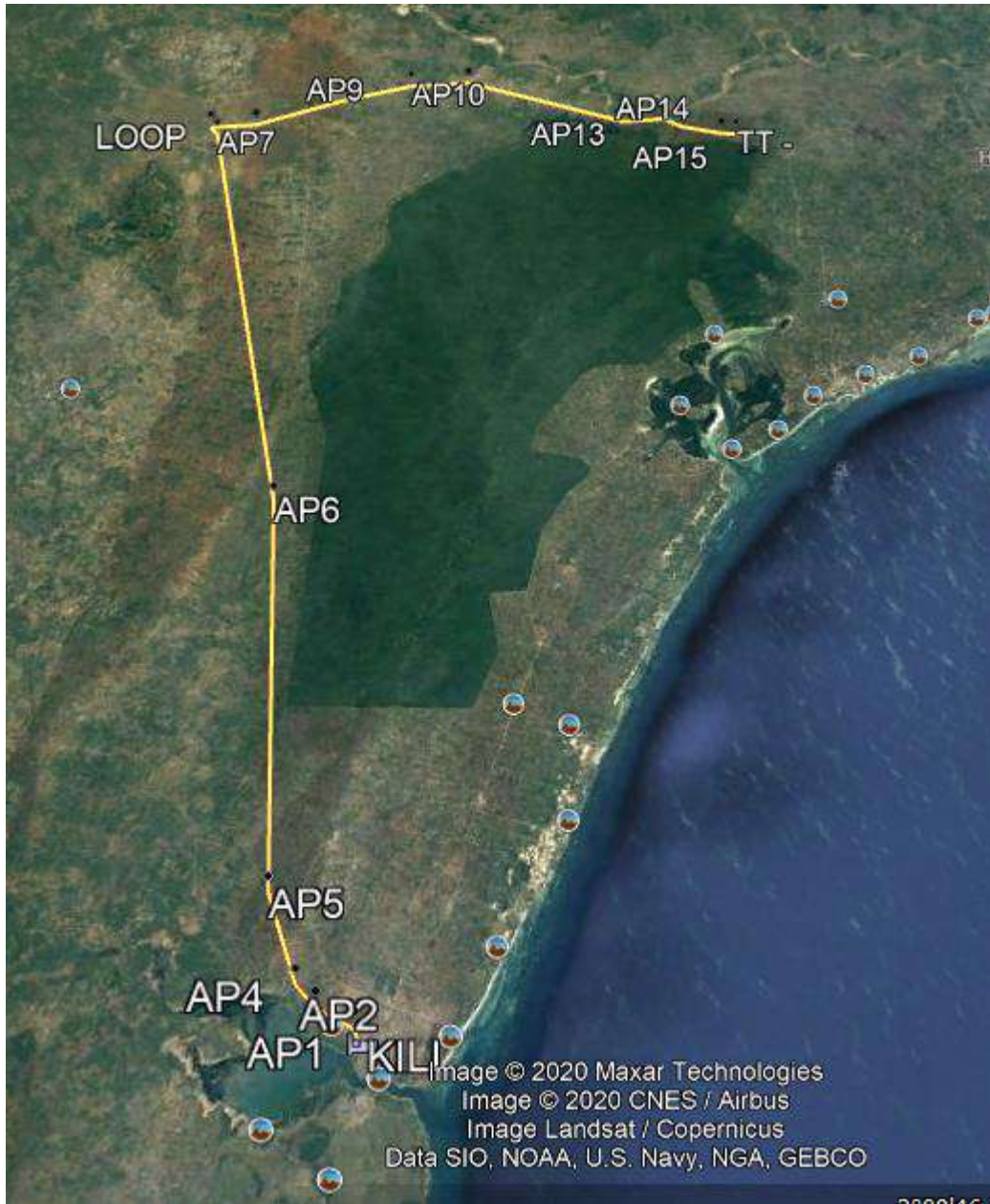


Figure 9-3 Proposed development option Malindi -Weru (SS) -Kilifi
Source Google Earth – AWEMAC GIS

9.6 Analysis of Alternative Construction Materials and Technology

The proposed transmission line and associated facilities development will be constructed using modern, locally and internationally accepted materials to achieve public health, Occupational health and safety and environmental aesthetic requirements. The steel structures will be bought from local companies that have been approved by the proponent and that meet the Kenya Bureau of Standards requirements.

9.7 Multicriteria evaluation of TL development options

A multi-criteria analysis based on the anticipated impacts (environmental, social as well as economic impacts), and cost of implementation was used to score the above alternatives (Table 9-1). The option with significant/highest positive impact was given a score of 5, where no change was anticipated, a score of 0 was given while the most adverse/negative impact was given a score of -5.

Table 9-1 Multicriteria evaluation of TL development Options

Impact	Project Alternatives						
	Transmission Route				Under ground TL	No Project	Proposed Development Option
	Option 1	Option 2	Option 3	Option 4			
Environmental Impacts							
Aquatic and Habitat Alteration	-1	-1	-5	-5	-5	2	-1
Loss of vegetation cover and biodiversity	-2	-2	-5	-3	-5	3	-3
Terrestrial Habitat Alteration	-2	-2	-5	4	-5	-2	-2
Impact on migratory birds	-2	-2	-5	-4	5	5	-2
Social Impacts							
Displacement of households and businesses / Impact on livelihoods	-3	-3	1	1	-5	5	-3
Employment Opportunities	2	3	4	4	5	-5	5
Economic Impacts							
Power transmission reliability / stability in distribution	2	3	2	2	2	-5	5
Gain in Local and National Economy	2	4	2	2	2	-5	5
Project Cost	3	2	-3	-4	-5	5	2
Score	-1	2	-14	-3	-11	3	6

The No project alternatives scored relatively well (score of 3) but still has higher impacts compared to the proposed development option. Its worth noting that despite not having direct impact on biodiversity, need for energy will continue to instill pressure on the biodiversity from cutting down of trees for energy production. Such will result to habitat alteration hence denying the no project alternative a chance to attain maximum scores. Option 4 of having the Transmission route traverse through the Arabuko Sokoke Forest was found to be the most detrimental (score of -14) on biodiversity and also likley to be expensive. Underground Transmission line followed closely with high adverse impact (score of -11) cutting across, biodiversity impacts, costs and displacement of households. Overall, the proposed development was considered the most suitable option from this study with a score of 6.

10 CHAPTER TEN: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

10.1 Introduction

The proponent of the proposed project acknowledges that the proposed project activities will have some impacts on the biophysical environment, health and safety of its employees and members of the public, and socio-economic wellbeing of the residents. Thus, the focus was on reducing the negative impacts and maximizing the positive impacts associated with the project activities through a continuous improvement programme. An environmental and social management plan (ESMP) including a monitoring plan has been developed to assist the proponent in mitigating and managing environmental impacts associated with the life cycle of the project – a detailed ESMP is illustrated in table 10-1.

The ESMP table 10-1 consists of section A and section B. Section A highlights the potential positive impacts and gives recommendations to enhance the impacts including respective responsibility for enhancement, timelines and cost overlay. Section B highlights the negative impacts and gives proposed mitigation measures for the negative impacts including respective responsibility for mitigation, timelines and cost overlay. The ESMP was developed to provide a basis for an Environmental Management System (EMS; ISO 14001 principles) for the project. It is noteworthy that key factors and processes may change through the life of the project and considerable provisions have been made for dynamism and flexibility of the ESMP. As such, the ESMP should be subjected to a regime of periodic review.

The ESIA study has further established detailed environmental and social management plan (ESMP); a comprehensive environmental and social monitoring plan(ESMmP); including standalone management plans (Annex 14) for various aspects with mitigation measures for the anticipated impacts. Some of the management plans are as follows;

- Atmospheric Emissions Management Plan
- Hazardous Substances Management Plan
- Spill Prevention and Countermeasures Management Plan
- Fire Risk Management Plan
- Noise Management Plan
- Surface Water Management Plan
- Waste Management Plan
- Biodiversity Management Plan
- Occupational Health and Safety Management Plan
- Emergency Preparedness and Response Management Plan
- Labour Management Plan
- Labour influx management plan
- Local Recruitment Plan
- Associated Facilities Management Plan
- GBV-SEA/SH management plan
- Stakeholder Engagement Plan
- Grievance Redress Mechanism
- CSR plan.
- Resettlement Action Plan
- Livelihood Restoration Plan
- Gender mainstreaming plan
- Chance Finds Procedure
- Resource Efficiency and Pollution Prevention and Control Plan
- External Communication Mechanism on Environmental Issues
- Community Health and Safety Plan

10.2 Environmental and Social Management Plan

Table 10-1 Environmental and Social Management Plan

Section A – Positive Impacts				
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
Enhancement of Environmental Impacts during construction & operation Phase				
Reforestation	<ul style="list-style-type: none"> Compensate the PAPs for the lost trees to enable them to re-plant outside the RoW. As a corporate social responsibility (CSR) the proponent to collaborate with KFS to replant trees in protected forest areas / gazetted areas through purchasing seedlings and nurturing the trees for a period of 3 years 	KETRACO Environmental & Social Safeguards Team	Throughout construction phase	As per RAP budget
Control of invasive species	<ul style="list-style-type: none"> Contractor to ensure only indigenous tree species / vegetation is re-planted after clearance of the right of way Empower local community members to adopt growing of commercial crops such as mango (<i>Mangifera indica</i>), cashew tree (<i>Anacardium occidentale</i>), neem (<i>Azadirachta indica</i>) and Nazi (<i>Ziziphus Mauritania</i>). Employ vegetation rehabilitation techniques such as planting grass to recover lost plant cover mostly in areas where the RoW will traverse 	Contractor Site Manager, & Environmental Team	Throughout construction phase	200,000
Reduction in Greenhouse Gas emission	<ul style="list-style-type: none"> KETRACO to ensure reliability in the provision of electricity through a routine repairs and maintenance program. This will contribute towards reduction in the generation of greenhouse gases from diesel powered generators and fossil fuels that are currently in use in parts of Kilifi County. KETRACO to liaise with Kenya Power at agency level to distribute ensure the residents of Kilifi County are connected to the National Grid. This will reduce dependence on fuelwood by providing an alternative lighting and cooking source of energy to the residents. Further it will improve access to adequate and affordable energy for households in surrounding towns such as Malindi, Mtwapa and industrial sectors hence help in rolling back the rate of deforestation and thus conserving forest resources, biodiversity, soil conservation and water resources. Notably access to affordable energy will improve efficiency in transportation, industrial production, and farming methods with the potential of reducing global, regional, and local pollutants emissions such as carbon monoxide, carbon dioxide, particulate matter, oxides of nitrogen and sulphur oxides to the atmosphere. 	KETRACO Engineering Department	Throughout Operation phase	Operational & maintenance costs

Section A – Positive Impacts				
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
Reduction of overreliance on fuelwood	<ul style="list-style-type: none"> KETRACO to liaise with Kenya Power at agency level to distribute and connect Kilifi County households, industries to the grid. This will reduce reliance on fuelwood and reduce overreliance on charcoal production thereby contributing towards among others, the national goal of meeting the minimum forest cover. 	KETRACO Engineering Department	Throughout Operation phase	Minimal costs
Enhancement of Social Impacts during construction & Operation Phase				
Creation of employment opportunities	<ul style="list-style-type: none"> KETRACO to ensure that contractors adopt and develop a Local Recruitment Plan (<i>Annex 14 section 3.14</i>) to enhance creation of employment opportunities, training, and skills. Specific enhancement measures include: <ul style="list-style-type: none"> A procedure for a fair, consistent, and transparent recruitment of both semi-skilled and unskilled locals including men and women above 18 years of age in Kilifi County. Locals within the settlements along the transmission line be given priority for unskilled jobs such as vegetation clearance, cleaning, etc. Maximising capacity enhancement and transfer of knowledge and skills to local employees, through on-the-job trainings to the extent possible. The Local Recruitment Plan to outline conditions of employment – earnings and benefits to avert unequal remuneration for the selected employees. Contractor to ensure non-discrimination and equal opportunity during selection of project workers. This to be attained through; <ul style="list-style-type: none"> <i>Eligibility:</i> All locals seeking employment be required to be 18 years of age and provide a National Identity (ID) card <i>Sourcing potential employees:</i> Recruitment of workers for the transmission line be done via adverts through the offices of Locational and Sub-locational Chiefs hence ease of access to all community members. KETRACO to ensure the contractor takes measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women. The principles of non-discrimination should apply to all workers. Contractors to develop a code of conduct and ensure its signed by all workers with physical presence on site. The code of conduct will address worker and community interactions considering risks of GBV-SEA and sexual harassment in workplaces, HIV/AIDs and other STDs resulting from population/labour influx. 	<p>KETRACO Environmental & Social Safeguards Team / Procurement</p> <p>Contractor Social Safeguards Team / Human Resource / Site Managers</p>	Throughout construction & Operation phase	<p>Livelihood restoration – As per RAP budget</p> <p>Local recruitment plan – Institutional costs</p>

Section A – Positive Impacts				
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Contractor to ensure non-discrimination of Vulnerable Individuals and Households Vulnerable individuals and households Vulnerable individuals and households such as PLWD, and widows. Where possible, contractor should prioritize and reserve certain employment opportunities for Vulnerable persons such as, PLWDs and widows KETRACO to ensure Contractors adopt, develop & implement a Labour Influx Management Plan (<i>Annex 14 section 3.13</i>) as part of C-ESMP to ensure reduction of labour influx by tapping into the local workforce. KETRACO to ensure implementation of a livelihood restoration plan (LRP) (<i>Annex 14 section 3.22</i>) that create alternative economic / job opportunities for the locals. Such include; <ul style="list-style-type: none"> (a) Crop based Livelihoods; through regeneration of food crops and cash crops by better extension services in partnership with the County Ministry of Agriculture; forestry through liaising with KFS to train farmers and offer seedlings on sustainable tree planting (b) Enterprise Based Livelihoods; <ul style="list-style-type: none"> ➢ A local buying program during the construction period hence more jobs to locals, ➢ Micro Loans/Small Business Grant to ensure enhanced social investment by KETRACO in the community ➢ Financial Literacy Training Entrepreneurial training: for existing small businesses and support with small grants for the identified Vulnerable Individuals and Households Vulnerable individuals and households ➢ Apiculture – Linking farmers with Ministry of Agriculture for training in commercial oriented beekeeping enterprises KETRACO to ensure direct employment opportunities such as wayleave officers, community liaison officers (CLOs) and vacancies emanating from the substations are recruited locally in a fair, consistent, and transparent process. 			
Gains in the local and national economy	<ul style="list-style-type: none"> KETRACO to ensure contractors adopt, develop and implement a Local Recruitment Plan (<i>Annex 14 section 3.14</i>) as part of C-ESMP to provide employment to the locals both men and women above 18 years of age, hence income from the salaries and wages will improve not only the County but the local economy of the trading centres where the RoW passes. Some of the trade centre's 	KETRACO Social Safeguards Team / Procurement	Throughout construction & operation phase	Institutional costs

Section A – Positive Impacts				
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
	<p>include Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga.</p> <ul style="list-style-type: none"> As part of the tendering process, KETRACO should ensure contractors develop a purchasing plan that stipulates how national and local purchase of goods and services will be optimised. It is expected that contractors should purchase some of the materials such as sand from the project area and as such contribute positively to the local and national economy. KETRACO to liaise with other line agencies such as Kenya Power to ensure achievement of project development objectives aimed to increase the capacity / adequacy of the transmission system and access to electricity in the project area which will lead to gain to the national economy from revenue generation. KETRACO to liaise with Kenya Power through Ministry of Energy to support grid densification, intensification and grid expansion to reach about various households within the project region. With improved power distribution, it is expected that there will be improved livelihood likely to benefit the local and regional economy in the short term and the national economy in the long term. Such will boost industrialization, education and manufacturing sectors. 			
Transfer of skills	<ul style="list-style-type: none"> KETRACO to ensure Contractors maximise on capacity enhancement and transfer of knowledge and skills to local employees, through on-the-job trainings to the extent possible. This can be attained through ensuring contractors adopt, develop and implement a Local Recruitment Plan (<i>Annex 14 section 3.14</i>) and Labour Management Plan (<i>Annex 14 section 3.12</i>) as part of C-ESMP a Local Recruitment Plan. The Labour Management Plan will ensure promotion of fair and equitable labour practices for the fair treatment, non-discrimination and equal opportunity of workers. Semi-skilled labour should be sourced from within and where un-available outside the project area, as such, the local Kilifi County people will learn new skills from the transferred skills and knowledge. 	KETRACO Social Safeguards Team / Procurement	Throughout construction & operation phase	Institutional costs
Training and Capacity Building	<ul style="list-style-type: none"> KETRACO environmental and social safeguards departments to conduct to undertake training and build the capacity of the contractor to implement both the ESMP and ESMnP. This should include project staff, and implementing partners. Through implementation of Livelihood Restoration Plan (<i>Annex 14 – Section 3.22</i>). KETRACO should consider; 	KETRACO Environmental and Social Safeguards Team / Safety Team	Throughout construction & operation phase	As per Training & institutional Costs

Section A – Positive Impacts				
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ➢ <i>Financial Literacy Training / Entrepreneurial training</i>: for existing small businesses and support with small grants for the identified Vulnerable Individuals and HouseholdsVulnerable individuals and householdsVulnerable individuals and households ➢ <i>Apiculture Training</i> – Linking farmers with Ministry of Agriculture for training in commercial oriented beekeeping enterprises\ • As part of health and safety implementation KETRACO should ensure training is conducted on; <ul style="list-style-type: none"> ➢ Regular fire safety trainings /fire drills for employees and contractors ➢ The personnel involved in the handling of hazardous waste including fuel and used oil should undergo specific training in hazardous material handling procedures and fuel / lubricant and used oil handling procedures; ➢ Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; ➢ Training workers in the identification of occupational EMF levels and hazards; ➢ Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE. ➢ Set up a health and safety committee and undertake training • KETRACO to ensure contractor develops appropriate training, awareness content and implement awareness sessions for communities and workers on HIV/AIDs and other STDs, as well as GBV-SEA and sexual harassment at workplaces. • KETRACO to ensure the contractor provides mandatory trainings regarding GBV-SEA/SH to all project workers including temporary and casual workers. • KETRACO to ensure the contractor provides training and awareness raising on the code of conduct for the workforce about refraining from unacceptable conduct toward local community members, specifically women. 	Contractor Social and Environmental Safeguards Team		
Provision of market and supply for building materials	<ul style="list-style-type: none"> • As part of the tendering process, KETRACO should ensure contractors develop a purchasing plan that stipulate local purchase of goods and services including provision of market and supply for building materials. • It is expected that contractors should purchase building materials such as sand, cement etc. from suppliers including hardware shops in key trading centres such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga. 	KETRACO Social Safeguards Team / Procurement	Throughout construction phase	Administrative costs

Section A – Positive Impacts				
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
Improvement of local trade and business opportunities	<ul style="list-style-type: none"> As part of the tendering process, KETRACO should ensure contractors develop a purchasing plan that stipulate local and regional purchase of goods and services including provision of market and supply for building materials. A Purchasing Plan should ensure that contractors engage local suppliers for purchase of building materials such as sand, cement etc. from suppliers including hardware shops in key trading centres such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga. KETRACO to ensure implementation of a livelihood restoration / enhancement plan (LRP) (<i>Annex 14 section 3.22</i>) that create alternative economic / business opportunities for the locals. Such include; <ul style="list-style-type: none"> ➢ A local buying program during the construction period hence local suppliers of construction materials can benefit from contracts during construction. ➢ Enhancement of skills on small scale businesses such as food vendors and kiosk owners who can benefit greatly during construction stage due to the expected construction workers. KETRACO to liaise with Kenya Power through Ministry of Energy to support grid densification, intensification and grid expansion to reach about various households and town centres within the project region. With improved power distribution, it is expected that there will be improved livelihood likely to benefit the local and regional economy in the short term and the national economy in the long term. Such would result to income generation avenues and business opportunities. 	KETRACO Social Safeguards Team / Procurement	Throughout construction phase	Administrative costs
Improved security	<ul style="list-style-type: none"> KETRACO to liaise with relevant security agencies including Kenya Police for deployment of police or private security services along the project RoW and mainly within substation areas. 	KETRACO Procurement	Throughout construction & operation phase	Administrative costs
Increased access to information	<ul style="list-style-type: none"> KETRACO to liaise with Kenya Power through Ministry of Energy to support grid densification, intensification and grid expansion to reach about various households and town centres within the project region. With improved power distribution, the project would indirectly trigger physical infrastructural development and increased access to information. KETRACO to ensure building and operation of a substation at Malindi which will result to ease of power distribution in the area. This will make it easy for locals to charge phones, listen to the radio, and watch television which was termed not only as enhanced communication but as an indicator of improved standards of living. 	KETRACO Engineering team	Throughout construction & operation phase	Project cost as per BoQ

Section A – Positive Impacts					
Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)	
Health benefits of the project	<ul style="list-style-type: none"> KETRACO to liaise with Kenya Power through Ministry of Energy to support grid densification, intensification and grid expansion to reach about various households and town centres such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga within the project region. This will result in many families replacing kerosene lamps for lighting with electricity thereby reducing disease burden at the family level and on the government due to paraffin related lighting (Paraffin Lantern; Paraffin Pressure Lamp and Paraffin Tin Lamp); and use of firewood, attributed to indoor air pollution. 	KETRACO Engineering team	Operation phase	Administrative costs	
Section B – Negative Impacts					
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)	
Construction phase					
Minimization of Environmental Impacts					
Terrestrial Habitat Alteration	<ul style="list-style-type: none"> Use of existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible: to avoid habitat alteration Undertaking selective clearance by removing tall woody species leaving saplings, for quick regeneration of vegetation along the wayleave; Installing transmission lines above existing vegetation to avoid land clearing especially between Konjora and Sokoke location by doing design variations to towers through leg and body extensions; Avoiding construction activities during the breeding season and other sensitive seasons or times of day especially at AP16, AP15, AP13 and AP6; Management of construction site activities by limiting access road gradients to reduce runoff-induced erosion and providing adequate road drainage based on road width, surface material, compaction, and maintenance Re-vegetation of disturbed areas with native / indigenous plant species; Working in close coordination with pertinent agencies (KWS and KFS) when undertaking construction of towers especially in the outskirts of Arabuko Sokoke Forest: AP16, AP15, AP13 and AP6. 	Contractor Engineer & Environmental Team KETRACO Engineer & Environmental Safeguards Team	Civil &	Continuous	1,350,000

Section B – Negative Impacts					
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)	
Loss of vegetation cover / biodiversity	<ul style="list-style-type: none"> ▪ Provide adequate protection against scour and erosion; and consider the onset of the rainy season with respect to construction schedules. ▪ Minimize clearing of indigenous plant species and ensure replanting of indigenous plant species in disturbed areas by liaising with experts from Kenya Forest Services (KFS). ▪ Employ vegetation rehabilitation techniques to recover lost land cover such as planting indigenous grass species in areas where the RoW will traverse. ▪ Ensure proper demarcation and delineation of the project area to be affected by construction works; ▪ Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage; ▪ Designate access routes and parking within the site; ▪ Implement a landscaping programme for the substation site; ▪ Consider to support community initiatives in tree planting initiatives such as in surrounding primary schools as part of CSR and for reforestation purposes. 	<p>KETRACO Site Manager / Civil Engineer & Environmental Safeguards Team</p> <p>Contractor Site Manager, Civil Engineer & Environmental Team</p>	Continuous	600,000	
Risk of fire	<ul style="list-style-type: none"> ▪ Conduct a fire risk assessment for project at hand especially in areas with fire receptors such as area with canopies with a potential to touch the conductors such as at AP16, AP15, AP13 and AP6; ▪ Conduct regular trainings and fire drills for the operation and maintenance employees both at the line and substation; ▪ Removing blow down and other high-hazard fuel accumulations; ▪ Time thinning, slashing, and other maintenance activities to avoid forest fire seasons especially at the following areas: AP16, AP15, AP13 and AP6; ▪ Establishing a network of fuel breaks of less flammable materials or cleared land to slow progress of fires and allow firefighting access. ▪ Create fire breaks (ploughed strips) on strategic areas of the proposed RoW to prevent fire spreading to other pasture lands or from pasture lands to the Arabuko Sokoke Forest and substations. ▪ Periodic maintenance to ensure that, there are; - no overloaded electrical systems; no incorrectly installed wiring; no live naked wires; and fuel store areas are continuously monitored. ▪ Build capacity for community on fire related issues including fighting and vigilance; ▪ Ensure compliance with fire safety rules under OSHA 2007 at the substations. 	<p>KETRACO Health & Safety Team</p> <p>Contractor Health & Safety Team</p>	Continuous	200,000	

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Human – wildlife conflict	<ul style="list-style-type: none"> ▪ All personnel should be briefed about wildlife protection measures at the outset of the project, in order to ensure that these measures are clearly understood and appropriately implemented. ▪ The briefing needs to provide an overview of the mitigation measures that are being used at the site, as well as instructions on what to do if and when wildlife are encountered during the work. ▪ It should also include information on any species at risk that may be present, and what to do if one is seen. ▪ A laminated handout summarising key information on wildlife protection should be kept on-site at all times for reference by staff. It should address the following; <ul style="list-style-type: none"> ✓ General provisions – e.g., do not harm, feed or unnecessarily harass wildlife; drive slowly and avoid hitting wildlife where possible; keep site tidy and secure ✓ Species at risk – basic identification tips and recommendations (needs to be modified to address species most likely to be encountered at the site) ✓ Contact information for: Project biologist / wildlife service provider; Ministry of Natural Resources and Forestry, KFS (for species at risk) Wildlife rehabilitators (KWS) and veterinarians (for orphaned or injured wildlife) ▪ The management of the site needs to specifically address how to avoid attracting wildlife to the workspace. Although on-site activities will generally discourage wildlife from entering the workspace during the day, they may be drawn to the site at night (or on weekends) if it appears to provide sources of food, water or shelter. The following common attractants should be controlled or eliminated: <ul style="list-style-type: none"> ✓ Food wastes and other garbage – effective mitigation measures include waste control (prevent littering); keeping all trash secured in wildlife-proof containers, and prompt removal from the site (especially in warm weather). ✓ Water – effective mitigation measures include ensuring proper site drainage to limit standing pools of water; fencing off temporary storm ponds and other water bodies within the work space (and not permitting wildlife access to any potentially contaminated waterbodies); and, use appropriate sediment and erosion control measures to protect the quality of surface water adjacent to or downstream of the work space. 	<p>KETRACO Site Manager / & Health and Safety Team</p> <p>Contractor Site Manager, Health & Safety Team</p>	Continuous	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ✓ Shelter – effective mitigation measures include covering or containing piles of soil, fill, brush, rocks and other loose materials; capping ends of pipes where necessary to keep wildlife out; ensuring that trailers, bins, boxes, and vacant buildings are secured at the end of each work day to prevent access by wildlife. ▪ While all personnel need to be aware of the wildlife protection measures, one or more people should be specifically tasked with ensuring that those measures are properly implemented, by performing the following duties: <ul style="list-style-type: none"> ✓ Checking the work site (including previously cleared areas) for wildlife, prior to beginning work each day; ✓ Regularly inspecting protective fencing or other installed measures to ensure their integrity and continued function; and, ✓ Monitoring construction activities to ensure compliance with the project-specific protocol (where applicable) or any other requirements. 			
Avian (Bird) collisions and electrocutions	<ul style="list-style-type: none"> ▪ Engineering solutions including installing visibility enhancement objects such as wire marker balls, bird perch deterrents, or diverters; especially at Arabuko Sokoke Forest (ASF) environs AP16, AP15, AP13 and AP6 locations including Kilifi Creek environs AP 2 -AP 3 to alert birds to the presence of power line, allowing them time to avoid the collision; ▪ Building raptors platforms on top of towers for roosting and nesting; ▪ Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware ; ▪ Insulation through covering energised parts and/or covering grounded parts with materials appropriate for providing incidental contact protection to birds. It is best to use suspended insulators and vertical disconnectors, if upright insulators or horizontal disconnectors are present, these should be covered; ▪ Installing elevated perches, insulating jumper loops, placing obstructive perch deterrents (e.g. insulated “V’s”) on the transmission line. ▪ Working with line agencies such as NMK, KWS and relevant NGOs such as Birdlife International and Nature Kenya for expert opinion and specialized monitoring studies (ornithological studies). ▪ The proponent design team to consider a wider berth to the ASF boundary than currently proposed since birds are not confined to buffer zones. 	<p>KETRACO Civil Engineer & Environmental Safeguards Team</p> <p>Contractor Civil Engineer & Environmental Team</p>	Throughout	15,250,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Impact on Mammals including Bats Collisions and Electrocutions	<p>The following should be undertaken mainly within the Arabuko Sokoke Forest environs [AP6 (1.85km) to the East, AP12 (287m), AP13 (275) and AP16 (465m) to the South] where mammals and bats are likely to be found. Worth noting, echolocating bats are less likely to fall victim of crushing into overhead cables.</p> <ul style="list-style-type: none"> • Implementation of an integrated vegetation management approach (IVM) during repairs and maintenance of RoW. The selective removal of tall-growing tree species and the encouragement of low-growing grasses and bushes to avoid alteration and disturbance to critical natural habitats such as monkeys and bat foraging corridors, roosting and breeding areas. • Provision of engineering solutions such as wire-marking through installing visibility enhancement objects such as marker balls • Ensuring towers / pylons are insulated to act as bats roosting places and protect monkeys from electrocution • Maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, covering energized parts and hardware; • Insulation: covering energised parts and/or covering grounded parts with materials appropriate for providing incidental contact protection to bats. It is best to use suspended insulators and vertical disconnectors, if upright insulators or horizontal disconnectors are present, these should be covered; • Working with line agencies such as NMK, KWS and relevant NGOs such as Nature Kenya for expert opinion. 	<p>KETRACO Civil Engineer & Environmental Safeguards Team</p> <p>Contractor Civil Engineer & Environmental Team</p>	Throughout	5,000,000
Aquatic Habitat Alteration (Wetlands)	<ul style="list-style-type: none"> ▪ Ensure power transmission pylons are not erected on critical aquatic habitat such as wetlands including the marshland / riparian section near River Galana (AP2 - AP3) ▪ Avoiding altering critical aquatic habitat (wetlands) during construction such as marsh land /flood zone near River Galana and Jilore Lake; ▪ Minimize clearing and disruption to riparian vegetation; ▪ Adjust tower placements to span wetlands or limit equipment access in wetlands including the marsh land /flood zone near River Galana wherever possible; ▪ Working in close consultation with line agencies such as the Water Resources Authority to observe Riparian areas. 	<p>KETRACO Civil Engineer & Environmental Safeguards Team</p> <p>Contractor Civil Engineer & Environmental Team</p>	Throughout	200,000
Hazardous Materials	<ul style="list-style-type: none"> ▪ Use of designated areas of hard standing for repair and maintenance of machinery e.g. garages to avoid fuels and lubricant spills at the RoW construction sites; 	<p>KETRACO Site Manager & Environmental Safeguards Team</p>	Throughout	2,500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Install oil trapping equipment and remedial measures in areas where there is a likelihood of oil spillage e.g. during maintenance of machines and construction equipment; ▪ Implement the Spill Prevention & Counter Measures Management Plan (SPCMMP) – Annex 14 section 3.4 to deal and prevent hazardous material spills ▪ Storage and liquid impoundment areas for fuels, raw and in-process material solvents, wastes and finished products should be designed with secondary containment to prevent spills and the contamination of soil, ground and surface water; ▪ A written response plan should be prepared and retained on the site and the workers should be trained to follow specific procedures in the event of a spill; ▪ Regular inspection of vehicles and machines for oil and fuel leaks. Leaking vehicles and machines to be removed from site until repaired; ▪ Spill response kit (e.g. absorbents) to be readily available at the construction site; ▪ Hazardous substances to be stored only in specialized/labelled containers and designated storage facility with warning signs; ▪ Hazardous materials storage facilities should be located as far as possible from sensitive areas (e.g. groundwater wells, surface water) and well secured from the public; ▪ Storage and handling facilities of hazardous liquid should be bounded with an impermeable base; ▪ The personnel involved in the handling of hazardous waste including fuel and used oil should undergo specific training in hazardous material handling procedures and fuel / lubricant and used oil handling procedures; ▪ Contract a NEMA registered waste handler to dispose hazardous materials including waste oil in designated manner; 	Contractor Site Manager & Environmental Team		
Soil erosion risk / Soil degradation	<ul style="list-style-type: none"> ▪ Soils excavated for the erection of towers should be used for re-filling and should not be left exposed to wind or water for long periods; ▪ The contractor should avoid steep terrain during the transportation of construction material by using alternative routes, use light vehicles or existing routes where appropriate; ▪ Riverine vegetation such as around AP 2 -AP 3 (confines of River Galana) should be minimally disturbed during the construction phase to reduce soil erosion and safeguard riverbank protection; 	KETRACO Environmental Safeguards Team Contractor Environmental Team	Continuous	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Ensure timely revegetation of disturbed areas with local species common in the area to complement natural vegetation along the RoW to improve ground cover; A storm water management plan that minimizes impervious area infiltration by use of recharge areas and use of detention and/or retention with graduated outlet control structure should be designed within substations; Apply soil erosion control measures such as levelling of the substation and project site to reduce run-off velocity and increase infiltration of storm water into the soil; Ensure that construction vehicles are restricted to use existing graded roads Ensure drains maintenance and ripping off compacted areas to reduce run-off especially in mountainous topography – AP 5 to AP 6 and AP2 -AP 3 of the wayleave in order to avoid soil erosion and soil quality degradation of productive lands along the wayleave Ensure construction activities are kept outside the tree and vegetation protection zone, for any trees and vegetation that will be maintained on project work sites 			
Minimization of Air pollution				
Dust Emissions	<ul style="list-style-type: none"> Avoid excavation works in extremely dry weather; Ensure strict enforcement of on-site speed limit regulations; Sprinkle water on graded access routes when necessary to reduce dust generation by construction and vehicles; Ensure stockpiles of earth are enclosed / covered / watered during dry or windy conditions to reduce dust emissions; Provide appropriate PPE to employees and ensure proper and constant use. Adhere to the Environmental Management and Co-ordination (Air Quality) Regulations, 2014. 	KETRACO Manager Site & Environmental Safeguards Team Contractor Manager Site & Environmental Team	Daily inspection	2,000,000
Exhaust Emissions	<ul style="list-style-type: none"> Sensitise truck drivers and machine operators to switch off engines when not in use; Regular servicing of engines and machine parts to reduce exhaust emission generation; Prohibit idling of vehicles; Alternative non-fuel construction equipment shall be used where feasible. 	KETRACO Manager Site and Environmental Safeguards Team	Daily inspection	2,000,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Adhere to the Environmental Management and Co-ordination (Air Quality) Regulations, 2014. 	Contractor Site Manager, & Environmental Team		
Minimization of Water Pollution				
Increased generation and movement of storm water and impact on drainage / Contamination of Water sources	<ul style="list-style-type: none"> Maintenance of construction vehicles should be carried out in the designated areas away from sources of water such as River Galana and Lake Jilore Use of storm water management practices that slow peak runoff flow, reduce sediment load, and increase infiltration. Regular inspection and maintenance of permanent erosion and runoff control features. Adopt and implement a storm water management plan. 	KETRACO Site Manager / Civil Engineer & Environmental Safeguards Team Contractor Site Manager, Civil Engineer & Environmental Team	Throughout	500,000
Waste Management				
Increased generation of solid waste	<ul style="list-style-type: none"> Use of an integrated solid waste management system i.e. the 3 R's: 1. Reduction at source 2. Reuse 3. Recycle; Accurate estimation of the dimensions and quantities of materials required; Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of construction waste generated over time; Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage; Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste; Reuse packaging materials such as cartons, cement bags, empty metal and plastic containers to reduce waste at site; Waste collection bins to be provided at designated points on all active sites; Dispose waste more responsibly by contracting a NEMA registered waste handler who will dispose the waste at designated sites or landfills only and in accordance with the existing laws. Composting of vegetation waste for reuse as a landscaping fertilizer. Develop and implement a Construction Waste Management Plan before start of the project. 	KETRACO Site Manager & Environmental Safeguards Team Contractor Site Manager & Environmental Team	Continuous	5,000,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Comply with provisions of the Environmental Management and Co-ordination, Waste Management Regulations 2006. 			
Increased discharge of Waste water / Sewage	<ul style="list-style-type: none"> Provide means for handling sewage generated at the construction site; Provision of mobile toilets at every active site for transmission line and associated facilities construction; Monitor effluent quality on quaterly basis to ensure that the stipulated discharge standard as per Environmental Management and Co-ordination (Water quality) Regulations 2006 are not violated. 	KETRACO Site Manager & Environmental Safeguards Team Contractor Site Manager & Environmental Team	Continuous	5,000,000
Minimization of Noise and Vibration				
Noise and vibration	<ul style="list-style-type: none"> Sensitize drivers of construction vehicles and machinery operators to switch off engines or machinery that are not being used. Ensure that all vehicles and construction machinery are kept in good condition all the time to avoid excessive noise generation. Regular servicing of engines and machine parts to reduce noise generation; Ensure that all generators and heavy-duty equipment are insulated or placed in enclosures (containers) to minimize ambient noise levels; Ensure that all workers wear earmuffs and other personal protective gear/equipment when working in noisy sections. Undertake loud noise and vibration level activities during off-peak hours during the day (i.e. preferably between 12.00 noon and 2.00 pm). Comply with conditions provided by the Environment Management and Coordination, Noise and Excessive Vibrations Pollution Control Regulations 2009. 	KETRACO Site Manager & Environmental Safeguards Team Contractor Site Manager & Environmental Team	Throughout	500,000
Reduced Material Demand and Efficient use of Resources				
Increased energy Consumption	<ul style="list-style-type: none"> Ensure electrical equipment, appliances and lights are switched off when not being used; Install energy saving bulbs/tubes at all lighting points instead of incandescent bulbs which consume higher electric energy; Plan well for transportation of materials to ensure that fossil fuels (diesel, transformer oil, petrol) are not consumed in excessive amounts; Monitor energy use during construction and set targets for reduction of energy use. 	KETRACO Site Manager & Environmental Safeguards Team Contractor Site Manager & Environmental Team	Throughout	100,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Increased Water Demand / abstraction	<ul style="list-style-type: none"> ▪ Harness rainwater (install gutters on the roof of the site offices to harvest rainwater) and storm water whenever possible for use in dust prevention, gardening and other site specific uses; ▪ Conduct regular checks for sewage pipe blockages or damages since such vices can lead to release of the effluent into the land and water bodies; ▪ Install water conserving taps that turn-off automatically when water is not being used; ▪ Promote recycling and reuse of water as much as possible; ▪ Promptly detect and repair water pipe and tank leaks; ▪ Sensitise construction workers to conserve water by avoiding unnecessary use; ▪ Ensure taps are not running when not in use; ▪ Develop a leakage detection and repair system; ▪ Ensure all taps and cisterns are optimally working. ▪ Drilling of borehole for use to reduce over reliance on water from existing sources. This avert any competition with the local community or be a potential for water resource conflict between residents, livelihood sources (livestock, irrigation, cropping) and the transmission projects. Establishing of water sources (boreholes) should be preferably done in mindful of community needs and accessibility in the future. ▪ The Contractor must adhere to water quality regulations described in Legal Notice No. 120 of the Kenya Gazette Supplement No. 68 of September 2006 and Water Act 2016. 	<p>KETRACO Site Manager & Environmental Safeguards Team</p> <p>Contractor Site Manager & Environmental Team</p>	Throughout	500,000
Modification of hydrology	<ul style="list-style-type: none"> ▪ Undertake standalone EIA for each borehole and apply for a permit for all water abstractions (rivers, dams, boreholes etc.). ▪ Control excessive abstraction of water from boreholes by ensuring compliance with the prescribed volume as stipulated in the permits issued by WRA. ▪ Surface runoff should be channelled to areas with gentle slopes to avoid excessive erosion. 	<p>Contractor Site Manager & Environmental Team</p> <p>KETRACO Site Manager & Environmental Safeguards Team</p>	Throughout	2,000,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Cumulative Environmental Impacts	<ul style="list-style-type: none"> ▪ Make deliberate efforts to reduce or prevent emission of greenhouse gases throughout the project that can cumulatively exacerbate climate change impacts. This can be attained by adopting new technologies and renewable energies including use of low and zero carbon emitting project machinery, vehicles and equipment. ▪ Ensure the project route is retained as it or any designs alterations avoids towns and market centres. ▪ Ensure construction including RoW clearing and maintenance works are scheduled to avoid rainy seasons. ▪ KETRACO to ensure regional mitigation or offset management engagement strategies such as regional liaising with other government line agencies including KFS, Kilifi County Government and local community to participate in tree replanting program activities (plant in alternative public places such as schools, water towers in Kenya, promotion of livelihood restoration activities such as agroforestry to PAP) ▪ Adaptive management approaches to project mitigation including: using existing utility transport corridors for transmission and distribution as much as possible to reduce on habitat alteration; undertaking selective clearance by removing tall woody species leaving saplings, for quick regeneration of vegetation along the wayleave; installing transmission lines above existing vegetation to avoid land clearing; re-vegetation of disturbed areas with native plant species; reduce proliferation of the invasive species through active periodic way leave management ▪ Ensure adequate project impacts monitoring to assess efficacy of management efforts. 	KETRACO Site Manager & Environmental Safeguards Team	Throughout	1,000,000
Risks of Climate Change	<p>Adaptation options to deal with these risks and impacts include:</p> <ul style="list-style-type: none"> ▪ Ensuring higher installation of power lines within 33.5metres to 46 metres to keep away from foreign objectives blown by winds during storms ▪ Installing conductors with hotter operating limits or implementing the use of 'low-sag' conductors. ▪ Technology implementations such as developing a software tool to optimise overhead line ratings. ▪ Use more heat-resistant materials to mitigate reduced carrying capacity of lines and transformers caused by increase temperatures 	<p>KETRACO Civil Engineer & Environmental Safeguards Team</p> <p>Contractor Civil Engineer &</p>	Throughout	1,000,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Implement more effective cooling for transformers such as air efficient chillers for cooling down the transformers during high temperatures ▪ Develop and implement a storm water management plan to ensure flood protection of equipment at ground level in substations ▪ Use covered and/or insulated conductors to prevent erosion ▪ Include lightning protection (e.g., earth wires, spark gaps) in the distribution network to prevent lighting damages ▪ Raise structure levels at substations to prevent flooding or spillage of fuel from transformers. ▪ Implement more rigorous structural standards such as concrete-sided buildings and pylons ▪ Implement porous materials for better wind flow to prevent damaged infrastructure ▪ Schedule construction work in dry months to prevent delays during construction works 	Environmental Team		
Minimization of Occupational Health and Safety				
Electrocution from live power lines during construction and operation	<ul style="list-style-type: none"> ▪ Deactivating and properly grounding live power distribution lines before work is performed on, or in proximity, to the lines; ▪ Allowing only trained and certified workers to install, maintain, or repair electrical equipment; Qualified or trained employees working on transmission or distribution systems should be able to achieve the following- <ul style="list-style-type: none"> ➢ Distinguish live parts from other parts of the electrical system ➢ Determine the voltage of live parts ➢ Understand the minimum approach distances outlined for specific live line voltages ➢ Ensure proper use of special safety equipment and procedures when working near or on exposed energized parts of an electrical system ▪ Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards. ▪ Ensuring workers do not approach an exposed energized or conductive part even if properly trained unless the worker is: properly insulated from the energized part with gloves or other approved insulation; the energized part is properly insulated from the worker and any other conductive object; the worker is properly isolated and insulated from any other conductive object. 	KETRACO Site Manager and Health & Safety Team Contractor Site Manager and Health & Safety Team	Throughout	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Ensuring workers not directly associated with power transmission and distribution activities adhere to local legislation, standards, and guidelines relating to minimum approach distances for excavations, tools, vehicles, pruning, and other activities; Adopt and implement the Occupational, Health and Safety Management Plan (OHSMP) – <i>Annex 14 -section 3.14</i> 			
Working at heights on pylons and structures	<ul style="list-style-type: none"> Testing structures for integrity prior to undertaking work; Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; The fall protection system should be appropriate for the tower structure and necessary movements, including ascent, descent, and moving from point to point; Inspection, maintenance, and replacement of fall protection equipment; Installation of fixtures on tower components to facilitate fall protection systems; Provision of an adequate work-positioning device system for workers. Connectors on positioning systems should be compatible with the tower components to which they are attached; Hoisting equipment should be properly rated and maintained and hoist operators properly trained; An approved tool bag should be used for raising or lowering tools or materials to workers on structures; Use of helmets and other protective devices will mitigate against scratches, bruises, punctures, lacerations and head injuries due to dropping objects; Ensuring all rope safety belts are replaced before signs of aging or fraying of fibers show up; When operating power tools at height, workers should use a second (backup) safety strap. Signs and other obstructions should be removed from pylons or structures prior to undertaking work; No drunk worker should be allowed on site to reduce risk falling from height and ensuring proper communication on site. 	<p>KETRACO Site Manager and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	Daily inspection	500,000
Exposure of electric magnetic fields to workers	<ul style="list-style-type: none"> Identifying potential exposure levels in the workplace; Training workers in the identification of occupational EMF levels and hazards; 	KETRACO Site Manager and Health & Safety Team	Throughout	200,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Establishing safety zones to differentiate between work areas with expected elevated EMF levels compared to those acceptable for public exposure, limiting access to properly trained workers; Implementation of action plans to address potential or confirmed exposure levels that exceed reference occupational exposure levels developed by international organizations such as the International Commission on Non-Ionizing Radiation Protection (ICNIRP). Action plans to address occupational exposure may include limiting exposure time through work rotation, increasing the distance between the source and the worker, when feasible, or the use of shielding materials. 	Contractor Site Manager and Health & Safety Team		
Exposure to chemicals	<ul style="list-style-type: none"> Implementation of engineering and administrative control measures to avoid or minimize the release of hazardous substances into the work environment keeping the level of exposure below internationally established or recognized limits; Keeping the number of employees exposed, or likely to become exposed, to a minimum; Communicating chemical hazards to workers through labeling and marking according to national and internationally recognized requirements and standards, including the International Chemical Safety Cards (ICSC), Materials Safety Data Sheets (MSDS), or equivalent. Any means of written communication should be in an easily understood language and be readily available to exposed workers and first-aid personnel; Training workers in the use of the available information (such as MSDSs), safe work practices, and appropriate use of PPE. 	KETRACO Site Manager and Health & Safety Team Contractor Site Manager and Health & Safety Team	Throughout	200,000
Risk of occupational incidents, accidents and dangerous occurrences and diseases/physical hazards	<ul style="list-style-type: none"> Set up a health and safety committee and periodic site inspections, training and annual safety audits; Provide appropriate PPEs to workers and visitors to the proposed route; Adhere to the provisions of the occupational Health and Safety Act of 2007; Have a qualified EHS Officer; first aider/ medic on site. Ensure that provisions for reporting incidents, accidents and dangerous occurrences during construction and operation is as per prescribed forms obtainable from the local Occupational Safety and Health Office are in place. 	KETRACO Site Manager and Health & Safety Team Contractor Site Manager and Health & Safety Team	Throughout	200,000
Ergonomics, Repetitive Motion, Manual Handling	<ul style="list-style-type: none"> Use of mechanical assists to eliminate or reduce exertions required to lift materials, hold tools and work objects, and requiring multi-person lifts if weights exceed thresholds Selecting and designing tools that reduce force requirements and holding times, and improve postures 	KETRACO Site Manager and Health & Safety Team	Throughout	200,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Providing user adjustable workstations ▪ Incorporating rest and stretch breaks into work processes, and conducting job rotation ▪ Implementing quality control and maintenance programs that reduce unnecessary forces and exertions ▪ Taking into consideration additional special conditions such as left-handed persons 	Contractor Site Manager and Health & Safety Team		

<p>Minimization risks on Community Health and Safety</p>	<ul style="list-style-type: none"> ▪ Proponent to engage local persons as Wayleave Officers / Community Liaison Officers (CLOs) to work with the contractor on local engagements. They act as the focal point for communications between local population and the project management team. ▪ Proponent to establish an effective grievance redress mechanisms for community members as early as possible in the project development for reporting complaints and grievances; <p>On Electrocutation:</p> <ul style="list-style-type: none"> ▪ Use of signs, barriers (e.g. locks on doors, use of gates, use of steel posts surrounding substations, particularly in Kilifi and Malindi sub-stations. ▪ Sensitization / public outreach on community health and safety awareness to prevent public contact with potentially dangerous equipment along RoW; ▪ Grounding conducting objects (e.g. fences or other metallic structures) installed near power lines, to prevent shock. <p>On Electromagnetic Fields (EMF):</p> <ul style="list-style-type: none"> ▪ Ensure the recommended wayleave of 40m (20m on both sides of the centerline) is observed for the proposed 220kv transmission line. The EMF decays very rapidly with distance from source and there should be no potential health risks for people living outside the 40 m wide wayleave corridor. <p>On Noise / Corona effect</p> <ul style="list-style-type: none"> ▪ The recommended wayleave of 40m (20m on both sides of the centerline) to be observed for the proposed 220kv transmission line. ▪ The acoustic noise produced by transmission lines is only greater with high voltage power lines of above 400-800 kilo volts [kV] whereas the proposed Malindi Kilifi is 220KV hence expected to be negligible ▪ The buzzing noise decays very rapidly with distance from source hence no potential noise nuisance is expected for people living outside the 40 m wide wayleave corridor <p>On Traffic / Access roads safety</p> <ul style="list-style-type: none"> ▪ Adoption of best transport safety practices across all aspects of project operations with the goal of preventing traffic accidents and minimizing injuries suffered by project personnel and the public; ▪ Develop a robust transport management plan; ▪ Collaboration with local communities and responsible authorities to improve signage, visibility and overall safety of roads, particularly along stretches located near schools or other locations where children may be present; ▪ Using locally sourced materials, whenever possible, to minimize transport distances. ▪ Locating workers campsites close to project sites and arranging bus transport to minimize on external traffic 	<p>KETRACO Site Manager and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	<p>Throughout</p>	<p>2,500,000</p>
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	<ul style="list-style-type: none">▪ Emphasizing safety aspects among drivers<ul style="list-style-type: none">• Improving driving skills and requiring licensing of drivers• Adopting limits for trip duration and arranging driver rosters to avoid overtiredness• Avoiding dangerous routes and times of day to reduce the risk of accidents• Use of speed control devices (governors) on trucks, and remote monitoring of driver actions			
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Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Air Navigation Safety Risks	<ul style="list-style-type: none"> ▪ Continued engagement with regulatory air traffic authorities such as KCAA prior and during construction of pylons for safety purposes and to acquire prelicense permits; ▪ Installation of flight (aviation) colored balls and infrared lighting to enhance visibility of masts especially near Kilifi Substation AP 1 – AP 3 and Malindi substation AP 12 – AP 16 to warn off any ascending or discerning flights in the nearby airstrips ▪ Adherence to Civil Aviation Act No. 21 of 2013 and subsequent regulation for compliance with aviation safety guidelines 	<p>KETRACO Site Manager and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	Throughout	2,000,000
Minimization of Social Impacts				
Displacement of households and loss of businesses	<ul style="list-style-type: none"> ▪ Resettlement and compensation of PAPs to align to the RPF developed under this project. ▪ Apply RAP compensation procedures in a transparent and consistent way to all persons affected by the project. ▪ Provide compensation at full replacement cost in accordance to project RPF; ▪ Where possible, avoid involuntary resettlement; and where avoidance is not possible, minimize involuntary resettlement ▪ Carry out timely-before project commencement, fair and adequate compensation as per Kenyan law, WB guidelines and provide assistance as appropriate, (allowances and livelihood restoration programs) to PAPs until such a time that their livelihoods and incomes are restored to pre-project levels or better; ▪ Implement internal and external monitoring to ensure the RAP is implemented appropriately; ▪ Identify individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status including women household heads, minority groups, OVCs, widows, and PLWD, and put measures in place to ensure they have equal access to project benefits and opportunities; ▪ Apart from cash compensation, consider other alternatives such as in-kind or land to land compensation especially for vulnerable people. ▪ Provide a choice of options to affected persons and consult with communities over community assets and resources; ▪ Provide opportunities to displaced communities and persons to derive development benefits from the project; 	KETRACO Social team via Safeguards	Pre-construction phase	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Provide transitional support for a reasonable period of the time to enable PAPs whose livelihoods have been affected, to restore their income-earning capacity, production levels, and standards of living; ▪ Ensure displaced persons are informed of their full rights and entitlement to e.g. their right to compensation and compensation options, GRM Annex 14 chapter 7. ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to engage host communities as well, in addition to PAPs where appropriate. ▪ In addition to land owners, with formal rights the project identified squatters, absentee landlords, tenants, and those without formal land rights in the project area, and their compensation will align to the RPF developed under this project. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to address all emerging complaints and grievances from the PAPs and project area community. ▪ Adopt and implement the livelihood restoration plan (LRP) to improve the lives of those affected and ensure they benefits from the project. ▪ Ensure that the displaced persons are: <ol style="list-style-type: none"> a) Informed about their options and rights pertaining resettlement and compensation b) Consulted on, offered choices among, and provided with alternatives; c) Provided prompt, adequate and effective compensation at full replacement cost for losses of assets attributable directly to the project in accordance to project RPF. d) Offered support after displacement, for a transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living; <p>Provided with development assistance in addition to compensation measures</p>			
Land acquisition (way-leave contractor facilities sites, workers camp sites, and sub-station sites) and	<ul style="list-style-type: none"> ▪ Resettlement and compensation of PAPs to align to the RPF developed under this project. ▪ A project Grievances Redress Mechanism (<i>GRM: Annex 14 in chapter 7</i>) including a GRM committee to be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level, to address all emerging complaints and grievances from the PAPs and project area community. ▪ If the Locational Grievance Redress Committee is not able to reach a resolution, the grievance is escalated to the KETRACO RAP Implementation Unit at the 	KETRACO via Social Safeguards team	Pre-construction phase	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
resettlement conflicts	<p>KETRACO Headquarters.</p> <ul style="list-style-type: none"> ▪ Loss of land and crops will be compensated; the amount of compensation to be paid for private land will be as per the Kilifi County land registry rates provided by National Land Commission (NLC). However, the rates must be in line with the RPF developed for the project. ▪ A Resettlement Action Plan (RAP) study has been commissioned for the proposed project. The RAP has been carried out in accordance with the legal framework of the Government of Kenya, the requirements of the World Bank’s OP 4.12 (Involuntary Resettlement) and RPF developed for this project for compensation purposes. ▪ Surveys have been conducted to establish which properties (land and buildings) lie within the RoW for compensation of PAPs. ▪ The exact number of PAPs affected and the types of properties affected should be determined for compensation. ▪ In addition, potential sites for the relocation of the PAPs should be identified, and an estimation of the total cost for the RAP obtained for compensation. Where possible avoid involuntary resettlement and where avoidance is not possible, minimize impacts on people/households and livelihoods. ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication, community buy in and ownership of the project. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive 			
Socio-Political Disputes exacerbated by the Project	<ul style="list-style-type: none"> ▪ Ensure all stakeholders and the public are involved in the planning process and sensitized to understand that increase in the capacity of transmissions system will increase access and distribution of electricity at homesteads and institutional level within Kilifi county. ▪ Ensure proper identification and compensation of all persons who will lose businesses and land. ▪ Obtain necessary permissions and approvals from the County Governments. ▪ Ensure EIAs are conducted for specific project activities such as 	KETRACO Social Safeguards team	Throughout project cycle	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>campsites, quarries, materials sites, campsites, boreholes etc.</p> <ul style="list-style-type: none"> Proponent to engage local persons as Wayleave Officers to work with the contractor, in order to ensure the project is implemented smoothly Largely involve the community in the project through their leaders, take keen in timely addressing their grievances and ensure a good percentage of the local community members are employees in the project. Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team. Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from PAPs and host community. Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure all stakeholders and the public are involved during the project cycle 			
Land and property disputes exacerbated by the Project/ related to the project	<ul style="list-style-type: none"> Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project. Where possible, avoid involuntary resettlement; and where avoidance is not possible, minimize impacts on people/households and livelihoods. Carry out timely (before project commencement), fair / just and adequate compensation as per the provisions in the RPF developed under this project,. Implement internal and external monitoring in collaboration with PAPs and other stakeholders e.g. county, local leadership, local NGOs etc to ensure the RAP is implemented appropriately; Map vulnerable households and individuals in the project area and implement specific interventions as appropriate to ensure equal benefits sharing. Proponent to engage local persons as Wayleave Officers to work with the contractor, to ensure the project is implemented smoothly. KETRACO to engage affected persons as outlined in the Stakeholder Engagement Plan (SEP) (Annex 14 section 3.16 – SEP). Where there are land disputes and lack of land ownership documents, which might delay compensation of PAPs. KETRACO should deposit compensation monies on an interest earning escrow account until such cases are resolved. The proponent will ensure that information regarding interest earning escrow account is timely disseminated to all PAPs in subsequent consultation forums, to avoid project delays and compensation disputes. 	KETRACO via Social Safeguards team	Pre-construction and operation phase phases	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Ensure relocation and compensation is in accordance to provisions within RPF developed under this project. Stakeholder engagement as per Stakeholders Engagement Plan (SEP) (Annex 14 section 3.14) and full information disclosure to PAPs as well as host communities where appropriate. Information disclosure should be done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive. A project Grievances Redress Mechanism (GRM: Annex 14 in chapter 7) including a Grievance Redress Committees. To be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level by Community Liaison Officers (CLOs), to address all emerging complaints and grievances from the PAPs and project area community. If the Grievance Redress Committee is not able to provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters. Acquisition of land for contractor’s camp and worker accommodation, will require a land use and restoration agreement between community and contractor 			
Gender Inequality	<ul style="list-style-type: none"> Applying all Kenyan Constitutional requirements on gender throughout the project. Apply all guidelines under the National Gender and Equality Commission Act, 2011 and adhere to Gender Strategy (FY16-23). Developing the project sustainably by transforming the distribution of opportunities, resources and choices for males and females so that they have equal power to shape their own lives and contribute to their families, communities, and country. Undertake gender mainstreaming at project design, implementation/ construction, operation and decommissioning stages. KETRACO to give equal treatment to both men and women recruitment and doing business with the community. The Transmission line and associated facilities contractors will be expected to implement Labour Management Plan section 3.13 of annex 14 and uphold equal treatment of men and women during recruitment. Developing the project sustainably by transforming the distribution of opportunities, resources and choices for males and females so that they have equal 	KETRACO via Social Safeguards team	Throughout project cycle	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>power to shape their own lives and contribute to their families, communities, and country.</p> <ul style="list-style-type: none"> Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication for both men and women. Adopt and implement a Gender Mainstreaming Plan (Annex 14 – section 3.23) to ensure that both men and women have equal opportunities to participate in and benefit from the proposed power transmission project Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from both men and women. 			
Health Impact such as Spread of HIV/AIDS and other Sexually transmitted diseases	<ul style="list-style-type: none"> Review activities of the proposed electric power transmission and distribution project to integrate with HIV/AIDS campaigns. Develop appropriate training, awareness content and implement awareness sessions for communities and workers on HIV/AIDs and other STDs, as well as GBV-SEA and sexual harassment at workplaces. Support HIV/AIDS and STD awareness and education. This can be done through the use of educative posters, offering free HIV/AIDS testing services and HIV/AIDS counselling in main towns situated along the RoW. Ensure an adequate and accessible provision of condoms to workers both male and female. Providing health services (treatment through standard case management in on-site or community health clinic). Promoting collaboration with local authorities to enhance access of workers families and the community to public health services. Liaise with relevant health agencies both at national and County level (Kilifi County) (Ministry of Health, National AIDS Control Council (NACC)), including NGOS (AHF Kenya), and CBOs (youth, men, and women groups) on awareness creation Periodic sensitization forums for workers on ethics, morals; general good behaviour and the need for the project to co-exist with the neighbours. Ensure sensitization of workers and communities on HIV/AIDs and other STDs including ethics, morals; general good behaviour in accordance to the Stakeholder Engagement Plan <i>Annex 14 section 3.14</i> prepared under this project. Such sensitizations or trainings should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of 	<p>KETRACO Site Manager and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	Throughout project cycle	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and limiting gatherings or as per Gok directive.</p> <ul style="list-style-type: none"> ▪ Adhere to and implement the HIV and AIDS Prevention and Control Act, 2006 and the Sexual Offences Act, 2006 and its amendment 2012. ▪ Contractors to develop a code of conduct and ensure its signed by all workers with physical presence on site as well as within the project area. The code of conduct will address worker and community interactions considering risks of GBV-SEA and sexual harassment in workplaces, HIV/AIDs and other STDs resulting from population/labour influx. Labour influx impacts will be managed through a Labour influx Management Plan (LMP)– <i>Annex 14 section 3.13</i> ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from the PAPs and host community. 			
COVID-19 Transmission s/ Infections	<p>The following should be undertaken</p> <ul style="list-style-type: none"> ▪ Develop and communicate to all employees (skilled, semi-skilled and unskilled), a COVID-19 Preparedness management plan that addresses all aspects of COVID-19 readiness including but not limited to Policy, Planning and Organizing project activities vis-à-vis COVID-19. ▪ Sensitize all workers (skilled, semi-skilled and unskilled) on COVID-19 risk mitigation measures with sufficient information to keep them and local community safe. ▪ Establish prevention and mitigation measures against COVID-19 and arrangements for dealing with suspected and confirmed COVID-19 cases. The measures should include but not limited to; <ul style="list-style-type: none"> ✓ Infection control plans, ✓ Ensuring social distancing of not less 1.5 meters between employees in all directions, ✓ Hygiene promotion through suitable hand sanitizing facility or handwashing soap and water ✓ Strict and proper use of face masks throughout all working hours and public places. 	<p>KETRACO Site Manager and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	Throughout project period	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ✓ Implement Ministry of Health guidelines for staff safety and health, including daily temperature checks for everyone in the workplace ✓ Increase frequency of cleaning commonly touched surfaces / objects 			
Insecurity	<ul style="list-style-type: none"> ▪ Thoroughly screen workers, suppliers and distributors; ▪ vehicle scanning systems; ▪ Ensure 24-hour surveillance by engaging the Administration Police services during the day and night; ▪ Install CCTV cameras in strategic locations in workers' camps; ▪ Ensure close liaison with the local Police Department. ▪ Engage stakeholders throughout the project cycle to ensure project ownership, and mitigate the risk of insecurity-theft, vandalism. ▪ Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure project ownership, and mitigate the risk of insecurity-theft, and vandalism. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from the PAPs and host community. 	<p>KETRACO Site Manager, Social Safeguards team and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	Throughout the project cycle	RAP Budget
Theft and Vandalism	<ul style="list-style-type: none"> ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from PAPs and host community. ▪ Minimize overcrowding at the construction site so as to prevent double handling of materials and equipment. ▪ Provision of proper management of materials by allocation to specific persons involved. ▪ Advanced tracking of on-site construction machinery which facilitate an improvement in the safety performance job site layout and prevent theft ▪ Optimize the utilization of construction equipment. ▪ Proponent to engage local persons as Wayleave Officers to work with the contractor, in order to ensure the project is implemented smoothly ▪ Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team. ▪ Liaise with law enforcement in the project area to ensure theft and vandalism perpetrators are held to account. ▪ Implement the stakeholder's engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community. Acts of vandalism and 	<p>KETRACO Site Manager and Health & Safety Team</p> <p>Contractor Site Manager and Health & Safety Team</p>	Throughout the project cycle	500,000 Annually

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	theft are less likely to happen if the project has demonstrated a genuine interest in the well-being of the host community.			
Quality of life and lifestyle impacts	<p>The following should be undertaken for quality of life impacts:</p> <ul style="list-style-type: none"> ▪ Ensure a fair process of compensation and livelihood replacement / RAP and enhancement; ▪ Provide benefits to affected communities; ▪ Identify individuals and groups who might be disproportionately impacted due to their disadvantaged or vulnerable status, including women headed households, minority groups, OVCs, widows, and PLWD, and put measures in place to ensure they have equal access to development benefits and opportunities; <p>The following should be undertaken to mitigate lifestyle related impacts:</p> <ul style="list-style-type: none"> ▪ Resettlement and compensation to be implemented in line with the RPF develop under this project; ▪ Improve the livelihoods and standards of living of displaced persons by providing transitional support for a reasonable period of the time to enable people to restore their income-earning capacity, production levels, and standards of living. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community. ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication. 	KETRACO via Social Safeguards team	Pre-construction	RAP Budget
Loss of social fabrics	<ul style="list-style-type: none"> • Where possible, avoid involuntary resettlement and where avoidance is not possible, minimize project impacts on social fabric/networks • Consider the prospects of getting resettlement land for the 7% land owners who are permanently displaced in the vicinity (cost allowing) to deter disruption of social support systems and networks. • Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs. • Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with PAPs. 	KETRACO via Social Safeguards team	Pre-construction	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Illicit behaviour / drug and alcohol abuse	<ul style="list-style-type: none"> Elders and local administration in the project area to manage illicit behaviour / drug and alcohol abuse at the community and family level whereas the contractor and proponent should be responsible for worker conduct on site. Contractors, subcontractors and all project staff to behave in a culturally appropriate manner. The contractor and proponent to establish a code of conduct to ensure workers conduct at site as well as within the project area adheres to set rules and regulations e.g. on drug use and alcohol, interactions with locals and Gender Based Violence (GBV) – Sexual Exploitation and Abuse (SEA) / workplace sexual harassment (SH). Civic and health education on HIV/AIDS and STIs Ensure an adequate and accessible provision of condoms to workers both male and female. Elderly and social protection officers can be used to uphold moral standards and dignity in the affected community Establish Grievance Redress Committee (GRC) and have in place the elderly to liaise and identify such situation and address them before escalating to pressing social problems Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address illicit behaviour / drug and alcohol abuse complaints before escalating to pressing social problems Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with the host community Adhere to and implement the HIV and AIDS Prevention and Control Act, 2006 and the Sexual Offences Act, 2006 and its amendment 2012. 	KETRACO via Social Safeguards team	Throughout the project cycle	RAP Budget
Domestic Conflicts exacerbated by project	<p>The following should be undertaken:</p> <ul style="list-style-type: none"> Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with the host community and PAPs where appropriate. Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address domestic conflicts exacerbated by project. 	KETRACO via Social Safeguards team	Throughout the project cycle	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Resettlement and compensation to align to the RPF developed under this project. Grievances should be received and recorded at the Sub-location level by Community Liaison Officers (CLOs) or wayleaves officer and handled by the Grievance Redress Committees (GRC). If the Grievance Redress Committee is not able to provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters. Involve CLOs and GRCs to ensure the vulnerable especially orphans, widows and elderly. Access project benefits and opportunities. The project to slowly engage the elderly and Social workers to guide and mediate case of domestic violence Encourage the spouse to open a joint bank account to avoid mistrust 			
Gender-Based Violence (GBV)- Sexual Exploitation and Abuse (SEA) /Workplace Sexual Harassment (SH)	<ul style="list-style-type: none"> Ensure sensitization of the contractor, their sub-contractors and consultants on GBV -SEA/SH issues including refraining from unacceptable conduct towards local community members. Introduce a worker Code of Conduct as part of the employment contract, to be signed by all with physical presence on site as well as within the project area, and to include sanctions for non-compliance (e.g., termination). Ensure mandatory trainings regarding GBV -SEA/SH to be provided to all project workers including temporary and casual workers. Undertake awareness meetings for the project affected communities on GBV-SEA/SH issues. Participants should be informed about the Code of Conduct, related national legislations and available GRM including available services/referral mechanism mechanisms for seeking help within the context of the COVID-19 pandemic Adopt and implement a grievance redress mechanism (GRM) and referral mechanism to address all emerging complaints including risks such as COVID 19 related to Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH). Implement the GBV-SEA/SH Management Plan (Annex 14 section 3.19) and Labour Influx Management Plan (Annex 14 section 3.13) Ensure establishment and Implementation of a GBV-SEA/SH Action Plan by the contractor which should reflect the unique dimensions of COVID-19. 	<p>KETRACO via Social Safeguards team & Site Managers</p> <p>Contractor Site Managers and Social safeguards Team</p>	Throughout the project cycle	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Ensure separate sanitation and hygiene facilities (toilets, utility rooms and changing rooms) for men and women in the workers’ camps / workplaces are provided. ▪ Prioritize GBV -SEA/SH prevention, response, and risk mitigation approaches as essential parts of COVID-19- related measures. ▪ Adopt a policy to cooperate with law enforcement agencies in investigating complaints about GBV-SEA/SH should a survivor choose the legal redress. Survivors should be facilitated to understand that this may require them to commit to cooperate with the agencies. ▪ Inform workers and local community about national laws such as the Sexual Offences Act. No 3 of 2006 that make GBV-SEA/SH a punishable offence which is prosecuted. ▪ Apply all Kenyan Constitutional / legal requirements on gender and sexual based violence throughout the project ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication on GBV-SEA/SH. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive. 			
Speculation for land compensation (false information and hike in prices / value)	<ul style="list-style-type: none"> ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from PAPs and host community ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs <p>On false information:</p> <ul style="list-style-type: none"> • KETRACO to engage affected persons as outlined in the Stakeholder Engagement Plan (SEP) (Annex 14 section 3.16 – SEP). • The planning and implementation of the transmission line and associated facilities remains as publicly shared. Any changes necessitated by unforeseen circumstances should be communicated and a new census of affected persons conducted. 	KETRACO via Social Safeguards team	Pre-construction	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>On hike in prices / value:</p> <ul style="list-style-type: none"> ▪ KETRACO to adopt compensation rates established by the RAP as per cutoff date ▪ Compensation to be made to bonafide land owners with official land documents 			
Impacts on community facilities	<p>The following should be undertaken:</p> <ul style="list-style-type: none"> • Site transmission and distribution rights-of-way, lines, towers, and substations to avoid cultural sites • Provide opportunities to displaced communities and persons to derive development benefits from the project; • Provide Corporate Social Responsibility (CSR) / social assistance. Such could include provision of support for supplies and movable items for institutions or sector needs identified by the community; donation to community of any facilities used by the contractor at the conclusion of the project such as buildings, and boreholes. • Ensure engagement on CSR implementation (further consultations on priority projects and implementation plans) are done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive. • Provide training programmes to the community to cope with changes brought by establishment of transmission line and associated facilities • Establish effective grievance mechanisms as early as possible in the project development; • Proponent to engage local persons as Wayleave Officers to work with the contractor, to ensure the project is implemented smoothly • Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team 	<p>KETRACO via Social Safeguards team</p> <p>Contractor Social safeguards Team</p>	Throughout project Period	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) as early as possible in the project development to receive and address complaints from host community. 			
Community Expectation on CSR / High Expectations on CSR	<ul style="list-style-type: none"> Adopt and implement a CSR plan (Annex 14 section 3.20 CSR) targeting activities within KETRACO’s mandate for implementation during the project Provide support for supplies and movable items for institutions or sectors identified by the community. KETRACO to establish deliberations / procedures on donation to local community of facilities used by the contractor, at the conclusion of the project. Such facilities could include campsite buildings, and boreholes. Implement the stakeholder’s engagement plan (SEP) to ensure effective communication, community buy in and ownership of the project without lowering realistic expectations. KETRACO to consider liaising with or bringing to attention the relevant Ministries and County departments on critical community needs. For instance, linking vulnerable populations at project locational levels for registration in local government support programs Ensure implementation of plans in Annex 14 such as vulnerable peoples plan, local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Social Impacts Management Plan, Livelihood Restoration Plan to ensure host community accesses the project benefits. Ensure engagement on the project and CSR implementation (further consultations on priority projects and implementation plans) are done in line with Ministry of Health COVID-19 prevention and mitigation measures including but not limited to; physical / social distancing protocols (1.5metres), provision of handwashing facilities (soap and water) or hand sanitizing facilities, wearing of masks and limiting gatherings as per GoK directive. Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from host community 	<p>KETRACO via Social Safeguards team</p> <p>Contractor Social safeguards Team</p>	Throughout project Period	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Risks on Vulnerable populations	<p>The following should be undertaken to cushion the vulnerable populations such as the elderly, orphans, PLWD, and widows amidst COVID-19 pandemic from the project risks:</p> <ul style="list-style-type: none"> Amidst COVID-19, clearly identify / map vulnerable households and individuals such as orphans, PLWD, widows and elderly to ensure they have access to development benefits and opportunities. Apart from cash compensation, consider other alternatives such as in-kind or land to land compensation especially for vulnerable people such as orphans, PLWD, widows and elderly to cushion them from projects impacts that are likely to be exacerbated by COVID 19 pandemic Implement livelihood restoration plan (LRP) with specific targeted interventions for vulnerable persons to respond to the project impacts and COVID-19 pandemic effectively Establish and implement targeted interventions / support for Vulnerable Individuals and HouseholdsVulnerable individuals and householdsVulnerable individuals and households during RAP. Such could include protection support against sexual exploitation & abuse, placement assistance for PLWD to secure project jobs, Widows protection against hostile family members on account of eligibility for compensation. Establish and implement a GBV -SEA/SH action plan for the project to mitigate GBV that has been exacerbated by COVID-19 against the vulnerable population. Offer extra assistance during displacement / relocation of houses and structures. Procurement and delivery of construction material as well as supervision of construction; assisted mobility for elderly / PLWD while observing In the context of COVID-19 and various vulnerabilities, offer transitional assistance in consultations with vulnerable persons / households to cushion them from displacement / relocation hardships. Involve Grievance Redress Committees (GRCs) and Community Liaison Officers (CLOs) to ensure protection of rights of the vulnerable especially orphans, PLWD, widows and elderly. Implement the Stakeholders Engagement Plan while ensuring adequate, meaningful, and continued consultation with Vulnerable Individuals and HouseholdsVulnerable individuals and householdsVulnerable individuals and households. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not 	KETRACO via Social Safeguards team	Throughout project Period	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per Gok directive.</p> <ul style="list-style-type: none"> ▪ Implement a Local Recruitment Plan and while at it prioritise and reserve certain employment opportunities for Vulnerable PAPs such as, PLWDs and widows. ▪ Implement the Vulnerable Persons Plan to ensure that vulnerable persons are cushioned from the project impacts and have equal opportunities to participate in and benefit from the proposed project. ▪ Implement the Gender Mainstreaming Plan to cushion vulnerable women including widows and PLWD from discrimination in project opportunities and COVID 19 impacts. ▪ KETRACO to liaise with relevant national and County Government agencies to register vulnerable persons in the National Safety Net programs for Vulnerable persons / Government support programs to cushion them from project impacts and COVID 19 impacts. Such could include: <ul style="list-style-type: none"> ➤ Orphans: Link up orphans with government scholarship opportunities by liaising with County Government; and with county government for registration under Cash Transfer for Orphans and Vulnerable Children to cushion them from both project impacts and COVID-19 impacts. ➤ PLWD: Liaise with County Government Social protection department to register PLWD with Cash Transfer for Persons With Severe Disabilities (PWSD-CT) to cushion them from project impacts and the impacts exacerbated by COVID-19 ➤ Elderly: Link up the elderly (65 years and above) with Social protection department at County level for registration with Older Persons Cash Transfer (OPCT) program to cushion them from both project impacts and the health impacts exacerbated by COVID-19 ➤ Link up the extremely impoverished households with Hunger Safety Net Programme (HSNP) via social protection department and vulnerable households' children to County / constituency scholarships program to cushion them from both project impacts and impacts exacerbated by COVID-19. 			

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Child labour and forced labour	<p>The following should be undertaken to protect the rights of children and elimination of child labour and forced labour:</p> <ul style="list-style-type: none"> ▪ The following should be undertaken to protect the rights of children and elimination of forced labour: ▪ No employment for anyone under the age of 18 ▪ All persons seeking employment (contractor, subcontractor) should be required to provide a national identity card. ▪ The client and contractor should not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty. ▪ Implement a labour management plan – Annex 14 section 3.12 to promote fair and equitable labour practices during the COVID 19 pandemic including the project cycle for the fair treatment, protection of workers’ rights, non-discrimination and equal opportunity of workers ▪ Implement a local recruitment plan - Annex 14 section 3.14 – to create opportunities for local employment and to adopt a fair and consistent approach to the recruitment, assessment and selection of local employees during the COVID 19 pandemic including the project cycle. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address grievances from host community during the COVID 19 pandemic including the project cycle. ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community on raising awareness to prevent child labour and forced labour, with particular attention given to domestic work and the worst forms of child labour during the COVID 19 pandemic including the project cycle. ▪ Adopt and implement livelihood restoration plan (Annex 14 -section 3.22 LRP) to ensure host community and particularly vulnerable persons have access to livelihood interventions including access to National Safety Net programs for Vulnerable persons / Government support programs ▪ Implement the Vulnerable Persons Plan to ensure that vulnerable persons including women and girls are cushioned from the project impacts and have equal opportunities to participate in and benefit from the proposed project. 	<p>KETRACO via Social Safeguards team</p> <p>Contractor Site managers and Social safeguards Team</p>	Throughout the project cycle	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
Livelihood disruptions	<p>The following should be implemented to deal with livelihood disruption and ensure livelihood restorations:</p> <ul style="list-style-type: none"> • Implement the Livelihood Restoration Plan (Annex 14 section 3.22) for the proposed project • Implement Crop based Livelihoods by regeneration of food crops – such as household irrigation schemes, and cash crops including fruits (such as mangoes, coconut), and vegetables through better extension services in partnership with the County Ministry of Agriculture. • Implement tree planting to reclaim forestry by liaising with KFS to train farmers and offer seedlings on sustainable tree planting and management in all the 10 Locations / Settlements • Implement Enterprise Based Livelihoods by maximizing the available project-based opportunities. The livelihood restoration plan recommends: <ul style="list-style-type: none"> ➢ A Local Buying Program during the construction period to assist in building capability and capacity in the local supply chain. Local businesses in the region of the project are prioritized as suppliers of various materials, goods, and services. ➢ Offering Micro Loans/Small Business Grants by liaising with Government agencies such as Ministry of Trade to support small business enterprises such as green grocers. Such initiatives could lead to increased access to quality services. ➢ Apiculture – Linking farmers with Ministry of Agriculture for training in commercial oriented beekeeping enterprises. ➢ Implement Financial Literacy Training / Entrepreneurial training by liaising with relevant County and National Government agencies to cushion against loss of existing retail businesses. Small grants could be offered to Vulnerable Individuals and HouseholdsVulnerable individuals and householdsVulnerable individuals and households to sustain their livelihoods. • Brings to the attention of the community the existence/availability of National Safety Net programs /projects, their cycles and application process and requirements. • Link Vulnerable persons with National Safety Net programs / Government support programs by liaising with respective county departments/ministries of Social Services to come to project Location levels to register the vulnerable 	KETRACO via Social Safeguards team	Pre-construction	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>persons. Some of the National Safety Net programs for Vulnerable persons include Cash Transfer for Orphans and Vulnerable Children; Cash Transfer for Persons With Severe Disabilities (PWSD-CT); Older Persons Cash Transfer (OPCT) program and Hunger Safety Net Programme (HSNP)</p> <ul style="list-style-type: none"> • Provision of employment: semi-skilled and unskilled jobs should be reserved for project affected persons and the community in general, by implementing a local recruitment plan through liaising with local administration at location levels. • Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication on livelihood restoration. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings as per GoK directive. 			
Interference of existing development infrastructure	<ul style="list-style-type: none"> ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) for effective communication to PAPs and host community. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from the PAPs and host community. <p>On road usage</p> <ul style="list-style-type: none"> ▪ Construction contractor to prepare Road Use Restriction Management Plan in case of such needs and inform the local government and community in advance; ▪ Transmission towers should not be spotted near road networks; ▪ Liaison with the pertinent road agencies at design stage as well as in case of any partial closure during construction phase; <p>on Kenya Power utility lines</p> <ul style="list-style-type: none"> ▪ Liaison with Kenya Power at design stage and on planned shutdowns; ▪ Construction contractor to prepare Kenya Power utility line shut-down management plan. 	<p>KETRACO Site Manager / Social Safeguards team</p> <p>Contractor Site Manager / Social Safeguards Team</p>	Throughout the project period	500,000
Population / labour influx and pressure on social infrastructure	<ul style="list-style-type: none"> ▪ Establish a recruitment policy to employ local populace for all unskilled labour / casual labourers to reduce on population influx in search of jobs including creating slots for locals on semi-skilled employment if available. The local recruitment policy should be carefully developed with relevant stakeholders such as the local administration before the commencement of project activities. 	<p>KETRACO Site Manager / Social Safeguards team</p> <p>Contractor Site Manager / Social Safeguards Team</p>	Throughout the project period	According to the wage rate

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Encourage community business interaction within project where possible e.g. local procurement where possible, selling of consumable like food etc. to discourage influx. ▪ Provision of workers camps to alleviate pressure on existing community housing infrastructure and basic services viz., food, water, and sanitation. This will minimise the interactions with the locals, consequently reducing competition for resources and the spread of diseases. ▪ Provision of worker transport for locals to reduce the impetus for migration towards the project site which creates demand for local housing, pressure on local infrastructure, services, and utilities, and thus pre-empt the development of larger population centres close to the project site. ▪ Ensure induction of all immigrant workers to abide by the code of conduct and respect the community cultural norms and values. ▪ All Contractors to develop & implement a Labour Influx Management Plan and Workers’ Camp & Accommodation Management Plans, GBV-SEA/SH plan, as part of C-ESMP. ▪ Contractors to develop a code of conduct and ensure its signed by all workers with physical presence on site as well as within the project area. The code of conduct will address worker and community interactions considering risks of GBV-SEA and sexual harassment in workplaces, HIV/AIDs and other STDs resulting from population/labour influx. ▪ Establish and ensure early uptake of a Grievance Redress mechanism for local community and Workers. The Grievance Redress Committee to act as link between community and the project; and should be sought as a priority in solving issues. ▪ Undertake stakeholder engagement / awareness to prepare local communities psychologically. Awareness should include efforts toward instilling attitudes of tolerance, support and understanding of labour immigrants by the local communities. Discuss issues, risks and opportunities linked to in-migration; Understand the concerns of local communities; Raise awareness of risk and opportunities; and Identify solutions to issues relating to in-migration ▪ Ensure implementation of a livelihood restoration plan (LRP) that create alternative economic opportunities for the locals. <p>Minimizing exposure to COVID-19, the following should be undertaken</p> <ul style="list-style-type: none"> ▪ Develop and communicate to all employees (skilled, semiskilled and unskilled), a COVID-19 Preparedness management plan that addresses all aspects of COVID- 			

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>19 readiness including but not limited to Policy, Planning and Organizing project activities vis-à-vis COVID-19.</p> <ul style="list-style-type: none"> ▪ Sensitize all workers (skilled, semiskilled and unskilled), on COVID-19 risk mitigation measures with sufficient information to keep them and local community safe. ▪ Establish prevention and mitigation measures against COVID-19 and arrangements for dealing with suspected and confirmed COVID-19 cases. The measures should include but not limited to; <ul style="list-style-type: none"> ✓ Infection control plans, ✓ Ensuring social distancing of not less 1.5 meters between employees (skilled, semiskilled and unskilled), in all directions, ✓ Hygiene promotion through suitable hand sanitizing facility or handwashing soap and water ✓ Strict and proper use of face masks throughout all working hours and public places. ✓ Implement Ministry of Health guidelines for staff safety and health, including daily temperature checks for everyone in the workplace ✓ Increase frequency of cleaning commonly touched surfaces / objects 			
Minimization of Economic Impacts				
Agricultural produce Loss / restriction to access Pasture / Impact on Apiculture	<ul style="list-style-type: none"> ▪ Enumeration of destroyed farm crops including those under irrigation schemes through a Crop destruction Register in the presence of crop owner. ▪ Identify, address, and document concerns such as agricultural produce loss, restrictions to access to pasture and impacts on apiculture before construction begins. ▪ Using transmission structures with longer spans to avoid clearing the agricultural fields and impacting on pasture. ▪ Using existing roads or lanes utilized by the farm owner; ▪ Avoiding construction and maintenance activities during times when soils are saturated. ▪ Ensuring construction is scheduled after crop harvesting (when farms are largely with no produce) ▪ Sensitise contractors / workers / local community to avoid any interference of the beehives if outside the RoW 	KETRACO via Social Safeguards team	Pre-construction phases	As per the agreed cost by the farm owner.

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Ensure relocation of beehives that are directly on the proposed transmission line RoW Identify and ensure compensation of the beehives, restriction on access to pasture for affected households as per RAP, and RPF developed for the project. Adopt and implement the livelihood restoration plan (LRP) to improve the lives of those affected and ensure they benefits from the project. Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication. This should be done in line with the Ministry of Health COVID-19 prevention and mitigation measures / government protocols including but not limited to: Physical / social distancing protocols (1.5metres), Provision of handwashing facilities (soap and water) or hand sanitizing facilities, Wearing of masks in public and Limiting gatherings to as per GoK directive Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from the PAPs and host community. 			
Minimization of Visual Impacts				
Visual Impact	<ul style="list-style-type: none"> Restore excavated site area through proper backfilling Removal of any overburden ripped material along the RoW Explore the form, colour, or texture of the line and pylons to minimize aesthetic impacts and mimic / blend in the surrounding; Implement an appropriate landscaping programme especially for substation Ensure planting of indigenous short growing shrubs and grass on the open spaces to re-introduce visual barriers along RoW 	KETRACO Civil Engineer / Environmental safeguards team Contractor Civil Engineer / Environmental Team	Construction and operation phases	500,000
Minimization of Archaeological and Cultural Heritage Impacts				
Archaeological and Cultural Heritage Impacts	<ul style="list-style-type: none"> Avoid constructing substations or tower spotting by transmission line design changes / changing tower spans to avoid spotting the pylons in areas of archaeological or cultural heritage importance; in this case a baobab tree in Konjora, and approximate of 24 graveyards within the proposed RoW. Fourteen (14) graves in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location. 	KETRACO Civil Engineer / Social safeguards team Contractor Civil Engineer / Social Safegurds Team	Construction phaset	500,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Avoid spotting towers by changing transmission line design (changing tower spans) specifically on the three (3) churches grounds: Word Celebration Centre Church in Jilore Location, Sokoke PEFA Church in Nyari Location, and Barikiwani Church in Konjora location including any other areas of cultural or religious importance. ▪ Work together with local elders to identify and map any other physical cultural resource and other areas of cultural heritage importance, not identified during the ESIA process. ▪ Avoid any interference with all existing graves either during construction works or clearing access routes, since the graves hold cultural values and social ties to the bereaved. Avoidance can be attained by design changes such as changing tower spans to avoid spotting the pylons on cultural resources Or seeking other appropriate alternative access routes during construction. ▪ Use existing utility and transport corridors for transmission and distribution, and existing roads and tracks for access roads, whenever possible. ▪ Work in close liaison with national agencies that deal with areas of archaeological and cultural importance such as the National Museums of Kenya (NMK) to offer guidance in chance finds procedure if unknown heritage resources, particularly archaeological resources, are encountered during project construction or operation. ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication in relation to cultural resources with the host community ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from host community. 			
Mitigating Potential risks to the project				
Community demonstrations in pursuit for employment opportunities	<ul style="list-style-type: none"> ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address grievances from PAPs and host community. ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs ▪ Ensure implementation of plans in Annex 14 such as local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Livelihood Restoration Plan to ensure host community accesses the project benefits. 	<p>KETRACO Social safeguards team</p> <p>Contractor Social Safeguards Team</p>	Throughout the project period	As per project ESMP budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team. KETRACO to ensure direct employment opportunities such as wayleave officers, community liaison officers (CLOs) and vacancies emanating from the project are recruited locally in a fair, consistent, and transparent process. 			
Terrorism	<ul style="list-style-type: none"> Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address grievances from PAPs and host community. Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs. Thoroughly screen workers, suppliers and distributors to ensure security enhancement. Provide vehicle scanning systems. Ensure 24-hour surveillance by engaging the Administration Police services during the day and night; Install CCTV cameras in strategic locations in workers’ camps, offices, and substation areas. Ensure close liaison with the local Police officers. 	<p>KETRACO Social safeguards team</p> <p>Contractor Social Safeguards Team</p>	Throughout the project period	As per security budget
Lack of land documentation and formal land rights	<ul style="list-style-type: none"> Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project, guided by the provisions of the KESIP RPF. Ensure relocation and compensation is in accordance to provisions within RPF developed under this project. KETRACO should deposit compensation monies on an interest earning escrow account until cases such as lack of documentation and formal land rights are resolved. The proponent will ensure that information regarding interest earning escrow account is timely disseminated to all PAPs in subsequent consultation forums, to avoid project delays and compensation disputes. A project Grievances Redress Mechanism (GRM: Annex 14 in chapter 7) including a Grievance Redress Committees. To be established and implemented, with various tiers of escalation including provision for legal redress; receipt and recording of grievances at locational level by Community Liaison Officers (CLOs), to address all emerging complaints and grievances from the PAPs and project area community. If the Grievance Redress Committee is not able to provide a solution, the grievance is escalated to the KETRACO RAP Implementation Unit at the KETRACO Headquarters. 	KETRACO Social safeguards team	Throughout the project period	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs 			
Political Interference	<ul style="list-style-type: none"> Ensure all stakeholders and the public are involved in the planning process and sensitized to understand that increase in the capacity of transmissions system will increase access and distribution of electricity at homesteads and institutional level within Kilifi county. Obtain necessary permissions and approvals from the County Governments. Ensure EIAs are conducted for specific project activities such as campsites, quarries, materials sites, campsites, boreholes etc Full and proper implementation of the Resettlement Action Plan (RAP) for the proposed project. Ensure relocation and compensation is in accordance to provisions within RPF developed under this project. Proponent to engage local persons as Wayleave Officers to work with the contractor, in order to ensure the project is implemented smoothly Largely involve the community in the project through their leaders, take keen in timely addressing their grievances and ensure a good percentage of the local community members are employees in the project. Engage Community Liaison Officers (CLOs) to support local engagements. They act as the focal point for communications between local population and the project management team. Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address complaints from PAPs and host community. Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure all stakeholders and the public are involved during the project cycle 	KETRACO Social safeguards team	Throughout the project period	RAP Budget
Encroachment of RoW	<ul style="list-style-type: none"> Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure all stakeholders and the public are involved during the project cycle. Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7-GRM) to receive and address complaints from PAPs and host community on possible encroachment of RoW 	KETRACO Social safeguards team	Pre-construction and operation phase	RAP Budget

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> Ensure sensitisation of PAPs and host community on the dangers of encroachment to the RoW KETRACO to ensure maintenance and adequate clearance of the right of way (RoW) KETRACO to undertake periodic RoW monitoring through the environment and social safeguards team including the operation and monitoring teams. Gazettlement of the 40metres RoW. 			
Operational phase				
Terrestrial habitat alteration	<ul style="list-style-type: none"> The selective removal of tall-growing tree species and the encouragement of low growing grasses and shrubs in transmission line rights-of-way. Re-vegetation of disturbed areas with native plant species; Removal of alien invasive plant species; Cultivating native plant species; Ensuring that vegetation management should not eradicate all vegetation; 	KETRACO Environmental Safeguards Team	Continuous during operation phase	1,000,000
Risk of fire	<ul style="list-style-type: none"> Controlled burning of vegetation in transmission line rights-of-way should adhere to applicable burning regulations, fire suppression equipment requirements, and typically must be monitored; Monitoring right-of-way vegetation according to fire risk. 	KETRACO health and safety team	Continuous during operation phase	500,000
Electrocution from live wires	<ul style="list-style-type: none"> Workers should not approach an exposed energized or conductive part even if properly trained unless the worker is: properly insulated from the energized part with gloves or other approved insulation; the energized part is properly insulated from the worker and any other conductive object; the worker is properly isolated and insulated from any other conductive object (live-line work). Sensitize local communities and school going children from possible climbing of towers / pylons 	KETRACO health and safety team	Continuous during operation phase	250,000
Working at heights	<ul style="list-style-type: none"> Testing structures for integrity prior to undertaking work; Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; Inspection, maintenance, and replacement of fall protection equipment; Installation of fixtures on tower components to facilitate fall protection systems; An approved tool bag should be used for raising or lowering tools or materials to workers on structures; Use of helmets and other protective devices will mitigate against scratches, bruises, punctures, lacerations and head injuries due to dropping objects. 	KETRACO health and safety team	Throughout during project period	1,000,000

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> ▪ Implementation of a fall protection program that includes training in climbing techniques and use of fall protection measures; ▪ Inspection, maintenance, and replacement of fall protection equipment; ▪ Use of helmets and other protective devices will mitigate against scratches, bruises, punctures, lacerations and head injuries due to dropping objects. 			
Disruption and alteration of Wildlife habitat during RoW maintenance	<p>The recommended mitigation measures are as below including those presented in section on Terrestrial Habitat Alteration</p> <ul style="list-style-type: none"> • Implementation of an integrated vegetation management approach (IVM). The selective removal of tall-growing tree species and the encouragement of low-growing grasses; • Removal of invasive plant species, whenever possible, cultivating native plant species; • Scheduling activities to avoid breeding and nesting seasons for any critically endangered or endangered wildlife species; • Observing manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response; • Avoiding clearing in riparian areas; • Avoiding use of machinery in the vicinity of watercourses. 	KETRACO Environmental Safeguards Team	Throughout during project period	500,000
Rights of way maintenance	<ul style="list-style-type: none"> ▪ Provision of appropriate PPE to the workers clearing the way leave (vegetation clearing activities which will involve use of machetes and/or power saws) ▪ Observing manufacturer machinery and equipment guidelines, procedures with regard to noise, and oil spill prevention and emergency response ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address grievances from PAPs and host community ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs 	KETRACO health and safety team	Continuous during operation phase	500,000
<p>Mitigation measures for below operation phase social impacts are same as those of construction phase already presented in this EMP.</p> <ul style="list-style-type: none"> • Spread of STD, HIV and AIDS • Gender and equality biases • Illicit behavior / drug and alcohol abuse • Sexual Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV) 				

Section B – Negative Impacts				
Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<ul style="list-style-type: none"> • Labour influx • Community expectations on CSR 				
Decommissioning phase				
Noise Pollution (Vehicles & compressors)	<ul style="list-style-type: none"> ▪ Control of vehicles speed within the site; ▪ Provision of hearing protection devices for workers. ▪ Adopt and implement a Grievances Redress Mechanism (Annex 14 in chapter 7- GRM) to receive and address grievances from PAPs and host community ▪ Implement the stakeholder’s engagement plan (SEP) (Annex 14 -section 3.16 SEP) to ensure effective communication with host community and PAPs 	KETRACO Site Managers / health and safety team	continuous during decommissioning phase	500,000
Physical Hazards	<ul style="list-style-type: none"> ▪ Adopting ergonomic workflow designs that tend to fit the physical tasks to the workers and not vice-versa while maintaining a balance with expected productivity. 	KETRACO Site Managers / health and safety team	Continuous during decommissioning phase	500,000
Air pollution Cement dust & (Vehicle emissions)	<ul style="list-style-type: none"> ▪ Provide appropriate hand, respiratory and body protective devices; ▪ Proper service of project vehicles. 	KETRACO Site Managers / health and safety team	Continuous during decommissioning phase	300,000
<p>Mitigation measures for below decommissioning phase social impacts are same as those of construction phase already presented in this EMP.</p> <ul style="list-style-type: none"> • Spread of STD, HIV and AIDS • Theft and vandalism • Gender and equality biases • Illicit behavior / drug and alcohol abuse • Sexual Exploitation and Abuse (SEA) and Workplace Sexual Harassment (SH) and other forms of Gender-Based Violence (GBV) • Labour influx 				

11 CHAPTER ELEVEN: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

11.1 Introduction

Monitoring will be a continuous process essential for identification of impacts unforeseen during the ESIA study. Monitoring parameters/indicators have been identified and programmes developed for their observation and action.

11.2 Monitoring Guidelines

Monitoring programmes were developed taking into cognizant the following; frequency of monitoring; personnel; recording; equipment; baseline information and data analysis and review. The environmental indicators to be monitored during the project phases namely the construction; operation and decommissioning are described in table below. The monitoring parameters will be revised as the project development proceeds to enable incorporate and foreseen indicators. On environmental and social monitoring, both KETRACO and the Contractor will have monitoring responsibilities. For instance, KETRACO will require that contractors monitor, keep records, and report environmental and social issues. In general, monitoring for the project will include the following: -

(a) Pre – construction phase

- Monitor RAP implementation
- Monitor compensation for loss of assets at current replacement cost in accordance to project RPF
- Groups who might be disproportionately impacted due to their disadvantaged or vulnerable status, and put measures in place to ensure they have access to development benefits and opportunities

(b) Construction phase

- Monitor to ensure that occupational health and safety measures are carried out in accordance with the established ESMP
- Monitor the impacts from construction such as terrestrial habitat alteration, solid waste disposal, hazardous materials (including fuels and lubricants) management, are being mitigated in accordance with the ESMP
- If applicable, monitor that any cultural heritage that may be found or affected during construction is treated in accordance chance find procedures and the WB OP4.11 on physical cultural resources;
- Monitor habitat and species impact in accordance with the ESMP, and /or the Project's biodiversity management plan;
- Monitor Community, Health and Safety issues in accordance with the ESMP and Community, Health, Safety Plan

(c) Operation phase

- Monitor for all potential impacts i.e. social, cultural, archaeological, visual, cumulative, biodiversity, health and impacts on environmental quality (i.e. air quality, water quality and noise levels)
- Ensure that restoration of any disturbance during construction has occurred.

(d) Decommissioning phase

- Ensure that restoration of any disturbance during construction, operation and demolition has occurred.

Table 11-1 Environmental and Social monitoring plan for the proposed project

Key Component / Activity	Parameters to be monitored	Points to be monitored	Frequency of monitoring	Sampling Points	Total samples	Cost per sample	Total Cost	Lab Materials and Equipment/Other Requirements	Responsibility
Environmental Issues									
Water Quality	pH, Total Suspended Solids (TSS) and Total Dissolved Solids (TDS), heavy metals, oils and grease	River Galana near Mungotini, & Lake Jilore in Jilore Location	Quarterly during operation and decommissioning phases	5	12	12,000.00	144,000.00	Sampling bottles, cooler box, Access to a NEMA accredited laboratory	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team
Noise and Vibrations	Decibels (dBs)	(Near Schools, towns / villages , markets) These include areas such as; Mongotini Village (Kibao Kiche); Kafitsoni Dida Village; Fumbini Village (Area Near Konjora Primary School); Konjora 3 Sokoke (Near Nyari Primary School); Mpirani Primary School Kakoneni; Sea Horse Village. Others areas; Jilore, Kakoneni, Malanga, Sokoke, Konjora and Fumbini villages	Monthly/ during the construction and decommissioning phase	8 key receptor points	16	10,000	160,000	Noise & vibrations Meter	KETRACO Health and safety team / Contractor health and Safety team
Air Quality	TSP, NO _x , SO ₂ , CO, Dust particles, particulate matter etc.	Construction, campsites, towns and villages	Quarterly air quality measurements during construction and decommissioning phase	5	5	20,000.00	100,000.00	Air sampling equipment	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team

Solid Waste Generation	Slag, domestic refuse, metallic scraps, sludge, waste composition, treatment methods	Construction sites, campsites	Monthly during construction, operation and decommissioning phases	N/A	Waste inventory	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team
HIV/AIDS Incidences	- Training programmes, number of incidences, number of condoms distributed, seminars, and participants trained etc. -COVID 19 prevention strategies in place during sensitization / training (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per GoK directive.)	Campsites, construction sites, towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoeni, Bao Lala and Malanga), villages,	Quarterly throughout the project cycle	N/A	Office Supplies	KETRACO Social Safeguards Team / Contractor Social Safeguards Team
Soil Erosion	Soils eroded, Turbidity in storm water and other water sources, sources and causes	Excavated areas, sloppy areas along the road	Continuous throughout the project cycle	N/A	Camera, field vehicle	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team
Storm Water Drainage	Rainfall volume, topography	Flood prone areas, culverts, water ways, low lying areas	Continuous throughout the project cycle	N/A	Rain-gauge, field survey maps	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team
Environmental Risks	Fire outbreak, floods etc.	Possible hazardous areas only	Continuous throughout the project cycle	N/A	Field inspections and information from lead agencies	KETRACO Environmental Safeguards Team
Terrestrial Habitat Alteration	Existence of vegetation Type and number of species	Terrestrial areas such as Arabuko Sokoke Forest Corridor	Continuous throughout the project cycle	N/A	Field inspections and information from lead agencies	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team
Avian Bat/Bird collisions and electrocutions	-Number of bat/bird collisions and electrocutions - Presence of resident birds	Key birds flight paths such as Arabuko Sokoke enviorns, Kilifi creek enviorns, North Western side across Lango-	Continuos during project operation	N/A	Field inspections and information from lead agencies	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team

		baya location; used by birds migrating to and from the Tsavo-Taita Hills including lake Jilore.				
Health and Safety Issues						
Occupational Health and Safety Issues	<ul style="list-style-type: none"> - Evaluation against ICNIRP published occupational exposure limits guidelines to electric and magnetic fields. - Number of occupational diseases and accidents - Record(s) of occupational accidents and dangerous occurrences - Record(s) of occupational diseases 	Campsites, construction sites, towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages,	Continuous throughout the project cycle	N/A	Field inspections and information from EHS Personnel	KETRACO Health & Safety Team and Contractor Health and Safety team
Community Health issues and Spread of diseases	<ul style="list-style-type: none"> -Trend of infectious diseases for example: HIV/AIDS, STI's -Correlation between project team and local community -COVID 19 prevention strategies in place during sensitization / training (Hand washing facilities, physical distancing, use of masks, adherence to government restrictions as per GoK directive.) 	Campsites, construction sites, towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	Continuous throughout the project cycle	N/A	Field surveys and information from EHS Personnel	KETRACO Health & Safety Team/ Contractor social safeguards team.
Reforestation	<ul style="list-style-type: none"> - No. of PAPs compensated for lost trees - Corporate social responsibility (CSR) by KETRACO on tree planting initiatives / seedlings disturbed to PAPs No. of planted trees 	Throughout the RoW	Continuous throughout the project cycle	N/A	Field surveys and information from EHS Personnel	KETRACO environmental & social safeguards Team
Social Impacts						
Risks and impacts from displacement of households and businesses /	To be implemented through RAP monitoring; Key aspects include; <ul style="list-style-type: none"> - Number and amounts of payments made to PAPs / Vulnerable Populations - Number of PAPs / Vulnerable Populations with restored assets disaggregated by type of structure 	PAPs. Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	Pre-construction and operation phases	N/A	Field surveys	KETRACO social safeguards Team

<p>Compensation and Livelihood restoration</p> <p>/</p> <p>Livelihood disruptions</p>	<ul style="list-style-type: none"> - Number of PAPS/ Vulnerable Populations with restored livelihood enterprises - Average income level by source - Number of people/groups/ Vulnerable Populations with improved livelihoods - Number of PAPs compensated, by type of PAP - Number of PAPs promptly paid disaggregated by gender - Number of PAPs not paid promptly and reasons - Employment status and income earnings (average) - Number of re-established businesses, and average monthly income - A number of livelihoods specific training held by type, gender, and thematic areas covered. - Employment status and income earnings (average) - Number of re-established businesses, crop-based livelihoods such as irrigation schemes and average monthly income - Number of beneficiaries disintegrated by gender on livelihood restoration programs (tree planting, Enterprise Based Livelihoods, A Local Buying Program, Micro Loans/Small Business Grants, Apiculture, Financial Literacy Training / Entrepreneurial training - Number of Persons linked with National Safety Net programs /projects - Number of locals in employment: semi-skilled and unskilled jobs disintegrated by gender - A number of livelihoods specific training held by type, gender, and thematic areas covered. 					
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<p>Training Capacity Building / Transfer of Skills</p>	<ul style="list-style-type: none"> - Number of trainings held disaggregated by target group/institutions and issues amongst employed locals - Number and type of participants disaggregated by gender - Number of staff trained in implementation of the ESMP - COVID 19 prevention strategies in place during information disclosure (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per GoK directive.) 	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW Project site</p>	<p>Continuous throughout the project cycle.</p>	<p>N/A</p>	<p>Field surveys and information from EHS Personnel</p>	<p>KETRACO social safeguards Team/ Contractor social safeguards team.</p>
<p>Grievance management</p>	<ul style="list-style-type: none"> - Implementation of the GRM Number & type of grievances received and recorded by CLOs in the grievances log -Number & type of grievances resolved promptly (within the duration allowed in the grievance redress mechanism) and resolutions reached. -Number& type of grievances not resolved in time but completed -Number & type of outstanding grievances not resolved -Average timelines for resolution of grievances disaggregated by the various levels of grievance redress mechanism/institutions -Number of grievances referred to Level 3 (Courts of Law) -Number of complaints referred to KETRACO 	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>continuous throughout project cycle</p>	<p>N/A</p>	<p>Field surveys; grievance log / acknowledgement form and information from EHS Personnel</p>	<p>KETRACO social safeguards Team / Contractor social safeguards team.</p>
<p>Gender Based Violence (GBV) Sexual Exploitation and Abuse (SEA) / Sexual Harassment (SH)</p>	<ul style="list-style-type: none"> - implementation of a GBV Management Plan including COVID 19 risks - Number of training courses related to GBV – SEA/SH delivered; / GRM access amidst COVID 19 - Percentage of workers that have signed a Code of Conduct (CoC); and/or 	<p>Campsites, construction sites, towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>Continuous throughout project cycle</p>	<p>N/A</p>	<p>Field surveys; grievance log / acknowledgement form and information from EHS Personnel</p>	<p>KETRACO social safeguards Team / Contractor social safeguards team</p>

	<ul style="list-style-type: none"> - Percentage of workers that have attended CoC training. - Implementation of labour influx management plan 					
Land and property disputes exacerbated by the project / related to the project	<ul style="list-style-type: none"> - Established an interest earning escrow accounts - No. of PAPs not compensated/with stalemates - Full and proper implementation of the Resettlement Action Plan (RAP) - Mapped vulnerable households and individuals - No. of engaged local persons as Wayleave Officers - Implementation of a Grievances Redress Mechanism - Implementation of the stakeholder's engagement plan (SEP) 	RoW	Continuous during pre-construction and operation phases	N/A	Field surveys; grievance log / acknowledgement form	KETRACO via social safeguards Team / Contractor social safeguards team.
Vulnerable populations;	<ul style="list-style-type: none"> - Number of vulnerable PAPs especially orphans, PLWD, widows and elderly assisted by type and gender - Type of assistance provided to vulnerable PAPs especially orphans, PLWD, widows and elderly - Number of vulnerable PAP especially orphans, PLWD, widows and elderly not assisted and reasons - Number of meetings attended by vulnerable groups - Number and types of vulnerable issues articulated - Number of Vulnerable PAPs sensitized - No. of vulnerable Household Heads affected by the project - Type of vulnerability and limitations - The assistance offered to Vulnerable persons - COVID 19 prevention strategies in place during sensitization / training (Hand washing 	RoW	Continuous during pre-construction and operation phases	N/A	Field surveys; grievance log / acknowledgement form	KETRACO via social safeguards Team

	facilities, physical distancing, use of masks, adherence restrictions as per GoK directive.)					
Cultural Aspects / Impacts	<ul style="list-style-type: none"> - Cultural appropriateness of the methods adopted on avoidance of; spotting Pylons on the 24 graves / or using other appropriate alternative access routes and cutting down of significant Baobab trees. - Appropriateness of modes used in consultation etc. - Assessing relevant cultural institutions engaged in Stakeholders Engagement Plan (SEP) - Change is social-cultural setting of the permanently relocated PAPs triggered by RAP 	RoW	Continuous during pre-construction and operation phases	N/A	Field surveys; grievance log / acknowledgement form	KETRACO via social safeguards Team/ Contractor social safeguards team.
Gender inequality;	<ul style="list-style-type: none"> - Implementation of a gender mainstreaming plan - Participation of women, men in project implementation, including the decision making processes - Enhancement of the social and economic status of both women and men 	RoW	Continuous throughout project cycle	N/A	Field surveys; grievance log / acknowledgement form	KETRACO via social safeguards Team / Contractor social safeguards team.
Stakeholder engagement and information disclosure;	<ul style="list-style-type: none"> - Implementation of the SEP - Disclosure of ESIA report on KETRACO and World Bank websites. - Availability of ESIA report at the county level. - Disclosure of ESIA report summary at in a culturally appropriate language, and in locations accessible to all. - Number of consultative meetings held, by type - Stakeholders awareness of ESIA and RAP entitlements 	RoW / Project area (Buffer zone of 1km)	Continuous throughout project cycle	N/A	Field surveys / information from EHS Personnel	KETRACO via social safeguards Team / Contractor social safeguards team.

	<ul style="list-style-type: none"> - Number of County and National Government leaders engaged/briefed about the ESIA process - Number of stakeholders consultative meetings held - Type of information provided in meetings - Type of issues raised at public consultation meetings, and response rate - Number of participants attending public consultation meetings related to project disaggregated by gender - Modes and language of communication. - Minutes of meetings held and lists of attendance - Number of people seeking information on displacement and compensation - COVID 19 prevention strategies in place during information disclosure (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per GoK directive.) 					
Impacts on community facilities	<ul style="list-style-type: none"> - Restored access to and functioning communal services, for instance, water, electricity - Number, type, and size of public structures affected - Number of community facilities affected and replaced - COVID 19 prevention strategies in place (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per GoK directive.) 	construction sites, towns, villages along RoW	Continuous throughout project cycle	N/A	- Field surveys / information from CLO / PIC	KETRACO via social safeguards Team / Contractor social safeguards team.
Local recruitment; / Creation of employment	<ul style="list-style-type: none"> - Grievances lodged by type and number, illustrated with graphs. Open grievances by type and number - Disciplinary cases – type and number 	RoW	Continuous throughout project cycle	N/A	Field surveys / PIC	KETRACO Site Managers social safeguards Team / Contractor Site Managers , social safeguards team

<p>/</p> <p>Labour Influx</p>	<ul style="list-style-type: none"> - Disciplinary action by type and number, including graphs - Induction training numbers, queries and comments - Pay slip queries -Type and number - Food and accommodation complaints – Type and number - Issues raised by workers’ committees and action taken - Workforce numbers by local employess and immigrant workers (labour influx)- actual against planned - Industrial relations incidents – stoppages go slows, threats, damage to property, violence - Lost hours by category - Absenteeism, sick leave and late arrivals - Issues raised by camp committees and action taken - Workers Camp numbers by local and foreign workers – actual against planned - Camp incidents -COVID 19 prevention strategies in place for all workers (skilled, semiskilled and unskilled), (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per GoK directive.) - Existence of COVID 19 preparedness management action plan applicable to all workers (skilled, semiskilled and unskilled), 					
<p>HIV/AIDs and other STDs;</p>	<ul style="list-style-type: none"> - Number of HIV/AIDs and other STDs awareness trainings held disaggregated by target group/institutions / Gender and issues amongst stakeholders / workers / community - The number of condoms distributed per gender 	<p>RoW</p>	<p>Continuous throughout project cycle</p>	<p>N/A</p>	<p>Field surveys / PIC</p>	<p>KETRACO Site Managers social safeguards Team / Contractor Site Managers , social safeguards team</p>

	<ul style="list-style-type: none"> - Adequacy and accessibility in provision of condoms to workers both male and female - Levels and knowledge of condom use or other safer sex methods - Knowledge and attitudes about HIV and STDs - Potential channels, methods, materials and messages for reaching target groups - Factors that can facilitate or hinder intervention - Cultural beliefs about sex, sexuality, sexual health and HIV/AIDs and STDs - Involvement of community stakeholders - Number of workers who have signed a code of conduct - COVID 19 prevention strategies in place for all workers (skilled, semiskilled and unskilled), (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per GoK directive.) 					
Child labour and forced labour	<ul style="list-style-type: none"> - Number of workers employed and ID numbers - implementation of Labour Management Plan - Implementation of local recruitment plan - Implementation of Grievances Redress Mechanism and recorded grievances on child and forced labour - stakeholder's engagement plan (SEP) – with awareness creation sessions on child and forced labour - Implementation of livelihood restoration plan - Implementation of Vulnerable Persons Plan 	Campsites / Worksites along RoW	Continuous throughout project cycle	N/A	PIC	KETRACO Site Managers, social safeguards Team / Contractor Site Managers, social safeguards team

<p>Quality of life and lifestyle impacts</p>	<ul style="list-style-type: none"> - Number and amounts of payments made to PAPs / Vulnerable Populations especially orphans, PLWD, widows and elderly - Compensation by Number of PAP disintegrated by gender - Full implementation of RAP in line with the RPF - Implement of Livelihood Restoration Plan - Type of assistance provided to vulnerable PAPs especially orphans, PLWD, widows and elderly - Improvements on livelihoods and standards of living - Implementation of a Grievances Redress Mechanism - Implementation of the stakeholder's engagement plan (SEP) 	<p>-construction sites, towns, villages along RoW</p>	<p>Continuous throughout project cycle</p>	<p>N/A</p>	<p>Field surveys / CLO observation / PIC</p>	<p>KETRACO via social safeguards Team</p>
<p>Community Expectation on CSR</p>	<ul style="list-style-type: none"> - Implementation of CSR plan - support for supplies to the community - donation to local community - Implementation of stakeholder's engagement plan (SEP) - Number of people registered in local government support programs - Implementation of plans (vulnerable peoples plan, local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Social Impacts Management Plan, Livelihood Restoration Plan) - Grievances on community expectations - COVID 19 prevention strategies put in place (Hand washing facilities, physical distancing, use of masks, 	<p>construction sites, towns, villages along RoW</p>	<p>Continuous throughout project cycle</p>	<p>N/A</p>	<p>Field surveys / CLO observation / PIC</p>	<p>KETRACO Site Managers social safeguards Team / Contractor Site Managers , social safeguards team</p>

	adherence to restrictions as per GoK directive.)					
Encroachment of RoW	<ul style="list-style-type: none"> - Bush Woody plant encroachment/bush encroachment with satellite imagery - Areas with significant land cover changes, - Established standards for clearing/thinning encroached areas. - Number of manual clearing programmes in selected communal areas. - Number of identified hotspots areas - Spatial variation in bush encroachment - No. of structures built househokds along RoW 	RoW	Continuous throughout project cycle	N/A	Field surveys / CLO observation / PIC	KETRACO via Social safeguards team
Gains in the local and national economy	<ul style="list-style-type: none"> - Implementation of a Local Recruitment Plan - No. of employed locals both men and women above 18 years of age - Development of contractors purchasing plan that stipulates how national and local purchase of goods and services will be optimised - Implementation of Livelihood Restoration Plan - Improvements on livelihoods and standards of living 	Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	Continuous throughout project cycle	N/A	Field surveys / PIC	KETRACO via Social safeguards tea
Increased access to information	<ul style="list-style-type: none"> - Grid densification, intensification and grid expansion - Physical infrastructural development heighted by power distribution - Building and operation of Malindi Substation - Connection of locals to power - Locals access to phones, radio, and television 	Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	During operation phase	N/A	Field surveys / PIC	KETRACO via Social safeguards tea

Health benefits of the project	Grid densification, intensification and grid expansion for various households and town centres within the project region Use of electricity for lighting by the host community	Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	During operation phase	N/A	Field surveys	KETRACO via Social safeguards team
Community demonstrations in pursuit for employment opportunities	Implementation of a Grievances Redress Mechanism Implementation of the stakeholder's engagement plan (SEP) Implementation of plans in Annex 14 such as local recruitment plan, labour management plan, gender mainstreaming plan, Labour influx Management Plan, Livelihood Restoration Plan No of engaged Community Liaison Officers (CLOs) No. of direct employment opportunities disintegrated by gender such as wayleave officers, community liaison officers (CLOs) and project vacancies.	Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	Continuous throughout project cycle	N/A	Field surveys	KETRACO via Social safeguards team / Contractor social safeguards team.
Terrorism	Implementation a Grievances Redress Mechanism Implementation of the stakeholder's engagement plan (SEP) Existence of screening for workers, suppliers and distributors Vehicle scanning systems in place at substation and construction sites Existence of 24-hour surveillance by Administration Police services Installation of CCTV cameras in strategic locations in workers' camps, offices, and substation areas.	Campsites / Worksites along RoW construction sites,	Continuous throughout project cycle	N/A	Field surveys / CLO observation / PIC	KETRACO via Social safeguards team / Constructor Safeguards Team

<p>Lack of land documentation and formal land rights</p>	<p>Full and proper implementation of the Resettlement Action Plan (RAP) Established interest earning escrow accounts No. of PAPs not compensated/with stalemates Timely dissemination of information regarding interest earning escrow accounts is timely disseminated Established Grievances Redress Mechanism Implementation of the stakeholder's engagement plan (SEP)</p>	<p>RoW</p>	<p>Pre-construction phase</p>	<p>N/A</p>	<p>Field surveys; grievance log / acknowledgement form</p>	<p>KETRACO via social safeguards Team</p>
<p>Political Interference</p>	<p>Sensitizations conducted on projects benefits Approvals from the County Governments EIAs conducted for specific project activities such as campsites, quarries, materials sites, campsites, boreholes etc Full and proper implementation of the Resettlement Action Plan (RAP) No of engaged local persons disintegrated by gender as Wayleave Officers Involved community leaders Engagement of Community Liaison Officers (CLOs) Implementation of Grievances Redress Mechanism Implementation of the stakeholder's engagement plan (SEP)</p>	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>Continuous throughout project cycle</p>	<p>N/A</p>	<p>Field surveys; grievance log / acknowledgement form</p>	<p>KETRACO via social safeguards Team</p>
<p>Land acquisition (wayleave contractor facilities sites, workers camp sites, and sub-station sites) and</p>	<p>Area of private land to be acquired or put under easement Area of public land to be acquired or put under easement Total area of Land Acquired</p>	<p>-Row, Campsites / Worksites along RoW construction sites,</p>	<p>During pre-construction and operation phases</p>	<p>N/A</p>	<p>Field surveys; grievance log / acknowledgement form</p>	<p>KETRACO via social safeguards Team</p>

<p>resettlement disputes</p>	<p>Implementation a Grievances Redress Mechanism Implementation of the stakeholder's engagement plan (SEP) The amount of compensation to paid for private land Resettlement Action Plan (RAP) study for the proposed project Surveys conducted to establish which properties (land and buildings) lie within the RoW The exact number of PAPs affected and the types of properties affected.</p>					
<p>Provision of market and supply for building materials</p>	<p>Existence of a purchasing plan that stipulate local purchase of goods and services including provision of market and supply for building materials. Receipts and LPOs on purchase of building materials such as sand, cement etc. from suppliers including hardware shops in towns such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga.</p>	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>During construction phase</p>	<p>N/A</p>	<p>Field surveys</p>	<p>KETRACO via Social safeguards team / Contractor Social Safeguards Team</p>
<p>Improvement of local trade and business opportunities</p>	<p>Contractors purchasing plan that stipulate local and regional purchase of goods and services including provision of market and supply for building materials such as sand, cement etc. Implementation of a livelihood restoration / enhancement plan (LRP) A local buying program Enhancement of skills on small scale businesses such as food vendors and kiosk owners Grid densification, intensification and grid expansion to reach about various households and town centres within the project region</p>	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>Throughout construction and operation phases</p>	<p>N/A</p>	<p>Field surveys</p>	<p>KETRACO via Social safeguards team / Contractor Social Safeguards Team</p>

Insecurity incidences in the project area	<ul style="list-style-type: none"> - Deployment of police or private security services along the project RoW and mainly within substation areas such as proposed Malindi substation. 	Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	Throughout the project cycle	N/A	Field surveys	KETRACO via Social safeguards team / Contractor Social Safeguards Team
Agricultural produce Loss / restriction to access Pasture / Impact on Apiculture	<ul style="list-style-type: none"> - Enumeration of destroyed farm crops - A Crop destruction Register - Documented concerns such as agricultural produce loss, restrictions to access to pasture and impacts on apiculture - Use of existing roads or lanes utilized - Scheduledling construction after crop harvesting - Avoidance of any interference of the beehives if outside the RoW - Relocated beehives that are directly on the proposed transmission line - Implementation of the livelihood restoration plan (LRP) - Implementation of the stakeholder's engagement plan (SEP) (- Adoption and implementation of a Grievances Redress Mechanism 	RoW	Pre-construction and construction phases	N/A	Field surveys	KETRACO via Social safeguards team / Contractor Social Safeguards Team
Interference of existing development infrastructure	<ul style="list-style-type: none"> - Implementation of the stakeholder's engagement plan (SEP) (- Adoption and implementation of a Grievances Redress Mechanism - Preparation of a Road Use Restriction Management Plan for major road crossings - Liaison with Kenya Power at design stage and on planned shutdowns; 	major road crossings along RoW, RoW	During construction phase	N/A	Field surveys	KETRACO via Social safeguards team / Contractor Social Safeguards Team

	<ul style="list-style-type: none"> - Kenya Power utility line shut-down management plan. 					
<p>Insecurity / Theft and Vandalism</p>	<ul style="list-style-type: none"> - Insecurity incidences in the project area - Deployment of police or private security services along the project RoW and mainly within substation areas such as proposed Malindi substation - Implementation a Grievances Redress Mechanism - Implementation of the stakeholder's engagement plan (SEP) - Existence of screening for workers, suppliers and distributors - Vehicle scanning systems in place at substation and construction sites - Existence of 24-hour surveillance by Administration Police services - Installation of CCTV cameras in strategic locations in workers' camps, offices, and substation areas. 	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>Throughout the project cycle</p>	<p>N/A</p>	<p>Field surveys</p>	<p>KETRACO via Social safeguards team / Contractor Social Safeguards Team</p>
<p>Land and Property/ Socio-Political Disputes exacerbated by the Project</p>	<ul style="list-style-type: none"> - Full implementation of the Resettlement Action Plan (RAP) - timely (before project commencement), fair / just and adequate compensation as per the provisions in the RPF - Implement internal and external monitoring in collaboration with PAPs and other stakeholders 	<p>Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW</p>	<p>Pre-construction, and operation phases</p>	<p>N/A</p>	<p>Field surveys</p>	<p>KETRACO via Social safeguards team / Contractor Social Safeguards Team</p>

	<ul style="list-style-type: none"> - Mapping of vulnerable households and individuals especially orphans, PLWD, widows and elderly in the project area and implement specific interventions - Engagement of local persons as Wayleave Officers - Relocation and compensation in accordance to provisions within RPF - Implementation of Stakeholder engagement plan (SEP) - Implementation a Grievances Redress Mechanism - Signed land use and restoration agreement between community and contractor on land for contractor facilities such as campsites 					
Loss of social fabrics	<ul style="list-style-type: none"> - Settling of 7% land owners landowners who are permanently displaced - in the vicinity (cost allowing) to deter disruption of social support systems and networks. - Implementation of Stakeholder engagement plan (SEP) - Implementation a Grievances Redress Mechanism - 	Along RoW	Pre-construction and construction phase	N/A	Field surveys	KETRACO via Social safeguards team
Illicit behaviour / drug and alcohol abuse	<ul style="list-style-type: none"> - Existence of a code of conduct to ensure workers conduct - Trainings on civic and health education on HIV/AIDS and STIs - Accessible provision of condoms to workers both male and female - Implementation of Stakeholder engagement plan (SEP) - Implementation a Grievances Redress Mechanism 	-Row, Campsites / Worksites along RoW construction sites,	Throughout project cycle	N/A	Field surveys	KETRACO via Social safeguards team / Contractor Social Safeguards Team

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Domestic Conflicts exacerbated by project	<ul style="list-style-type: none"> - Resettlement and compensation to aligned to the RPF - Involvement of CLOs and GRCs to ensure the vulnerable especially orphans, widows and elderly. access project benefits and opportunities. - Joint bank account by spouses to avoid mistrust - Implementation of Stakeholder engagement plan (SEP) - Implementation a Grievances Redress Mechanism 	Towns(Such as Konjora, Rojorojo, Sokoke, Matanno Manne, Kakoneni, Bao Lala and Malanga), villages along RoW	Throughout project cycle	N/A	Field surveys	KETRACO via Social safeguards team

12 CHAPTER TWELVE: CONCLUSION AND RECOMMENDATION

12.1 Public Review and disclosure of the ESIA Report

Upon submission of the ESIA report to NEMA; Within fourteen (14) days of having received the ESIA study report NEMA will review the report and prepare a summary of the report (advert) and invite the public to make oral or written comments on the report. NEMA will, at the expense of the proponent:

- a. Publish an advert in the Kenya Gazette and
- b. Newspaper that has a nationwide circulation
- c. Announce Over the Radio in both official and local languages in a radio with a nationwide coverage for at least once a week for two consecutive weeks;

The invitation for public comments or 'the advert' will state –

- The nature of the project;
- The location of the project;
- The anticipated impacts of the project and the proposed mitigation measures to respond to the impacts;
- The times and place where the full report can be inspected (In this case, NEMA Headquarters, NEMA website – www.nema.go.ke , KETRACO, and NEMA County Offices); and
- The period within which the authority shall receive comments. (Not more than 60 days)

The purpose of the adverts is to allow all stakeholders to read and understand how they would be affected by the project. Upon receipt of both oral and written comments NEMA may hold a public hearing. The date and venue of the public hearing will be publicized at least one week prior to the meeting;

- In at least one daily national newspaper & local newspaper
- At least two announcements in the local and National language through radio with a nation-wide coverage.

Presiding officer shall present the public hearing report to NEMA within fourteen (14) days from the date of the public hearing. The public review period will last a minimum of 60 days. After expiry of the public review period, NEMA will collate the comments submitted from the public and hand them over to the proponent highlighting which key issues require to be addressed. The proponent in liaison with the ESIA expert will prepare written responses either into an additional chapter or an addendum to the ESIA report. This chapter will clearly explain how each of the comments and concerns raised by the public have been addressed and resolved. Once NEMA is satisfied that the revised ESIA Study report addresses all the issues raised by stakeholders it would decide on issuance of an ESIA/EIA license.

World Bank safeguard policies including the proposed project KETRACO KESIP frameworks (ESMP, RPF and VMGF) require that environmental reports for projects are made available to project affected groups, local NGOs, and the public at large. KETRACO should therefore disclose summaries of ESIA and all project frameworks/plans to PAPs in culturally appropriate languages and in accessible locations. Public disclosure of EIA reports is also a requirement of the national EIA procedures in line with the provisions of EMCA, Cap 387 as elaborated in the Environmental Impact Assessment and Audit Regulations, 2003 and amendments 2019

Disclosure of EIA study reports prepared in line with EMCA provisions should follow the same procedure. The approved version of the ESIA report should be posted at NEMA websites. KETRACO Website as well as WB Info Shop to ensure all interested parties can access it.

In addition to the environmental documentation requirements described above, the proposed project ESMF notes that the following consultation and disclosure requirements be utilized

for all Category A subprojects: KETRACO will be expected to consult and make the ESIA findings about the project’s environmental and social aspects available to project affected persons (PAPs), other stakeholders including local NGOs, and take their views into account. The disclosure of ESIA findings to PAPs will be undertaken in culturally appropriate languages, using feasible techniques such as FGDs, public barazas, in easily accessible locations, and in a timeframe that enables meaningful consultations. Such engagements should be in line with the Stakeholders Engagement Plan (SEP) – Annex 14 section 3:16. KETRACO should initiate the consultations as early as possible. Consultations with stakeholders should take place only once after a draft EA report is prepared. In addition, KETRACO should consult with such groups throughout project implementation as necessary to address EA-related issues that affect them. For meaningful consultations, the KETRACO should apply the following disclosure requirements:

- KETRACO should provide relevant material in English and/or the local language (as appropriate) in a timely manner and language that are understandable and accessible to the groups being consulted prior to consultation.
- KETRACO should make the draft ESIA/EIA report including a detailed summary of the ESIA/EIA conclusions available at a public place accessible to groups affected by the project and local NGOs.

Once the borrower officially transmits the Category A EA report to the Bank, the Bank distributes the summary (in English) to the executive directors (Eds) and makes the report available through its InfoShop.

12.2 Budget for ESMP and ESMmp

The costs of incorporating the recommended mitigation measures are defined in the ESMP matrix, most of which will be passed to the contractor and overseen by the KETRACO Project Manager. The environmental and social department – social safeguards team, valuation and survey department along with assistance from the KETRACO Technical department will oversee and manage the cost and recommended mitigation measures within the field of expertise including compensation for property, crops and relocation activities. These costs are presented in the proposed project Resettlement Action Plan (RAP). A budget overview of implementing the ESMP & ESMmp has been summarized below:

Table 12-1 ESMP & ESMmp Implementation estimate costs

Item	Cost
<i>RAP costs</i>	671,966,041.60
<i>Environmental and social management costs</i>	25,800,000.00
<i>Environmental and social monitoring costs</i>	1,004,000.00
<i>Costs to be included in contractor’s Boq</i>	27,200,000.00
<i>Costs that should be part of routine or periodic maintenance</i>	6,250,000.00
<i>Total</i>	814,476,041.00
<i>Training/institutional costs 2% of total cost</i>	16,289,520.82
<i>Grand total</i>	748,509,562.42

12.3 Conclusion and Recommendation

The ESIA study has established that the proposed transmission line and substations are a worthwhile investment. The project will contribute significantly to the power stability, provide reliability, enhance security of supply to the existing demand hubs in Kilifi County and country at large which by extension will spur economic development; expand transmission capacity necessary to enhance electrification initiatives and reduce technical losses in areas currently served by long medium voltage lines.

The water quality analysis carried out from a sample point in River Sabaki near AP12 portrayed it does not conform to EMCA (Water Quality) Regulations, of 2006 standards for domestic water due to high suspended solids and presence of *Escherichia coli*. Presence of E-coli could be attributed to traces of untreated sewer finding its way into the river. During the baseline study and survey conducted, there were no significant noise polluting activities within the proposed project area. The highest reading recorded during the noise survey conducted along the proposed project area was at Kakoneni Village which had Leq of 51.9 dB(A). This was attributed to the village being adjacent to C103 Road hence the noise recorded could have been as a result of vehicular movement. The lowest measurements were recorded at Mpirani Primary School and Kafitsoni Village in Dida. The areas were generally silent with Kafitsoni in Dida recording Lmin of 35.3 dB(A).

The ESIA study estimated that a total of 303.667 Ha or 750.36 Acres will be affected by the right of way for the proposed transmission line and substations. It was noted that approximately 603 registered landowners will also be affected. Further, it is estimated approximately 1,083 structures which include permanent (136), semi-permanent (71), temporary (793), services (watering points) (51), burial sites (24) and dug open pits meant for pit latrines (8) will be affected. The displacements will occur throughout the ROW with significant impact on structures likely to be experienced in the densely populated Jilore Location and Kilifi Township location. An approximate 22 business structures mainly retail shops owned by households ranging from four (4) permanent, four (4) semi-permanent, and fourteen (14) temporary are also affected by the RoW. Further, some physical cultural resources such as a baobab tree in Konjora and an approximate total of 24 graveyards were observed. The graves were distributed along the RoW as follows; (14) in Jilore location, seven (7) in Sokoke/Nyari location and three (3) noted in Tezo-Kilifi township location. The highlighted social -cultural and economic issues underpins the need for a comprehensive resettlement action plan (RAP) that would ensure compensation and livelihood restorations for projected affected persons.

The vicinity of the proposed Malindi – Kilifi high voltage transmission line include the high biodiversity Arabuko – Sokoke forest and the estuary of the Galana river. In these areas, migratory bird species including palaeartic, Madagascan and intra-African migrants which move sporadically across the continent have been recorded. Nonetheless, the proposed transmission line avoids the North Eastern side of Arabuko Sokoke Forest which has several migratory routes. However, of concern should be the route on the North Western side of Arabuko Sokoke across Lango-baya location; used by birds migrating to and from the Tsavo-Taita Hills including Lake Jilore, Arabuko Sokoke environs and Kilifi Creek environs. Comprehensive mitigation measures have been suggested including provision of engineering solutions such as installations of bird diverters especially in identified migratory routes, installing visibility enhancement objects such as marker balls, bird deterrents, or diverters; building raptors platforms on top of towers for roosting and nesting; and maintaining 1.5 meter (60-inch) spacing between energized components and grounded hardware or, where spacing is not feasible, insulating energized parts and hardware. It is also recommended that the proponent should work with line agencies such as NMK, KWS and relevant NGOs such as Birdlife International and Nature Kenya for expert opinion and specialized studies (ornithological studies).

Amongst some of the key impacts anticipated by the proposed project include;

Environmental Impacts

- Terrestrial habitat alteration
- Destruction of existing vegetation cover / biodiversity
- Avian /Bird and Bat collisions and electrocutions
- Increased generation of solid waste
- Increased discharge of Waste water / Sewage

Occupational Health and Safety

- Electrocution from live power lines
- Working at heights on poles and structures
- Exposure of electric magnetic fields to workers
- Community Health and Safety issues

Social Impacts

- Displacement of households and loss of businesses, destruction of trees and loss of crops.
- Land acquisition (way-leave) and resettlement conflicts
- Agricultural produce loss / economic impacts
- Land and property disputes exacerbated by the project
- Labour influx and risk of GBV-SEA/SH; risk of child labour/forced labour
- Cultural impacts
- HIV/AIDS and other Sexually transmitted diseases

Its worth to note that the proposed project is especially designed to veer off and avoid the Arabuko Sokoke forest with various distances at different intervals [AP6 (1.85km) to the East within Sokoke Location, AP12 (287m), AP13 (275m) and AP16 (465m) to the South]. The variance is due to the line avoiding other key areas such as migratory routes, Kilifi creek, densely populated areas, towns, and market centres. In addition, the proposed transmission route also follows existing roads as closely as possible. These design measures minimises negative environmental, social and economic impacts. Nonetheless it is recommended that the proponent design team consider a wider berth to the ASF boundary than currently proposed since birds are not confined to buffer zones.

The ESIA study has established detailed environmental and social management plan (ESMP); and a comprehensive environmental and social monitoring plan(ESMmP); including standalone management plans for various aspects with mitigation measures for the anticipated impacts. The ESIA has recommended the need to ensure stakeholder engagement and grievances management is undertaken post ESIA (applicable to the pre-construction, construction, operations, and decommissioning phases). This should be attained through full implementation of the SEP (Annex 14 -section 3.16 SEP) and GRM (Annex 14 - chapter 7-GRM) which provides aspects post the ESIA, including principles, processes, and procedures to guide the project in engaging stakeholders and managing grievances throughout the project cycle. This ESIA also recommends that the proponent to disseminates the correct information on KETRACO's CSR policy and the cap for trees and crops allowed under the RoW guided by the RPF provisions to PAPs in consecutive stakeholder engagement sessions e.g., during the disclosure of the RAP and ESIA. An approximate budget to implement the ESMP and ESMmP has been calculated at **Ksh 748,509,562.42**. Some of the management plans to be implemented alongside the ESMP and ESMmp are as follows;

- Atmospheric Emissions Management Plan
- Hazardous Substances Management Plan
- Spill Prevention and Countermeasures Management Plan
- Fire Risk Management Plan
- Noise Management Plan
- Surface Water Management Plan
- Waste Management Plan
- Biodiversity Management Plan
- Occupational Health and Safety Management Plan
- Emergency Preparedness and Response Management Plan

- Labour Management Plan
- Labour influx management plan
- Local Recruitment Plan
- Associated Facilities Management Plan
- GBV-SEA/SH action management plan
- Stakeholder Engagement Plan
- Grievance Redress Mechanism
- CSR plan.
- Resettlement Action Plan
- Livelihood Restoration Plan
- Gender mainstreaming plan
- Chance Finds Procedure
- Resource Efficiency and Pollution Prevention and Control Plan
- External Communication Mechanism on Environmental Issues
- Community Health and Safety Plan

KETRACO has established a dedicated Project Implementation Team (PIT) to implement the Project. The PIT will include a project engineer, three site managers, one civil engineer, one accountant, one procurement expert, one socio-economist and one environmentalist. The PIT will be assisted by a consultant with experience in undertaking similar projects in the region. The PIT reports to the KETRACO Board Committee that will oversee project implementation, including the review of annual work plans and budgets. The consultant will prepare the technical specification and draft bid documents for transmission lines and substations. KETRACO will at all times remain responsible for the overall performance of all ESMPs. Currently, KETRACO has 7 NEMA and Environmental Institute of Kenya (EIK) registered professionals, 12 socio-economists, 14 land surveyors, 3 safety officers and 14 land valuers/economists. The Environmental and Social division of KETRACO will monitor compliance of the project to applicable environmental and social standards whereas the KETRACO safety unit ensure safe work management and support the E&S unit to carry out contractor inductions. Its worth, noting that the KETRACO E&S department is well trained and capable to ensure monitoring of the project. From the consultant perspective KETRACO has the capacity to monitor implementation of the Environmental and Social Management Plan (ESMP) and Environmental and Social Monitoring Plan (ESMnP) developed for the project. The department also has the capacity to undertake training and build the capacity of the contractor to implement both the ESMP and ESMnP.

The proponent is committed to putting in place the proposed measures to mitigate the potential negative environmental, safety, health and social impacts associated with the life cycle of the proposed project. Taking into cognizant the anticipated project benefits to the Country on power stability, reliability and spur on economy; and the adequate mitigation measures provided for the impacts, it is within our expert opinion that the project be approved with full implementation of the established ESMP, ESMmP and respective management plans.

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