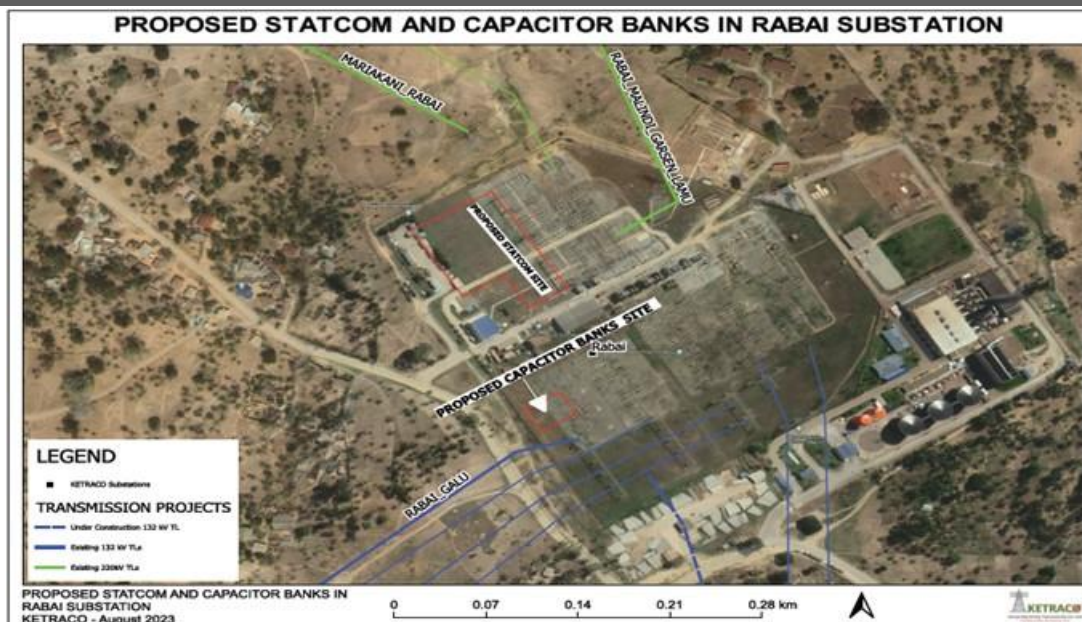


**KENYA GREEN AND RESILIENT EXPANSION OF ENERGY (GREEN) PROGRAM  
(P180465)**

**ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT  
REPORT FOR THE PROPOSED STATCOM PROJECT AT  
RABAI 220kV/132 kV SUBSTATION  
ON PLOT L.R. NUMBER: 27669/2**



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**VOLUME 1**

**MARCH 2024**

## DOCUMENT CONTROL

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This Environmental & Social Impact Assessment Comprehensive project report has been prepared by KETRACO and is intended for the proposed Static Synchronous Compensator (STATCOM) project in the existing Rabai 220kV/132 kV substation.

### Document history:

Version	Purpose description	Originated	Reviewed	Date
Ver 1.0	Draft ESIA report and Annexes-Submission to World Bank	KETRACO	RG	25 <sup>th</sup> August 2023
Ver 1.1	World Bank (WB) Reviewed ESIA report 01.09.2023	WB	PS & JMA	12th October 2023
Ver 1.2	Revised ESIA report Annex 9- Chance find procedures-	KETRACO	NN and CS	29 <sup>th</sup> October 2023
Ver 1.3	Revised ESIA report Annex 9- Chance find procedures-	KETRACO	CS	29 <sup>th</sup> November 2023

**DECLARATION PAGE**

This Comprehensive Project Report has been prepared in accordance with the Environmental (Impact Assessment and Audit) Regulations, 2003 of the Kenya Gazette Supplement No. 56 of 13<sup>th</sup> June 2003, Legal Notice No. 101, and Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019

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

## LIST OF ACRONYMS AND ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
BETA	Bottom-up Economic Transformative Agenda
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CIA	Cumulative Impact Assessment
CIDP	County Integrated Development Plan
CRPD	Convention on the Rights of Persons with Disabilities
EA	Environmental Assessment
EHS	Environmental Health and Safety
EIA	Environmental Impact Assessment
EBK	Engineers Board of Kenya
EMCA	Environmental Management and Coordination Act
EPRA	Energy and Petroleum Regulatory Authority
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMnP	Environmental and Social Monitoring Plan
ESS	Environmental and Social Standard
GoK	Government of Kenya
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
IFC	International Finance Corporation
IWRM	Integrated Water Resources Management
KeNHA	Kenya National Highways Authority
KEPHIS	Kenya Plant Health Inspectorate Services
KeRRA	Kenya Rural Road Authority
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 Lighting Company
KURA	Kenya Urban Roads Authority
kV	Kilovolts
KWS	Kenya Wildlife Service
LCPDP	Least Cost Power Development Plan
LMP	Labor Management Plan
MEA	Multi-lateral Environmental Agreement
MoEP	Ministry of Energy and Petroleum
MoLPP	Ministry of Lands and Physical Planning
MTP	Medium Term Plan
MVAr	Reactive power
NBSAP	National Biodiversity Strategy and Action Plan

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NCCRS	National Climate Change Response Strategy
NEMA	National Environment Management Authority
NGO	Non-Governmental Organization
NMK	National Museums of Kenya
NPGD	National Policy on Gender and Development
PAPs	Project Affected Persons
PDO	Project Development Objective
PIT	Project Implementation Team
PLWD	People Living with Disabilities
POPs	Persistent Organic Pollutants
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SCADA	Supervisory Control and Data Acquisition
SDGs	Sustainable Development Goals
STATCOM	Static Synchronous Compensator
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SS	SubStation
STIs	Sexually Transmitted Infection
SVC	Static Var Compensator
TCSC	Thyristor Controlled series Capacitor
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change
UPFC	Unified Power Flow controller
VAr	Volt-amp reactive/ Reactive power
VMGF	Vulnerable and Marginalized Groups Framework
WASREB	Water Services Regulatory Board
WB	World Bank
WRA	Water Resources Authority

**TABLE OF CONTENTS**

<b>DOCUMENT CONTROL</b>	<b>2</b>
<b>DECLARATION PAGE</b>	<b>3</b>
<b>LIST OF ACRONYMS AND ABBREVIATIONS</b>	<b>4</b>
<b>LIST OF TABLES</b>	<b>11</b>
<b>LIST OF FIGURES</b>	<b>12</b>
<b>EXECUTIVE SUMMARY</b>	<b>1</b>
<b>1 CHAPTER ONE: INTRODUCTION</b>	<b>8</b>
1.1 Project Background information	8
1.2 Project Beneficiaries	9
1.3 Objectives of the ESIA Study	9
1.4 Methodology for the study	10
1.4.1 <i>Environmental screening</i>	10
1.4.2 <i>Environmental Scoping</i>	11
1.4.3 <i>Desktop study</i>	11
1.4.4 <i>Proposed project site assessment</i>	12
1.4.5 <i>Stakeholder Engagement and Public Participation</i>	12
1.4.6 <i>Data analysis, reporting and documentation.</i>	13
1.4.7 <i>ESIA report structure.</i>	13
<b>2 CHAPTER TWO: PROJECT DESCRIPTION</b>	<b>14</b>
2.1 Introduction	14
2.2 Project Rationale	14
2.3 Project Objectives	15
2.4 The Proposed Project Location and site description	16
2.5 Access to the Proposed Project site	17
2.6 General Site Analysis	17
2.7 Major Components of the Proposed Project	17
2.7.1 <i>General scope of works</i>	17
2.7.2 <i>Substation Design and Layout</i>	17
2.7.3 <i>Description of the Project's Construction Activity</i>	22
2.7.4 <i>Typical construction procedures</i>	22
2.7.5 <i>Project construction Input</i>	23
2.8 Project Timeline	23
2.9 Project Design and Cost	23
<b>3 CHAPTER THREE: ANALYSIS OF PROJECT ALTERNATIVES</b>	<b>24</b>
3.1 Introduction	24
3.2 No Project Alternative	24
3.3 Option I- Installation of mechanically switched reactive power compensators.	24

3.4	Option II- The proposed development alternative- STATCOM	24
3.5	Materials and technologies to be used in the proposed development alternative- STATCOM.25	
3.6	Site selection and design analysis for the proposed development alternative- STATCOM. 25	
<b>4</b>	<b>CHAPTER FOUR: BASELINE INFORMATION</b>	<b>26</b>
4.1	Introduction	26
4.2	Administrative Framework	26
4.3	Natural and Physical Environment	30
<b>4.3.1</b>	<b><i>Vegetation types</i></b>	<i>Error! Bookmark not defined.</i>
<b>4.3.2</b>	<b><i>Drainage</i></b>	<b>30</b>
<b>4.3.3</b>	<b><i>General Topography, Geology and Soils</i></b>	<b>31</b>
<b>4.3.4</b>	<b><i>General Climate</i></b>	<b>33</b>
<b>4.3.5</b>	<b><i>Water resources</i></b>	<b>33</b>
4.4	Solid Waste Management	34
4.5	Socio-Economic Environment	34
<b>4.5.1</b>	<b><i>Land use patterns and tenure</i></b>	<b>34</b>
<b>4.5.2</b>	<b><i>Population Distribution</i></b>	<b>35</b>
<b>4.5.3</b>	<b><i>Infrastructure</i></b>	<b>35</b>
<b>4.5.4</b>	<b><i>Energy Access</i></b>	<b>36</b>
<b>4.5.5</b>	<b><i>Access to Health</i></b>	<b>36</b>
<b>4.5.6</b>	<b><i>Housing Type, Structures and Socio-cultural amenities</i></b>	<b>36</b>
<b>4.5.7</b>	<b><i>Economic activities</i></b>	<b>37</b>
<b>4.5.8</b>	<b><i>Educational facilities</i></b>	<b>37</b>
4.6	Gender Based Violence– Sexual Exploitation and Abuse /Sexual Harassment (GBV - SEA/SH)	37
4.7	Cultural Environment	37
<b>5</b>	<b>CHAPTER FIVE: CRELEVANT LEGISLATIVE AND REGULATORY FRAMEWORK</b>	<b>38</b>
5.1	Introduction	38
5.2	KETRACO Guiding Frameworks	38
<b>5.2.1</b>	<b><i>Environmental and Social Management Framework (ESMF).</i></b>	<b>38</b>
<b>5.2.2</b>	<b><i>Resettlement Policy Framework (RPF)</i></b>	<b>38</b>
5.3	National Policy Framework	38
5.4	Kilifi County legislations	43
5.5	Institutional Framework	44
5.6	Administrative Framework	47
<b>5.6.1</b>	<b><i>Kenya Electricity Transmission Company</i></b>	<b>47</b>
<b>5.6.2</b>	<b><i>The World Bank’s Environmental and Social Framework (ESF)</i></b>	<b>48</b>
<b>5.6.3</b>	<b><i>Alignment of WB and GOK Policies relevant to this ESIA.</i></b>	<b>54</b>



<b>5.6.4</b>	<b>World Bank General Environmental, Health, and Safety (EHS) Guidelines</b>	<b>54</b>
<b>5.7</b>	<b>National Legal and Regulatory Framework</b>	<b>55</b>
<b>5.7.1</b>	<b>Constitution of Kenya</b>	<b>55</b>
<b>5.8</b>	<b>Relevant Multilateral International Treaties</b>	<b>72</b>
<b>5.8.1</b>	<b>The Rio Declaration and Agenda 21</b>	<b>72</b>
<b>5.8.2</b>	<b>The World Commission on Environment and Development (The Brundtland Commission of 1987)</b>	<b>72</b>
<b>5.8.3</b>	<b>United Nations Framework Convention on Climate Change (UNFCCC)</b>	<b>73</b>
<b>5.8.4</b>	<b>Convention on the rights of the Child</b>	<b>73</b>
<b>5.8.5</b>	<b>Convention on the Rights of Persons with Disabilities (CRPD)</b>	<b>74</b>
<b>5.8.6</b>	<b>Montreal Protocol</b>	<b>74</b>
<b>5.8.7</b>	<b>Stockholm Convention on POPs</b>	<b>75</b>
<b>6</b>	<b>CHAPTER SIX: PUBLIC PARTICIPATION AND DISCLOSURES</b>	<b>76</b>
<b>6.1</b>	<b>Introduction</b>	<b>76</b>
<b>6.2</b>	<b>Objectives of the consultation and public participation</b>	<b>76</b>
<b>6.3</b>	<b>Methodology in Consultation and Public Participation</b>	<b>77</b>
<b>6.3.1</b>	<b>Administration of public/Community consultation questionnaires</b>	<b>77</b>
<b>6.3.2</b>	<b>Key Informant Interviews</b>	<b>78</b>
<b>6.3.3</b>	<b>Public Community Meetings</b>	<b>78</b>
<b>6.4</b>	<b>Pictorial</b>	<b>79</b>
<b>6.5</b>	<b>Issues identified during the site visit and the public meeting.</b>	<b>81</b>
<b>6.5.1</b>	<b>Positive issues raised.</b>	<b>81</b>
<b>6.5.2</b>	<b>Negative impacts</b>	<b>82</b>
<b>7</b>	<b>CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL IMPACTS, IDENTIFICATION AND ANALYSIS</b>	<b>84</b>
<b>7.1</b>	<b>Introduction</b>	<b>84</b>
<b>7.2</b>	<b>Siting and Construction Phase</b>	<b>85</b>
<b>7.2.1</b>	<b>Positive Impacts</b>	<b>85</b>
<b>7.2.2</b>	<b>Negative Impacts</b>	<b>86</b>
<b>7.3</b>	<b>Operational phase</b>	<b>89</b>
<b>7.3.1</b>	<b>Positive Impacts</b>	<b>89</b>
<b>7.3.2</b>	<b>Negative Impacts</b>	<b>90</b>
<b>7.4</b>	<b>Decommissioning Phase</b>	<b>90</b>
<b>7.4.1</b>	<b>Positive Impacts</b>	<b>90</b>
<b>7.4.2</b>	<b>Negative Impacts</b>	<b>91</b>
<b>8</b>	<b>CHAPTER EIGHT: PROPOSED MITIGATION MEASURES</b>	<b>93</b>
<b>8.1</b>	<b>Introduction</b>	<b>93</b>
<b>8.2</b>	<b>Proposed Mitigation Measures for the Construction-Related Impacts</b>	<b>93</b>



<b>8.2.1</b>	<b><i>Mitigating increased generation of storm water and impact on drainage</i></b>	<b>93</b>
<b>8.2.2</b>	<b><i>Mitigating increased soil erosion risk and soil quality degradation</i></b>	<b>93</b>
<b>8.2.3</b>	<b><i>Mitigating increased Traffic congestion and increased traffic accident</i></b>	<b>93</b>
<b>8.2.4</b>	<b><i>Mitigating Increased water abstraction and consumption</i></b>	<b>94</b>
<b>8.2.5</b>	<b><i>Mitigating air pollution due to dust generation and air emissions</i></b>	<b>94</b>
<b>8.2.6</b>	<b><i>Mitigating discharge of wastewater, sewage, and degradation of water quality</i></b>	<b>94</b>
<b>8.2.7</b>	<b><i>Mitigating loss of vegetation cover and biodiversity</i></b>	<b>95</b>
<b>8.2.8</b>	<b><i>Mitigating introduction and spread of invasive alien species.</i></b>	<b>95</b>
<b>8.2.9</b>	<b><i>Mitigating increased generation of solid waste</i></b>	<b>95</b>
<b>8.2.10</b>	<b><i>Mitigating increased energy consumption</i></b>	<b>96</b>
<b>8.2.11</b>	<b><i>Mitigating noise pollution and excessive vibrations</i></b>	<b>96</b>
<b>8.2.12</b>	<b><i>Mitigating Occupational safety and health risks</i></b>	<b>96</b>
<b>8.2.13</b>	<b><i>Mitigating spread of STD, HIV and AIDS</i></b>	<b>97</b>
<b>8.2.14</b>	<b><i>Mitigating social ills and disputes exacerbated by labour influx.</i></b>	<b>98</b>
<b>8.2.15</b>	<b><i>Mitigation of Gender Based Violence- Sexual Exploitation and Abuse/ Sexual harassment (GBV-SEA/SH) concerns.</i></b>	<b>98</b>
<b>8.2.16</b>	<b><i>Mitigating Increased COVID-19 infections in the project area.</i></b>	<b>99</b>
<b>8.2.17</b>	<b><i>Mitigating health impacts exacerbated by hot, humid weather.</i></b>	<b>99</b>
<b>8.3</b>	<b>Mitigation measures for negative impacts during operation phase</b>	<b>99</b>
<b>8.3.1</b>	<b><i>Mitigating increased solid waste generation</i></b>	<b>99</b>
<b>8.3.2</b>	<b><i>Mitigating increased generation of storm water and impact on drainage</i></b>	<b>100</b>
<b>8.3.3</b>	<b><i>Mitigating social ills and disputes exacerbated by labor influx.</i></b>	<b>100</b>
<b>8.3.4</b>	<b><i>Mitigating Increased water usage</i></b>	<b>100</b>
<b>8.4</b>	<b>Mitigation measures for negative impacts during decommissioning phase</b>	<b>100</b>
<b>8.4.1</b>	<b><i>Mitigating increased solid waste generation</i></b>	<b>100</b>
<b>8.4.2</b>	<b><i>Mitigating Occupational Safety and Health risks</i></b>	<b>100</b>
<b>8.4.3</b>	<b><i>Mitigating air pollution due to dust generation and air emissions</i></b>	<b>100</b>
<b>8.4.4</b>	<b><i>Mitigating social ills and disputes exacerbated by labor influx.</i></b>	<b>100</b>
<b>8.4.5</b>	<b><i>Mitigating Illicit behavior / drug and alcohol abuse</i></b>	<b>100</b>
<b>8.4.6</b>	<b><i>Mitigating noise pollution and excessive vibrations</i></b>	<b>100</b>
<b>8.4.7</b>	<b><i>Mitigating introduction and spread of invasive alien species.</i></b>	<b>100</b>
<b>9</b>	<b>CHAPTER NINE: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN</b>	<b>101</b>
<b>9.1</b>	<b>Introduction</b>	<b>101</b>
<b>9.2</b>	<b>Responsibilities</b>	<b>101</b>
<b>9.3</b>	<b>KETRACO</b>	<b>101</b>

<b>9.4</b>	<b>Project Contractor</b>	<b>101</b>
<b>9.5</b>	<b>Environmental and Social Management Plan</b>	<b>102</b>
<b>10</b>	<b>CHAPTER TEN: ENVIRONMENTAL AND SOCIAL MONITORING PLAN</b>	<b>118</b>
		<b>118</b>
<b>10.1</b>	<b>Introduction</b>	<b>118</b>
<b>10.2</b>	<b>Monitoring Guidelines</b>	<b>118</b>
<b>11</b>	<b>CHAPTER ELEVEN: CONCLUSION AND RECOMMENDATION</b>	
	<b>133</b>	
<b>12</b>	<b>REFERENCES</b>	<b>135</b>
<b>13</b>	<b>ANNEXES</b>	<b>137</b>

## LIST OF TABLES

---

Table 1- Summary of potential environmental, social and OHS related impacts. ... <b>Error! Bookmark not defined.</b>	
Table 2- ESIA study team .....	13
Table 3- Kenya's Installed capacity per generation mix .....	14
Table 4- Global Positioning System (GPS) coordinates for the proposed STATCOM project within the existing Rabai 220kV/132 kV Substation .....	16
Table 5- Rabai sub-county population statistics .....	35
Table 6- Experience of sexual violence by any perpetrator per county within the coastal region. ....	37
Table 7- Kenyan policies, plans and strategies. ....	38
Table 8- Summary of Kilifi County relevant legislations .....	43
Table 9- Relevant key National Institutions in Kenya.....	44
Table 10- An analysis of applicable World Bank Environmental and Social Standards and relevance..	50
Table 11- Relevant Kenyan laws and regulations.....	56
Table 12- List of key stakeholders engaged during the ESIA study. ....	78
Table 13- Schedule of Public Meetings held during the ESIA study.....	79
Table 14- Levels of Scale used in analyzing the magnitude of potential impacts.....	84
Table 15- Environmental and Social Management Plan .....	102
Table 16- Environmental and Social monitoring plan for the proposed STATCOM project .....	118

## LIST OF FIGURES

Figure 2.4-1- Google earth satellite Imagery for the proposed STATCOM development area within Rabai 220 kV/ 1320 kV SS .....	16
Figure 2.7-1- Proposed STATCOM area layout .....	19
Figure 2.7-2- STATCOM area layout.....	20
Figure 2.7-3- Capacitor Banks site layout.....	21
Figure 3.2-1- 132kV Rabai busbar Voltage Profile as recorded from Rabai substation control SCADA captured on 1 <sup>st</sup> August 2023, 12.27pm. ....	24
Figure 4.2-1- National Government Administrative location within Rabai constituency, Kilifi County. ....	27
Figure 4.2-2- Proposed STATCOM project site (highlighted in Red).....	28
Figure 4.2-3: Location of the project in relation to map of Kenya. ....	29
Figure 4.3-1: Vegetation observed within the proposed project site at within the existing Rabai 220kV/132 KV SS.....	30
Figure 4.3-2- Proposed STATCOM project site ( highlighted in Red) .....	<b>Error! Bookmark not defined.</b>
Figure 4.3-3- Geological map of the Kilifi Mazeras area.....	32
Figure 4.3-4- Elevation profile of the proposed STATCOM site. Source: KETRACO.....	33
Figure 4.3-5- Vegetation observed within the proposed project site at the existing Rabai 220kV/132 KV SS.....	<b>Error! Bookmark not defined.</b>
Figure 6.3-1- ESIA Field assistant capturing details of respondents in Simakeni A village, Mwele/Kisurutini Sublocation.....	77
Figure 6.4-1- Lead expert explaining the ESIA procesduring communityty sensitization at Mwele/Kisurutini sub-location, Rabai location.....	80
Figure 6.4-2- KETRACO Transmission planning engineer clarifying on the STATCOM project scope during the sensitization meeting .....	80
Figure 6.4-3- Assistant County Commissioner. Rabai Sub- County addressing the members in attendance during the opening session. ....	80
Figure 6.4-4- Community member asking a question during the sensitization meeting.....	81

## **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 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 the 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 a 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 World Bank for the installation of Static Synchronous Compensators (STATCOMs) at Rabai 220/132 kilovolts (kV) and Suswa Converter/ 400kV/220 kV substations.

This Environmental and Social Impact Assessment (ESIA) report has been prepared for the proposed STATCOM project to be implemented within the existing Rabai 220kV/132 kV substation in Rabai Sub-County, Kilifi County. The ESIA study was conducted by Kenya Electricity Transmission Company's (KETRACO) multidisciplinary team of experts comprising of licensed National Environmental Management Authority (NEMA) experts and Engineers Board of Kenya (EBK) registered engineers.

The Project will be coordinated by The Ministry of Energy (MOE) and implemented by Kenya Electricity Transmission Company (KETRACO). The project is in line with the Kenya Energy sector plans and Least Cost Power Development Plan (2021-2030) that are aimed to ensure the reliable, secure, and cost-effective transmission of power between generation and load centers. It is also aligned with the World Bank's Kenya Country Strategy Paper (CSP) (2019-2023) that seeks to support two strategic pillars: Pillar-I "industrialization" through interventions to reduce the cost of doing business by investing in critical national and regional infrastructure, namely, transport, energy, and water sanitation.

### **Objective of the Environmental and Social Impact Assessment**

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

The exercise was carried out in accordance with the World Bank's Environmental and Social standards (ESS) triggered under this project, together with relevant Kenyan environmental legislation and regulations that includes Environmental Management and Coordination Act (EMCA), 1999, and the Constitution of Kenya, 2010. KETRACO's Environmental and Socio Management Framework (ESMF) was also key in undertaking the Environmental and Social Impact Assessment (ESIA) study.

### **Overall, Scope of the Work**

The general steps followed by the ESIA team during the assessment include:

- Environmental screening, in which the project was identified as a medium-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 Environmental and Social Standards, the proposed project was classified as ‘Substantial risk’.
- Environmental scoping which provided the key environmental and social issues, desktop studies and stakeholder mapping.
- Physical inspection of the proposed project site.
- ESIA Public participation and meaningful stakeholder consultation using household to household and key informant interviews, questionnaires, and Baraza’s targeting communities within the project’s area of influence.

### Project description

The proposed project involves the installation of Static Synchronous Compensators (STATCOM) devices at the existing Rabai 220kV/132 kV Substation ( Land Reference ( LR) number 27669/2). The project sites’ coordinates are as follows:

STATCOM	
Eastings	Northings
562011	9565523
561962	9565602
562003	9565629
562051	9565551
CAPACITOR BANKS	
Eastings	Northings
562051	9565551

The proposed project site is in Simakeni village, Mwele/ Kisurutini sub-location, Rabai location, Rabai sub-county, Kilifi County. It is situated twenty-five (25) kilometers northwest of Mombasa town and one kilometer (1 km) off the C111 Kabieni road. STATCOM has the capability to increase voltage stability by providing dynamic control and compensation of the system voltage.

The Rabai substation is one of the of the KPLC assets that is listed as part of the transmission infrastructure to be transferred to KETRACO as the designated transmission system operator.

STATCOM devices provide a number of benefits to the power grid. These include:

- Voltage regulation and control: STATCOMs can regulate and support the Alternating Current (AC) voltage in the transmission network, helping to minimize over and under voltages that may occur during various faults and events in the network. Furthermore, when the voltage drops, its compensating current does not depend on the level of the system voltage at the point of common coupling (PCC); it operates at full capacity.
- Control response: The use of the STATCOM switching control allows faster control response compared to Static Var Compensators (SVC) and improved power system performance.
- Power quality improvement: STATCOMs can improve power quality by compensating for disturbing loads such as arc furnaces, wind and solar farms, and single-phase traction loads.
- Dynamic stability: STATCOMs can increase the dynamic stability of the power system, allowing for the transmission of additional power through the grid.
- Power system oscillation damping: STATCOMs can damp power system oscillations and increase the power capabilities of AC lines.
- Compact design: STATCOMs have a compact design, or small footprint compared to SVC, as well as low noise and low magnetic impact. This is because they replace passive banks of circuit elements with compact electronic converters.

Overall, STATCOMs help to improve the stability and efficiency of the power grid by providing reactive power compensation, voltage regulation and control, transient and dynamic stability, and control and protection. The proposed project, besides enhancing power system stability in the coast region subsystem, will also improve the power quality in Mombasa, Kilifi, Kwale, Lamu Counties

and environs. This will in essence boost various sectors including agriculture, tourism, health, education, business (and especially small-scale businesses), water and sanitation, and security sectors.

### Baseline information

The proposed project site is located within the existing Rabai 220 kV/132 kV SS. No natural vegetation exists in the area site due to previous disturbances during the development of the surrounding Sub Station infrastructure. As such, the proposed project site is characterized by predominantly flat land covered by assorted grasses. No permanent or seasonal river is located within the proposed project site. The project area has very well drained sandy soils. Due to the flat nature of the site and the surrounding elevated areas, there is the possibility of ponding observed if proper site drainage is not installed during site development.

1. **Climatic conditions:** The project site is located within Kilifi County which experiences a bimodal rainfall pattern with average annual precipitation ranging from 300mm in the hinterland to 1,300mm in the coastal belt. The coastal belt receives an average annual rainfall of about 900mm to 1,300mm while the hinterland receives an average annual rainfall of about 300mm to 900mm.

The average relative humidity is 65% but decreases to the hinterland. These high humidity levels, coupled with the salty air, combined have a direct impact on infrastructure including metal structures within the coastal region. It is imperative that corrosion resistant material and structural specifications be adopted in the STATCOM project. This will ensure longevity of the infrastructure at minimal maintenance cost.

2. **Road infrastructure:** The proposed project site is connected to the existing road infrastructure. It is situated twenty-five (25) kilometers northwest of Mombasa town and one kilometer (1 km) off the C111 Kabieni road. A cabro road links the Rabai Sub Station to the C111 Kabieni road.
3. **Health facilities:** Some of the health facilities within the project site vicinity as noted by the ESIA team include Ribe dispensary, Kwajuaje dispensary, and Rabai sub-county hospital.
4. **Economic activities:** The predominant economic activity within the project site included subsistence farming and small-scale businesses. 1 major industry- Jumbo steel Mills was observed approximately 5 km from the project sites. Several trading centers were observed at various points along the Kabieni road, characterized by grocery shops, mechanical auto shops, and food cafes. Quarrying is a predominant activity within the Mazeras area. Quarry sites were observed at least 10km from the project site. Notably, Kaydee quarry ltd quarry is located within the project area, accessed via a dirt access road running past the Rabai 220/132 kV substation.
5. **Housing types, structures, and socio-cultural facilities:** Adjacent to the proposed project site, the ESIA study team observed mostly semi-permanent housing structures. Most of these residents are subsistence farmers. The Chief in the project area indicated that most of the respondents have lived in the project area for many years. In addition, the ESIA team noted a cemetery located near the Rabai 220/132 kV Substation. Mwele/Kisurutini social hall is located approximately 2km from the proposed project site. It is envisioned that no resettlement/ desecration of burial grounds will be done to give way for the STATCOM project. A cultural site- National Museums of Kenya- Rabai Museum was also observed within the project site's area of influence.
6. **Educational facilities:** The ESIA team noted a significant number of primary, secondary, and tertiary institutions within a 5 km radius of the project site. Notably, Ludwig Krapf memorial school, Benyoka primary school, Shining stars academy, and Rabai secondary school were observed.



## 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 Environment and Social Framework (ESF)
- KETRACO -Environmental and Socio Management Framework (ESMF).
- Applicable Multilateral Environment Agreements (MEAs).
- Project designs.

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

### a) Policies:

- Bottom-up Economic Transformation Agenda (BETA)
- 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) 2019-2030
- National Forest Policy, 2014
- Human Immunodeficiency Virus (HIV)/Acquired Immunodeficiency Syndrome (AIDS) Policy of 2009

### b) Plans:

- Kilifi County Integrated Development Plan, 2023-2027
- Least Cost Power Development Plan, 2021-2030
- KETRACO Strategic Plan.

### c) Legislations:

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>▪ The Constitution of Kenya, 2010.</li> <li>▪ Environmental Management and Coordination Act (EMCA, Cap 387) and relevant subsidiary legislation.               <ul style="list-style-type: none"> <li>➢ Environmental Impact Assessment and Audit Regulations, 2003, amended 2019.</li> <li>➢ Water Quality Regulations, 2006</li> <li>➢ Waste Management Regulations, 2006</li> <li>➢ Air Quality Regulations, 2009</li> <li>➢ Biodiversity Regulations, 2009</li> <li>➢ Noise Regulations, 2009</li> </ul> </li> <li>▪ Energy Act, 2019.</li> <li>▪ Forest Conservation and Management Act, No. 34 of 2016.</li> <li>▪ Kenya Roads Act, 2007.</li> <li>▪ Land Act, 2012.</li> <li>▪ Land Registration Act, 2012.</li> <li>▪ National Museums and Heritage Act, No. 6 of 2016.</li> <li>▪ National Land Commission Act, No. 5 of 2012.</li> <li>▪ Occupational Safety and Health Act,</li> </ul> | <ul style="list-style-type: none"> <li>▪ Climate Change Act, 2016.</li> <li>▪ County Governments Act, No. 17 of 2012; together with its Amended Act, 2016</li> <li>▪ Employment Act, No 11, 2007.</li> <li>▪ Water Act, 2016.</li> <li>▪ HIV and AIDS Prevention and Control Act, 2006.</li> <li>▪ National Authority for the Campaign Against Alcohol and Drug Abuse Act, 2012.</li> <li>▪ Occupiers' Liability Act (Cap 34).</li> <li>▪ Persons with Disabilities Act, 2003.</li> <li>▪ Protection of Traditional Knowledge and Cultural Expressions Act, 2016.</li> <li>▪ Sexual Offences Act, 2006.</li> <li>▪ Standards Act (Cap 496).</li> <li>▪ Work Injury Benefits Act, 2007.</li> <li>▪ Wildlife Conservation and Management Act, No. 47 of 2013.</li> <li>▪ Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012,</li> <li>▪ Penal Code Act (Cap 63).</li> <li>▪ Physical and Land Use Planning Act, 2019.</li> <li>▪ Public Health Act (Cap 242).</li> </ul> |
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No. 15 of 2007.

- Public Roads and Roads of Access Act (Cap 399).

## 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 opinions/ observations on the ground and available tools. The magnitude, significance, and acceptability of predicted impacts were evaluated with a view to determine adequate mitigation measures.

The ESIA report was compiled from the field work and desktop review findings in accordance with the World Bank's Environmental and Social Framework, KETRACO Environmental and Social Management Framework, relevant legislations and guidelines issued by NEMA for such works.

## Stakeholder engagement and Public Participation

To ensure public participation in the ESIA process, the ESIA team used community and key informant questionnaires, interviews, and public community meetings to gather views pertaining to the proposed project. Overall, the information gathered was subsequently synthesized and incorporated into this ESIA Report notably Chapter 5-Public consultation, Chapter 7 on Impact and Chapter 8-Mitigation measures.

1. **Community questionnaires-** Among the stakeholders who were consulted through administration of ESIA questionnaires included local community members neighboring the proposed project site within Simakeni "A" and "B" villages, Mwele/ Kisurutini sub-location, Rabi location. The affected households within the vicinity of the Rabai 220kV/132 kV Substation were engaged through household-to-household visits. A total of 22 questionnaires ( Males-**13**, Females-**9**) were administered and subsequently analyzed.
2. **Public community meetings:** One (1) public community meeting was held at Mwele/Kisurutini social hall , Kisurutini ward, Rabai sub-county, Kilifi County on 31<sup>st</sup> July 2023 from 10.30 am-12.30 pm Fifty-One (51) (Males-41, Females-10) participants were in attendance during the public meeting.
3. **Key stakeholder Consultation:** One-on-one consultations with key stakeholders/ lead agencies within Rabai Sub-County were conducted to incorporate views from key government institution such as the County Government and Ministry of Interior and Coordination of National Government as described in detail in chapter 5 of this report. Interview questions aimed at obtaining information on likely impacts of the proposed project on biodiversity, community health and Safety and services delivery such as in schools were sought. A total of **11** key stakeholders were consulted and a total of nine (**9**) key informant questionnaires were administered (**9** Key informants -**6** males, **3** females) during the public participation exercise.

## Environmental and Social Impacts arising from the proposed project.

KETRACO acknowledges that the proposed project activities will have some minor 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 unforeseen impacts during the ESIA exercise.

Some of the potential impacts (negative and positive) are summarized in table 1 below. Detailed discussion is captured in Chapter 7- *Environmental and Social Impacts Identification and Analysis*. The proposed mitigation measures are discussed in detail in Chapter 8- *Proposed Mitigation Measures*.

Positive impacts	Negative Impacts
<b>General</b>	
Improved voltage stability within the coastal region	
<b>Environmental</b>	
Minimal space requirement	Increased storm water due to impervious surfaces
	Increased soil erosion and degradation
	Increased water demand
	Air pollution from exhaust emissions and dust
	Increased wastewater/ sewage discharges
	Increased solid waste generation
	Increased energy consumption.
	Noise and excessive vibration
	Introduction and spread of invasive alien species
<b>Social</b>	
Creation of employment opportunities	Social ills and disputes arising from migrant labor influx
Market supply of building materials	Increased insecurity incidences in the project area Increased Gender Based violence, Sexual Exploitation and Abuse/ Sexual Harassment (GBV-SEA/SH) incidences within the project area
Improved local trade at a national scale	HIV/AIDS/ Sexually Transmitted Infections (STIs) and other communicable diseases Child labor risks- direct and indirect
Improved business opportunities nearby shopping centers	
Improved skills/ knowledge transfer	
<b>Occupational Health and safety related impacts</b>	
	Electrical hazards
	Working at heights on poles and structures
	Exposure of electric magnetic fields to workers
	Community Health and Safety issues
	Health impacts arising from hot and humid weather

### Environmental and Social Management and Monitoring Plan

Chapter 9-*Environmental and Social Management Plan (ESMP)* and Chapter 10- *Environmental and Social Monitoring plan (ESMnP)* of this ESIA project report systematically presents the management and monitoring tools to be used during the STATCOM's project construction, operation, and decommissioning phases.

When developing the ESMP, the following parameters were considered:

- The nature of risk and impact (environmental, social, occupational health and safety-community and workers)
- The recommended mitigation measures for each identified impact.

- Parties responsible for implementing mitigation measures.
- Timeline
- Estimated cost.

In addition, 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

Air quality, noise, and vibration measurements are the two key environmental parameters to be measured and monitored. Other environmental parameters include afforested areas, solid waste generation, soil erosion, and environmental risks such as fire and floods.

Social parameters to be monitored include grievance management, GBV-SEA/SH incidents, labor related issues etc.

Monitoring of Occupational Health and Safety (workers and community) parameters will be done and emphasized due to the nature of the project being carried out within an active substation.

## **Conclusion and Recommendation.**

KETRACO is committed to putting in place several measures to mitigate the negative environmental, safety, health and social impacts associated with the life cycle of the project. It is recommended that in addition to this commitment, KETRACO focuses on implementing the measures outlined in the ESMP as well as adhering to all relevant national and international environmental, health and safety standards, World Bank ESF and policies that govern establishment and operation of such projects.

It is expected that the positive impacts that emanate from such activities shall be maximized as much as possible as exhaustively outlined within the report. These measures will go a long way in ensuring the best possible environmental compliance and performance standards.

The ESIA study has established a detailed environmental and social management plan (ESMP); and a comprehensive environmental and social monitoring plan (ESMoP); including standalone management plans for various aspects with mitigation measures for the anticipated impacts. These management plans include:

1. Stakeholder Engagement Plan (SEP) including Grievance Redress Mechanism (GRM) component (*Annex 6*)
2. Labor Management Plan (LMP) (*Annex 5*)

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 Stakeholder Engagement Plan (SEP) 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.

Taking into cognizance the anticipated project benefits to the country on power stability, reliability, spur on the national and local economy; support in decarbonization of the national transmission grid 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, ESMnP and respective management plans.

## 1 CHAPTER ONE: INTRODUCTION

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### 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 a 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 World Bank for the installation of Static Synchronous Compensators (STATCOMs) at Rabai 220/132 kV and Suswa Converter/ 400kV/220 kV substations.

This ESIA report has been prepared for the proposed STATCOM project to be implemented within the existing Rabai 220kV/132 kV substation in Rabai location, Rabai sub county, Kilifi County.

The Project will be coordinated by The Ministry of Energy and Petroleum (MoEP) and implemented by Kenya Electricity Transmission Company (KETRACO). The project is in line with the Kenya Energy sector plans and Least Cost Power Development Plan (2021-2030) that are aimed to ensure the reliable, secure, and cost-effective transmission of power between generation and load centers. It is also aligned with the Bank's Kenya Country Strategy Paper (CSP) (2019-2023) that seeks to support two strategic pillars: Pillar-I "industrialization" through interventions to reduce the cost of doing business by investing in critical national and regional infrastructure, namely, transport, energy, and water sanitation.

#### **Project Development Objectives**

The proposed project development objective (PDO) is to enhance power system stability, security, quality, and reliability in the coastal regions through the installation of dynamic reactive power compensators, specifically Static Synchronous Compensators (STATCOM) devices at the existing Rabai 220kV/132 kV Substation in Rabai subcounty. The scope of works includes the design, installation, and commissioning of:

1. 1x220 kV  $\pm$  120 MVar STATCOM,
2. 1x132 kV 100MVar shunt capacitor
3. All associated substation primary equipment and secondary systems
4. Civil works which will comprise of, but not limited to, equipment foundations, cable trenches, trench covers, laying of crushed stones among others.
5. Steel works such as erection of gantries and steel structures.

The plant equipment will be installed in a safety enclosure with access road, lighting, and walkways to within the STATCOM substation.

Installation of STATCOM within the Rabai 220kV/132 kV Substation will aid in the seamless integration of renewable energy sources (solar, wind) into the grid, which will reduce overall GHG emissions from electricity generation.

The National transmission grid has continued to experience challenges in operation largely due to

lack of reactive power and voltage support. While these voltage issues are experienced in various parts of the grid, the challenges are more pronounced in Coast and West Kenya regions. Completion of key transmission lines in Western Kenya and the establishment of a 400 kV substation at Mariakani (with the eventual operationalization of the 400 kV backbone to Coast region) will address the issues of constrained transmission transfer capacity to these regions.

This will however not be sufficient to entirely solve the power quality challenges in these regions. The expected development of intermittent power plants (Solar and Wind) within the medium term; on the backdrop of receding development of dispatchable power plants in the coastal regions, may further negatively impact the power quality issues.

STATCOM project will eliminate this hurdle and support decarbonization of the Kenya's power transmission grid through the stabilization of power quality and reliability. This is significant as the Government of Kenya (GoK) plans to develop and onboard additional renewable power plants (Solar and Wind) in the coastal region.

In so doing, STATCOM project will enable actualization of the following long-term benefits:

1. Bolster efforts to reduce reliance on fuel-based power plants- Currently, local generation in the Coast region (medium –speed diesel power plants) are being deployed to support voltages during peak periods. In West Kenya, interventions such as imports from Uganda and deployment of gas turbines are required to support voltages in the area.
2. Meet International emission reduction targets and obligations- Kenya ratified the Paris Agreement in December 2016 and consequently committed to action through its Nationally Determined Contribution (NDC). Under the NDC, the country has committed to a carbon emission reduction of 30 percent against business-as-usual scenario by 2030 and adaptation actions in key sectors.

### **1.2 Project Beneficiaries**

The proposed project, besides enhancing power system stability in the coastal region subsystem, will also improve the power quality in Mombasa, Kilifi, Kwale, Lamu Counties and environs. This will in essence boost various sectors including agriculture, tourism, health, education, business (and especially small-scale businesses), water and sanitation and security sectors.

### **1.3 Objectives 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 STATCOM project with the aim of proposing the possible mitigation measures. This was done to ensure that such a development does not negatively impact on the environment in terms of social aspects; human health and safety; and the physical (land, water, plants, and animals) state of the area.

The exercise was carried out in accordance with the World Environmental and Social Standards triggered under this project, together with relevant Kenyan environmental legislation and regulations that includes Environmental Management and Coordination Act (EMCA), 1999, and the Constitution of Kenya, 2010. KETRACO's Environmental and Socio Management Framework (ESMF) was also key in undertaking the Environmental and Social Impact Assessment (ESIA) study.

In brief, the specific objectives of carrying out the Environmental and Social Impact Assessment (ESIA) for the proposed STATCOM project in Rabai 220/132 kV SS were to:

- i. Describe the proposed project (construction, operations, and decommissioning), including the technology to be used, the STATCOM and capacitor banks' site layout (substations), geographic location.
- 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 Environmental and Social Standards, KETRACO policies and analyze the gap between the applicable World Bank E&S standards 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. Analyze 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, and identify mitigation measures.
- v. Undertake analysis of alternatives by systematically comparing feasible alternatives to the proposed development, such as technology, design, and operation and reasons for preferring the proposed design and technologies.
- vi. Carry out public participation and meaningful consultations to collect the concerns, expectations, and opinions of affected, concerned, and interested stakeholders. In addition ensure disclosure of the ESIA process 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 of 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.

Establish a technical summary of the proposed project, its environmental setting, and highlight key findings, recommended mitigation measures, and monitoring procedures.

#### **1.4 Methodology for the study**

The study was conducted as guided by the Environmental Impact Assessment/ Audit Regulations of 2003 as follows:

- Environmental screening, in which the project was identified as a medium-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 the World Bank's Environmental and Social Standards, the proposed project was classified as '*Substantial risk*'.
- Environmental scoping provided the key environmental issues, desktop studies and stakeholder mapping.
- Physical inspection of the proposed project site.
- ESIA Public participation and stakeholder consultation using household to household and key informant interviews, questionnaires, and Baraza's targeting communities within the project's area of influence.
- Data analysis; and
- Report preparation.

##### **1.4.1 Environmental screening**

The screening exercise identified that the project is listed in the Amendment of the Second Schedule of EMCA 1999 (Legal notice 31 of 30th April 2019), and the Environmental (Impact Assessment and Audit) (Amendment) Regulations, 2019 as a Medium-Risk Project in power and infrastructure projects, specifically electrical substation; for which an Environmental and Social Impact Assessment project report is prepared. As per the World Bank's Environmental and Social Framework, the project is classified as '*Substantial risk*'. Therefore, an Environmental and Social assessment is required, in accordance with national law and any requirements of the ESSs that will be triggered by the project.



### 1.4.2 Environmental Scoping

The Scoping process helped narrow down onto the most critical issues requiring attention during the assessment. Environmental and Social issues were categorized into physical, natural/ecological, and social, economic, and cultural aspects. It was determined that no resettlement will be made to give way for STATCOM development. Furthermore, due to the past development around the project site within the Rabai substation arising from previous projects, it was expected that the project site's habitat had been significantly altered. Hence, environmental issues would also be further minimized. This exercise also informed the ESIA team of the type and level of stakeholder engagement that would be carried out during public consultation, as well as environmental receptors to identify during the physical site inspection.

### 1.4.3 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 Environment and Social Framework (ESF)
- KETRACO -Environmental and Socio Management Framework (ESMF).
- Applicable Multilateral Environment Agreements (MEAs).
- Project designs.

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

#### d) Policies:

- Bottom-up Economic Transformation Agenda (BETA).
- 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) 2019-2030
- National Forest Policy, 2014
- HIV/AIDS Policy of 2009

#### e) Plans:

- Kilifi County Integrated Development Plan, 2023-2027
- Least Cost Power Development Plan, 2021-2030
- KETRACO Strategic plan

#### f) Legislations:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>▪ The Constitution of Kenya, 2010.</li> <li>▪ Environmental Management and Coordination Act (EMCA, Cap 387) and relevant subsidiary legislation.               <ul style="list-style-type: none"> <li>➤ Environmental Impact Assessment and Audit Regulations, 2003, amended 2019.</li> <li>➤ Water Quality Regulations, 2006</li> <li>➤ Waste Management Regulations, 2006</li> <li>➤ Air Quality Regulations, 2009</li> <li>➤ Biodiversity Regulations,</li> <li>➤ Noise Regulations, 2009</li> </ul> </li> <li>▪ Energy Act, 2019.</li> <li>▪ Forest Conservation and Management</li> </ul> | <ul style="list-style-type: none"> <li>▪ Climate Change Act, 2016.</li> <li>▪ County Governments Act, No. 17 of 2012; together with its Amended Act, 2016</li> <li>▪ Employment Act, No 11, 2007.</li> <li>▪ Water Act, 2016.</li> <li>▪ HIV and AIDS Prevention and Control Act, 2006.</li> <li>▪ National Authority for the Campaign Against Alcohol and Drug Abuse Act, 2012.</li> <li>▪ Occupiers' Liability Act (Cap 34).</li> <li>▪ Persons with Disabilities Act, 2003.</li> <li>▪ Protection of Traditional Knowledge and Cultural Expressions Act, 2016.</li> <li>▪ Sexual Offences Act, 2006.</li> <li>▪ Standards Act (Cap 496).</li> <li>▪ Work Injury Benefits Act, 2007.</li> </ul> |
|---|---|

- Act, No. 34 of 2016.
- Kenya Roads Act, 2007.
- Land Act, 2012.
- Land Registration Act, 2012.
- National Museums and Heritage Act, No. 6 of 2016.
- National Land Commission Act, No. 5 of 2012.
- Occupational Safety and Health Act, No. 15 of 2007.
- Wildlife Conservation and Management Act, No. 47 of 2013.
- Prevention, Protection and Assistance to Internally Displaced Persons and Affected Communities Act, 2012,
- 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).

#### 1.4.4 *Proposed project site assessment*

This was undertaken by a multidisciplinary team of environmental experts and electrical engineer on 24th and 25th July 2023. The key objective was to determine the anticipated impacts. This was achieved by making observations of the proposed site.

located within Rabai 220/132 kV substation, to collate baseline information.

#### 1.4.5 *Stakeholder Engagement and Public Participation*

To ensure effective stakeholders' consultation and public participation, stakeholders' mapping was conducted, assessment tools were prepared for effective and systematic interviews by the ESIA team. The tools included - key informant and community respondent schedules, field visits and observations; and triangulation of field data which focused specifically on the communities neighboring the proposed project area.

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

- Administration of public consultation questionnaires
- Community interviews
- Key informant interviews
- Public community meeting/ baraza

Overall, the information gathered was subsequently synthesized and incorporated into this ESIA Report notably Chapter 6-Public consultation of this report, Chapter 7 on impact and Chapter 8-mitigation chapters.

- **Community questionnaires-** Among the stakeholders who were consulted through administration of ESIA questionnaires included local community members neighboring the proposed project site within Simakeni "A" and "B" villages, Mwele/ Kisurutini sub-location, Rabi location. The affected households within the vicinity of the Rabai 220kV/132 kV Substation were engaged through household-to-household visits. A total of 22 questionnaires (Males-**13**, Females-**9**) were administered and subsequently analyzed.
- **Public community meetings:** One (1) public community meeting was held at Mwele/Kisurutini social hall, Kisurutini ward, Rabai sub-county, Kilifi County on 31<sup>st</sup> July 2023 from 10.30 am-12.30 pm Fifty-One (51) (Males-41, Females-10) persons were engaged during the public meetings.
- **Key stakeholder Consultation:** One-on-one consultations with key stakeholders/ lead agencies within Rabai Sub-County were conducted to incorporate views from key government institution such as the County Government and Ministry of Interior and Coordination of National Government as described in detail in chapter 5 of this report. Interview questions aimed at obtaining information on likely impacts of the proposed project on biodiversity,

community health and Safety and services delivery such as in schools were sought. A total of **11** key stakeholders were consulted and a total of nine (**9**) key informant questionnaires were administered (**9** Key informants -**6** males, **3** females) during the public participation exercise.

#### 1.4.6 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 occurrence of predicted impacts were evaluated with a view to determine adequate mitigation measures.

The ESIA report was compiled from the field work and desktop review findings in accordance with the World Bank Environmental and Social Framework (ESF), KETRACO Environmental and Social Management Framework, relevant legislations and guidelines issued by NEMA for such works.

The ESIA team involved in the desktop studies, field assessments, data collection and analysis as well as reporting are as shown in Table 1 below:

Table 1- ESIA study team

S/No	Name	Designation	Role
1.	Ramat Godana, NEMA Lead Expert, Reg. No.1747	Lead Expert Manager, Environmental Safeguards and Sustainability	ESIA/EA lead expert, Team leader
2.	John Malika	Transmission planning- Electrical engineer	Electrical engineering expertise and in-depth knowledge of STATCOM device.
3.	Naomi Nthiga, NEMA associate Expert, Reg No 12177	Environmental safeguards and sustainability officer	ESIA/ EA expert, stakeholder engagement.
4.	Christine Gacheri	Environmentalism	Field assistance and data collection

#### 1.4.7 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. The ESIA report is as outlined below:

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

## 2 CHAPTER TWO: PROJECT DESCRIPTION

### 2.1 Introduction

Kenya Electricity Transmission Company ("KETRACO") is mandated to develop the country's power transmission grid with the primary objective of meeting the country's power transmission needs efficiently, effectively, and reliably. The national peak demand in July 2023 was 2,164 MW, with an installed generation capacity of 3,321 MW as of December 2022. The installed generation mix is summarized in table 3 below:

*Table 2- Kenya's Installed capacity per generation mix*

Technology	Installed Capacity
Hydro	838.5 MW
Geothermal	950 MW
Thermal	681.90 MW
Wind	436.1 MW
Solar	212.6 MW
Bioenergy	2.00
Imports	200.00
<b>TOTAL</b>	<b>3,321.1 MW</b>

Source: Kenya Power and Lighting Company (KPLC) and Energy and Petroleum Regulatory Authority (EPRA)

The transmission network comprises approximately 90 substations and 9,011 Km of transmission lines of which **39** substations and 5,473.6 km of transmission lines. By 2039, KETRACO is expected to have cumulatively established around 11, 246 km of transmission lines and 129 substations (Source: Transmission Master Plan 2023-2042)

The completed KETRACO transmission line projects have enhanced the national grid capability. As a result, this has greatly improved the transmission system efficiency, reliability, and adequacy. Despite these developments, the system has continued to experience challenges in operation largely due to lack of reactive power and voltage support. While these voltage issues are experienced in various parts of the grid, the challenges are more pronounced in Coast and West Kenya regions. In the short term, local generation in the Coast region (medium –speed diesel power plants) are being deployed to support voltages during peak periods. In West Kenya, interventions such as imports from Uganda and deployment of gas turbines are required to support voltages in the area. These are short term measures that may impact the efforts to optimize the cost of power in the country.

Completion of key transmission lines in Western Kenya and the establishment of a 400 kV substation at Mariakani (with the eventual operationalization of the 400 kV backbone to Coast region) will address the issues of constrained transmission transfer capacity to these regions. This will however not be sufficient to entirely solve the power quality challenges in these regions. The expected development of intermittent power plants (Solar and Wind) within the medium term; on the backdrop of receding development of dispatchable power plants in these regions, may negatively impact the power quality issues.

### 2.2 Project Rationale

A critical part of the transmission grid's operation is voltage stabilization, which is an important aspect in ensuring quality power supply. Currently, the reactive power compensation devices that are employed are mechanically switched. These are predominantly shunt reactors that do not offer the required flexibility. They are characterized by large voltage steps requiring additional intervention to ensure the voltage does not exceed the allowable thresholds whenever they are deployed.

It has been proposed that fast-acting (dynamic) reactive power and voltage control devices be installed in Rabai 220kV/132 kV substation to assist in resolving the above challenges. Voltage instability is considered a major threat to stable, secure, and reliable operation of any power system. Improving the system's reactive power handling capacity with Flexible AC Transmission System (FACTS) devices is one remedy for prevention of voltage instability and voltage collapse.

FACTS technologies are available in various forms, including SVC, STATCOM, thyristor – controlled series capacitor (TCSC) and unified power flow controller (UPFC). Among them, SVC and STATCOM are classified as dynamic reactive power compensation resources which quickly inject or absorb reactive power immediately after system disturbances to support power system voltage.

The proposed project involves the installation of Static Synchronous Compensators (STATCOM) devices at the existing Rabai 220kV/132 kV Substation in Rabai subcounty. STATCOM has the capability to increase voltage stability by providing dynamic control and compensation of the system voltage.

STATCOMs provide several benefits to the power grid. These include:

- Voltage regulation and control: STATCOMs can regulate and support the AC voltage in the transmission network, helping to minimize over and under voltages that may occur during various faults and events in the network. Furthermore, when the voltage drops, its compensating current does not depend on the level of the system voltage at the point of common coupling (PCC); it operates at full capacity.
- Control response: The use of the STATCOM switching control allows faster control response compared to SVC and improved power system performance.
- Power quality improvement: STATCOMs can improve power quality by compensating for disturbing loads such as arc furnaces, wind farms, and single-phase traction loads.
- Dynamic stability: STATCOMs can increase the dynamic stability of the power system, allowing for the transmission of additional power through the grid.
- Power system oscillation damping: STATCOMs can damp power system oscillations and increase the power capabilities of AC lines.
- Compact design: STATCOMs have a compact design, or small footprint compared to SVC, as well as low noise and low magnetic impact. This is because they replace passive banks of circuit elements with compact electronic converters.

Overall, STATCOMs help to improve the stability and efficiency of the power grid by providing reactive power compensation, voltage regulation and control, transient and dynamic stability, and control and protection. The proposed project, besides enhancing power system stability in the coast region subsystem, will also improve the power quality in Mombasa, Kilifi, Kwale, Lamu Counties and environs. This will in essence boost various sectors including agriculture, tourism, health, education, business (and especially small-scale businesses), water and sanitation, and security sectors.

### **2.3 Project Objectives**

The proposed project development objective (PDO) is to enhance power system stability, quality, security, and reliability in the coastal regions through the installation of dynamic reactive power compensators, specifically Static Synchronous Compensators (STATCOM) devices at the existing Rabai 220kV/132 kV Substation in Rabai subcounty.

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

1. Voltage profiles recorded from the Supervisory Control and Data Acquisition (SCADA) on the 220kV and 132kV bus bars at Rabai Substation.
1. Voltage profile recorded from the Large Power Consumers
2. SAIDI and SAIFI data as recorded from distribution substations.
3. Standby Generator fuel consumption data from large power consumers.



## 2.4 The Proposed Project Location and site description

The proposed project site is located at Simakeni village, Mwele/ Kisurutini sub-location, Rabai location, Rabai sub-county, Kilifi County. It is situated twenty-five (25) kilometers northwest of Mombasa town and one kilometer (1 km) off the C111 Kabieni road. The proposed project is located within the existing Rabai 220 kV/132 kV substation (L.R. Nos: 27669/2).

The Rabai substation is owned by KPLC, but it is among the listed assets to be handed over to KETRACO as the transmission system operator.

The specific project site coordinates are summarized in table 4 below:

Table 3- Global Positioning System (GPS) coordinates for the proposed STATCOM project within the existing Rabai 220kV/132 kV Substation

STATCOM SITE	
Eastings	Northings
562011	9565523
561962	9565602
562003	9565629
562051	9565551
CAPACITOR BANK SITE	
Eastings	Northings
562051	9565551

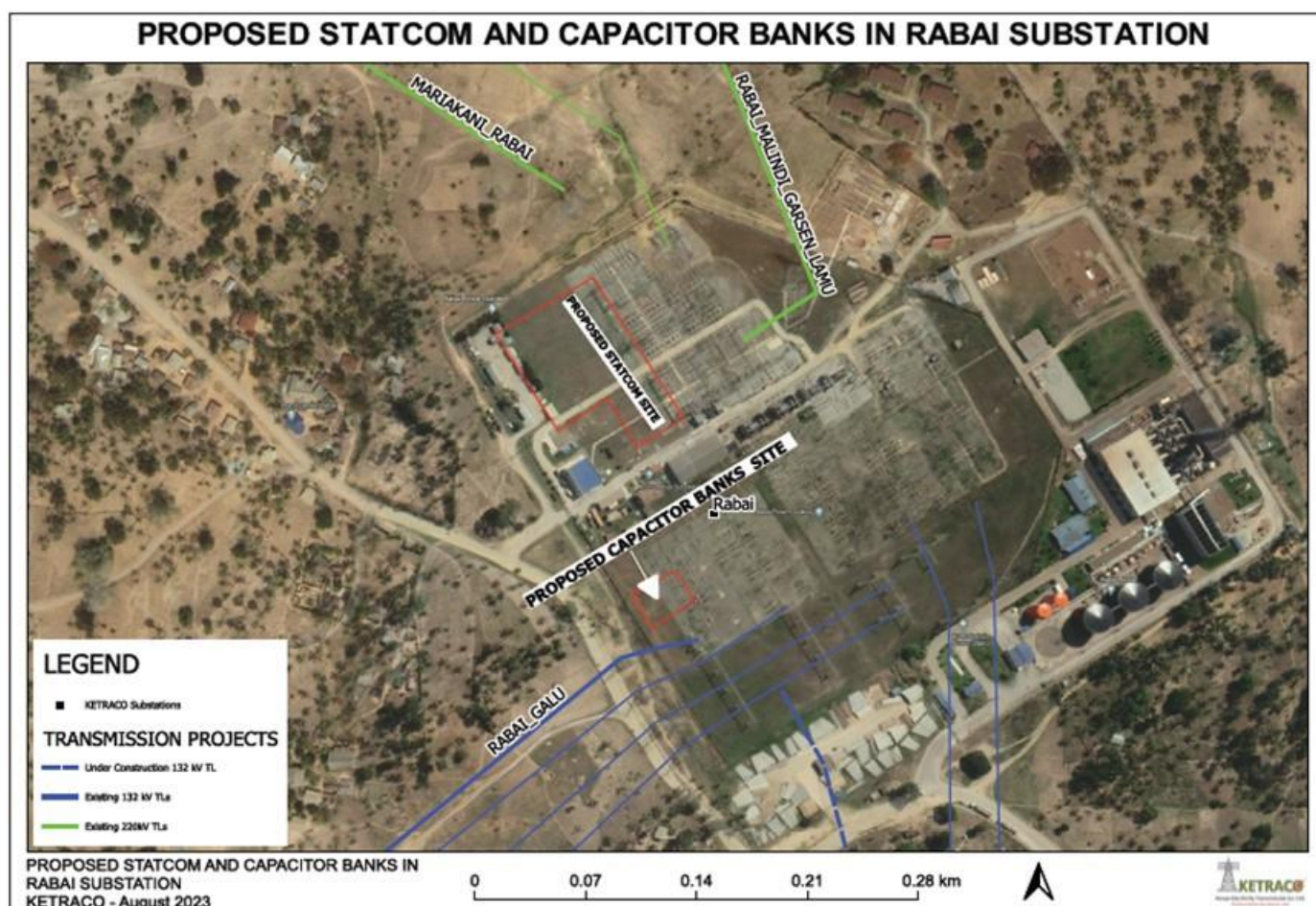


Figure 2-1- Google earth satellite Imagery for the proposed STATCOM development area within Rabai 220 kV/ 1320 kV SS ( Image year- 2023)

## 2.5 Access to the Proposed Project site

The proposed project site is located twenty-five (25) kilometers from Mombasa town and three kilometers (3 km) off the Mombasa – Nairobi highway. It is accessed via a tarmacked access road off the Kabieni C111 road, with a turn off at Rabai and 300m to the Rabai 220 kV/132 kV substation gate. The proposed project site is located 100 meters off the KETRACO substation control building within the fenced Rabai 220kV/132 kV Substation.

## 2.6 General Site Analysis

From the initial analysis of the site by the ESIA team, the site was found to be suitable for STATCOM development with mostly coastal ecological conditions including grass vegetation, sandy-loamy soils. No natural habitat was observed as the Rabai 220/132 kV SS has undergone significant development from previous transmission line projects. The site is well inter-connected to roads infrastructure in the area including the Mombasa-Nairobi highway and Kabieni C111 Tarmac Road heading to the Bondora-Kaloleni Junction. The general terrain of the site is generally flat. The proposed project site is well connected to piped water lines supplied by Kilifi- Mariakani Water and Sewerage Company (KIMAWASCO).

## 2.7 Major Components of the Proposed Project

### 2.7.1 General scope of works

The scope of works includes design, supply, installation, and commissioning of dynamic reactive power compensation devices comprising of a STATCOM at 220kV substation and mechanically switched capacitor banks at 132kV substation within the existing Rabai 220/132 kV substation, at an estimated cost of **USD 24, 296,436 million**. The works include:

- Supply and installation of 1 x 100 MVar 132 kV shunt capacitor and establishment of 132kV bar extension to accommodate the capacitor bank.
- Supply and installation of 1 x 120 MVar STATCOM at 220 kV Rabai substation and establishment of 220kV bay extension to accommodate the STATCOM.
- All associated substation primary equipment and secondary systems
- Civil works which will comprise of, but not limited to, equipment foundations, cable trenches, trench covers, laying of crushed stones among others.
- Steel works such as erection of gantries and steel structures.

The plant equipment will be installed in a safety enclosure with access road, lighting, and walkways to within the STATCOM substation.

### 2.7.2 Substation Design and Layout

The substation would include extension and modification of the 220 kV switchyard to accommodate the establishment of the proposed 120MvAr STATACOMs and extension and modification of the 132kV switchyard to accommodate the establishment of the proposed 100 MVar Shunt Capacitor Banks. The land size for the proposed additional scope to the exiting substation is approximately 1/8 of an acre. The bay switchgear equipment connecting to the 120MVar STATCOM and the 100MVar shunt Capacitors of the proposed project would be conventional outdoor air-insulated switchgear, both for 220 kV and 132 kV busbar. Equipment for control, protection and auxiliary power will be housed in a small control building. The proposed STATCOM substation layout consists of the arrangement of a number of switchgear components in an ordered pattern governed by their function and rules of spatial separation. The spatial separation will be included.

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

The section clearance is the clearance between live parts and the terminals of a work section. The

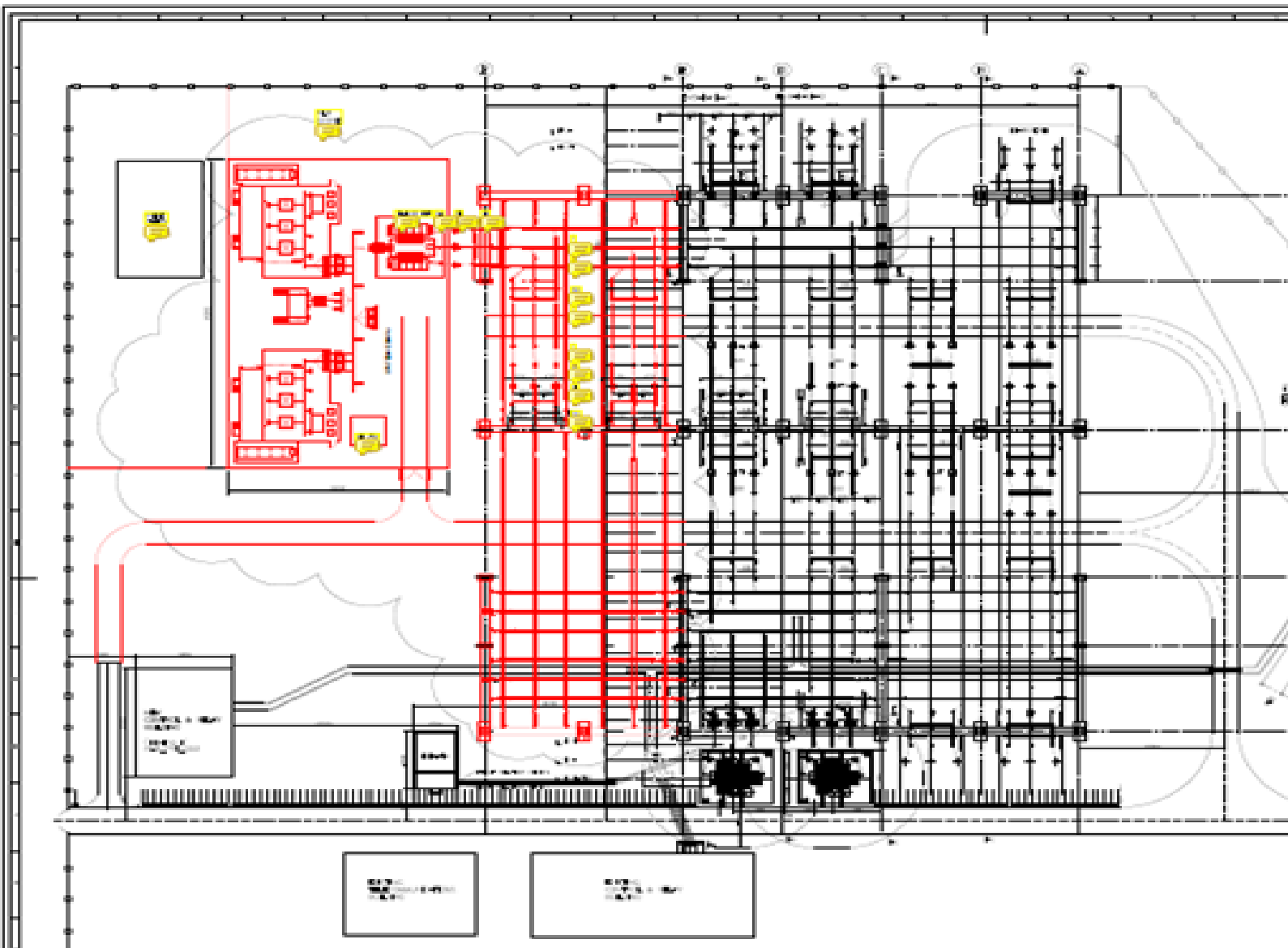


limits of this work section, or maintenance zone, may be the ground or a platform from which the substation works are executed.

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

Figure 3 and 4 below shows the area layouts for the proposed STATCOM and associated capacitor banks.

The dimension of land required for the STATCOM installation is approximately 1/8 of an acre which has already been identified and provided for in the Rabai Substation.



*Figure 2-3- STATCOM area layout*

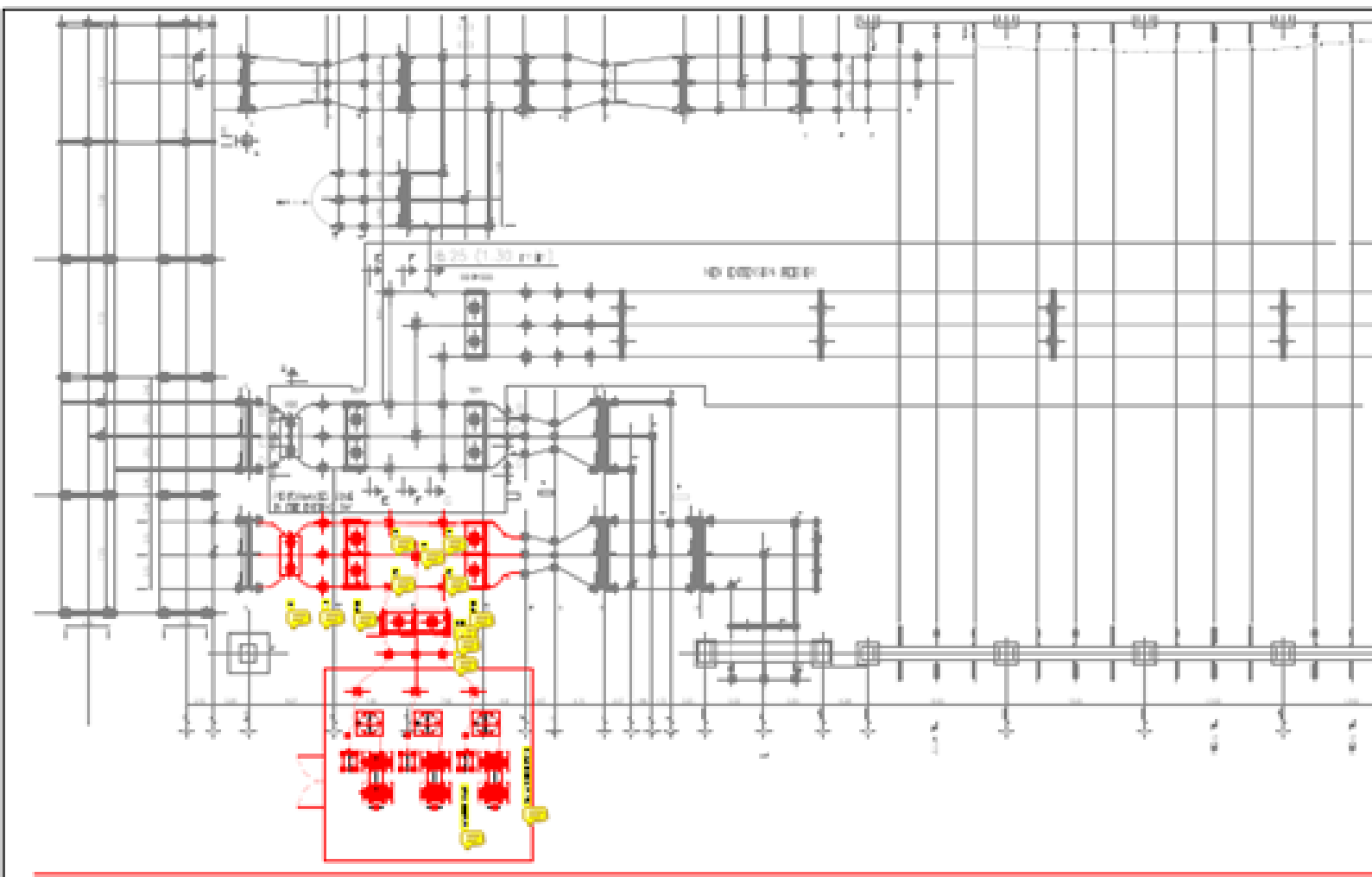


Figure 2-4- Capacitor Banks site layout

The Substation Designs services will include Single-Line Diagrams and Construction Drawings, Site Selection & Equipment Layouts, Equipment Procurement, Construction Coordination, Relay, Control & Metering, Protective Systems Coordination, Substation Automation, SCADA Systems Design, Grounding Systems and Final Checkout, Start-up, and Testing.

### **2.7.3 Description of the Project's Construction Activity**

All construction activities including ground preparation, earth moving, materials delivery, building, walling, roofing, and the installation of amenities (power, water, communication equipment, etc.), control room fittings (doors, windows, safety provisions, etc.) will be carried out by competent personnel obtained through rigorous tendering procedure to ensure that the set quality standards and timelines are met.

#### **2.7.4 Typical construction procedures**

Subject to permitting requirements, construction typically, but not always, will occur in the following sequence:

##### **2.7.4.1 Site Development**

Site development begins with vegetation clearing at the site. Temporary environmental controls, such as silt fences, will also be installed at this time. The area is then levelled by cutting and filling as necessary to bring the site up to subgrade. Sand and aggregate fill materials may be brought in to make a level site for construction.

The substation site development will also include the installation of any required environmental controls such as plunge pools, retention ponds, or rip-rap slopes. The final grading and seeding of the areas outside of the substation fence will be installed during this phase.

##### **2.7.4.2 Material delivery**

Foundation and construction materials, including steel and gravel, are delivered to the work site. Construction equipment such as backhoes, semitrailers, moving equipment, concrete haulers and cranes may also be brought onsite. As the construction will be carried out in an active substation, the contractor will identify and use a suitable storage yard/area to store materials and equipment to ensure the health and safety of contracted workers and material delivery crews. In order to ensure road safety during transportation of materials and equipment to the sites, the contractor shall adopt 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. In addition, the contractor shall emphasize safety aspects among drivers, use locally sourced materials whenever possible to minimize transport distances, require licensing of drivers, adopt limits for trip duration and arranging driver rosters to avoid overtiredness and use speed control devices (governors) on trucks, and remote monitoring of driver actions.

In keeping with the requirements of Draft E-waste Regulations, 2015, the contractor shall ensure e-waste is properly stored, ensure vehicles transporting e-waste obtain a waste transport license from NEMA, and ensure it is disposed in licensed dumping sites. In addition, the handling, transport, use and disposal of any hazardous or controlled substance will be done with prior knowledge and approval of KETRACO and follow the requirement within the Draft Toxic and Hazardous Industrial Chemicals and Materials Management Regulations 2018.

##### **2.7.4.3 Foundation Installation**

Soon after site development is completed, the equipment foundations will be installed. The foundations are reinforced concrete and may be drilled pier or spread footing foundations depending on the size and weight of the equipment.

##### **2.7.4.4 Equipment Installation**

Following the installation of the foundations, the equipment is delivered and installed at the station. The equipment installed at the station includes, but is not limited to, substation security fences, steel structures, circuit breakers, transformers, capacitor banks, and control buildings.

After the equipment is installed, a finish layer of crushed stone (typically 6 inches deep) is installed over the entire station up to the base of the structure foundations. This gives the station its "finished" look.

#### **2.7.4.5 Final Restoration**

Upon completion of construction, the contractor will do the final restoration of the site. Final restoration consists of the removal of all temporary environmental controls, final seeding, and the installation of any vegetative buffers.

#### **2.7.5 Project construction Input**

Establishment of the proposed 120MVar STATCOMs and the 100MVar Shunt capacitor banks will be constructed using conventional construction materials and construction procedures that are not expected to compromise the safety of the neighboring communities as well as the general environment. The construction period is estimated to be **18 months**. The following inputs will be required for construction:

- (i) Raw construction materials e.g., sand, cement, natural building stone blocks, hard core, gravel, concrete among others.
- (ii) A construction labor force (of both skilled and unskilled workers). These are as follows:
  - KETRACO staff who will constitute the Project Implementation team (PIT), i.e. direct workers. An estimated number of between 10-15 dedicated KETRACO staff will oversee the implementation of the project.
  - Contracted Workers engaged by the contractors and subcontractors to perform work related to core business of the project for a substantial duration. An estimated workforce of between 30-50 workers who are in the skilled, semi-skilled, and casual labor brackets (See LMP provided in the Annexes). The contracted workers' employment terms will be either full-time, part time, temporary, or seasonal. It is envisioned that no labor agents or intermediaries will be utilized.
  - Primary supply workers engaged by third parties in carrying out the core functions of the STATCOM project. An estimated workforce of between 30-50 workers will be engaged.
  - Migrant workers- Due to the technology to be used in the STATCOM project, it is anticipated that migrant workers may be brought in by the contracted third party to offer technical expertise. An estimated 2-5 skilled workers may be engaged at various points of the construction and testing phases prior to project handover and commissioning stage.

### **2.8 Project Timeline**

The project is expected to be completed within 18 months of awarding of contract.

### **2.9 Project Design and Cost**

The Proponent, KETRACO has commissioned qualified Engineers to undertake detailed investigations and detailed design for the proposed development project and determine the project cost among other aspects as per specified project timelines. The project's gross cost estimates as per the Design Engineers' amounts to **USD 29,092,670**. The summary of the BoQ has been annexed to this report as Annex 4.

### 3 CHAPTER THREE: ANALYSIS OF PROJECT ALTERNATIVES

#### 3.1 Introduction

This section analyses the project alternatives in terms of site, technology scale and involves studying design alternatives and analyzing them based on the environmental costs and benefits. This involves studying technology, design, capital investments, operation, and maintenance requirements, among others.

#### 3.2 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, have adverse effects on the network operation. It will lead to voltage instability in the network caused by poor reactive power control. Voltage instability is the cause of system voltage collapse, in which the power system voltage decays to a level from which point it is unable to recover. Voltage collapse may lead to partial or full power interruption in the system. The voltage profile below ( fig 5) was taken from the Rabai SS's Supervisory Control and Data Acquisition (SCADA). It indicates the current voltage profiles existing under a 'No Project alternative scenario, characterized by high peaks and low voltage dips.

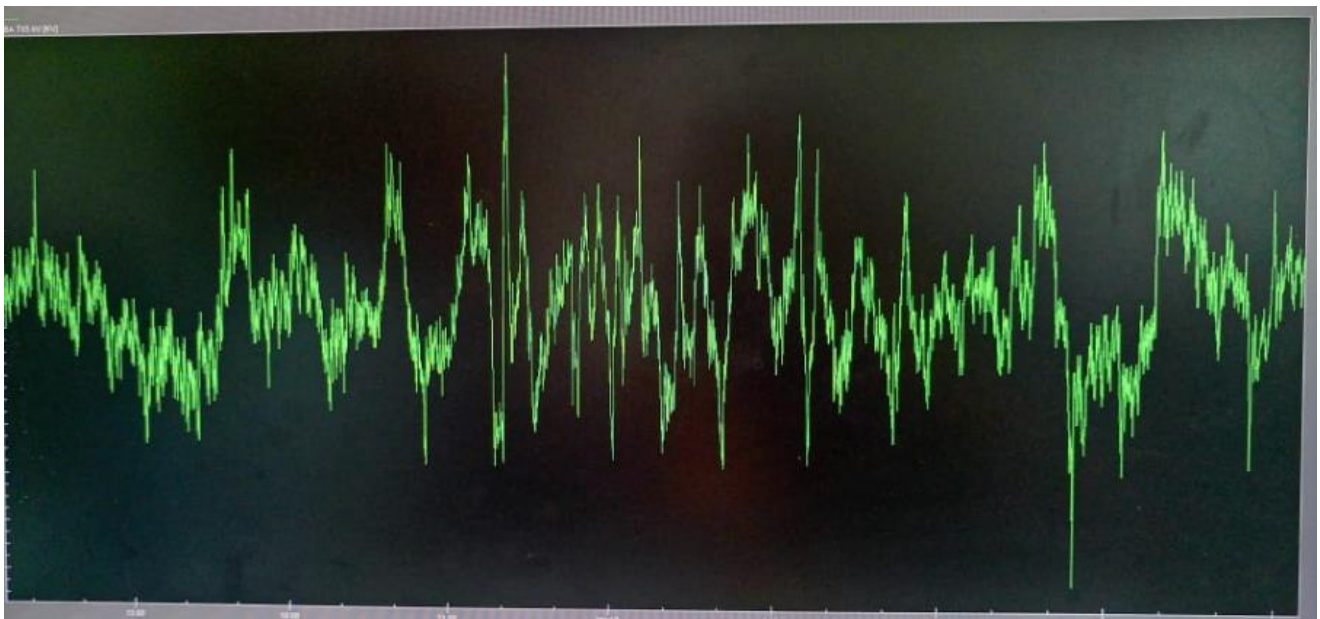


Figure 3-1- 132kV Rabai busbar Voltage Profile as recorded from Rabai substation control SCADA captured on 1<sup>st</sup> August 2023, 12.27pm.

#### 3.3 Option I- Installation of mechanically switched reactive power compensators.

This option will involve the installation of mechanically switched reactive power compensation devices such as capacitors and shunt reactors. This option will however have its limitations in operations since they are majorly single step causing either under- voltages or over-voltages when turned on and off respectively. In addition, due to the manual/ mechanical operation required, the human interface required can further act as a weak link in ensuring timely responses are achieved.

#### 3.4 Option II- The proposed development alternative- STATCOM

This option will involve the installation of STATCOMs which are Flexible AC Transmission System (FACTS) devices. FACTS technologies are available in various forms, including:



- SVC –Static Var Compensator
- STATCOM- Static Synchronous Compensators
- Thyristor –controlled series capacitor (TCSC), and
- Unified power flow controller (UPFC). Among them, SVC and STATCOM are classified as dynamic reactive power compensation resources which quickly inject or absorb VARs (Volt Amp Reactive also referred to as reactive power) immediately after system disturbances to support power system voltage.

The preferred option -STATCOM has the capability to increase voltage stability by providing dynamic control and compensation of the system voltage. The advantage of STATCOM over its counterpart i.e. the SVC system includes:

1. When the voltage drops, its compensating current does not depend on the level of the system voltage at the point of common coupling (PCC); it operates at full capacity.
2. The use of the STATCOM switching control allows faster control response compared to SVC and improved power systems' performance.
3. STATCOM is also more resilient to changes in power system conditions, such as variations in harmonic levels.
4. STATCOM requires smaller outdoor equipment compared with SVC. Therefore, it requires less land footprint during installation, leading to minimal impacts.

The main disadvantage of the STATCOM over other dynamic voltage compensators is the high CAPEX cost.

### **3.5 Materials and technologies to be used in the proposed development alternative- STATCOM.**

STATCOM is a device that uses power electronics to provide fast and flexible reactive power compensation for the grid. It does not use any chemicals, but it relies on various components and materials to operate. Some of the main components and materials used in STATCOM are:

1. **Converter:** This is the core of the STATCOM, which converts AC voltage to DC voltage and vice versa. It can use different topologies, such as six-pulse, twelve-pulse, or modular multilevel converters. The converter uses switching devices, such as thyristors, gate turn-off thyristors (GTOs), or insulated gate bipolar transistors (IGBTs), to control the voltage and current waveforms. The converter also uses capacitors and inductors to filter and smooth the output voltage.
2. **Capacitor bank:** This is a set of capacitors connected in parallel or series to store electrical energy and provide reactive power support. Capacitor banks can be mechanically switched or electronically controlled. Capacitor banks can be used in conjunction with STATCOM to improve voltage stability and reduce the converter rating. Capacitor banks use dielectric materials, such as paper, plastic, ceramic, or metal oxide, to separate the electrodes and prevent electrical breakdown.
3. **Transformer:** This is a device that transfers electrical energy from one circuit to another by electromagnetic induction. The transformer can be used to step up or step down the voltage level and isolate the STATCOM from the grid. The transformer uses magnetic materials, such as iron, steel, or ferrite, to form the core and copper or aluminum to form the windings.
4. **Cooling system:** This is a system that removes heat from the STATCOM components and maintains a suitable operating temperature. Cooling system can use air, water, or oil as the cooling medium. Cooling system uses pumps, fans, heat exchangers, pipes, valves, and sensors to circulate and regulate the cooling medium.

### **3.6 Site selection and design analysis for the proposed development alternative- STATCOM.**

## 4 CHAPTER FOUR: BASELINE INFORMATION

### 4.1 Introduction

The proposed STATCOM project site is located at Simakeni village, Mwele/ Kisurutini sub-location, Rabai (Mwawesa) location, Rabai sub county, Kilifi County. It is situated twenty-five (25) kilometers northwest of Mombasa town and one kilometer (1 km) off the C111 Kabieni road. The proposed project is located on the existing Rabai 220 kV/132 kV substation land (L.R. Nos: 27669/2) . The project sites' coordinates are as follows:

STATCOM	
Eastings	Northings
562011	9565523
561962	9565602
562003	9565629
562051	9565551
CAPACITOR BANKS	
Eastings	Northings
562051	9565551

### 4.2 Administrative Framework

Rabai sub-county is the smallest within Kilifi County, covering an area of 208 km<sup>2</sup>. It consists of 3 divisions, 7 locations, and 16 sub-locations. In addition, Rabai constituency has 4 county government assembly wards (Mwawesa, Ruruma, Kambe/Ribe and Rabai/ Kisurutini wards) and 176 villages (Kilifi County Government, County Integrated Development Plan (CIDP) III 2023-2027)

Figure 6 below is a map of the administrative boundaries within Rabai constituency.



Figure 4-1- National Government Administrative location within Rabai constituency, Kilifi County.  
Source- [Rabai Constituency Wards, MP, CDF, Population, Registered Voters and Map \(kenyacradle.com\)](#)

Rabai location comprises of 4 sub-locations namely:

- Mwele/ Kisurutini sub-location
- Kaliangombe sub-location
- Mazeras/ Mugumowapatsa sub-location
- Chisimani/ Buni Sub location

The figures below show the location of the project at local level and national level.

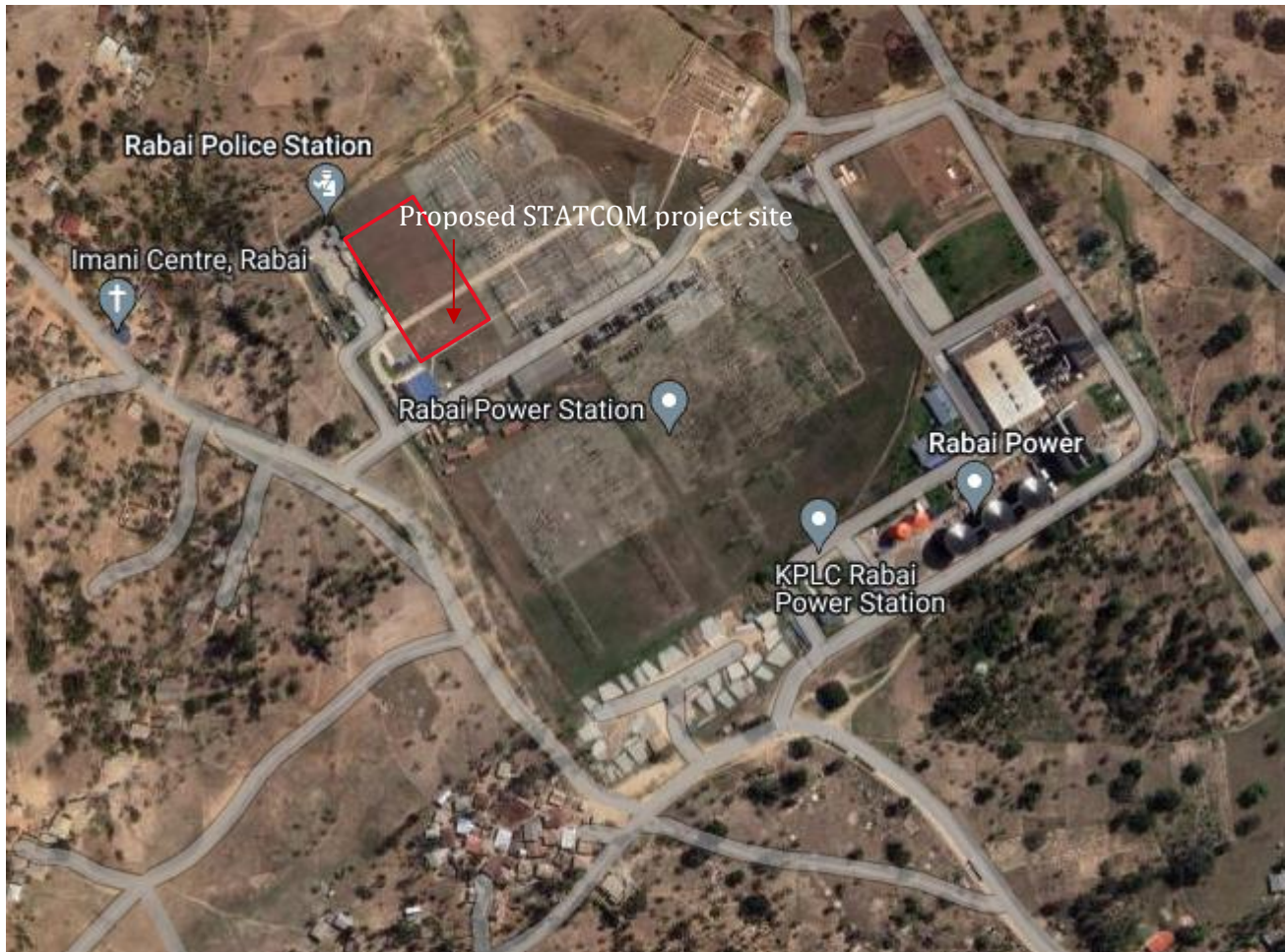


Figure 4-2- Proposed STATCOM project site (highlighted in Red)  
Source- Google Maps (Satellite imagery),  
Image year- 2023





Figure 4-3: Location of the project in relation to map of Kenya.

Source: KETRACO



### 4.3 Natural and Physical Environment

#### 4.3.1 Flora and Fauna

The proposed project site is located within the existing Rabai 220 kV/132 kV SS. The site is classified as a 'modified habitat' i.e. one where human activity has substantially modified the area's primary ecological function and species' composition. This habitat alteration is primarily due to previous disturbances during the development of the surrounding Sub Station infrastructure.

The vegetation types within the project site and in the surrounding area within Rabai subcounty is characterized by the following:

- Cultivated farmlands and human settlements. Crops observed include maize, beans, palm trees clusters.
- Coastal bushland: This is a type of secondary vegetation that results from human disturbance. This was observed in the immediate vicinity (100-500m) of the Rabai Substation. It is dominated by shrubs and small trees such as Acacia, Euphorbia shrubs, and Grewia occidentalis trees interspersed with grassland or cropland.
- Coastal grassland: This was predominant in open spaces characterized by sandy or rocky soils and was also observed within the palm stands growing in the vicinity of the Rabai substation.
- Coastal palm stands: This vegetation type is predominant within the Rabai subcounty area, especially in the lowland areas. It is characterized by tall palms such as Hyphaene or Borassus that form dense clusters or linear rows. This type of vegetation was mostly surrounded by grassland or bushland.
- No invasive species was directly observed by the ESIA team during the baseline survey of the vegetation within and surrounding the Rabai 220/132 kV Substation.
- **The The project within a brownfield that is totally fenced out and dedicated for energy infrastructure. There is no vegetation within except for the grass as shown in the figure below:**



Figure 4-4: Vegetation observed within the proposed project site at within the existing Rabai 220kV/132 KV SS

#### 4.3.2 Drainage

In general, the drainage pattern of Kilifi 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, Ribe and Kombeni. The streams include Wimbi, Kanagoni, Masa, Muhomkulu and Mleji. No permanent or seasonal river is located within the

proposed project site. The project area has very well drained sandy soils. Due to the flat nature of the site and the surrounding elevated areas, there is the possibility of ponding observed if proper site drainage is not installed during site development.

#### 4.3.3 General Topography, Geology and Soils

The geology of Rabai subcounty, Mombasa County, is mainly characterized by the following features:

1. The subcounty is located within the coastal plain of Kenya, 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 subcounty is characterized by rocks. These rocks include sandstones, limestones, shales, and clays that were deposited by rivers, lakes, and marine environments. The subcounty is also underlain by the Mozambique Belt, which is a complex of metamorphic and igneous rocks of Precambrian age. These rocks include gneisses, schists, granites, and migmatites that were formed by intense deformation and melting during the Pan-African orogeny.
- The subcounty is crossed by several faults and fractures that influence the groundwater flow and availability. Some of these faults are associated with volcanic activity, such as the Rabai-Kisurutini fault zone, which hosts the Rabai geothermal field.



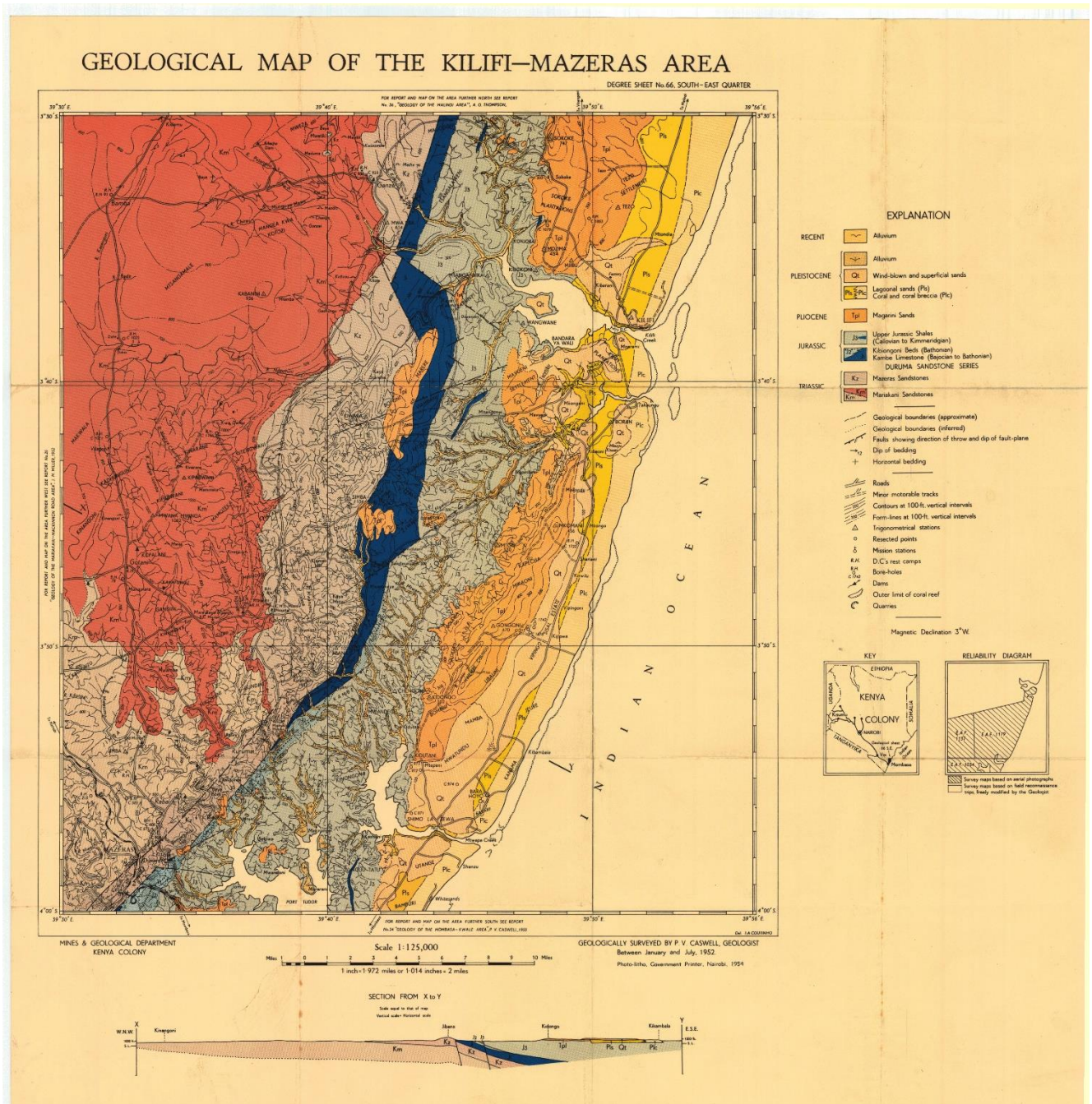


Figure 4-5- Geological map of the Kilifi Mazeras area.

(source: [Geological+map+of+the+Kilifi-Mazeras+area.jpg \(4752×4960\)](#))

- The proposed project site is generally flat with man-made elevated portions on the upper side. The area is characterized by sandy-loam soils that are generally well drained. The figure below shows the elevation profile of the proposed site:



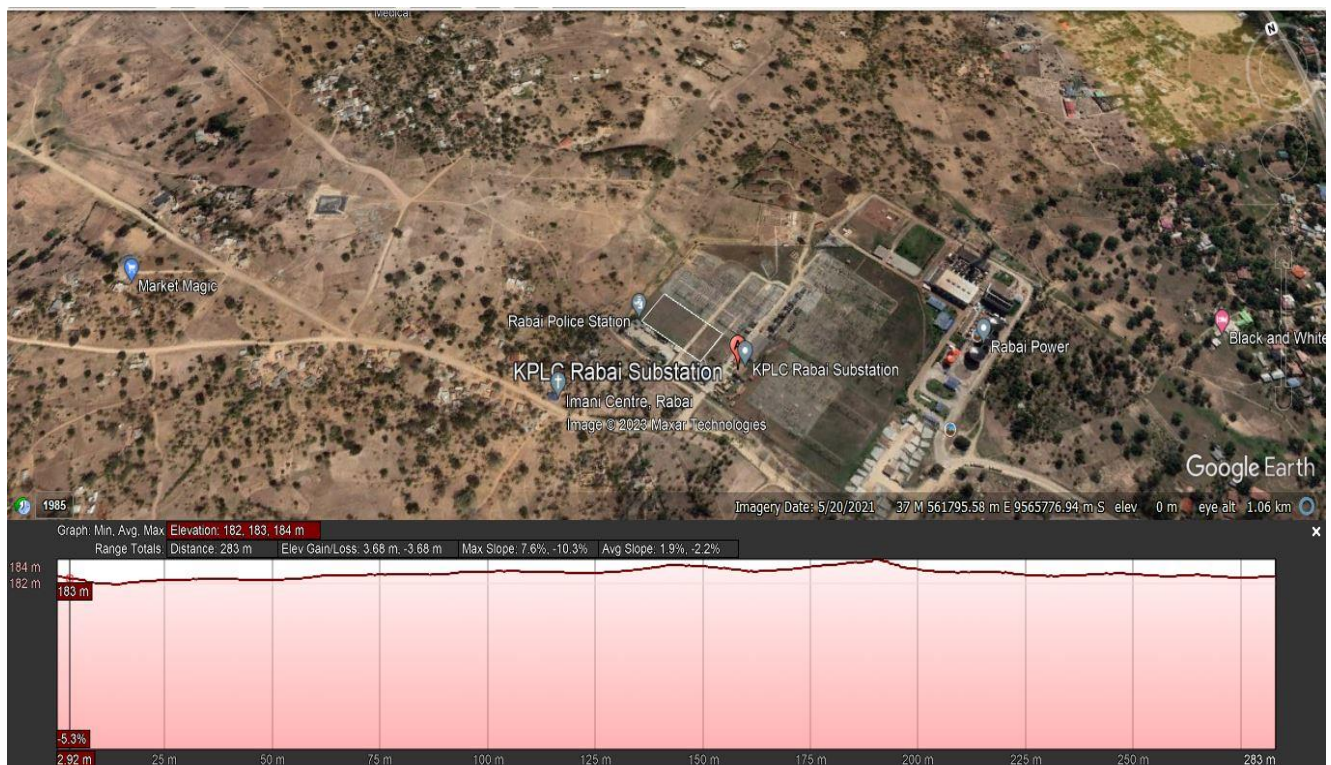


Figure 4-6- Elevation profile of the proposed STATCOM site. Source: KETRACO

#### 4.3.4 General Climate

Kilifi county has a bimodal rainfall pattern with average annual precipitation ranging from 300mm in the hinterland to 1,300mm in the coastal belt. The coastal belt receives an average annual rainfall of about 900mm to 1,300mm while the hinterland receives an average annual rainfall of about 300mm to 900mm.

The short rainy season is experienced in the months of October, November, and December while the long rains are experienced in the months of March, April, and May. The most important season to the hinterland is the short rains for pasture regeneration and water recharge while the long rain season is the most important season for the coastal area for crop production. Areas receiving highest average annual mean evaporation ranges from 1800mm along the coastal strip to 2200mm in the Nyika plateau in the hinterland. The highest evaporation rates are experienced during the months of January to March in the county. The annual temperatures range between 21°C and 30°C in the coastal belt and between 30°C and 34°C in the hinterland. The county experiences a very important wind field with relatively moderate wind speeds ranging from 4.8Km/h along the coastal strip to 12km/h in the hinterlands.

Average relative humidity is 65% but decreases to the hinterland. These high humidity levels, coupled with the salty air, combined have a direct impact on infrastructure including metal structures within the coastal region. It is imperative that corrosion resistant material and structural specifications be adopted in the STATCOM project. This will ensure longevity of the infrastructure at minimal maintenance cost.

Before settling of construction material KETRACO undertakes due diligence through Factory Acceptance Tests (FATs) to ascertain quality of material that meets prevailing climatic conditions as would be specified in tender documents.

#### 4.3.5 Water resources

Kilifi County is a generally water-stressed county with most parts in rural Kilifi County being water

deficient; the county meets 30% of the water demand. Daily production is 43,000m<sup>3</sup> per day against a demand of 182,000m<sup>3</sup>. This is against a rapidly expanding population and an old water distribution system that is inefficient and vulnerable to frequent breakdowns (Gok, 2018). KIMAWASCO is the water and sewerage company responsible for water supply within Mwawesa location.

The existing Rabai 220 kV/132 kV SS is supplied with fresh water from KIMAWASCO. No water body was observed within or adjacent to the project site.

#### **4.4 Solid Waste Management**

Kilifi County prides itself in acquiring good solid waste collection infrastructure, which includes compactors, trucks, and bins. A dumping site in the county has also been secured. However, challenges still exist in the management of personnel, inadequate Personal Protective Equipment (PPE) for the work, use of modern technology in waste management, 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 in the rural areas. Regarding garbage disposal, most residents burn garbage in an open place, dump it in the homestead compound, while others bury their waste. Only 2% of the garbage produced is collected by the county government. This is an environmental threat.

The proposed project will ensure good solid waste management principles are used, that is, Reduce, RE-use, Recycle. The generated waste deemed for disposal will be collected at a designated waste collection area within the Substation compound. Final disposal will be done by a NEMA licensed solid waste handler.

#### **4.5 Socio-Economic Environment**

The various social, economic, and cultural aspects (demography, economic conditions, land tenure and land use patterns, 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. These aspects are explored in detail in the subsequent sub-sections.

##### **4.5.1 Land use patterns and tenure**

Rabai subcounty is inhabited by the Agiriama people, who are one of the nine Mijikenda tribes. The Rabai people have a rich history and culture, which are reflected in their land tenure practices. They have customary rights to land, which are based on kinship, clan membership, and ancestral occupation. This notwithstanding, Kilifi County is also influenced by the national land policy and regulatory framework of Kenya, which aims to address the historical injustices and inequalities in land ownership and distribution prevalent in the coastal region. The Constitution of Kenya (2010) recognizes different forms of land tenure, such as private, communal, public, and trust land. From community informal interviews, several respondents within the neighborhood of Rabai Substation cited presence of private land ownership, with most citing land tenure on land on the basis of ancestral occupation.

On land use patterns, the rocks predominant in the Rabai-Mazeras area are rich in minerals and groundwater, which attract mining and agricultural activities. Some examples of agricultural products in Rabai sub-county are maize, cassava, coconut and mango farming, and cattle. The presence of several streams and rivers in the Rabai subcounty provides unique opportunities for irrigation, fishing, and tourism.

The establishment of Rabai 220/132 kV substation and the neighboring Rabai Power plant has contributed to the development of industrial land use zone within the project area. The proposed STATCOM project's development is consistent with this land use. Potential impacts of the project to the surrounding land users have been identified and expounded in Chapter 7.

#### 4.5.2 Population Distribution

According to the Kenya Population and Housing Census 2019, Kilifi County had a total population of 1,453,787 made of 704,089 males and 655,673 females (CIDP III, 2023-2027). The county has an average household size of 4.8. Malindi is the most populous sub-county while Chonyi and Kauma are the least populated. Table 5 below gives a breakdown per sub-county:

Table 4- Rabai sub-county population statistics

Name Sub-county	Population (2019) National Census	Number of households	Land area Sq. KM	County Assembly Wards
<b>Chonyi</b>	62,318	11,421	192.6	
<b>Ganze</b>	143,590	23,258	3,204.4	Ganze, Bamba, Jaribuni, Sokoke
<b>Kaloleni</b>	192,905	36,355	706.1	Kaloleni, Kayafongo, Mariakani, Mwanamwinga
<b>Kauma</b>	22,613	3,479	181.4	
<b>Kilifi North</b>	177,527	39,512	264.4	Tezo, Sokoni, Kibarani, Dabaso, Watamu, Matsangoni, Mnarani
<b>Kilifi South</b>	203,891	53,074	290.5	Junju, Mwarakaya, Shimo la Tewa, Chasimba, Mtepeni
<b>Magarini</b>	190,644	33,017	5,229.4	Maarafa, Magarini, Gongoni, Adu, Garashi, Sabaki
<b>Malindi</b>	326,991	73,547	2,263.3	Jilore, Kakuyuni, Ganda, Malindi town, Shella
<b>Rabai</b>	120,479	24,809	207.8	Mwawesa, ,Ruruma, Kambe/Ribe, <b>Rabai/Kisurutini</b>

**Sources: 2019 Kenya Population and Housing Census: Volume 1, County Government of Kilifi County integrated Development Plan (CIDP) III 2023-2027**

#### 4.5.3 Infrastructure

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 Mazeras and Samburu. There is one station in Mariakani and another railway terminus in the neighboring Mombasa County which is about 180km from Malindi town.

The county boasts of two modern bus terminuses in Malindi and Kilifi towns, respectively. There are other middle-level buses/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 marshaling yards for lorries and trucks in the suburbs and peri-urban areas of Malindi, Mtwapa, Kilifi, and Mariakani towns.

The proposed project site is connected to the existing road infrastructure. It is situated twenty-five (25) kilometers northwest of Mombasa town and one kilometer (1 km) off the C111 Kabieni road. A cabro road links the Rabai SS to the C111 Kabieni road.



#### **4.5.4 Energy Access**

Over 80% of the population in the county relies on wood for their energy needs, a fact that has led to the 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 the 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. From observation and interviews, most of the households are not connected to the power grid.

During the CIDP period 2018-2022, the proportion of households connected to electricity grid increased from 21% to 64%. This is due to Kenya power and Lightning Company having connected bigger number of people more than the target under the rural electrification programme.

In addition, over 200 streetlights and over 100 high masts were installed. The proportion of electricity generated from renewable energy sources disaggregated by type and use (MW) increased from 3MW to 44MW. This is due to the establishment of a 40MW Solar power generation plant in the county and Gongoni salt ltd which developed two solar power plants of capacity 0.5MW each for their industrial use. The number of households using energy saving jikos, and related technologies increased from 50 to 3,000.

With the construction of the STATCOM system within the Rabai 220 kV/132 kV SS, it is anticipated that the voltage regimes within the coastal region, a net electricity importer, will significantly stabilize. As a result, it will enable productive activities to continue uninterrupted, thus contributing to regional economic growth. Major beneficiaries will be the existing electricity consumers that include business customers of Kenya Power such as heavy and light industries, hotels, schools, hospitals, and domestic consumers for whom the quality and reliability of electricity service will improve.

#### **4.5.5 Access to Health**

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 the nearest 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).

Some of the health facilities within the project site vicinity as noted by the ESIA team include Ribe dispensary, Kwajuaje dispensary, and Rabai sub-county hospital.

#### **4.5.6 Housing Type, Structures and Socio-cultural amenities**

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 beliefs in the regions. In the rural areas, houses are simple and small in size, generally 1 to 3 rooms per unit.

Adjacent to the proposed project site, the ESIA study team observed mostly semi-permanent housing structures. Most of these residents are subsistence farmers. The Chief in the project area indicated that most of the respondents have lived in the project area for many years with most citing ancestral linkage to the land. In addition, the ESIA team noted a cemetery located near the Rabai 220/132 kV Substation. However, this cemetery is away from and outside of the fenced-off proposed project site.

Mwele/Kisurutini social hall is located approximately 2km from the proposed project site. It is envisioned that no resettlement/ desecration of burial grounds will be done to give way for the STATCOM project. A cultural site- National Museums of Kenya- Rabai Museum was also observed

within the project site's area of influence.

#### 4.5.7 Economic activities

The predominant economic activity within the project site included subsistence farming and small-scale businesses. 1 major industry- Jumbo steel Mills was observed approximately 5 km from the project sites. Several trading centers were observed at various points along the Kabieni road, characterized by grocery shops, mechanical auto shops, and food cafes. Quarrying is a predominant activity within the Mazaras area. Quarry sites were observed at least 10km from the project site. Notably, Kaydee quarry ltd quarry is located within the project area, accessed via a dirt access road running past the Rabai 220/132 kV substation.

#### 4.5.8 Educational facilities

The ESIA team noted a significant number of primary, secondary, and tertiary institutions within a 5 km radius of the project site. Notably, Ludwig Krapf memorial school, Benyoka primary school, Shining stars academy, Rabai secondary school were observed.

### 4.6 Gender Based Violence- Sexual Exploitation and Abuse /Sexual Harassment (GBV -SEA/SH)

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. According to the Kenya Demographic and Health Survey (2022) report, the commonest forms of GBV mentioned by men and women included experience of physical violence, sexual violence, controlling behaviors and intimate partner violence. From the statistics, the percentage of women aged 15-49 who have 1) Ever experienced sexual violence and 2) who experienced sexual violence in the 12 months preceding the survey in the 6 coastal counties, indicates Kilifi ranks third (12.2%) and first (6.5%) in the above categories respectively.

*Table 5- Experience of sexual violence by any perpetrator per county within the coastal region.*

County	Ever <sup>1</sup> %	Ranking	In the last 12 months <sup>2</sup> %	Ranking
<b>Mombasa</b>	9.8	4	3.8	3
<b>Kwale</b>	4.3	5	3.3	4
<b>Kilifi</b>	12.2	3	6.5	1
<b>Tana River</b>	2.3	6	1.5	6
<b>Lamu</b>	14.5	1	6.3	2
<b>Taita/ Taveta</b>	14.0	2	3.0	5

*Adapted from: Demography and Health Survey, 2022, Volume 1, Table 17.4 C, page 606.*

Based on the interviews during the ESIA study, locals and key informants claimed that the influx of non-locals might expose the project area to gender-based violence (GBV) such as sexual exploitation and abuse/ Sexual harassment. (SEA/ SH).

### 4.7 Cultural Environment

The project area is largely dominated by the Agirama 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. As the proposed project is located within the larger Rabai 220 kV/ 132 kV substation land, it is anticipated that no community cultural sites will be impacted by the proposed STATCOM development.

## 5 CHAPTER FIVE: CRELEVANT LEGISLATIVE AND REGULATORY FRAMEWORK

### 5.1 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 ESSs 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 (EA) Sourcebooks.

### 5.2 KETRACO Guiding Frameworks

#### 5.2.1 Environmental and Social Management Framework (ESMF).

The ESMF was prepared by KETRACO to address the environmental and social impacts of the portion of the STATCOM project. The ESMF sets out the principles, rules, guidelines, and procedures to assess the environmental and social impacts of project during Project implementation. It includes guidelines to prepare measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts of projects, 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.*

#### 5.2.2 Resettlement Policy Framework (RPF)

The Resettlement Policy Framework (RPF) was prepared by the KETRACO to address the resettlement and compensation principles. 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 STATCOM project will neither involve the displacement of persons/ households nor the acquisition of land. The entire project will be implemented within the existing Rabai Sub Station. As such, a RAP/ARAP will not be prepared for this project.*

### 5.3 National Policy Framework

#### 4.2.1 Policies, Plans and Strategies

Table 6- Kenyan policies, plans and strategies.

« Key areas of application	
The Bottom-up Economic Transformation Agenda (BETA)	<ul style="list-style-type: none"> <li>The Bottom-Up Economic Transformation Agenda (BETA) is the Government's Plan geared towards economic turn-around and inclusive growth through a value chain approach. It identifies policy priorities expected to result in greatest impact on the economy and welfare of households. Specifically, the priorities address key objectives namely: <i>bringing down the cost of living, eradicating hunger, creating jobs, expanding the tax base, improving on foreign exchange balance, inclusive</i></li> </ul>



« Key areas of application »	
	<p><i>growth, and uplifting the lives and livelihoods of those at the bottom of the pyramid. This will be achieved through targeted investments in five core pillars: Agricultural Transformation; Micro, Small and Medium Enterprises (MSME) Economy; Housing and Settlement; Healthcare; Digital Superhighway and Creative Economy.</i></p> <ul style="list-style-type: none"> <li>▪ The core pillars will be implemented through five BETA sectors: Finance and Production; Infrastructure; Social; Environment and Natural Resources; and Governance and Public Administration. The five sectors are an amalgamation of the 25 sectors of the Medium-Term Plan (MTP) III.</li> </ul> <p><i>The STATCOM project will be implemented under the infrastructure sector. It will see an increase in energy / electricity quality, reliability, one of the key enablers of economic growth and support for the MSMEs as well as industrialization agenda. The proposed STATCOM project will undoubtedly spur the local economy in the coastal region.</i></p>
Kenya Vision 2030	<ul style="list-style-type: none"> <li>▪ Vision 2030 (GOK, 2007) is divided into three fundamental pillars: economic, social, and political. The social pillar aims at realizing a just and cohesive society enjoying equitable social development in a clean and secure environment.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul> <p><i>The proposed STATCOM project will enable voltage stabilization in the transmission grid. Consequently, this will ensure efficient, accessible, and reliable performance within the transmission infrastructure. This 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.</i></p>
Fourth Medium Term Plan (MTP IV) (2023-2027)  (Preparatory process)	<ul style="list-style-type: none"> <li>▪ The Fourth Medium Term Plan (MTP 2023-2027) of Kenya Vision 2030 is currently under preparation phase. It will succeed the Third MTP 2018-2022. The Fourth MTP will implement the fourth and second-last phase of Kenya Vision 2030 and will set the momentum for transition to the next long-term development agenda for the country<sup>1</sup>. It will be guided by Kenya Vision 2030 and lessons learned in the implementation of previous MTPs (MTPI, MTPII, and MTPIII). It will also be guided by the Constitution and will incorporate the priorities outlined in the Manifesto of the Political Party forming the Government after the next general election scheduled for August 2022.</li> <li>▪ The Fourth MTP will prioritize the implementation of economic recovery strategies to re-position the economy on a steady and sustainable growth trajectory<sup>1</sup>. The plan will outline policies, programs, and projects to be implemented by the government in the period of 2023-2027. 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.</li> </ul> <p><i>The proposed STATCOM project will support the MTP IV plan's overall objectives of spurring the national economy through among others, improving the transmission of electricity geared towards transitioning the country to an upper-middle income country.</i></p>
Sessional Paper No. 10 of 2014 on the National Environment Policy	<ul style="list-style-type: none"> <li>▪ 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"> <li>➢ The broad objectives of the national environmental policy in Kenya are: -To ensure optimal use of natural resources while improving environmental quality.</li> </ul> </li> </ul>

«	Key areas of application
	<ul style="list-style-type: none"> <li>➤ To conserve natural resources such that the resources meet the needs of the present without jeopardizing future generations enjoying the same.</li> <li>➤ To develop awareness that inculcates environmental stewardship among the citizenship of the country.</li> <li>➤ To integrate environmental conservation and socio-economic aspects in the development process.</li> <li>➤ To ensure that national environmental goals contribute to international obligations on environmental management and social integrity.</li> <li>➤ To achieve the above policy objectives, it is a policy directive that appropriate reviews and evaluations of all forms of developmental project plans and operations are carried out to ensure compliance with the environmental policy and legal frameworks.</li> </ul> <ul style="list-style-type: none"> <li>▪ It recognizes the various vulnerable ecosystems and proposes various policy measures not only to maintain 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul> <p><i>The proposed STATCOM project is not located within a sensitive ecosystem hence will ensure sustainable management of natural resources.</i></p>
Sessional Paper No. 1 of 2017 on National Land Policy	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ The Policy is premised on the philosophy of economic productivity, social responsibility, environmental sustainability, and cultural conservation.</li> <li>▪ Key principles informing it include efficiency, access to land use information, equity, elimination of discrimination and public benefit sharing.</li> <li>▪ Amongst the key principles envisioned by the policy include. <ul style="list-style-type: none"> <li>➤ Land use planning, resource allocation and resource management for sustainable development to promote public good and general welfare.</li> <li>➤ Environmental management and sustainable production in the utilization of land resources.</li> <li>➤ Coordination and integration of institutional linkages in planning at sectoral and cross-sectoral levels to foster collaboration and decision making among different land users.</li> <li>➤ Equitable utilization of land resources to meet governance, social-economic and cultural obligations of the people of Kenya.</li> </ul> </li> </ul> <p><i>The proposed STATCOM project will be consistent with the provisions of this Policy in order to avoid conflicts. KETRACO followed due process in the acquisition of the land in which the proposed project is to be sited.</i></p>
Sessional Paper No. 6 of 1999 on Environment and Sustainable Development Policy.	<ul style="list-style-type: none"> <li>▪ The policy defines approaches that will be pursued by the Government in mainstreaming environment into development.</li> <li>▪ The policy harmonized environmental and developmental objectives with the broad goal of achieving sustainable development.</li> </ul> <p><i>The policy paper also provided guidelines and strategies for government action regarding environment and development.</i></p> <p><i>This policy is relevant to the proposed STATCOM project in view of the potential impacts on the environment and involvement of the public in project planning.</i></p>
National Energy Policy, 2018	<p>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 the realization of Vision.</p>

«	Key areas of application
	<p>The overall objective of the energy policy is to ensure an affordable, sustainable, adequate, competitive, secure, and reliable supply of energy at the least cost geared to meet national and county needs while protecting and conserving the environment. Specifically these objectives are:</p> <ul style="list-style-type: none"> <li>Utilize energy as a tool to accelerate economic empowerment for the National and County Governments as well as urban and rural development.</li> <li>Improve access to affordable, competitive, and reliable energy services.</li> <li>Provide an environment conducive for the development and provision of energy services.</li> <li>Prioritize and promote development of indigenous primary and secondary energy resources.</li> <li>Prioritize and promote the development of local technologies in energy development and delivery.</li> <li>Promote energy efficiency and conservation.</li> <li>Ensure that prudent environmental, social, health and safety considerations, as well as issues of climate change are factored in energy and petroleum sector developments.</li> <li>Foster international co-operation in energy trade, investments, and development.</li> <li>Promote and develop government owned agencies in the development of energy resources.</li> </ul> <p>Encourage generation of electricity from renewable resources, build and maintain the necessary distribution and transmission infrastructure.</p> <p><i>The proposed STATCOM project's objective is to ensure reliable supply of energy at the least cost. Its implementation is in line with the tenets of the energy policy and will 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"> <li>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.</li> <li>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.</li> </ul> <p><i>The proposed STATCOM project will ensure gender concerns are mainstreamed into the planning and implementation of the project to ensure that the needs and interests of each gender are addressed. Specifically, men, women and youth will be accorded equal opportunity to participate in the proposed project from planning to implementation.</i></p>
Kenya National Youth Development Policy (2019)	<ul style="list-style-type: none"> <li>The Youth policy provides for Youth inclusion in the different sectors to identify specific Youth issues and how to address and include them.</li> <li>Article 260 of Kenya's Constitution defines a Youth as a person aged between eighteen (18) years and thirty-four (34) years.</li> </ul> <p><i>The proposed STATCOM project will identify the needs and concerns of youth and include their views. Public participation was youth sensitive and ensured the groups were well represented. The youth will be considered for appropriate opportunities during project implementation.</i></p>
National Policy on Older Persons and Ageing, 2009	<ul style="list-style-type: none"> <li>Older people are often discriminated against and neglected. They are also prone to risks as are children, women, youth and People Living with Disabilities (PLWDs).</li> <li>The policy aims to facilitate the integration and mainstreaming of the needs and concerns of older persons in national development.</li> <li>The policy, among other issues, emphasizes social protection in old age through either non-contributory benefit focused on reducing poverty and vulnerability, or contributory benefits aimed at maintaining the income of individuals.</li> </ul> <p><i>The national policy for older persons and ageing lays the basis for the intervention and involvement of the elderly in development matters. The proposed STATCOM project will not lead to the displacements of elderly persons, as the project will be implemented fully in the existing Rabai Sub Station land.</i></p>

«	Key areas of application
Sessional Paper No. 2 of May 2006 on Gender Equality and Development	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ It also recognizes that development initiatives impact differently on men and women and in turn women and men impact differently on development process.</li> </ul> <p><i>The proposed STATCOM project will ensure gender equality concerns are mainstreamed into the development and in consideration of opportunities provided during construction phases.</i></p>
HIV/AIDS prevention and control Policy of 2009	<ul style="list-style-type: none"> <li>▪ The policy identifies HIV/AIDS as a global crisis that constitutes one of the most formidable challenges to development and social progress.</li> <li>▪ 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.</li> </ul> <p><i>Due to the influx workers who will be involved in the proposed project and the associated social issues with projects of such scale, HIV/AIDS has been considered as one of the proposed impacts, hence adequate mitigation measures are proposed to that effect. Notably, KETRACO, through the project contractor, shall implement mitigation measures to curb the spread of HIV/AIDS within the work and camp sites through Information, Education and Communication (IEC) activities, provision of condoms, develop partnerships with local healthy testing centers and counselling for community and project workers.</i></p>
National Forest Policy, 2014	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ The Policy aim to enhance management of forest resources for conservation of soil, water biodiversity and environmental stability.</li> </ul> <p><i>The proposed STATCOM project will not be situated within a forest ecosystem. It is expected that there will be no impact on forest ecosystems within the area. The proponent will ensure responsible sourcing of wooden construction material through licensed loggers in collaboration with Kenya forest Service (KFS) where need arises during construction.</i></p>
National Water Policy, 2012	<ul style="list-style-type: none"> <li>▪ 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).</li> <li>▪ The Policy is built on the premises of Integrated Water Resources Management (IWRM). The Policy aims to guide the development of strategies for water management and utilization by water sector stakeholders.</li> <li>▪ This policy recognizes the great expectation of population regarding access to freshwater supplies and use for domestic, livestock, agriculture, and other production purposes.</li> </ul> <p><i>It is therefore expected that the proposed STATCOM project will ensure adequate protection of water resources for population access through careful utilization of water resources during construction and operation phases of the project.</i></p>
The National Climate Change Response Strategy (NCCRS), 2010	<ul style="list-style-type: none"> <li>▪ 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 requirements; enhancing research and development as well as technology development and transfer in areas that respond to climate change, among many others.</li> </ul> <p><i>KETRACO will 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, ,for example, structures that can</i></p>



« Key areas of application	
	<i>withstand highly corrosive salty air coupled with humid conditions prevalent in the coastal belt.</i>
The National Biodiversity Strategy, and Action Plan (NBSAP) 2019-2030	<ul style="list-style-type: none"> <li>▪ NBSAP was formulated to enable Kenya address national and international commitments defined in Article 6 of the Convention on Biological Diversity (CBD).</li> <li>▪ 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.</li> </ul> <p><i>KETRACO will ensure the proposed project objectives are in line with the strategy to conserve Kenya's biodiversity; and to sustainably use its components.</i></p>
Least Cost Power Development Plan, 2021-2030	<ul style="list-style-type: none"> <li>▪ The 10-year Least Cost Power Generation plan (LCPDP) covering the period 2021-2030 is derived from a long term 20 year rolling plan covering the period 2020-2040. It integrates Feed-In-Tariff Policy approvals and provides a focus on the national Government Bottom-up Transformation Agenda and undertakes for the post Covid-19 development support program in collaboration with development partners.</li> <li>▪ The report covers a comprehensive load forecast, generation plan, Ancillary service requirements and Tariff evolution.</li> <li>▪ The main objective of the plan and its update (from 2021 -2030) is to consider 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.</li> <li>▪ 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.</li> </ul>
Kilifi County Integrated Development Plan, 2023-2027	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul> <p><i>It is envisioned that the STATCOM project will support Rabai's SS's overall objective of supplying quality and reliable electricity for the last mile Connectivity programme within Kilifi County. This is aimed at expanding the electricity infrastructure through the rural electrification programmes.</i></p>

#### 5.4 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 7- Summary of Kilifi County relevant legislations

Kilifi Laws and Regulations	Key areas of application
<b>The Kilifi County Environment (Regulation and Control) Act, 2016</b>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Part I Section 3 of the Act states its objectives to provide for the control of— <ul style="list-style-type: none"> <li>➢ Air pollution.</li> <li>➢ Noise pollution.</li> <li>➢ Public nuisances, including waste and disease-causing pests; and</li> <li>➢ Unregulated outdoor advertising, to ensure a clean and healthy environment.</li> </ul> </li> <li>▪ 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 pollution, or emit any liquid, solid or gaseous</li> </ul>

Kilifi Laws and Regulations	Key areas of application
	<p>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 do 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"> <li>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.</li> </ul> <p><i>KETRACO will therefore ensure the proposed project aligns with the relevant provisions of the Act.</i></p>
<p><b>The Kilifi County Disaster Management Act, 2016</b></p>	<ul style="list-style-type: none"> <li>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.</li> <li>Part I section 3 of this act states its objectives as to — <ul style="list-style-type: none"> <li>➤ (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.</li> <li>➤ (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.</li> <li>➤ (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.</li> <li>➤ (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.</li> <li>➤ (e) to implement mechanisms to reduce risks and hazards that may cause, contribute to, or exacerbate disaster or emergency situations in the County; and</li> <li>➤ (f) to facilitate procedures aimed at implementing recovery activities in the aftermath of disasters and emergencies.</li> </ul> </li> </ul> <p>The Act describes County commitment on disaster management and highlights the establishment of a disaster management plan. It also highlights the need for coordination amongst various agencies.</p> <p><i>KETRACO will abide with the provisions of the Act in case of a disaster.</i></p>

## 5.5 Institutional Framework

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

Table 8- Relevant key National Institutions in Kenya

Institutions / Departments	Key Mandate
<p>The Ministry of Energy and Petroleum (MoEP)</p>	<ul style="list-style-type: none"> <li>The Ministry of Energy and Petroleum is responsible for energy policy and regulation of electricity and gas reticulation. The ministry's 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"> <li>• Hydro power Development.</li> <li>• Geothermal Exploration and Development.</li> </ul> </li> </ul>

Institutions / Departments	Key Mandate
	<ul style="list-style-type: none"> <li>• Oil and Gas Exploration.</li> <li>• Oil/Gas and Minerals sector capacity development.</li> <li>• Rural Electrification Programme.</li> <li>• Petroleum products, import/export/marketing policy Management.</li> <li>• Renewable Energy Promotion and Development</li> <li>• Energy Regulation, Security and Conservation.</li> </ul> <p><i>MoEP will be the coordinating agency for the proposed project.</i></p>
Ministry of Lands and Physical Planning (MOLPP)	<ul style="list-style-type: none"> <li>▪ The Directorate of Land is charged with the responsibility of ensuring efficient administration and sustainable management of the land resource in the country.</li> </ul> <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. KETRACO has installed 220 kV/132 kV s SS equipment within the existing Rabai 220/132 kV Substation land under KPLC ownership ( LR number: 27669/2) in which the proposed STATCOM project will be located. Therefore, no further acquisition and resettlement is envisioned as it relates to the proposed STATCOM project.</i></p>
Ministry of Environment and Natural Resource	<ul style="list-style-type: none"> <li>▪ 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).</li> </ul> <p><i>The proposed project is expected to align with the policies and programs of this Ministry notably the requirements of EMCA, 1999, its implementing regulatory Authority-NEMA, all which are enshrined within this Ministry.</i></p>
National Environmental Tribunal	<ul style="list-style-type: none"> <li>▪ The National Environment Tribunal (NET) created under Section 125 of EMCA, 1999 has the following functions: <ul style="list-style-type: none"> <li>➢ To hear and determine appeals from NEMA's decisions and other actions relating to issuance, revocation, or denial of Environmental Impact Assessment (EIA) licenses or amount of money to be paid under the Act and imposition of restoration orders.</li> <li>➢ To give direction to NEMA on any matter of complex nature referred to it by the Director General; and</li> <li>➢ 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.</li> </ul> </li> </ul>
National Environment Complaints Committee	<ul style="list-style-type: none"> <li>▪ The National Environment Complaints Committee performs the following functions: <ul style="list-style-type: none"> <li>➢ 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.</li> <li>➢ 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</li> <li>➢ To undertake public interest litigation on behalf of the citizens in environmental matters.</li> </ul> </li> </ul> <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>
National Environment Management Authority (NEMA)	<ul style="list-style-type: none"> <li>▪ The National Environment Management Authority (NEMA) exercises general supervision and co-ordination of all matters relating to the environment.</li> <li>▪ NEMA is also the principal instrument of the government in the implementation of all policies relating to the environment.</li> <li>▪ NEMA is also the Designated National Authority for certain Multilateral Environmental Agreements.</li> </ul> <p><i>The Authority will review this ESIA report for the proposed project, visit the project sites to verify information provided in the report and issue EIA license if it considers that all</i></p>



Institutions / Departments	Key Mandate
	<i>the issues relevant to proposed projects have been identified and mitigation measures to manage them have been proposed.</i>
Kilifi County Government	<ul style="list-style-type: none"> <li>▪ The proposed project is within the jurisdiction of Kilifi County Government</li> <li>▪ The County government are expected to enact legislation as well as collaborate on physical planning.</li> </ul> <p><i>Liaison with Kilifi County government authorities will be required for functions that fall under their jurisdiction.</i></p>
The County and Sub-County Environment Committees	<ul style="list-style-type: none"> <li>▪ Governors shall by the 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 arranged.</li> <li>▪ The County and Sub-County Environmental Committees contribute to decentralization of activities undertaken by NEMA.</li> <li>▪ 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 reports of proposed projects.</li> </ul> <p><i>Since the proposed project is located within Kilifi County, liaison with Kilifi County government authorities and the relevant committee members will be required for functions that fall under their jurisdiction. The involvement of the relevant Environment committee officials in Kilifi County and Rabai Sub-County during the project planning and ESIA review stages is paramount.</i></p>
Kenya Forest Service (KFS),	<ul style="list-style-type: none"> <li>▪ Kenya Forest Service is a corporate body established under the Forest Conservation and Management Act no 34 of 2016.</li> <li>▪ 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 forest resources for the socioeconomic development of the country and for connected purposes."</li> </ul> <p><i>No forest will be impacted during the implementation of this project. However, KFS will play a critical role on providing information as a key stakeholder where wooden products utilization during construction is concerned. 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"> <li>▪ 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.</li> <li>▪ KWS undertakes conservation and management of wildlife resources across all protected areas systems in collaboration with stakeholders.</li> </ul> <p><i>KWS will be key on wildlife management found within the proposed STATCOM project area. It is envisioned that no critical wildlife habitats will be impacted by the proposed project.</i></p>
Water Resources Authority (WRA)	<ul style="list-style-type: none"> <li>▪ Water Resources Authority (WRA) is a state corporation established under Section 11 of the Water Act, 2016.</li> <li>▪ 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.</li> <li>▪ The Water Act 2016 makes extensive provisions on the Authority's role in regulating the use and management of water resources.</li> <li>▪ 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).</li> </ul> <p><i>WRA will provide the necessary water use permits where required for the proposed STATCOM project.</i></p>
The Directorate of Occupational Safety and Health Services (DOSHS)	<ul style="list-style-type: none"> <li>▪ 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.</li> </ul>

Institutions / Departments	Key Mandate
	<ul style="list-style-type: none"> <li>An 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.</li> </ul> <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>
National Museums of Kenya (NMK)	<ul style="list-style-type: none"> <li>The National Museums of Kenya is a state corporation that manages museums, sites, and monuments in Kenya. It carries heritage research, and has expertise in subjects ranging from paleontology, ethnography and biodiversity research and conservation.</li> </ul> <p><i>NMK will be a key institution to be engaged in the event of discovery of any important cultural heritage sites and/or archaeological sites within the project land. KETRACO and contractor shall ensure training of direct and project workers on identification of archeological objects.</i></p> <p><i>If there is a chance encounter of archaeological material during construction, the developed Chance Find Procedures (Annex 9) shall be triggered which include stopping construction works at the site, confining the site using tapes or local materials, and informing relevant authorities including local administration officers and the National Museums of Kenya (NMK) for further direction.</i></p>

## 5.6 Administrative Framework

The Project will be a Financed by World Bank Group. The Republic of Kenya will be the Borrower, and the Ministry of Energy and Petroleum (MoEP) will be the Executing Agency. KETRACO will serve as the implementing agency.

### 5.6.1 Kenya Electricity Transmission Company

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 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 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.

#### 5.6.1.1 Project Implementation Team

KETRACO has established a dedicated Project Implementation Team (PIT) to implement the Project. KETRACO will at all times remain responsible for the overall performance of all ESMPs. KETRACO will also be responsible for the implementation of the Environmental and Social Management Framework (ESMF).

#### 5.6.1.2 Roles and Responsibilities of KETRACO Environmental and Social Safeguards Units

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 the ESIA, ESMPs as appropriate for review and clearance by the Bank.
- Prior review and coordination for clearance of project ESIA and ESMPs by World Bank and NEMA.
- Monitoring of ESMP implementation, including monitoring of mitigation measures, and monitoring of contractors' environmental and social performance.
- Training project staff, implementing partners, and contractors.
- Preparation of quarterly reports summarizing monitoring results, to be included in the Project's reports.
- Monthly Reporting to World and NEMA Providing E&S monitoring oversight.
- Ensuring compliance to the World Bank's Environmental and Social standards.
- Ensuring availability of adequate E&S resources to supervise and enforce compliance.
- Managing the Grievance redress mechanism and Stakeholder engagement plan.
- Reviewing Contractor Management Plans (especially the Labor Management Plan)
- Conduct independent E&S audits by appointing independent experts where required.
- Hold responsibility to ensure adequate and meaningful consultation with all identified stakeholders.

KETRACO safety unit has developed tools and handbooks to guide contractors in safe work management. The safety unit's 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 address contractor behavior in relation to community resources and assets.

The KETRACO E&S department is well trained and capable of ensuring monitoring of the project. 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.

Contractors will be expected to develop their own ESMP which identifies their specific obligations and activities and correlates these with the work schedule. This should be approved by the KETRACO safeguards teams. 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 i.e. environmental safeguards officer and a Sociologist respectively.

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 in the implementation of contractors ESMP and ESMnP. The trained E&S team should be responsible for ensuring full implementation of the contractor's ESMP and ESMnP.

#### 5.6.2 The World Bank's Environmental and Social Framework (ESF)

The World Bank's Environmental and Social Framework (ESF) sets out the World Bank's commitment to sustainable development through:

1. *A Vision for Sustainable development,*
2. *The World Bank's Environmental and Social Policy for investment project Financing and*
3. *The Environmental and Social Standards*

The Environmental and Social Standards (ESSs) set out in the ESF outline the requirements relating to the identification and assessment of environmental and social risks and impacts associated with projects supported by the Bank through Investment Project Financing.

The Bank believes that the application of these standards, by focusing on the identification and management of environmental and social risks, will support Borrowers in their goal to reduce poverty

and increase prosperity in a sustainable manner for the benefit of the environment and their citizens. The standards will:

- a) support Borrowers in achieving good international practice relating to environmental and social sustainability.
- b) assist Borrowers in fulfilling their national and international environmental and social obligations.
- c) enhance nondiscrimination, transparency, participation, accountability, and governance; and
- d) enhance the sustainable development outcomes of projects through ongoing stakeholder engagement.

(Adopted from: *ESF overview, Environmental and Social Framework, 2017*)

As per the World Bank's Environmental and Social Framework, the project is classified as 'Substantial risk'. Therefore, an Environmental and Social assessment is required, in accordance with National laws and any requirements of the ESS that will be triggered by the project.

All World Bank Ten (10) E&S standards are listed in table 10 with descriptions for those applicable to the Project: An analysis of WB's ESS against the proposed project indicates that 7 out of 10 World Bank's ESSs are applicable. Their applicability and relevance to the proposed project are discussed in table 10.

Table 9- An analysis of applicable World Bank Environmental and Social Standards and relevance

S N	Policy	Applicable	Relevance
1.	ESS1- Assessment and Management of Environmental and Social Risks and Impacts.	Yes  Environmental and Social Standard ESS1 applies to all projects for which Bank Investment Project Financing is sought. Annex 1 of this standard sets forth an indicative outline of the ESIA report.	<p>ESS1 sets out the Borrower's responsibilities for environmental and social risks and impacts associated with the Bank through Investment Project Financing, in order to achieve outcomes consistent with the Environmental and Social Framework.</p> <p>ESS1 establishes the importance of:</p> <ul style="list-style-type: none"> <li>(a) the Borrower's existing environmental and social impacts of the project.</li> <li>(b) an integrated environmental and social assessment of the project.</li> <li>(c) effective community engagement through consultation, and effective feedback; and</li> <li>(d) management of environmental and social risks and impacts throughout the project life cycle.</li> </ul> <p>The Bank requires that all environmental and social impacts be managed as part of the environmental and social assessment and management plan. It requires the undertaking of stakeholder engagement and consultation in line with the requirements of ESS 10. In addition, the Borrower is required to develop an Environmental and Social Commitment plan (ESCP) as well as conduct monitoring and report on the E&amp;S performance.</p> <p><i>The requirements of the standard are like those of the Sustainable Development Goals. Most of the responses to this report, by evaluating the impact of the project on the legislative framework and, conducting meaningful consultation and mitigation measures for the potential impacts identified.</i></p>
2.	ESS2- Labor and working conditions	Yes	<p>ESS2 recognizes the importance of employment creation, poverty reduction and inclusive economic growth, and the need to manage relationships and enhance the development of the project fairly and providing safe and healthy working conditions. It includes:</p> <ul style="list-style-type: none"> <li>a) To promote safety and health at work.</li> <li>b) To promote fair treatment, nondiscrimination and equal opportunity.</li> <li>c) To protect project workers, including vulnerable groups, such as women, disabilities, children (of working age, in accordance with national law), contracted workers, community workers and others.</li> <li>d) To prevent the use of all forms of forced labor.</li> <li>e) To support the principles of freedom of association and collective bargaining for workers in a manner consistent with national law.</li> <li>f) To provide project workers with accessible and safe grievance mechanisms.</li> </ul> <p><i>This standard is relevant as the STATCOM project involves the employment of laborers throughout its project cycle. During the implementation of the STATCOM Project, the following measures will be taken:</i></p> <ul style="list-style-type: none"> <li>• Through its contractor, will engage contractors to employ local laborers. Local communities will be given preference for casual work.</li> <li>• Will designate a multidisciplinary PIT who will monitor and manage the laborers.</li> <li>• Minors and children will NOT be engaged on the project.</li> <li>• Ensure full implementation of the developed labor management plan.</li> </ul>

S N	Policy	Applicable	Relevance
3.	ESS3- Resource Efficiency and Pollution Prevention and Management	Yes  The STATCOM Project will utilize resources such as energy and water during the construction and operation phase. Pollutants such as solid and liquid waste will be generated during the construction, operation, and decommissioning phases. In addition, air pollutants such as noise, dust and exhaust emissions are expected to be generated more so during the construction phases.	This ESS sets out the requirements to address resource management throughout the project life cycle. The ESS3 objectives are: <ul style="list-style-type: none"> <li>• To promote the sustainable use of resources</li> <li>• To avoid or minimize adverse impacts on human health or minimizing pollution from project activities</li> <li>• To avoid or minimize project-related emissions of pollutants.</li> <li>• To avoid or minimize generation of hazardous waste</li> </ul>
4.	ESS4- Community Health and Safety	Yes  The surrounding community have been identified as sensitive receptors of project related impacts such as noise and dust pollutants, increased traffic, influx of workers in the area and the resultant disputes and conflicts that may arise.	ESS4 recognizes that project activities, equipment, and exposure to risks and impacts. ESS4 addresses the health on project-affected communities and the corresponding measures to minimize such risks and impacts, with particular emphasis on particular circumstances, may be vulnerable. The ESS4 objectives are to: <ul style="list-style-type: none"> <li>• To anticipate and avoid adverse impacts on communities during the project life cycle under various circumstances.</li> <li>• To promote quality and safety, and consider the design and construction of infrastructure, in the project area.</li> <li>• To avoid or minimize community exposure to noise, diseases, and hazardous materials.</li> <li>• To have in place effective measures to address the health and safety of the community.</li> <li>• To ensure that the safeguarding of personnel and the community that avoids or minimizes risks to the project.</li> </ul>
5.	ESS 5-Land Acquisition, Restrictions on Land use and involuntary resettlement	No  The project will not involve acquisition of easements, as well as land for ancillary facilities. The STATCOM Project will be implemented within the existing Rabai 220 kV/ 132 kV SS which has undergone considerable development (brownfield)	The objective of this standard is: <ul style="list-style-type: none"> <li>• To avoid involuntary resettlement or, where unavoidable, to minimize resettlement by exploring project design alternatives.</li> <li>• To avoid forced eviction.</li> <li>• To mitigate unavoidable adverse social and economic impacts and restrictions on land use by: <ul style="list-style-type: none"> <li>○ providing timely compensation for lost assets</li> <li>○ assisting displaced persons in their livelihoods and living standards, in order to reach or exceed levels prevailing prior to the beginning of the project.</li> </ul> </li> <li>• To improve living conditions of poor or vulnerable groups through provision of adequate housing, access to land tenure.</li> <li>• To conceive and execute resettlement activities providing sufficient investment resources to the project, as the nature of the project requires.</li> <li>• To ensure that resettlement activities are preceded by full disclosure of information, meaningful consultation with those affected.</li> </ul> <p><i>This standard will not be triggered as no relocation of assets, loss of income sources or means of livelihoods are expected from the STATCOM project. The proposed project will be implemented within the existing 220 kV/132 kV SS owned by KPLC (LR number 2) and development of high voltage transmission infrastructure.</i></p>



S	Policy	Applicable	Relevance
N			
6.	ESS6- Biodiversity Conservation and Sustainable Management of living Natural Resources	Yes  The projects baseline assessment took into consideration this standard's requirements. No critical or natural habitat was observed within the project site i.e., Rabai 220/132 kV Ss or its environs. The site can be classified as a 'modified' habitat.	ESS6 recognizes the importance of maintaining corridors, forests, and the biodiversity they support. The specific objectives are: <ul style="list-style-type: none"> <li>○ To protect and conserve biodiversity and habitats</li> <li>○ To apply the mitigation hierarchy and the implementation of projects that could have a negative impact</li> <li>○ To promote the sustainable management of natural resources</li> <li>○ To support livelihoods of local communities through inclusive economic development, through conservation needs and development priorities</li> </ul> <i>The requirements of this standard were observed during the assessment of the ESIA study. No natural or critical habitat was found on the SS land. In addition, the ESIA team engaged several local communities to incorporate their concerns and views as part of the assessment area.</i>
7.	ESS7- Indigenous Peoples/ Sub-Saharan African Historically Underserved Traditional Local communities.	No  There are no Indigenous persons found within or in the environs of the project site. The project site is not on indigenous land nor have a designated cultural heritage status (tangible or intangible) linked to an indigenous community as a whole	
8.	ESS8- Cultural Heritage	Yes  The specific project site is not categorized as community land or have any cultural heritage status (tangible or intangible). However, the project is in the vicinity of a historical site, with the establishment of the National Museums of Kenya- Ludwig Krapf Museum. For this reason, this ESS was triggered, and the relevant stakeholder engaged during the ESIA study. Chance finds procedures also form part of this ESIA report.	This ESS sets out general provisions on risks and impacts of project activities. The objectives are: <ul style="list-style-type: none"> <li>• To protect cultural heritage from the adverse impacts of project activities</li> <li>• To address cultural heritage as an integral part of project planning</li> <li>• To promote meaningful consultation with stakeholders</li> <li>• To promote the equitable sharing of benefits</li> </ul> It also spells out the chance finds procedure which will be followed when cultural heritage is encountered during project activities.  <i>Chance Find Procedures (Annex 9) shall be triggered when the project works at the site, confining the site using tapes or barriers, and consulting the authorities including local administration officers and the police for further direction and assessment of the find.</i>
9.	ESS9- Financial Intermediaries	No	Project activities do not involve financial intermediaries
10.	ESS10- Stakeholder Engagement and Information Disclosure	Yes  This standard is triggered and forms an integral component of the ESIA process and discussion in this report.	This ESS recognizes the importance of open and transparent communication with project stakeholders as an essential element of project implementation. Stakeholder engagement can improve the environment, enhance project acceptance, and make a significant contribution to the successful implementation. The specific objectives are: <ul style="list-style-type: none"> <li>• To establish a systematic approach to stakeholder identification, to identify stakeholders and build and maintain relationships with particular project-affected parties.</li> <li>• To assess the level of stakeholder interest and ensure that stakeholders' views to be considered in project planning and performance.</li> <li>• To promote and provide means for effective communication with affected parties throughout the project life cycle and to them.</li> <li>• To ensure that appropriate project information on potential impacts is disclosed to stakeholders in a timely and accessible manner.</li> </ul>



S	Policy	Applicable	Relevance
N			<p>appropriate manner and format.</p> <ul style="list-style-type: none"><li>• To provide project-affected parties with access to grievance mechanisms and grievances and allow Borrowers to respond to grievances.</li></ul> <p><i>This standard is consistent with the requirements laid out in the EMCA, 1999. In so doing this ESIA report has consulted with relevant stakeholders ( project affected persons as well as the community). An Engagement plan has also been annexed to this report.</i></p>

### 5.6.3 Alignment of WB and GOK Policies relevant to this ESIA.

Both the World Bank ESSs, 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. The Bank mandates the element of meaningful consultation which should be done on an ongoing basis as the nature of issues, impacts and opportunities evolves.
- iv. The World Bank's E&S framework stipulates different scales of ESIA for different categories of projects categorized as *High Risk, Substantial Risk, Moderate Risk or Low risk*. 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 Schedule 2. The principles underlying the categorization is aligned in the two documents.
- v. EMCA recognizes other sectorial laws while WB has ESSs for specific interests.
- vi. The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project which is consistent with the requirements of EMCA. Additionally, ESS10 requires the preparation of a stakeholder engagement plan ( SEP) which describes the timings and methods of engagement with stakeholders throughout the life cycle of the project.
- vii. Additionally, statutory annual environmental audits are required by EMCA.

In Kenya, it is a mandatory requirement under EMCA,1999 for all development projects (listed in Schedule Two) to be subjected to an EIA study. Following amendments of legal notice 150 amendments 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 project will require a full scale ESIA or not. Thus, under the Laws of Kenya, environmental assessment is fully mainstreamed in all development process consistent with World Bank ESF. 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 ESSs, individual projects are screened against each standard as part of the EIA Study.

### 5.6.4 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 STATCOM project 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 with the International Finance Corporation (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 STATCOM development or at the end of the project's lifecycle.

## 5.7 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.

### 5.7.1 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:

- Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits.
- Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya.
- Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources.
- Encourage public participation in the management, protection, and conservation of the environment.
- Protect genetic resources and biological diversity.
- Establish systems of environmental impact assessment, environmental audit and

monitoring of the environment.

- Eliminate processes and activities that are likely to endanger the environment; and
- Utilise the environment and natural resources for the benefit of the people of Kenya.

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.

Table 10- Relevant Kenyan laws and regulations

Laws and Regulations	Key areas of application	Permit / license Requirements
Environmental Management and Coordination Act (EMCA, 1999) and relevant amendments	<ul style="list-style-type: none"> <li>▪ EMCA, 1999 is the principal law in Kenya that governs the management, use and regulation of environmental resources including natural capital.</li> <li>▪ The law provides for several policy and institutional arrangements aimed at ensuring that Kenya's environmental resources are utilized in a sustainable and equitable manner.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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"> <li>➢ Environmental impact assessment</li> <li>➢ Environmental audit and monitoring</li> <li>➢ Environmental restoration orders, conservation orders, and easements.</li> </ul> </li> <li>▪ 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 Plans and monitoring and compliance plans among others.</li> <li>▪ Other aspects provided include Strategic Environmental Assessment, Standards and Quality Monitoring, and Environmental Impact assessment.</li> </ul> <p><i>Through EMCA, various regulations have also been gazetted which the proponent will abide to as discussed below;</i></p>	<ul style="list-style-type: none"> <li>▪ Obtain EIA License prior to commencement of the project. This ESIA report is a first step towards meeting this requirement</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
The Environmental Impact (Assessment and Auditing) Regulations, 2003 and (Amendment) Regulations, 2016 (L.N 149) & 2019 (L.N 32)	<ul style="list-style-type: none"> <li>Environmental Impact Assessment under EMCA 1999, is guided by the Environmental Impact Assessment (Assessment and Auditing) <i>Regulations of the year 2003, which is given under legal notice no. 101 and (Amendment) Regulations, 2016 (L.N 149) &amp; 2019 (L.N 32)</i></li> <li>The regulations stipulate the ways in which environmental impact assessment and audits should be conducted. The STACOM project is classified as medium risk project as per the second schedule of EMCA, amended 2019 that requires an Environmental Impact Assessment Study be undertaken to provide baseline information upon which subsequent environmental control audit shall be based.</li> <li>The EMCA 1999 requires that during the EIA process a proponent shall consult 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.</li> </ul> <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 commits to implementing the environmental management plan laid out in this report and any other conditions laid out by NEMA in the license conditions.</i></p>	<ul style="list-style-type: none"> <li>Undertake Annual Environmental Audit (EA) of the project during operation</li> </ul>
Environmental Management and Coordination (Water Quality) Regulations, 2006	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul> <p><i>The project proponent will 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,1999) .</i></p>	<ul style="list-style-type: none"> <li>Undertake Quarterly effluent discharge quality and quantity monitoring through sampling.</li> <li>Apply for an effluent discharge license (EDL) (for campsites)</li> </ul>
Environmental Management and Coordination (Waste Management) Regulations, 2006	<ul style="list-style-type: none"> <li>These Regulations are meant to streamline the handling, transportation, and disposal of various types of waste.</li> <li>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.</li> </ul> <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"> <li>Obtain waste transportation and disposal Permit or Contract a licensed waste transport and disposal company</li> </ul>
EMCA (Conservation of Biological Diversity and Resources, Access to	<ul style="list-style-type: none"> <li>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.</li> <li>In addition, a total of 467 lake and wetland habitats are estimated to cover 2.5% of the territory. In order to preserve</li> </ul>	<ul style="list-style-type: none"> <li>Obtain EIA License prior to commencement of the project since it may have an adverse impact on the ecosystem.</li> </ul>



Laws and Regulations	Key areas of application	Permit / license Requirements
Genetic Resources and Benefit Sharing) Regulations 2016	<p>the country's wildlife, about 8% of Kenya's land area is currently under protection.</p> <ul style="list-style-type: none"> <li>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; 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.</li> </ul>	
Environmental Management and Coordination (Noise and Excessive Vibration Pollution Control) Regulations, 2009	<ul style="list-style-type: none"> <li>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"> <li>➤ Time of the day;</li> <li>➤ Proximity to residential area;</li> <li>➤ Whether the noise is recurrent, intermittent, or constant;</li> <li>➤ The level and intensity of the noise;</li> <li>➤ Whether the noise has been enhanced in level or range by any type of electronic or mechanical means; and,</li> <li>➤ Whether the noise is subject to be controlled without unreasonable effort or expense to the person making the noise.</li> </ul> </li> <li>These regulations also relate noise to its vibration effects and seek to ensure that the level of noise causes no harmful vibrations. Any person intending to undertake activities in which noise is suspected to be injurious or endangering the comfort, repose, health or safety of others and the environment, must make an application to NEMA, and acquire a license.</li> </ul> <p><i>Noise is expected during the construction phase. Therefore, the contractor shall implement the provisions of the ESMP in ensuring noise reduction. In addition, he shall be required to adhere to the provisions of maximum permissible levels for construction sites.</i></p>	<ul style="list-style-type: none"> <li>Obtain Noise and Excessive Vibration permit</li> </ul>
Environmental Management and Coordination (Air Quality) Regulations, 2014	<ul style="list-style-type: none"> <li>The objective of this regulation is to provide for prevention, control, and abatement of air pollution to ensure clean and healthy ambient air.</li> <li>It provides for the establishment of emission standards for various sources, including mobile sources (e.g. motor vehicles).</li> <li>Emission limits for various areas and facilities have been set.</li> <li>The regulations provide the procedure for designating controlled areas, and the objectives of air quality management plans for these areas.</li> </ul> <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 the abatement of air pollution.</i></p>	<ul style="list-style-type: none"> <li>Conduct ambient air quality analysis of the generators as recommended under the third schedule of the regulations.</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
Building Code, 2000;	<ul style="list-style-type: none"> <li>▪ This law recognizes the county governments as the leading planning agencies. It compels potential developers to submit development applications for approval.</li> <li>▪ The county governments are hence empowered to approve or disapprove of any plans if they do or don't comply with the law, respectively.</li> <li>▪ Any developer who intends to erect a building must give the respective local authority a notice of inspection before the erection of the structure.</li> <li>▪ On completion of the structure, a notice of completion shall be issued by the local authority to facilitate final inspection and approval.</li> <li>▪ No person therefore shall occupy a building whose certificate of completion has not been issued by the county government.</li> </ul> <p><i>In the development of the project, the proponent will 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"> <li>▪ Obtain County approval of Building plans.</li> <li>▪ Obtain certificate of completion for buildings</li> </ul>
National Construction Authority Act, 2011	<ul style="list-style-type: none"> <li>▪ The National Construction Authority Act 2011 is an act of parliament that established the National Construction Authority (NCA), a state corporation that oversees and coordinates the development of the construction industry in Kenya. The act provides for the functions, powers, and structure of the NCA, as well as the registration and regulation of contractors, joint ventures, skilled workers, and construction site supervisors. The act also imposes a levy on construction works and establishes an appeals board to hear disputes arising from the NCA's decisions.</li> </ul> <p>Some of the main objectives of the act are to:</p> <ul style="list-style-type: none"> <li>▪ Promote and stimulate the development of the construction industry.</li> <li>▪ Establish and maintain a register of contractors in accordance with the classes of contract works.</li> <li>▪ Ensure quality assurance and compliance with standards in the construction industry.</li> <li>▪ Undertake or commission research into any matter relating to the construction industry.</li> <li>▪ Advise the government on matters relating to the construction industry.</li> <li>▪ Provide training, consultancy, and advisory services to contractors and other stakeholders in the construction industry.</li> <li>▪ Facilitate the export of construction services.</li> <li>▪ The act also empowers the NCA to make regulations for the better carrying out of its functions. Some of the regulations that have been made under the act are:</li> <li>▪ The National Construction Authority Regulations, 2014, which provide for the registration of contractors, joint ventures, skilled workers, and construction site supervisors, as well as the collection and payment of construction levy and enforcement measures.</li> <li>▪ The National Construction Authority (Accreditation of Foreign Contractors) Regulations, 2017, which provide for the criteria and procedure for accrediting foreign contractors who wish to undertake construction works in Kenya.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Renewed and up-to-date Certificate of registration (contractor/subcontractors)</li> <li>▪ Obtain engaged Contractor's/ subcontractors valid practicing licenses</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
	<p><i>The act is a key legal instrument that governs the construction industry in Kenya and aims to ensure its growth, sustainability, and quality. KETRACO will ensure contractors, local and foreign, engaged for the implementation of the STATCOM project comply with the requirements of this Act.</i></p>	
<p>Energy Act, 2019;</p>	<ul style="list-style-type: none"> <li>▪ 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</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ Article 193 gives the County Governments power to ensure efficient use of energy and its conservation.</li> <li>▪ Article 148 highlights that a person who wishes to carry out electrical installation work must be licensed as an electrical contractor by the Authority.</li> </ul> <p><i>It is envisioned that no land acquisition will be carried out for the proposed project land. All electrical works within the STATCOM project will be carried out by qualified and licensed electricians.</i></p>	<ul style="list-style-type: none"> <li>▪ Obtain Permit and License to carry out electrical installation work (for contractor)</li> <li>▪ Ensure electrical workers have a certificate for electrical works.</li> </ul>
<p>Forest Conservation and Management Act, No. 34 of 2016;</p>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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</li> </ul>	

Laws and Regulations	Key areas of application	Permit / license Requirements
	<p>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.</p> <ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> </ul> <p><i>The proposed STATCOM project will be carried out within the existing Rabai SS. No forested habitat will be impacted by the proposed project.</i></p>	
Kenya Roads Act, 2007;	<ul style="list-style-type: none"> <li>▪ This is an Act of Parliament that provided for the establishment of Kenya Road Agencies i.e. Kenya National Highways Authority (KeNHA), the Kenya Urban Roads Authority (KURA) and the Kenya Rural Roads Authority (KeRRA) and provided powers and functions of the authorities.</li> <li>▪ The Rural Roads Authority has the responsibility for the management, development, rehabilitation, and maintenance of rural roads.</li> </ul> <p>Article 49 of the act requires written permission to be obtained for construction or erection of any structures or other thing on, over, and below roads the surface of a road reserve.</p> <ul style="list-style-type: none"> <li>▪ 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.</li> </ul> <p><i>The existing road to the Rabai SS will also act as the primary access to the STATCOM project site. The various roads Authorities will be key stakeholders in the development of the project and most important during construction phases in the event of any additional road access requirements to the project site.</i></p>	
The Land Registration Act, 2012	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ The act requires proper marking and maintenance of boundaries.</li> <li>▪ 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.</li> <li>▪ 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 boundaries, pursuant to the requirements of any written law.</li> </ul> <p><i>The proposed project will be carried out within the existing Rabai SS. No land acquisition will be made for the proposed STATCOM project.</i></p>	

Laws and Regulations	Key areas of application	Permit / license Requirements
The Land Act, 2012; and The Land Laws (Amendment) Act, 2016	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul> <p><i>The proposed project will be carried out within the existing Rabai SS. No land acquisition will be made for the proposed STATCOM project.</i></p>	
National Land Commission Act, No. 5 of 2012;	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> </ul> <p><i>The proposed project will be carried out within the existing Rabai SS. No land acquisition will be made for the proposed STATCOM project.</i></p>	<ul style="list-style-type: none"> <li>▪</li> </ul>
The Valuers Act cap 532, 1985	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ The Act also provides the relevant regulations and guidelines in the undertaking of the valuation works.</li> </ul> <p><i>The proposed project will be carried out within the existing Rabai SS. No land acquisition or valuation will be made for the proposed STATCOM project.</i></p>	<ul style="list-style-type: none"> <li>▪</li> </ul>



Laws and Regulations	Key areas of application	Permit / license Requirements
Occupational Safety and Health Act, No. 15 of 2007;	<ul style="list-style-type: none"> <li>▪ The Occupational Safety and Health Act 2007 applies to all workplaces where any person is at work, whether temporarily or permanently.</li> <li>▪ 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.</li> <li>▪ Section (3) Every occupier shall carry out appropriate risk assessments in relation to the safety and health of employed and, on the basis of these results, adopt preventive and protective measures.</li> <li>▪ Section 9.(1) Every occupier shall establish a safety and health committee at the workplace in accordance with OSH Committee regulations.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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.</li> <li>▪ 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</li> </ul> <p><i>The proponent will ensure 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 workers from work-related injuries or other health hazards.</i></p>	<ul style="list-style-type: none"> <li>▪ Obtain Registration of Workplace Certificate for workplaces (Campsites, contractor offices)</li> <li>▪ Undertake Annual Safety and Health Audit</li> <li>▪ Establish a Safety and Health Committee</li> <li>▪ Undertake appropriate risk assessment of the Workplace</li> </ul>
Penal Code Act (Cap 63);	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Under this code, any person who for trade or otherwise makes a 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.</li> </ul> <p><i>The proponent, through the contractor shall ensure that emissions are controlled during the construction phase of the project to avoid interference on the health of the neighboring local communities and the workers.</i></p>	-

Laws and Regulations	Key areas of application	Permit / license Requirements
Physical and Land Use Planning Act, 2019;	<ul style="list-style-type: none"> <li>▪ The Physical and Land Use Planning Act 2019 provides for the preparation and implementation of physical development plans.</li> <li>▪ 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 wayleaves; siting of base transmission station, power generation Plants, etc.</li> <li>▪ 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.</li> </ul> <p><i>The proponent and contractors of the proposed STATCOM project shall ensure compliance with the provisions of the act on land use planning. Public participation has been conducted to ensure the views of stakeholders have been gathered and incorporated in the planning process.</i></p>	<ul style="list-style-type: none"> <li>▪ Subject the project to environmental and social impact assessment – issuance of an EIA license.</li> </ul>
Public Health Act (Cap 242);	<ul style="list-style-type: none"> <li>▪ The Public Health Act (Chapter 242) is an Act of Parliament that provides for securing and maintaining good health of citizens.</li> <li>▪ The Act contains directives that are focused on ensuring the protection of human health. There are provisions within the Act that deal with water, air, and noise quality as they pertain to human health.</li> <li>▪ An environmental nuisance includes the emission of wastewater, gases and smoke which could be regarded as injurious to health.</li> <li>▪ The owner and/or occupier of premises responsible for such nuisances are liable to prosecution under the Act.</li> </ul> <p><i>The construction of the proposed STATCOM project will ensure dust and noise is kept at the required levels to ensure minimal impact on the neighboring community.</i></p> <p><i>The contractor will ensure that water pollution is controlled and does not affect the residents.</i></p>	<ul style="list-style-type: none"> <li>▪ -</li> </ul>
Climate Change Act, No. 11 of 2016;	<ul style="list-style-type: none"> <li>▪ The Act provides 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.</li> <li>▪ 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.</li> <li>▪ The Act should be applied in all sectors of the economy by the national and county governments to— <ul style="list-style-type: none"> <li>➢ Mainstream climate change responses into development planning, decision making and implementation.</li> <li>➢ Build resilience and enhance adaptive capacity to the impacts of climate change.</li> <li>➢ Mainstream the principle of sustainable development into the planning for and decision making on climate change response; and</li> <li>➢ Integrate climate change into the exercise of power and functions of all levels of governance, and to enhance cooperative climate.</li> </ul> </li> </ul> <p><i>To ensure installation of climate resilient infrastructure, the proposed project will ensure that infrastructure design is climate-proof over its lifespan and undertaken as per provisions of the act specifically on planning and implementation stages. In addition, the STATCOM plant</i></p>	<ul style="list-style-type: none"> <li>▪ -</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
	<i>equipment will not produce greenhouse gases (GHG) during its operation.</i>	
County Governments Act, No. 17 of 2012; together with its Amendment Act, 2016	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ This Act vests responsibility upon the County Governments in planning development projects within their areas of jurisdiction be it projects of importance to the county government or those of national importance.</li> <li>▪ Section 102 of the Act provides the principles of planning and development facilitation which include integration of national values in county planning, protecting 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.</li> <li>▪ 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.</li> <li>▪ Section 113 of the Act makes public participation in County planning processes compulsory.</li> <li>▪ Section 114 and 115 indicate and give guidelines in planning projects of national significance and instill the aspect of public participation in every aspect of the planning process through that: clear strategic environmental assessments; clear environmental impact assessment reports; expected development outcomes; and development options and their cost implications.</li> <li>▪ 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.</li> </ul> <p><i>In the execution of the proposed project, the County Government of Kilifi and notably Rabai sub county forms a key stakeholder in project planning in ensuring equal allocation of the resource in question and ensuring public participation.</i></p>	<ul style="list-style-type: none"> <li>▪ -</li> </ul>
Employment Act, No 11, 2007;	<ul style="list-style-type: none"> <li>▪ The Employment Act, 2007 defines the fundamental rights of employees including the basic conditions of employment of workers. It also regulates the employment of children.</li> </ul> <p><i>The proponent through the contractor shall engage casual, and semi-skilled labor from the neighboring community in an effort to boost employment within the local area.</i></p> <p><i>The basic conditions of employees will be observed to avoid unnecessary conflicts during the construction work. The Contractor shall pay the entire amount of the wages earned by or payable to the workers. Payment of such wages should be made at the end of a working day, week or month (depending on the contractual agreement) 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> <p><i>No employment for anyone under the age of 18 should be done. All persons seeking employment (contractor, subcontractor) should be required to provide a national identity card for age verification. In addition, measures to ensure indirect involvement of children and minors such as vending, petty trade around the work sites, loading and offloading of</i></p>	<ul style="list-style-type: none"> <li>▪ Ensure Statutory deductions without delay to appropriate government agencies e.g. Kenya Revenue Authority, NSSF, NHIF</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
	<p><i>materials at source by primary suppliers etc. will be implemented. In conjunction with the local area administration, cases of children repeatedly observed near the work sites and not attending school shall be reported for investigation.</i></p> <p><i>The proponent and contractor shall 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.</i></p>	
Water Act, 2016;	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ The act highlights regulation of Water Rights and Works with Section 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;</li> <li>▪ Section 40 stipulates procedures for obtaining a water permit including the 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).</li> <li>▪ Section 55 highlights the abstraction of ground water. The Fourth Schedule has an effect with respect to the abstraction of ground water and respective works including application for a permit.</li> <li>▪ Consequently, the new law retained some and established other new institutional arrangements including. <ul style="list-style-type: none"> <li>➢ Ministry of Water and Irrigation as the sector coordinator,</li> <li>➢ Water Services Regulatory Board (WASREB) for regulation of water service providers,</li> <li>➢ Water Resources Regulatory Authority (WRA formerly WRMA) for water resource use regulation,</li> <li>➢ National Water Harvesting and Storage Authority for major water infrastructural development,</li> <li>➢ Water Tribunal for dispute resolution,</li> <li>➢ Water Sector Trust Fund for water services development towards the un-served and poor segments of society in peri-urban and rural areas,</li> <li>➢ Water Works Development Agencies to replace the Water Service Boards, and</li> <li>➢ Basin Water Resources Committees to replace Catchment Advisory Committees (CAACs)</li> </ul> </li> </ul> <p><i>The Act vests the 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 will be considered and adhered to.</i></p>	<ul style="list-style-type: none"> <li>▪ Apply for Water Extraction Permit</li> <li>▪ Obtain EIA license prior to digging boreholes</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
HIV and AIDS Prevention and Control Act, 2006;	<ul style="list-style-type: none"> <li>Section 3 of The Act indicated the purpose of the legislation including public awareness and rights to people living with HIV/AIDS.</li> </ul> <p><i>This Act's provisions then give the guidelines unto which the project shall follow in educating workers and staff and providing incentives to combat HIV/AIDs. The proposed project will 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> <p><i>Public awareness will be achieved through education, public campaigns at workplaces</i></p>	<ul style="list-style-type: none"> <li>-</li> </ul>
The Sexual Offences Act, 2006 and its amendment 2012	<ul style="list-style-type: none"> <li>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.</li> <li>The act emphasis on observing a standard work ethic to ensure persons from both genders are not subjected to sexual offences.</li> </ul> <p>The Act highlights key aspects within its provisions as follows;</p> <ul style="list-style-type: none"> <li>➤ Rape.</li> <li>➤ Attempted rape.</li> <li>➤ Sexual assault.</li> <li>➤ Compelled or induced indecent acts.</li> <li>➤ Acts which cause penetration or indecent acts are committed within the view of a child or person with mental disabilities.</li> <li>➤ Defilement.</li> <li>➤ Attempted defilement.</li> <li>➤ Gang rape.</li> <li>➤ Indecent act with child or adult.</li> <li>➤ Promotion of sexual offences with a child.</li> <li>➤ Child trafficking.</li> <li>➤ Child sex tourism.</li> <li>➤ Child prostitution.</li> <li>➤ Child pornography.</li> <li>➤ Exploitation of prostitution.</li> <li>➤ Trafficking for sexual exploitation.</li> <li>➤ Prostitution of persons with mental disabilities.</li> <li>➤ Incest by male persons.</li> <li>➤ Incest by female persons.</li> <li>➤ Sexual harassment.</li> <li>➤ Sexual offences relating to position of authority and persons in position of trust.</li> <li>➤ Sexual relationships which pre-date position of authority or trust.</li> <li>➤ Deliberate transmission of HIV or any other life threatening sexually transmitted disease.</li> <li>➤ Administering a substance with intent.</li> <li>➤ Distribution of substance by juristic persons.</li> <li>➤ Cultural and religious sexual offences.</li> <li>➤ Non-disclosure of conviction of sexual offences.</li> <li>➤ Vulnerable witnesses.</li> <li>➤ Vulnerable witnesses to be notified of protective measures.</li> <li>➤ Evidence of surrounding circumstances and impact of sexual offence.</li> </ul> <p><i>Ample working environment shall prevail in all workplaces in the project, to be enhanced through implementation of a Sexual Misconduct Policy.</i></p>	<ul style="list-style-type: none"> <li>-</li> </ul>



Laws and Regulations	Key areas of application	Permit / license Requirements
Alcoholic Drinks Control Act, 2010.	<ul style="list-style-type: none"> <li>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"> <li>To protect the health of individuals by providing a legal framework to control sale, production &amp; consumption of alcoholic drinks.</li> <li>To protect consumers of alcohol products from misleading inducements to use alcohol.</li> <li>To protect young people (those below 18 years of age) by restricting their access to alcoholic products</li> <li>To educate the public on the dangers of alcohol use (economic, social &amp; health)</li> <li>To protect the government by dealing with illicit trade</li> <li>To promote and provide treatment &amp; rehab programmes for the addicted.</li> <li>To promote research and dissemination of information especially of health risks</li> </ul> </li> </ul> <p><i>The proposed project shall be in the forefront to ensure the public, i.e. students, are informed and sensitized on the dangers of alcohol use (economic, social &amp; health) impacts. Workers' supervisors shall be required to ensure now workers enter the work site in case of intoxication.</i></p>	-
Persons with Disabilities Act, 2003;	<ul style="list-style-type: none"> <li>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.</li> <li>The act guarantees that: <ul style="list-style-type: none"> <li>No person shall deny a person with a disability access to opportunities for suitable employment.</li> <li>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.</li> <li>An employee with a disability shall be entitled to exemption from tax on all income accruing from his employment.</li> </ul> </li> </ul> <p><i>A person with a disability is entitled to exemptions with respect to exemptions and deductions as described in Schedule 42 subsection (2) of the act, among other provisions within this act that shall be complied with by all parties involved.</i></p>	
The National Gender and Equality Act, 2011	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul> <p><i>KETRCOA will ensure Gender mainstreaming in projects is done, ensuring that the concerns of women and men form an integral dimension of the project design, implementation, operation and the monitoring and evaluation, that women and men benefit equally, and that inequality is not perpetuated.</i></p>	
Protection of Traditional Knowledge and	<ul style="list-style-type: none"> <li>The Act of parliament provides a framework for the protection and promotion of traditional knowledge and</li> </ul>	

Laws and Regulations	Key areas of application	Permit / license Requirements
Cultural Expressions Act, 2016;	<p>cultural expressions which gives effect to Articles 11, 40 and 69(L) (c) of the Constitution.</p> <ul style="list-style-type: none"> <li>The Act requires a person who uses traditional knowledge or cultural expressions beyond its traditional context to 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.</li> <li>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.</li> </ul> <p><i>Based on this the proponent will ensure provisions of the act such as free prior and informed consultation of the locals is undertaken within the project cycle.</i></p>	
Work Injury Benefits Act, 2007;	<ul style="list-style-type: none"> <li>The Work Injury Compensation Benefit Act 2007 provides guideline for compensating employees on work-related injuries and diseases contracted in the course of employment.</li> <li>The Act also requires provision of compulsory insurance for all employees.</li> <li>The Act defines an employee as any worker on contract of service with employer.</li> </ul> <p><i>KETRACO in liaison with the Contractor will ensure that all workers contracted during the project implementation phase are provided with appropriate insurance covers so that they can be compensated in case of injury during work.</i></p>	<ul style="list-style-type: none"> <li>Provision of compulsory insurance for all employees</li> </ul>
National Museums and Heritage Act, No. 6 of 2006;	<ul style="list-style-type: none"> <li>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.</li> </ul> <p><i>The proposed project will ensure as per the National Museums Act; that any monuments and antiquities shall 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"> <li>-</li> </ul>
Wildlife Conservation and Management Act, No. 47 of 2013.	<ul style="list-style-type: none"> <li>The Wildlife and Conservation Act deals with the conservation and management of wildlife in Kenya.</li> <li>The Act provides that wildlife should be conserved so as to yield optimum returns in terms of cultural, aesthetic, scientific and economic benefits.</li> <li>The Act requires that full account be taken of the inter-relationship between wildlife conservation and land use.</li> <li>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.</li> </ul> <p><i>During construction of the proposed STATCOM project, the proponent will ensure wildlife is not affected negatively.</i></p>	<ul style="list-style-type: none"> <li>-</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
The Agriculture, Fisheries and Food Authority Act of 2013	<ul style="list-style-type: none"> <li>▪ 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 land, fish harvesting and (e) the use of land for agroforestry.</li> <li>▪ The Act requires the Authority in consultation with the county governments to promote the best practices among others.</li> <li>▪ Each county government is required to keep a register of land development orders and land preservation orders, which they may issue under this Act.</li> </ul> <p><i>The proposed project shall not be implemented within agricultural land. The existing Rabai SS has undergone significant development from previous power transmission lines' project. As such, the proponent through the implementation of the STATCOM project and the resulting boost in economic activities arising from the project will support the implementation of the agricultural activities in the project area.</i></p>	<ul style="list-style-type: none"> <li>▪ -</li> </ul>
The Traffic Act Cap 403	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ Part III of the act deals with Licensing of Vehicles with section 15 (1) noting that no person own or possess a motor vehicle or trailer, or use it on a road, unless such vehicle or trailer is licensed under the act.</li> <li>▪ Part IV of the act deals with - Driving Licenses 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 license, or a provisional license endorsed in respect of that class of vehicle.</li> </ul> <p><i>The Act also spells out conditions for the 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"> <li>▪ Motor vehicles and trailers to be licensed.</li> <li>▪ Drivers must hold Valid driving licenses.</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
Children's Act No. 12 of 2012	<ul style="list-style-type: none"> <li>▪ This Act of Parliament makes provision for parental responsibility, fostering, adoption, custody, maintenance, guardianship, care, and protection of children.</li> <li>▪ It makes provision for the administration of children's institutions; to give effect to the principles of the Convention on the Rights of the Child and the African Charter on the Rights and Welfare of the Child and for connected purposes.</li> <li>▪ This Act ensures every child shall be protected from economic exploitation and any work that is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.</li> <li>▪ In this Act child labour refers to any situation where a child provides labour in exchange for payment and includes               <ul style="list-style-type: none"> <li>▪ —(a) any situation where a child provides labour as an assistant to another person and his labor is deemed to be the labour of that other person for the purposes of payment;</li> <li>(b) any situation where a child's labour is used for gain by any individual or institution whether or not the child benefits directly or indirectly; and (c) any situation where there is in existence a contract for services where the party providing the services is a child whether the person using the services does so directly or by agent.</li> </ul> </li> </ul> <p>During construction and operation of the proposed STATCO project, KETRACO/Contractor will ensure no persons under the age of 18 years is employed at the construction/operation sites. All persons seeking employment (contractor, subcontractor) will be required to provide a national identity card for age verification. In addition, measures to ensure indirect involvement of children and minors such as vending/, petty trade around the work sites, loading and offloading of materials at source by primary suppliers etc. will be implemented. In conjunction with the local area administration, cases of children repeatedly observed near the work sites and not attending school shall be reported for investigation.</p>	<ul style="list-style-type: none"> <li>▪ Employees to provide National ID Cards at point of employment</li> </ul>
Employment Act No 11 of 2007 Revised 2021	<ul style="list-style-type: none"> <li>▪ An Act of Parliament to repeal the Employment Act, which declares and defines the fundamental rights of employees, to provide basic conditions of employment of employees, to regulate employment of children, and to provide for matters connected with the foregoing.</li> <li>▪ 4(1) No person shall use or assist any other person in recruiting, trafficking, or using forced labour.</li> <li>▪ 5(3) No employer shall discriminate directly or indirectly, against an employee or prospective employee or harass an employee or prospective employee— (a) on grounds of race, colour, sex, language, religion, political or other opinion, nationality, ethnic or social origin, disability, pregnancy, mental status or HIV status; (b) in respect of recruitment, training, promotion, terms and conditions of employment, termination of employment or other matters arising out of the employment.</li> <li>▪ Section 6 of the act prohibits any form of sexual harassment at the workplace.</li> <li>▪ 53 (1) Notwithstanding any provision of any written law, no person shall employ a child</li> </ul>	<ul style="list-style-type: none"> <li>▪ National ID for all employees</li> </ul>

Laws and Regulations	Key areas of application	Permit / license Requirements
	<i>There will be employment opportunities for skilled, unskilled, and semiskilled people during construction and operation phases of the proposed project. The contractor will be prohibited from using forced labour during project implementation. The contractor shall ensure there is no form of discrimination against any worker during construction phase of the project. Sexual harassment will be strongly prohibited and will be chargeable in a court of law. The contractor shall not use child labour (workers below 18 years).</i>	
Standards Act Chapter 496	<ul style="list-style-type: none"> <li>This Act of Parliament promotes the standardisation of the specification of commodities, and to provide for the standardisation of commodities and codes of practice; to establish a Kenya Bureau of Standards, to define its functions and provide for its management and control.</li> </ul> <p><i>Based on this, the proponent will ensure provisions of the act such as use of construction materials that meet the Kenya Bureau of Standards' Standardization and marks' requirements are adhered to.</i></p>	<ul style="list-style-type: none"> <li></li> </ul>
Land and Environment Court Act No 19 of 2011 Revision 2012	<ul style="list-style-type: none"> <li>An Act of Parliament to give effect to Article 162(2)(b) of the Constitution; to establish a superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to, land, and to make provision for its jurisdiction functions and powers, and for connected purposes.</li> </ul> <p><i>The principal objective of this Act is to enable the Court to facilitate the just, expeditious, proportionate, and accessible resolution of disputes governed by this Act.</i></p> <p><i>In the event of any arising disputes, requiring the intervention and mediation of this court on Land and Environmental affairs, KETRACO will ensure that provisions as made in this act are adhered to.</i></p>	<ul style="list-style-type: none"> <li></li> </ul>

## 5.8 Relevant Multilateral International Treaties

### 5.8.1 The Rio Declaration and Agenda 21

The Rio Declaration and Agenda 21, the action plan for the 21st century are two non- legally binding instruments adopted by the 1992 United Nations Conference on the Environment and Development (UNCED). While the Rio Declaration contains general principles and objectives, Agenda 21 contains detailed guidance on their practical implementation. Principle 4 of the Rio Declaration provides that to achieve sustainable development environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it. Principle 25 accentuates this by stating that peace, development, and environmental protection are interdependent and indivisible.

### 5.8.2 The World Commission on Environment and Development (The Brundtland Commission of 1987)

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 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. 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.

*The ESIA process and the preparation of this ESIA study report is in acknowledgment of the need to carry out sustainable development, a major tenant of the Rio declaration, Agenda 21 and the objectives of the Brundtland Commission of 1987. This ESIA study is cognizant of the need for the protection of the physical, biological, and social environments before, during and after the STATCOM project's implementation within Rabai location.*

### 5.8.3 United Nations Framework Convention on Climate Change (UNFCCC)

The United Nations Framework Convention on Climate Change provides the basis for concerted international action to mitigate climate change and to adapt to its impacts. Its provisions are far-sighted, innovative, and firmly embedded in the concept of sustainable development. With 189 Parties, the Convention has nearly a universal membership.

According to Article 2, the Convention's ultimate objective is "to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [originating in human activity] interference with the climate system". This objective is qualified in that it "should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner". In stating this objective, the Convention reflects concerns that the earth's climate system is threatened by a rise in atmospheric greenhouse gas (GHG) concentrations, which is caused by increased anthropogenic GHG emissions. The Convention does not state a limit for total anthropogenic GHG emissions which would have to be respected to reach the objective. Nor does it indicate the level of total GHG concentrations beyond which "dangerous anthropogenic interference with the climate system" would occur. Estimates of where these levels lie evolve continually with scientific advances and are complicated by the political need to consider the changing ability of societies to adapt to climate change. Another important factor is that stabilizing atmospheric concentrations of GHGs near current levels would require a steep reduction of current emissions. This is because, once emitted, GHGs remain in the atmosphere for a considerable length of time: carbon dioxide, for instance, stays in the climate system, on average, for a century or more.

*Renewable energy generation has become the inevitable development trend of the electric power industry. Since renewable energy generation is uncontrollable and its output is intermittent, its connection to the power transmission networks leads to many problems such as voltage fluctuation. The STATCOM project's development at Rabai 220/132 kV SS seeks to solve this by providing dynamic voltage stabilization. On one hand, this will facilitate the phase out of fossil fuel-based energy sources in the coastal region, which have been used to support power voltages during peak demand. On the other hand, it will also pave way for the seamless integration of intermittent renewable energy plants (wind and solar) currently in the developmental pipeline in the coastal region. All these contributes to the objectives of the UNFCCC in reducing GHG emissions in the earth's atmosphere.*

### 5.8.4 Convention on the rights of the Child

The Convention on the Rights of the Child is a human rights treaty that was adopted by the United Nations in 1989. The Convention recognizes that children are not just objects who belong to their parents or adults in training, but human beings and individuals with their own rights. The Convention defines a child as anyone under the age of 18 unless the relevant laws recognize an earlier age of majority. The Convention covers all aspects of a child's life and sets out the civil, political, economic, social and cultural rights that all children everywhere are entitled to. It also explains how adults and governments must work together to make sure all children can enjoy all their rights. The

Convention has 54 articles that cover different types of rights, such as:

- The right to life, survival and development
- The right to a name and a nationality
- The right to express their views and be heard
- The right to education, health care and nutrition
- The right to protection from violence, abuse and exploitation
- The right to play, rest and leisure
- The right to special care and assistance if they have a disability or are refugees
- The right to live in a family environment or alternative care
- The right to participate in cultural life and respect their identity

*During construction and operation of the proposed STATCO project, KETRACO/Contractor will ensure no persons under the age of 18 years is employed at the construction/operation sites. All persons seeking employment (contractor, subcontractor) will be required to provide a national identity card for age verification. In addition, measures to ensure indirect involvement of children and minors such as vending/, petty trade around the work sites, loading and offloading of materials at source by primary suppliers etc. will be implemented. In conjunction with the local area administration, cases of children repeatedly observed near the work sites and not attending school shall be reported for investigation.*

#### 5.8.5 Convention on the Rights of Persons with Disabilities (CRPD)

The Convention on the Rights of Persons with Disabilities (CRPD) is an international human rights treaty that aims to protect and promote the rights of persons with disabilities. It was adopted by the United Nations General Assembly in 2006 and entered into force in 2008. The CRPD is based on the principles of dignity, autonomy, inclusion, equality, and non-discrimination. It covers a wide range of civil, political, economic, social, and cultural rights that are relevant to persons with disabilities, such as accessibility, education, health, work, participation, and access to justice. The CRPD also has three optional protocols that address specific issues such as children with disabilities, involvement in armed conflict and communication of complaints.

The CRPD is a landmark treaty that recognizes the diversity and potential of persons with disabilities. It is a tool for advancing their human rights and well-being around the world. It also encourages cooperation and dialogue among states parties, civil society, international organizations, and other actors to ensure that persons with disabilities are fully included and respected in all aspects of society.

*During construction and operation of the proposed STATCO project, special consideration will be given for People living with disabilities (PLWDs).*

#### 5.8.6 Montreal Protocol

The Montreal Protocol is a global treaty that aims to protect the ozone layer by phasing out the production and consumption of substances that deplete it, such as chlorofluorocarbons (CFCs), halons, hydrochlorofluorocarbons (HCFCs), methyl bromide, and hydrofluorocarbons (HFCs).

The Montreal Protocol was adopted on 16 September 1987 and entered into force on 1 January 1989. It has been ratified by 198 countries, making it one of the most successful and widely supported environmental treaties in history. The Protocol has been amended and adjusted six times to reflect new scientific, technical, and economic developments. The most recent amendment, the Kigali Amendment, was adopted in 2016 and calls for the phase-down of HFCs, which are potent greenhouse gases that contribute to climate change.

The Montreal Protocol has achieved remarkable results in reducing the global consumption and production of ozone-depleting substances by over 99% since 1987 (UNEP). According to scientific assessments, the ozone layer is expected to recover to its pre-1980 levels by the middle of this century. The Protocol has also contributed to mitigating climate change by avoiding the emission of more than 135 billion tonnes of carbon dioxide equivalent gases. The Montreal Protocol is widely regarded as a model of international cooperation and environmental protection.

*Kenya ratified the Montreal Protocol on 15 September 1988 and became a party to it on 14 December 1988. Further, Kenya is one of the 136 parties that have ratified or acceded to the Kigali Amendment as of April 2020. By ratifying the Kigali Amendment, Kenya has agreed to limit its use of HFCs and to phase them down by more than 80 per cent over the next 30 years. KETRACO aims to contribute to this protocol as it carries out its mandate in power transmission and ensure energy access by use of low emission potential construction material and technology. The choice of STATCOM device, capacitor banks and transformer materials, oils and cooling systems to be installed at Rabai 220/132 kV substation will be done to ensure alignment with the tenets of the Montreal protocol.*

### 5.8.7 Stockholm Convention on POPs

The Stockholm Convention on Persistent Organic Pollutants (POPs) is a global treaty that aims to protect the environment and human health from the harmful effects of POPs. POPs are chemicals that persist in the environment, bioaccumulate in living organisms, and can travel long distances through air, water, and migratory animals. POPs can cause adverse effects such as cancer, reproductive disorders, immune system damage, and neurological problems.

The Stockholm Convention was signed on 22 May 2001 in Stockholm, Sweden, and entered into force on 17 May 2004. It has been ratified by 186 parties as of 2022. The Convention requires the parties to take measures to eliminate or reduce the production, use, release, and stockpiling of POPs. The Convention also establishes a scientific review process to identify and evaluate new POPs for possible inclusion in the treaty.

The Convention currently covers 30 chemicals, including 16 original POPs (also known as the "dirty dozen") and 14 additional POPs that were added later by amendments. Some of the POPs covered by the Convention are:

- DDT: a pesticide used to control malaria and other insect-borne diseases
- PCBs: industrial chemicals used in transformers, capacitors, and other electrical equipment
- Dioxins and furans: unintentional by-products of industrial processes such as waste incineration and metal smelting
- PFOS: a surfactant used in firefighting foams, textiles, and other products
- Endosulfan: an insecticide used on crops such as cotton, coffee, and tea

The Stockholm Convention is one of the most successful and widely supported environmental treaties in history. It has achieved significant progress in reducing the global production and use of POPs, as well as their presence in the environment and human body. The Convention has also contributed to enhancing cooperation and coordination among different stakeholders, such as governments, civil society, industry, academia, and international organizations. The Convention is a living instrument that continues to evolve and respond to new challenges and opportunities for protecting the environment and human health from POPs.

*Kenya ratified the Stockholm Convention on 14 June 2004 and became a party to it on 13 September 2004. KETRACO is carrying out its mandate in power transmission and ensure energy access by use of low emission potential construction material and technology. In particular, the choice of STATCOM device, capacitor banks and transformer materials, oils and cooling systems to be installed at Rabai 220/132 kV substation will ensure that Polychlorinated biphenyls are not utilized.*

## 6 CHAPTER SIX: PUBLIC PARTICIPATION AND DISCLOSURES

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### 6.1 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 (1999) section 59 on ESIA for the purpose of achieving the fundamental principles of sustainable development. The World Bank (the project financiers) also requires meaningful stakeholder consultations be undertaken throughout the project cycle, and from project onset. Public Consultation and disclosure requirement has been emphasized in the KETRACO's 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 international guidelines.

This chapter describes the process of the public participation and consultation that was adopted to identify the pertinent environment and social issues of the proposed STATCOM project within Rabai 220kV/132 kV substation. Views and concerns from the local residents, local leaders national and county government), and surrounding institutions, who in one way or another would be affected or have interest in the proposed project, were sought through interviews, and public meetings.

### 6.2 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 in the project area (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 STATCOM project was to:

- **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.
- **Consult:** To obtain feedback and acknowledge concerns and aspirations of stakeholders and interested parties on analysis, alternatives, and decisions regarding the project.
- **Meaningfully 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.
- **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 and the project proponent (KETRACO). 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) which includes a Grievance redress Mechanism (Annex 6) has been developed for this project.

### 6.3 Methodology in Consultation and Public Participation

#### 6.3.1 Administration of public/Community 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 issues, which may bring conflicts in case the proposed STATCOM project implementation proceeds as planned. 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 local community members neighboring the proposed project site within Simakeni “A” and “B” villages, Mwele/ Kisurutini sub-location, Rabi location.

A total of twenty-two (**22**) community questionnaires- **13**-Males, **9**-females) were administered during the consultative public participation exercise. See *Annex 8- Community questionnaires*.



*Figure 6-1- ESIA Field assistant capturing details of respondents in Simakeni A village, Mwele/Kisurutini Sublocation.*



### 6.3.2 Key Informant Interviews

Several 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, local administration officers- chief were consulted. A total of nine (9) key informant questionnaires were administered (9 Key informants -6 males, 3 females) during the consultative public participation exercise. *See annex 7- key informant questionnaires.*

Table 12 below categorizes and highlights various stakeholders engaged during the ESIA study exercise.

*Table 11- List of key stakeholders engaged during the ESIA study.*

SN.	Name	Lead Agency
1.	Winnie Dondi	DOSH officer, Malindi office • Directorate of Occupational Safety and Health Service
2.	Zealot Isaiah	Ag. Deputy County Commissioner, Rabai • Ministry of Interior and Cordination of National Government
3.	Fatuma Sarai	Assistant commissioner, Mwele/Kisurutini sub-location, Rabai • Ministry of Interior and Cordination of National Government
4.	Ramadhani Nzyoka	Ag. Chief, Mwele/Kisurutini sub location • Ministry of Interior and Cordination of National Government
5.	Dzuya T.Dziwo	Assistant Chief, Mugumowapatsa sublocation • Ministry of Interior and Cordination of National Government
6.	Boniface M. Msembi	Sub county Children's officer, Rabai sub-county • Ministry of Labour and Social protection, Department of Children services
7.	Samuel C. Fanjo	Ass. Chief, Mwele/Kisurutini sublocation • Ministry of Interior and Cordination of National Government
8.	Mariam Dau Ngome	Sub county Education officer, Rabai subcounty • Rabai sub-county, Education office
9.	Peter M. Tgogo	Sub county Agricultural officer, Rabai subcounty • Rabai sub county, Agriculture office
10.	William Mzungu Kombo	Officer • National Museums of Kenya, Dr. Krapf memorial museum.
11.	Mr. Cheruiyot	Administration Police commander • Administration police, Critical installation protection unit, Rabai

### 6.3.3 Public Community Meetings

One (1) public community meeting was held at Mwele/Kisurutini social hall , Kisurutini ward, Rabai sub-county, Kilifi County. Courtesy calls were made to the respective local administration leaders (Chiefs and Assistant chiefs) to advise on the most suitable venues for holding public meeting. The selection of the public meeting venue was also done in consultation with the village elders. The venue's selection was based on ease of site accessibility, proximity to the proposed project site, and population.

Public meeting notices were then done in collaboration with the Rabai location chief, assistant chief, and village elders in line with the agreed venue, seven (7) days prior to the commencement of the public meeting. The aim was to ensure as much as possible the project affected persons within the environs of the project site were notified of the meeting to enable attendance and a meaningful consultation process.

During the meeting, the ESIA team increased awareness of the proposed STATCOM project at Rabai 220 kV/132 kV SS. Participants were provided with a chance to voice their concerns, issues, and

ideas. This meeting also created avenues for exploring alternative strategies and building consensus. The meeting also provided a platform for the community to accord the proposed project a social license to operate in the project area in Kilifi County.

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

- The name of the project (Proposed STATCOM project in Rabai 220kV/132 kV Substation)
- 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. the right to accept or reject the project.

A summary of participants is shown in Table 13 below. Recorded minutes with participants' attendance sheets for the meetings held are attached as Annex 3 of this report.

*Table 12- Schedule of Public Meetings held during the ESIA study.*

S/N	Meeting Venue	Date & Time	Targeted Groups/Villages	Attendance		
				Male	Female	Total
1.	Mwele/Kisurutini Social hall	31 <sup>st</sup> July 2023 10.30AM-12.30 PM	<ul style="list-style-type: none"> <li>▪ Mwele/Kisurutini sub-location</li> <li>▪ Mazeras/Mugumowapatsa sub-location</li> </ul>	41	10	51

#### 6.4 Pictorial

This sub-section is a pictorial summary of the public consultation meeting carried out in the Mwele/Kisurutini Social Hall in Mwamkamba village, Kisurutini ward, Rabai sub-county:



Figure 6-2- Lead expert explaining the ESIA procesduring communityty sensitization at Mwele/Kisurutini sub-location, Rabai location.



Figure 6-3- KETRACO Transmission planning engineer clarifying on the STATCOM project scope during the sensitization meeting.



Figure 6-4- Assistant County Commissioner, Rabai Sub- County addressing the members in attendance during the opening session.





Figure 6-5- Community member asking a question during the sensitization meeting.

## 6.5 Issues identified during the site visit and the public meeting.

This sub-section covers the views, concerns, and opinions of the key stake holders (local leaders, neighbors, institutions/organizations, interested persons or groups and affected persons). It highlights both positive and negative social, socio-economic, and environmental impacts anticipated during the construction and operational phases of the project. This is followed by suggested mitigation measures that the developer should incorporate to address the adverse environmental impacts and promote sustainable development. This section ends by highlighting the opinions and expectations of the stakeholders.

### 6.5.1 Positive issues raised.

The following section provides a summary of the positive impacts of the proposed STATCOM project and associated facilities as expressed by those consulted during the ESIA public participation exercise.

#### 6.5.1.1 Creation of employment opportunities

The residents, males and females including the youth expressed that the construction and operation of the STATCOM project within the Rabai 220 kV/1320 kV SS would create job opportunities for the locals. The local community members expressed that the priority of employment opportunities for semi-skilled and unskilled labor (casuals) should be given to the locals. 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 community agreed that such can be sourced from outside the region.

#### 6.5.1.2 Increased business opportunities

The respondents and key informants were optimistic that business opportunities will increase during construction and operation of the proposed STATCOM project within the Rabai 220/132 kV substation. Small scale businesspeople such as food vendors and kiosk owners will benefit greatly

during the construction stage due to the expected workers' influx. The customer base for existing businesses will rise due to an influx of people and activities in the area because of the proposed project. During the operation stage, in the long run the locals will be able to practice various business activities.

### **6.5.1.3 Reliability of electricity supply**

The respondents and key informants were optimistic that the installation of STATCOMs in the area will improve the reliability of electrical supply within the coastal region. One respondent highlighted the element of 'dim' lights which arise due to low voltages. Others indicated 'power surge' effects which led to destruction of electronics in their homes. Ultimately, the installation of the STATCOM system and the resultant voltage stabilization was welcomed by the respondents. Some cited that this would boost economic development in the coastal region and boost the efficiency of industries, schools, hospitals, and hotels within Kilifi County. In addition, voltage stabilization would improve the residents' lifestyles due to improved services from social amenities such as schools and hospitals.

### **6.5.1.4 Social interactions leading to transfer of skills / Knowledge.**

The community members were optimistic that the construction of the proposed STATCOM project 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 hired by the contractor from the area. Suggestions were also put forth by the community members on provision of scholarships and training for the locals by the contractor. The ESIA study team acknowledged this request but communicated that this is solely on availability of this opportunity.

### **6.5.1.5 Better standards of living**

Improved energy sector, health, and educational achievement as well as economic activity because of the proposed project, implies that the locals, mainly the poor and vulnerable persons will, in the long run, have better standards of living.

## **6.5.2 Negative impacts**

The following section provides a summary of the adverse impacts of the proposed STATCOM project as expressed by those consulted during the ESIA public participation exercise:

- Soil erosion due to vegetation clearance on the site of the proposed project.
- Air pollution as result of dust emissions during construction phase of the proposed project.
- Social ills might spread because of social interaction between local community members and workers.
- Fear of increased cases of insecurity and gender-based violence due to social interaction among the workers and the local community members.
- Fear of excessive vibration during construction to the neighboring settlements as experienced during previous projects causing cracks in houses.
- Poor disposal of waste materials will lead to environmental pollution.
- Might lead to outbreak and spread of diseases as people interact with each other.
- Discrimination in access to employment opportunities

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

- Give priority to the locals in the proposed project area (s) for employment opportunities in semi-skilled and unskilled (casual) job categories.
- Ensure community health and safety is adequately handled during construction.
- Carry out and promote community health and safety awareness programmes in the proposed



- project affected areas,
- Contractor to conduct dust repressing techniques such as sprinkling of water during construction period to minimize air pollution.
  - Planting of grass and trees to regenerate vegetation cover hence minimizing soil erosion.
  - Project proponent to ensure proper waste management practices to reduce environmental pollution.
  - The contractors should heavily engage the skilled laborers within the community during 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 casual labour force.
  - Ensure the working hours is from 8 am to 6pm to minimize insecurity and noise disturbances.
  - The contractor to ensure that workers are sensitized on Gender Based Violence-Sexual Exploitation and Abuse/Sexual Harassment (GBV-SEA/SH).

## 7 CHAPTER SEVEN: ENVIRONMENTAL AND SOCIAL IMPACTS, IDENTIFICATION AND ANALYSIS

### 7.1 Introduction

The proposed STATCOM 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 analyzed. The impacts were categorized according to different phases/timing of the project, that is, construction, operation, and decommissioning phases. Under the different phases, the impacts were further analyzed into their corresponding nature, that is, either positive or negative and given a rating figure to depict its magnitude.

The negative and positive impacts likely to emanate from the project have generally been linked to the social and biophysical environment and the economic aspects within the proposed project area. Among the broad links are as follows:

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

### 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 table 14 below.

*Table 13- Levels of Scale used in analyzing 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 <b>MUST</b> 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.

## 7.2 Siting and Construction Phase

During the siting and construction period there may be various impacts which may be included.

### 7.2.1 Positive Impacts

#### 7.2.1.1 Improved voltage stability

The proposed STATCOM project has the capability to increase voltage stability by providing dynamic control and compensation of the system's voltage. This is of significance especially in the coastal region, which is considered a net importer of electrical energy (hydro and geothermal). In addition, the expected development of intermittent power plants (Solar and Wind) within the medium term; on the backdrop of receding development of dispatchable diesel power plants in the coast regions, may negatively impact on the power quality issues. With this background, it is expected that the installation of STATCOM switching controls at Rabai 220 kV/132 kV SS will allow faster control response and improved power system performance. The impact of voltage stabilization is far reaching within the transmission network. It will spur industrial development within the coastal region, as well as ensure a reliable power supply to existing commercial and domestic consumers. This impact will be very high, hence given the value of **4**.

#### 7.2.1.2 Minimal Space requirement

Compared to other dynamic voltage control technologies. STATCOM requires smaller outdoor equipment. This leads to a reduced space requirement and thus a lower impact on the bio-physical environment. Coupled with the fact that no displacement of persons will be done as the installation will be done entirely within the existing Rabai 220/132 kV SS, the negative impact on the human and social environment in this respect is minimal. It follows that this positive impact is significant, hence given a value of 4.

#### 7.2.1.3 Employment opportunities

The project will create a number of job opportunities, especially to casual workers. Employment opportunities are a benefit both in an economic and social sense. In the economic sense it means abundant unskilled labour will be involved in economic production. In a social sense the young and energetic people within the neighboring communities will be engaged in productive employment. Several workers including casual labourers, masons, carpenters, joiners, electricians, and plumbers are expected to work on the site for a period that the project will start to the end. Apart from casual labour, skilled, semi-skilled and unskilled labour and formal employees are also expected to be hired during the period of construction. This impact will be very high, hence given the value of **4**.

#### 7.2.1.4 Provision of Market for Supply of Building Materials

The project will require supply of large quantities of building materials, most of which will be sourced locally, and the surrounding areas. This project therefore provides a ready market for building material suppliers such as quarrying companies, hardware shops and individuals who sell such materials. This impact will be moderate, hence a value of **2**.

#### 7.2.1.5 Improved local trade.

Through the provision of employment to the locals, income from the salaries and wages will improve the economy of the trading centers. 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 also need recreation for time off. All these goods and services will be sourced from providers in the area thus increasing the economic activity around the region. At the national level, indirect economic gains will be realized 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 the value of **4**.

#### *7.2.1.6 Increased business opportunities for the informal sector*

During the construction period the informal sector will benefit from the operations. This will involve kiosk operators who will be selling food to the workers on site and Juakali entrepreneurs in the local areas. In turn, this will considerably improve their living standards from the income they get from their businesses. This impact will be very high, hence given the value of **4**.

#### *7.2.1.7 Improved knowledge/ skills transfer*

With the commencement of the project, construction workers will gain new skills which will help them in executing other projects. This impact will be moderate, hence a value of **2**.

### **7.2.2 Negative Impacts**

#### *7.2.2.1 Increased storm water*

Paved walkways and roofed structures will increase water collection and runoff as opposed to the infiltration. The increased storm water runoff will as a result lead to soil erosion if proper channels are not put in place. This impact will be minimal hence a value of **1**.

#### *7.2.2.2 Increased soil erosion and degradation*

The site slopes is generally flat. Possibilities of soil erosion occurring during construction are low. However, due to site disturbance during construction, soil erosion is expected during rainy seasons. Lost soil will be deposited on the road as well as low lying areas within the land. 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 flat nature of the landscape.

#### *7.2.2.3 Increased traffic congestion and possible traffic accidents*

The proposed development is located in an area that is moderately populated and is located at least 300m off the Kiambeni C111 road, 3km from the Mombasa-Nairobi highway. The contractor shall ensure safe driving limits are maintained during transportation of construction materials to site as a mitigation measure to ensure traffic congestion and possible accidents are kept to a minimum. This impact will be minimal hence a value of **1**.

#### *7.2.2.4 Increased water demand*

Both the workers and the construction activities will create additional demand for water in addition to the existing demand. Water will be mostly used in the preparation of concrete for construction works and for wetting surfaces, curing, or even cleaning complete structures and for use in washing, bathing and in toilets. This impact will be moderate, hence a value of **2**.

#### *7.2.2.5 Air pollution from exhaust emissions and dust*

Particulate matter and fugitive dust is likely to be produced during the site clearance, excavation, spreading of the topsoil and during construction. There is a possibility of suspended and settleable particles affecting the site workers and even neighbors' health. Exhaust emissions are likely to be

generated by the construction equipment during the construction phase. Motor vehicles used to mobilize the work force and materials for construction would cause a potentially significant air quality impact by emitting pollutants through exhaust emissions. Dust and exhaust emissions may also bring about respiratory infections especially to locals. This impact will be moderate, hence value of **2**.

#### **7.2.2.6 Increased discharge of wastewater, sewage, and degradation of water quality**

The ESIA team noted that there is no surface water body within or adjacent to the project site. However, construction of impervious surfaces such as access roads and control buildings increase the volume and rate of runoff, resulting in habitat destruction, increased pollutant loads, and flooding. Built or paved areas and changes in the shape of the land also influence groundwater hydrology (i.e. recharge rates, flow, conditions). Project related excavation could lead to surface and ground water quality degradation. Contaminated soil or ground water in the path of the project could be disturbed by excavation resulting in a potential transfer of the contamination to surface waters. The excavated area, if linear could act as a conduit to extend groundwater contamination to new areas. Spills of hazardous materials in excavated areas during construction could introduce contaminants to ground water. This impact will be moderate, hence value of **2**.

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. There will be potential impacts due to disposal practices of used oil, oil filters from vehicles and after-service equipment during the construction of the project. This impact will be moderate, hence a value of **2**.

#### **7.2.2.7 Loss of vegetation cover**

Due to prior developments within the Rabai 220/132 kV SS, no natural habitats exist within the SS area. Specifically, the proposed project site is covered with grass. No indigenous trees or shrubs were observed during the baseline survey of the site. The construction process will involve clearing this grass cover. This impact will be minimal, hence a value of **1**.

#### **7.2.2.8 Introduction and spread of invasive alien species.**

No invasive species was directly observed by the ESIA team during the baseline survey of the vegetation within and surrounding the Rabai 220/132 kV Substation. However, the risk of introduction of invasive species is likely and poses a serious threat to the health and functioning of natural ecosystems and human well-being. Such introduction and spread can be through material sourced from contaminated sites, disposal of cut-to-spoil and other debris from the construction site to other areas thus aiding dispersal, and shipment of contractor equipment from other areas thus aiding dispersal. This impact will be moderate, hence value of **2**.

#### **7.2.2.9 Excessive solid waste generation**

During construction solid waste will be generated. These include papers used for packing cement, plastics and timber remains among others. Dumping around the site will interfere with the aesthetic status of the area. This has a direct effect to the surrounding community. Disposal of the same solid wastes off-site could also be a social inconvenience if done in the wrong places. The off-site effects could be aesthetic, pest breeding, pollution of physical environment, invasion of scavengers and informal recycling communities. The contractor will ensure that all solid waste is collected and disposed of by a NEMA licensed waste handler to promote a clean and healthy environment. This impact will be high, hence a value of **3**.

#### **7.2.2.10 Excessive energy consumption**

The project will consume fossil fuels (mainly diesel) to run transport vehicles and construction machinery. Fossil energy is non-renewable, and its excessive use may have serious environmental implications on its availability, price, and sustainability. The construction of the proposed STATCOM project is expected to cause a temporal increase in energy consumption, especially from construction



campsites, and specific work sites. This impact will be moderate, hence a value of **2**.

#### *7.2.2.11 Noise and Excessive vibration*

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. To be affected mostly are the site workers and immediate neighbors since noise beyond some level is itself a nuisance if not maintained within acceptable limits (an exposure 85 Db/ 8 hours as WHO standards). It is a contractual obligation for the contractor and the proponent to protect the communities from these impacts and restore the sites upon closure. This impact will be moderate, hence value of **2**.

#### *7.2.2.12 General Occupational Health, Community Health, and Safety Issues.*

The STATCOM project will be carried out within the existing Rabai 220/132 kV SS. This poses a challenge with regards to Occupational Health and Safety of workers and visitors to the project site. Because of the presence of live electrical infrastructure, the contractor shall obtain daily work permits from KPLC before work can commence daily at the site.

During construction, it is expected that construction workers are likely to have accidental injuries and hazards due to human and workplace interactions. Because of the intensive engineering and construction activities, workers will be exposed to risks of accidents and injuries. There is an increased risk of electrocution.

Such injuries can result from accidental falls from high elevations, injuries from hand tools and construction equipment cuts from sharp edges of metal sheets and collapse of building sections among others. It's recommended an appropriate approach to ergonomics be sought. PPEs should be issued to all workers and visitors on site. Training on Fire Management, First Aid, occupational Health, and Safety also be conducted on a regular basis. Additionally, in ensuring workers' safety, hazard/risk assessment should be done, and comprehensive hazard/ risk management plans documented and certified by DOSHS. These plans will complement the contractor ESMP developed and the EIA license conditions in managing EHS issues at the site Visitor and workers induction must be carried out. In addition, daily toolbox talks must be done, with topics in line with the day's tasks, and records maintained. This impact will be very high, hence the value of **4**.

Community health and safety issues will emerge during construction of the STATCOM project. The impacts will include dust, noise, and vibration from construction vehicle movements and communicable diseases associated with the influx of temporary construction labor work force. 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**.

#### *7.2.2.13 Increased HIV/AIDS incidences within the project area*

The residents around the proposed project expressed concern that there would be likely a temporary increase in incidences of health impacts such as sexually transmitted diseases including HIV and AIDS especially during construction. The project proponent will work jointly with appropriate county and national government health agencies to mitigate STIs, HIV and AIDs during the construction and operational phases of the project. This impact will be moderate, hence a value of **2**.

#### *7.2.2.14 Social ills and disputes arising from labor influx.*

Although labor 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 behaviors, 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 scrambling for scarce resources such as job opportunities. 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**.

### *7.2.2.15 Increased Gender based violence- Sexual exploitation and Abuse/ Sexual Harassment (GBV- SEA/SH) incidences within the project area*

During the public consultation process, the respondents indicated that due to an influx of migrant workers into the area, there will be an upsurge of insecurity, as well as gender-based violence incidences. Of note, this was raised more so by the female respondents during the door-to-door community interviews. From subsequent interviews with the Administration Police base commander, Rabai location, insecurity as a standalone was not a concern highlighted in the area. In addition, the Rabai 220/132 kV substation, the proposed project site, is manned round the clock by Administration Police as it is a designated critical infrastructure. Therefore, the ESIA team identified the overall risk raised as weighted more towards risks of GBV-SEA/SH rather than general insecurity.

Thus, to mitigate against the GBV-SEA/SH risk, the project proponent will adopt a survivor-centred approach to prevent and respond to GBV-SEA/SH in the STATCOM projects. A survivor-centred approach is based on a set of principles and skills that guide professionals in their engagement with survivors of GBV-SEA/SH. This approach aims to respect the rights, needs, wishes, and agency of survivors, while ensuring their safety, confidentiality, dignity, and empowerment.. This impact will be high, hence a value of **3**.

### *7.2.2.16 Increased COVID-19 infections in the project area.*

The residents around the proposed project expressed concern that there would be likely a temporary increase in incidences of COVID\_19 in the project sites if measures such as workers' vaccination are not put in place to prevent its spread. The project proponent will work jointly with appropriate county and national government health agencies to mitigate COVID-19 during the construction and operational phases of the project. This impact will be moderate, hence a value of **2**.

### *7.2.2.17 Increased health impacts exacerbated by hot, humid weather.*

Exposure of workers to the hot and humid weather that is characteristic of the project site area can pose increased risk of dehydration and heat stroke during hot months. The presence of humid conditions can also create a conducive environment for the growth of fungi, bacteria, and dust mites which can cause increased asthma attacks and other respiratory health conditions. Poorly ventilated areas such as site offices can further accelerate the spread of respiratory diseases. This impact on workers' health will be moderate, hence a value of **2**.

## **7.3 Operational phase**

Some of the impacts, both positive and negative that may be because of the proposed project during the operation stage will include.

### **7.3.1 Positive Impacts**

#### *7.3.1.1 Greenhouse Gas emissions*

STATCOMs themselves do not release greenhouse gases (GHG) during operation. However, the production of electricity used to power STATCOM may result in GHG emissions, depending on the source of the electricity. Where electricity is generated from renewable sources such as wind or solar power, then the GHG emissions associated with powering STATCOM would be minimal. On the other hand, if the electricity is generated from fossil fuels such as diesel-run generators, then there would be GHG emissions associated with powering the STATCOM device.

It's important to note that the primary objective of installing the proposed STATCOM project within the Rabai 220kV/132 kV SS is to aid the seamless integration of renewable energy sources into the grid, which will reduce overall GHG emissions from electricity generation. In this light, the impact scale is significant on climate change mitigation efforts and Kenya's net zero emissions targets, hence the value of **3**.

#### *7.3.1.2 Employment creation*

Both direct and indirect temporary employment opportunities will emerge during the operation

phase. For direct employment, people will be employed for the normal and continuous maintenance of the STATCOM plant equipment whereas for the indirect employment, locals will benefit from improved and increased business activities including increased investments within the proposed project area. The impact scale in this stage is low hence a value of **1**.

#### **7.3.1.3 Increased security in the area**

The operational phase of the project will come along with security details including nighttime lighting, installation of CCTVs, and employing security guards which will be a benefit to the surrounding as well. This impact will be moderate, hence value of **2**.

#### **7.3.2 Negative Impacts**

##### **7.3.2.1 Solid waste generation**

The proposed project is expected to generate liquid and solid waste during its operation phase. The bulk of the solid waste generated during the operation of the project will consist of paper, plastic, glass, metal, textile, and organic wastes. With the solid waste and sewerage management practices put in place during construction phase, this impact will be low, hence a value of **1**.

##### **7.3.2.2 Increased storm water flow**

The building roofs and paved areas will lead to increased volume and velocity of storm water or run-off flowing across the STATCOM installation site. This will lead to increased amounts of storm water entering the drainage systems, resulting in overflow and damage to such systems in addition to increased erosion or water logging in the neighboring areas. This impact is low due to the anticipated small land footprint to be occupied by the plant equipment and capacitor banks, hence a value of **1**.

##### **7.3.2.3 Increased social ills and disputes exacerbated by labor influx**

Illicit behaviors mainly drugs, and alcohol abuse may emerge in the operation phase attributed to presence of labour force (of both skilled, semi-skilled and unskilled workers) for repair and maintenance operations. Such job opportunities are likely to result to overindulgence in substance abuse (alcoholism and drugs abuse) which might jeopardize marriages and family wellbeing, and harmonious existence within the society. This impact will be moderate, hence a value of **2**.

##### **7.3.2.4 Increased Water usage**

Activities during the operation phase of the project will involve the use of water as a result of activities such as housekeeping and running of the sanitation facilities that will take place within the STATCOM's control building. This impact is low, hence a value of **1**.

#### **7.4 Decommissioning Phase**

Some of the anticipated impacts during the decommissioning phase of the proposed project include.

##### **7.4.1 Positive Impacts**

##### **7.4.1.1 Rehabilitation and restoration of the site to its original status**

Upon decommissioning of the project, rehabilitation of the project site will be carried out to restore the site to its original status. This will include the replacement of topsoil and re-vegetation which will lead to improved visual quality of the area. This impact is high, hence a value of **3**.

##### **7.4.1.2 Employment opportunities**

Several employment opportunities will be created for the demolition staff. This impact is moderate, hence a value of **2**.

## **7.4.2 Negative Impacts**

### **7.4.2.1 Solid waste generation**

Demolition of the project buildings and related infrastructure will result in large quantities of solid waste. The waste will contain the materials used in construction including concrete, metal, drywall, wood, glass, paints, adhesives, sealants, and fasteners. Although demolition waste is generally considered as less harmful to the environment since they are composed of inert materials, there is growing evidence that large quantities of such waste may lead to release of certain hazardous chemicals into the environment. In addition, even the generally non-toxic chemicals such as chloride, sodium, sulphate, and ammonia which may be released as a result of leaching demolition waste, are known to lead to degradation of groundwater quality. This impact is high, hence a value of **3**.

### **7.4.2.2 Occupational Health and Safety**

The OHS risks envisioned during the construction phase similarly apply during the decommissioning phase. This is primarily due to the project being located within the existing Rabai 220/132 kV SS. As such, the impact remains very high during decommissioning, hence a value of **4**.

### **7.4.2.3 Dust generation and air emission**

Large quantities of dust will be generated during demolition works. This will affect demolition staff as well as the neighboring residents. This impact is moderate, hence a value of **2**.

### **7.4.2.4 Increased social ills and disputes due to 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 an influx of non-locals during decommissioning period might expose the project area to illicit behaviors, 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. This impact is moderate, hence a value of **2**.

### **7.4.2.5 Illicit behavior / drug and alcohol abuse**

Illicit behaviors mainly drugs, and alcohol abuse may emerge in the operation phase attributed to presence of labour force (of both skilled, semi-skilled and unskilled workers) for repair and maintenance of the substation. Such job opportunities are likely to result to overindulgence in substance abuse (alcoholism and drugs abuse) which might jeopardize marriages and family wellbeing, and harmonious existence within the society. This impact will be moderate, hence a value of **2**.

### **7.4.2.6 Noise and Vibration**

The demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas. This impact will be moderate, hence a value of **2**.

### **7.4.2.7 Introduction and spread of invasive alien species,**

The risks of invasive alien species envisioned during the construction phase similarly apply during the decommissioning phase. This is primarily due to the disposal of cut-to-spoil and other debris from the construction site to other areas thus aiding dispersal, shipment of contractor equipment from other areas thus aiding dispersal. The risk is moderate, hence a value of **2**.





## 8 CHAPTER EIGHT: PROPOSED MITIGATION MEASURES

### 8.1 Introduction

The construction of the proposed STATCOM project within Rabai 220 kV/132 kV SS 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 and social management and monitoring plan that is intended to guide the proponent in the management of the adverse environmental impacts associated with the life cycle of the project.

### 8.2 Proposed Mitigation Measures for the Construction-Related Impacts

#### 8.2.1 Mitigating increased generation of storm water and impact on drainage

This will 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.

#### 8.2.2 Mitigating increased soil erosion risk and soil quality degradation

This will be mitigated through the following:

- Soils excavated for the construction of foundations should not be left exposed to wind or water for long periods. improve
- The contractor should avoid steep terrain during the transportation of construction material by using alternative routes, using light vehicles, or existing routes where appropriate.
- Ensure timely revegetation of disturbed areas with local species common in the area to complement natural vegetation and to ground cover.
- A storm water management measures that encourage infiltration by use of recharge areas, detention and/or retention with graduated outlet control structures.
- Apply soil erosion control measures such as vegetation of steep embankments created in the 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 construction activities are kept outside the tree and vegetation protection zone, for any trees and vegetation that will be maintained on project work sites.

#### 8.2.3 Mitigating increased Traffic congestion and increased traffic accident

To safeguard community health and safety in relation to increased traffic in the project area, the following will be implemented:

- 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.
- 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.
- KETRACO to establish effective grievance redress mechanisms for community members as early as possible for reporting complaints and grievances.

### **8.2.4 Mitigating Increased water abstraction and consumption**

This will be mitigated as follows:

- Harness rainwater and storm water whenever possible for use in dust prevention, gardening, and other site-specific use.
- Install water efficient dual flush toilet cisterns and water conserving taps that turn off automatically when water is not being used.
- Promote recycling and reuse of water as much as possible at the workers' campsites and substations.
- Sensitize construction workers to conserve water by avoiding unnecessary waste.
- Ensure all taps and cisterns are optimally working.
- 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.

### **8.2.5 Mitigating air pollution due to dust generation and air emissions**

This negative impact of dust will be mitigated as follows:

- Sprinkling water on dry and dusty surfaces regularly including the access road.
- Collecting storm water and use to de-dust the construction site.
- Comply with personal protective clothing requirements 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 whose emissions 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 through adequate policing and monitoring.
- Adhere to the Environmental Management and Co-ordination, Air quality regulations of 2014.

### **8.2.6 Mitigating discharge of wastewater, sewage, and degradation of water quality**

The contractor shall develop appropriate measures to ensure all wastewater is treated, handled, and

disposed of 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 shall be mitigated as follows.

- Water containing pollutants such as cement, 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 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.
- Conduct regular checks for sewage pipe blockages or damages since these can lead to release of the effluent into the land and water bodies.
- Promote recycling 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.

### ***8.2.7 Mitigating loss of vegetation cover and biodiversity***

This will be mitigated as follows:

- Provide adequate protection against scour and erosion; and consider the onset of the rainy season with respect to construction schedules.
- Ensure replanting of indigenous plant/tree species in applicable areas to offset any vegetation loss.
- 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.

### ***8.2.8 Mitigating introduction and spread of invasive alien species.***

This will be mitigated as follows:

- Inspecting and cleaning vehicles, equipment, that may carry invasive species before entering or leaving an area i.e. material sources, construction sites etc.
- Educating the public and stakeholders about the risks and impacts of invasive species and how to prevent or report them.
- Monitoring and detecting invasive species early and reporting them to the relevant authorities such as Kenya Plant Health Inspectorate Services (KEPHIS), National Environment Management Authority (NEMA), the Kenya Wildlife Service (KWS), the Kenya Forestry Service (KFS), and the International Centre of Insect Physiology and Ecology (ICIPE),
- Implementing rapid response and eradication programs for newly detected or localized invasive species.
- Applying biological, chemical, mechanical, or cultural methods to control or reduce the population of established invasive species.

### ***8.2.9 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 will 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 of 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.
- Comply with the provisions of the Environmental Management and Co-ordination, Waste Management Regulations 2006.

#### ***8.2.10 Mitigating increased energy consumption***

This will be mitigated as follows:

- Promote the use of energy efficient bulbs in work sites.
- Switch off lights when not in use in work sites.
- Installation of pertinent signage at sites and offices on efficient energy consumption.
- Install electricity meters to monitor the consumption of electricity at the work site.
- Ensure construction machinery and trucks are well maintained.
- Use energy-efficient construction machinery and trucks during the construction phase of the project.
- Ensure compliance with Energy Management Regulations of 2012.

#### ***8.2.11 Mitigating noise pollution and excessive vibrations***

Noise pollution and excessive vibrations will 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.

#### ***8.2.12 Mitigating Occupational safety and health risks***

The following will be undertaken-

- |  |  |
|--|--|
| <b>Risk of occupational accidents and diseases/physical/electrical hazards</b> | <ul style="list-style-type: none"> <li>• Set up a health and safety committee and periodic site inspections, training, and annual safety audits.</li> <li>• Prepare comprehensive risk assessments for the specific jobs at the project site.</li> <li>• Conduct daily toolbox tasks prior to commencement of work. The</li> </ul> |
|--|--|

topics will be specific to the day's task with a special emphasis on handling the prevailing electrical hazards within the Rabai SS. Records will be maintained including attendances to facilitate monitoring.

- 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 visitor and worker inductions are carried out as the project will be carried out within a live substation.
- The contractor to ensure daily work permits are obtained from KPLC as the works will be carried out within the live Rabai 220/132 kV substation.

**Incidents, accidents, and dangerous occurrences  
Ergonomics, Repetitive Motion, Manual Handling**

- 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.
- Use of mechanical assistance to eliminate or reduce exertions required to lift materials, hold tools, and work objects, and requiring multi-person lifts if weights exceed thresholds, being cognizant of the height restrictions placed due to the live wires within the Rabai 220 kV/132 kV SS.
- 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

### **8.2.13 Mitigating spread of STD, HIV and AIDS**

- Develop appropriate training, awareness content and implement awareness sessions for communities and workers on HIV/AIDs and other STDs,
- Support HIV/AIDS and STD awareness and education.
- 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 Community Based Organizations (CBOs) (youth, men, and women groups) on awareness creation.
- Periodic sensitization forums for workers on ethics, morals, general good behavior and the need for the project to co-exist with the neighbours.
- 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.
- Adopt and implement a Grievances Redress Mechanism to receive and address complaints from the host community.



### **8.2.14 Mitigating social ills and disputes exacerbated by labour influx.**

On social ills, key stakeholders cited a likely increase in illicit behaviour because of labour influx in the project area. They indicated that their men, youths would resort to substance abuse (alcoholism and smoking) due to increased incomes arising from the project. The community explained that alleged illicit behaviours might jeopardise marriages and family wellbeing, and harmonious existence.

As mitigation, the following will be undertaken:

- Contractors, subcontractors, and all project staff to behave in a culturally appropriate manner.
- Implement the developed Labour Management plan- see Annex 5
- Establish a local recruitment policy to engage local populace for all unskilled labour / casual laborers 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 camps to alleviate pressure on existing community housing infrastructure and basic services viz., food, water, and sanitation. This will minimize 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 centers close to the project site.
- The contractor and proponent to establish a code of conduct and ensure workers conduct at site adhere 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).
- Ensure induction of all immigrant workers to abide by the code of conduct and respect the community cultural norms and values.
  - 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 immigration; Understand the concerns of local communities; Raise awareness of risk and opportunities; and Identify solutions to issues relating to in-migration.

### **8.2.15 Mitigation of Gender Based Violence- Sexual Exploitation and Abuse/ Sexual harassment (GBV-SEA/SH) concerns.**

Some of the key mitigation measures for GBV-SEA/SH using a survivor-centered approach are:

- Strengthen KETRACO's institutional capacity for GBV-SEA/SH risk mitigation and response. This includes developing and implementing policies, procedures, codes of conduct, reporting mechanisms, and accountability systems to prevent and address GBV-SEA/SH in project activities and operations.
- Provide GBV-SEA/SH capacity building for project implementing partners. This includes training and sensitizing project staff, contractors, and other stakeholders on the causes, consequences, and prevention of GBV-SEA/SH, as well as on the survivor-centered approach and the referral pathways for survivors. In turn, the contractor/ subcontractors shall ensure GBV-SEA/SH capacity building and awareness raising for all workers on the causes, consequences, and prevention of GBV-SEA/SH and their roles and obligations in addressing them. The contractor/ subcontractor(s) shall also ensure induction of all workers to abide by the code of conduct and respect the community's cultural norms and values.
- Conduct GBV-SEA/SH risk assessments in project areas. This includes identifying the contextual and project-related factors that may increase the vulnerability of certain groups or individuals to GBV-SEA/SH, such as poverty, displacement, insecurity, social norms, gender inequality, etc.

- Implement GBV-SEA/SH prevention and mitigation measures in project design and implementation. This includes integrating GBV-SEA/SH considerations into environmental and social assessments, management plans, monitoring and evaluation frameworks, procurement processes, civil works contracts. Specifically, the contractor shall develop and implement a GBV-SEA/SH prevention and response action plan that outlines the specific actions, responsibilities, resources, indicators, and monitoring mechanisms for mitigating GBV-SEA/SH risks during construction.
- Establish and support grievance mechanisms for GBV-SEA/SH complaints. This includes setting up accessible, confidential, safe, and responsive channels for reporting and addressing GBV-SEA/SH incidents or concerns related to the project.
- Facilitate access to quality services for GBV-SEA/SH survivors. This includes ensuring that survivors have timely and appropriate access to health care, psychosocial support, legal aid, protection, and other services that meet their needs and preferences.
- Engage with communities and stakeholders on GBV-SEA/SH prevention and response. This includes raising awareness, promoting dialogue, fostering participation, building trust, and mobilizing support for addressing GBV-SEA/SH issues in the project context.
- Establish and ensure early uptake of a Grievance Redress mechanism for the local community and Workers.

#### ***8.2.16 Mitigating Increased COVID-19 infections in the project area.***

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.
- Ensure workers hired are vaccinated against 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;
  - ✓ 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.
  - ✓ 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

#### ***8.2.17 Mitigating health impacts exacerbated by hot, humid weather.***

To mitigate concerns raised, the following will be undertaken:

- The contractor shall always ensure the provision of and easy access to clean wholesome water for project workers at all work sites, camps, and site offices.
- Workers, through the contractor, shall be advised during daily toolbox talks to wear loose-fitting, breathable clothing that can help stay cool and prevent excessive sweating during hot months.
- Provision of shaded shelters at appropriate sites to avoid direct exposure to the sun during breaks and rest times.
- Training of health and safety personnel to identify and provide emergency first aid for heat-induced symptoms, asthma attacks etc. for affected workers.
- Provide well-ventilated site offices and camp sites.
- Ensure regular cleaning and dusting of site offices and campsites to prevent accumulation of dust mites and other allergens.

### ***8.3 Mitigation measures for negative impacts during operation phase***

#### ***8.3.1 Mitigating increased solid waste generation***

The recommended mitigation measures are similar as those presented in section 8.2.9 above.

**8.3.2 Mitigating increased generation of storm water and impact on drainage**

The recommended mitigation measures are similar as those presented in section 8.2.1.

**8.3.3 Mitigating social ills and disputes exacerbated by labor influx.**

The recommended mitigation measures are similar to those presented in section 8.2.14.

**8.3.4 Mitigating Increased water usage**

The recommended mitigation measures are similar as those presented in section 8.2.4

**8.4 Mitigation measures for negative impacts during decommissioning phase****8.4.1 Mitigating increased solid waste generation**

The recommended mitigation measures are similar as those presented in section 8.2.9 above.

**8.4.2 Mitigating Occupational Safety and Health risks**

The recommended mitigation measures are similar as those presented in section 8.2.12.

**8.4.3 Mitigating air pollution due to dust generation and air emissions**

The recommended mitigation measures are similar as those presented in section 8.2.5 above.

**8.4.4 Mitigating social ills and disputes exacerbated by labor influx.**

The recommended mitigation measures are similar as those presented in section 8.2.14 above.

**8.4.5 Mitigating Illicit behavior / drug and alcohol abuse**

The recommended mitigation measures are similar as those presented in section 8.2.14.

**8.4.6 Mitigating noise pollution and excessive vibrations**

The recommended mitigation measures are similar as those presented in section 8.2.10.

**8.4.7 Mitigating introduction and spread of invasive alien species.**

The recommended mitigation measures are similar as those presented in section 8.2.8 above. In addition:

- Monitoring decommissioning sites for saplings and sprouting colonizer/invasive species and taking necessary response action in collaboration with relevant agencies such as Kenya Plant Health Inspectorate Services (KEPHIS), National Environment Management Authority (NEMA), the Kenya Wildlife Service (KWS), the Kenya Forestry Service (KFS), and the International Centre of Insect Physiology and Ecology (ICIPE).

## **9 CHAPTER NINE: ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

### **9.1 Introduction**

KETRACO acknowledges that the proposed STATCOM project activities will have 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 15.

The ESMP table 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. 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 will be subjected to a regime of periodic review. The ESMP will be used as a checklist in future environmental audits.

### **9.2 Responsibilities**

#### **9.3 KETRACO**

KETRACO, through the PIT, is responsible for developing, supervising, and monitoring the implementation of the ESMP. As the ESMP forms part of the NEMA licensing conditions, KETRACO is responsible for adherence to the ESMP developed and submitted to NEMA for licensing approval, throughout the project cycle of the STATCOM project. KETRACO's Environmental Safeguards and Sustainability team in conjunction with KETRACO team of Sociologists will be responsible for monitoring and reporting on the implementation of the ESMP to NEMA through its Quarterly and Annual Sustainability reports.

In addition, KETRACO will submit to World Bank quarterly reports on the implementation of the ESMP.

#### **9.4 Project Contractor**

The contractor is required to adopt this ESMP and develop a corresponding contractor's ESMP (c-ESMP). This forms part of the management plans required for submission during the bidding process. The contractor is required to constitute a competent E&S team that will oversee the implementation of the c-ESMP. The contractor will report to the project proponent monthly on the implementation progress.

## 9.5 Environmental and Social Management Plan

Table 14- Environmental and Social Management Plan

### Section A – Positive Impacts

Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
<b>Enhancement of Impacts during construction &amp; Operation Phase</b>				
<b>Creation of employment opportunities</b>	<ul style="list-style-type: none"> <li>KETRACO to ensure that contractors adopt and implement the Labour management plan to enhance the creation of employment opportunities, training, and skills of workers. Specific enhancement measures include: <ul style="list-style-type: none"> <li>➤ 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.</li> <li>➤ Locals within the settlements within the project area are given priority for unskilled jobs such as vegetation clearance, cleaning, etc.</li> <li>➤ Maximizing capacity enhancement and transfer of knowledge and skills to local employees, through on-the-job trainings to the extent possible.</li> </ul> </li> <li>Contractor to ensure non-discrimination and equal opportunity during selection of project workers. This to be attained through. <ul style="list-style-type: none"> <li>➤ <i>Eligibility:</i> All locals seeking employment are required to be 18 years of age and provide a National Identity (ID) card</li> <li>➤ <i>Sourcing potential employees:</i> Recruitment of workers for the project be done via adverts through the offices of Locational and Sub-locational Chiefs hence ease of access to all community members.</li> </ul> </li> <li>KETRACO to ensure the contractor takes measures to prevent and address harassment, intimidation, and/or exploitation, especially about women. The principles of non-discrimination should apply to all workers.</li> <li>Contractors to develop a code of conduct and ensure it's signed by all workers with physical presence on site. The code of</li> </ul>	<p>KETRACO Environmental &amp; Social Safeguards Team / Procurement</p> <p>Contractor Environmental and Social safeguards Team / Human Resource / Site Managers</p>	Throughout construction & Operation phase	<p>Labour management plan (LMP)</p> <p>Institutional costs</p>



## Section A – Positive Impacts

Potential Positive Impact	Recommendations to enhance Positive Impacts	Responsibility for enhancement	Timeline	Cost (Kshs)
	<p>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> <ul style="list-style-type: none"> <li>Contractor to ensure non-discrimination of Vulnerable Individuals and households such as PLWD, and widows during recruitment.</li> </ul>			
<b>Transfer of skills</b>	<ul style="list-style-type: none"> <li>KETRACO to ensure Contractors maximize capacity enhancement and transfer of knowledge and skills to local employees, through on-the-job training to the extent possible.</li> <li>Semi-skilled labour should be sourced from within and where unavailable outside the project area, so the local Kilifi County people will learn new skills from the transferred skills and knowledge.</li> </ul>	KETRACO Social Safeguards Team / Procurement	Throughout construction & operation phase	Institutional costs
<b>Enhancement of local market and supply for building materials</b>  <b>Improvement of local trade and business opportunities</b>	<ul style="list-style-type: none"> <li>As part of the tendering process, KETRACO will ensure contractors locally purchase goods and services including provision of market and supply for building materials.</li> <li>It is expected that contractors will purchase building materials such as sand, cement etc. from suppliers including hardware shops in key trading centers.</li> </ul>	KETRACO Social Safeguards Team / Procurement	Throughout construction phase	Administrative costs

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<b>Construction phase</b>				
<b>Minimization of Environmental Impacts</b>				
<b>Loss of vegetation cover / biodiversity</b>	<ul style="list-style-type: none"> <li>Provide adequate protection against scours and erosion; and consider the onset of the rainy season with respect to construction schedules.</li> </ul>	Contractor Site Manager, Civil Engineer & Environmental	Continuous	600,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> <li>Ensure replanting of indigenous plant/tree species in applicable areas to offset any vegetation/tree loss.</li> <li>Ensure proper demarcation and delineation of the project area to be affected by construction works.</li> <li>Specify locations for trailers and equipment, and areas of the site which should be kept free of traffic, equipment, and storage.</li> <li>Designate access routes and parking within the site.</li> <li>As part of climate mitigation measures, KETRACO in collaboration with KFS, local Community Forest Associations within Rabai subcounty and Kilifi County government, will implement a tree planting program within identified sections in Kilifi County of 30,000 seedlings.</li> </ul>	<p>Team (Implementation role)</p> <p>KETRACO Site Manager / Civil Engineer &amp; Environmental Safeguards Team (Supervisory and Monitoring role)</p>		<p>Tree planting budget- 5,000,000</p>
<b>Soil erosion risk / Soil degradation</b>	<ul style="list-style-type: none"> <li>Soils excavated for the construction of foundations should not be left exposed to wind or water for long periods.</li> <li>The contractor should avoid steep terrain during the transportation of construction material by using alternative routes, using light vehicles, or existing routes where appropriate.</li> <li>Ensure timely revegetation of disturbed areas with local species common in the area to complement natural vegetation and to improve ground cover.</li> <li>A storm water management measures that encourage infiltration by use of recharge areas, detention and/or retention with graduated outlet control structures.</li> <li>Apply soil erosion control measures such as vegetation of steep embankments created in the project site to reduce run-off velocity and increase infiltration of storm water into the soil.</li> <li>Ensure that construction vehicles are restricted to use existing graded roads.</li> <li>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.</li> </ul>	<p>Contractor Environmental Team (Implementing role)</p> <p>KETRACO Environmental Safeguards Team, Engineers/ site Manager (supervisory and monitoring role)</p>	Continuous	1,500,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<b>Minimization of Air pollution</b>				
<b>Dust Emissions</b>	<ul style="list-style-type: none"> <li>Covering heaps and berms of soil.</li> <li>Avoid excavation works in extremely dry weather.</li> <li>Ensure strict enforcement of on-site speed limit regulations.</li> <li>Sprinkle water on graded access routes when necessary to reduce dust generation by construction and vehicles.</li> <li>Ensure stockpiles of earth are enclosed / covered / watered during dry or windy conditions to reduce dust emissions.</li> <li>Provide appropriate PPE to employees and ensure proper and constant use.</li> <li>Adhere to the Environmental Management and Co-ordination (Air Quality) Regulations, 2014.</li> </ul>	Contractor Site Manager & Environmental Team (Implementing role)  KETRACO Site Manager & Environmental Safeguards Team (the supervisory and monitoring role)	Daily inspection	1,500,000
<b>Exhaust Emissions</b>	<ul style="list-style-type: none"> <li>Discourage plant operators and drivers of construction vehicles from unnecessary revving and idling.</li> <li>Limit construction traffic movement and operations to the most necessary activities through adequate site planning.</li> <li>Sensitise truck drivers and machine operators to switch off engines when not in use.</li> <li>Regular servicing of engines and machine parts to reduce exhaust emission generation.</li> <li>Alternative non-fuel construction equipment shall be used where feasible.</li> <li>Adhere to the Environmental Management and Co-ordination (Air Quality) Regulations, 2014.</li> </ul>	Contractor Site Manager, & Environmental Team (Implementing role)  KETRACO Site Manager and Environmental Safeguards Team (Supervisory and monitoring)	Daily inspection	2,500,000
<b>Minimization of Water Pollution</b>				
<b>Increased generation and movement of storm water and impact on drainage</b>	<ul style="list-style-type: none"> <li>Use of storm water management practices that slow peak runoff flow, reduce sediment load, and increase infiltration.</li> <li>Regular inspection and maintenance of permanent erosion and runoff control features.</li> </ul>	Contractor Site Manager, Civil Engineer & Environmental Team (with implementing role)	Throughout	1,000,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
		KETRACO Site Manager / Civil Engineer & Environmental Safeguards Team (supervisory and monitoring role)		
<b>Waste Management</b>				
<b>Increased generation of solid waste</b>	<ul style="list-style-type: none"> <li>Use of an integrated solid waste management system i.e. the 3 R's: 1. Reduction at source 2. Reuse 3. Recycle.</li> <li>Accurate estimation of the dimensions and quantities of materials required.</li> <li>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.</li> <li>Provide facilities for proper handling and storage of construction materials to reduce the amount of waste caused by damage.</li> <li>Use building materials that have minimal or no packaging to avoid the generation of excessive packaging waste.</li> <li>Waste collection bins to be provided at designated points on all active sites.</li> <li>Dispose waste more responsibly by contracting a NEMA registered waste handler who will dispose of the waste at designated sites or landfills only and in accordance with the existing laws.</li> <li>Comply with the provisions of the Environmental Management and Co-ordination, Waste Management Regulations 2006.</li> </ul>	<p>Contractor Site Manager &amp; Environmental Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Environmental Safeguards Team (the supervisory and monitoring role)</p>	Continuous	2,000,000
<b>Increased discharge of Wastewater / Sewage</b>	<ul style="list-style-type: none"> <li>Provide means for handling sewage generated at the construction site.</li> </ul>	Contractor Site Manager & Environmental	Continuous	2,000,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<ul style="list-style-type: none"> <li>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.</li> <li>Conduct regular checks for sewage pipe blockages or damages since these can lead to release of the effluent into the land and water bodies.</li> <li>Installation of sediment traps and use of runoff drainage to control flow and velocity.</li> <li>Provision of mobile toilets at every active construction site</li> <li>Monitor effluent quality on quarterly basis to ensure that the stipulated discharge standard as per Environmental Management and Co-ordination (Water quality) Regulations 2006 are not violated.</li> </ul>	<p>Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Environmental Safeguards Team (supervisory and monitoring role)</p>		
<b>Minimization of Noise and Vibration</b>				
<b>Noise and excessive vibration</b>	<ul style="list-style-type: none"> <li>Sensitize drivers of construction vehicles and machinery operators to switch off engines or machinery that are not being used.</li> <li>Ensure that all vehicles and construction machinery are kept in good condition all the time to avoid excessive noise generation.</li> <li>Ensure that all workers wear earmuffs and other personal protective gear/equipment when working in noisy sections.</li> <li>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).</li> <li>Comply with conditions provided by the Environment Management and Coordination, Noise and Excessive Vibrations Pollution Control Regulations 2009.</li> </ul>	<p>Contractor Site Manager &amp; Environmental Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Environmental Safeguards Team (the supervisory and monitoring role)</p>	Throughout	500,000
<b>Increased Material Demand and Efficient use of Resources</b>				



## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<b>Increased energy Consumption</b>	<ul style="list-style-type: none"> <li>Promote the use of solar energy and energy efficient bulbs in work site.</li> <li>Switch off lights when not in use in work sites.</li> <li>Installation of pertinent signage at sites and offices on efficient energy consumption.</li> <li>Install electricity meters to monitor the consumption of electricity in work site.</li> <li>Ensure construction machinery and trucks are well maintained.</li> <li>Use energy-efficient construction machinery and trucks during the construction phase of the project.</li> <li>Ensure compliance with Energy Management Regulations of 2012</li> </ul>	<p>Contractor Site Manager &amp; Environmental Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Environmental Safeguards Team (supervisory and monitoring role)</p>	Throughout	1,200,000
<b>Increased Water Demand / abstraction</b>	<ul style="list-style-type: none"> <li>Harness rainwater (install gutters on the roof of the staff houses to harvest rainwater) and storm water whenever possible for use in dust prevention, gardening, and other site-specific use.</li> <li>Install water efficient dual flush toilet cisterns and water conserving taps that turn off automatically when water is not being used.</li> <li>Promote recycling and reuse of water as much as possible at the workers' campsites.</li> <li>Sensitize construction workers to conserve water by avoiding unnecessary waste.</li> <li>Ensure all taps and cisterns are optimally working.</li> <li>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.</li> </ul>	<p>Contractor Site Manager &amp; Environmental Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Environmental Safeguards Team (the supervisory and monitoring role)</p>	Throughout	1,500,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<b>Increased risk of introduction and spread of invasive alien species</b>	<p>This will be mitigated as follows:</p> <ul style="list-style-type: none"> <li>Inspecting and cleaning vehicles, equipment, that may carry invasive species before entering or leaving an area i.e. material sources, construction sites etc.</li> <li>Educating the public and stakeholders about the risks and impacts of invasive species and how to prevent or report them.</li> <li>Monitoring and detecting invasive species early and reporting them to the relevant authorities such as Kenya Plant Health Inspectorate Services (KEPHIS), National Environment Management Authority (NEMA), the Kenya Wildlife Service (KWS), the Kenya Forestry Service (KFS), and the International Centre of Insect Physiology and Ecology (ICIPE),</li> <li>Implementing rapid response and eradication programs for newly detected or localized invasive species.</li> <li>Applying biological, chemical, mechanical, or cultural methods to control or reduce the population of established invasive species.</li> </ul>	<p>Contractor Site Manager &amp; Environmental Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Environmental Safeguards Team (supervisory and monitoring role)</p>	Throughout	700,000
<b>Minimization of Occupational Health and Safety Risks and Impacts</b>				
<b>Risk of occupational incidents, accidents and dangerous occurrences and diseases/Electrical hazards</b>	<ul style="list-style-type: none"> <li>Set up a health and safety committee and periodic site inspections, training, and annual safety audits.</li> <li>Prepare comprehensive risk assessments for the specific jobs at the project site.</li> <li>Conduct daily toolbox tasks prior to commencement of work. The topics will be specific to the day's task. Records will be maintained including attendances to facilitate monitoring.</li> <li>Provide appropriate PPEs to workers and visitors to the proposed route.</li> </ul>	<p>Contractor Site Manager and Health &amp; Safety Team (Implementing role)</p> <p>KETRACO Site Manager and Health &amp; Safety Team (supervisory and Monitoring role)</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"> <li>Adhere to the provisions of the occupational Health and Safety Act of 2007.</li> <li>Have a qualified EHS Officer; first aider/ medic on site.</li> <li>Ensure visitor and worker inductions are carried out as the project will be carried out within a live substation.</li> <li>The contractor to ensure daily work permits are obtained from Kenya Power and Lighting Company (KPLC) as the works will be carried out within the live Rabai 220/132 kV substation.</li> </ul>			
<b>Incidents, accidents and dangerous occurrences, Ergonomics, Repetitive Motion, Manual Handling</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Use of mechanical assistance to eliminate or reduce exertions required to lift materials, hold tools, and work objects, and requiring multi-person lifts if weights exceed thresholds, being cognizant of the restrictions placed due to the live wires within the Rabai 220 kV/132 kV SS.</li> <li>Selecting and designing tools that reduce force requirements and holding times, and improve postures.</li> <li>Providing user adjustable workstations.</li> <li>Incorporating rest and stretch breaks into work processes, and conducting job rotation.</li> <li>Implementing quality control and maintenance programs that reduce unnecessary forces and exertions.</li> <li>Taking into consideration additional special conditions such as left-handed persons</li> </ul>	<p>Contractor Site Manager and Health &amp; Safety Team (Implementing role)</p> <p>KETRACO Site Manager and Health &amp; Safety Team (supervisory and Monitoring role)</p>	Throughout	1, 000,000
<b>Minimization risks on Community Health and Safety</b>	<p>On Traffic / Access roads safety</p> <ul style="list-style-type: none"> <li>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.</li> <li>Develop a robust transport management plan.</li> <li>Collaboration with local communities and responsible authorities to improve signage, visibility, and overall safety</li> </ul>	<p>Contractor Site Manager and Health &amp; Safety Team (Implementing role)</p> <p>KETRACO Site Manager and Health &amp; Safety Team</p>	Throughout	1,000,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>of roads, particularly along stretches located near schools or other locations where children may be present.</p> <ul style="list-style-type: none"> <li>Using locally sourced materials, whenever possible, to minimize transport distances.</li> <li>Locating workers campsites close to project sites and arranging bus transport to minimize on external traffic.</li> <li>Emphasizing safety aspects among drivers</li> <li>Improving driving skills and requiring licensing of drivers.</li> <li>Adopting limits for trip duration and arranging driver rosters to avoid overtiredness.</li> <li>Avoiding dangerous routes and times of day to reduce the risk of accidents.</li> </ul>	(supervisory and Monitoring role)		
<b>Health impacts exacerbated by hot, humid weather</b>	<p>To mitigate concerns raised, the following will be undertaken:</p> <ul style="list-style-type: none"> <li>➤ The contractor shall always ensure the provision of and easy access to clean wholesome water for project workers at all work sites, camps, and site offices.</li> <li>➤ Workers, through the contractor, shall be advised during daily toolbox talks to wear loose-fitting, breathable clothing that can help stay cool and prevent excessive sweating during hot months.</li> <li>➤ Provision of shaded shelters at appropriate sites to avoid direct exposure to the sun during breaks and rest times.</li> <li>➤ Training of health and safety personnel to identify and provide emergency first aid for heat-induced symptoms, asthma attacks etc. for affected workers.</li> <li>➤ Provide well-ventilated site offices and camp sites.</li> <li>➤ Ensure regular cleaning and dusting of site offices and campsites to prevent accumulation of dust mites and other allergens.</li> </ul>	<p>Contractor Site Manager and Health &amp; Safety Team (Implementing role)</p> <p>KETRACO Site Manager and Health &amp; Safety Team (supervisory and Monitoring role)</p>	Throughout	700,000
<b>Minimization of Social Impacts</b>				

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<b>Health Impact such as Spread of HIV/AIDS and other Sexually transmitted diseases</b>	<ul style="list-style-type: none"> <li>Develop appropriate training, awareness content and implement awareness sessions for communities and workers on HIV/AIDs and other STDs.</li> <li>Provide HIV/AIDS and STD awareness and education.</li> <li>Ensure an adequate and accessible provision of condoms to workers both male and female.</li> <li>Providing health services (treatment through standard case management in on-site or community health clinic).</li> <li>Promoting collaboration with local authorities to enhance access of workers' families and the community to public health services.</li> <li>Liaise with relevant health agencies both at national and County level (Kilifi County) (Ministry of Health, National AIDS Control Council (NACC)), including NGOS and CBOs (youth, men, and women groups) on awareness creation.</li> <li>Periodic sensitization forums for workers on ethics, morals, general good behavior and the need for the project to co-exist with the neighbours.</li> <li>Adhere to and implement the HIV and AIDS Prevention and Control Act, 2006 and the Sexual Offences Act, 2006 and its amendment 2012.</li> <li>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 HIV/AIDs and other STDs resulting from population/labour influx in workplaces.</li> </ul>	<p>Contractor Site Manager and Health &amp; Safety Team (Implementing role)</p> <p>KETRACO Site Manager and Health &amp; Safety Team (supervisory and Monitoring role)</p>	Throughout project cycle	1, 000,000
<b>COVID-19 Transmissions/ Infections</b>	<p>The following should be undertaken:</p> <ul style="list-style-type: none"> <li>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.</li> <li>Ensure workers hired are vaccinated against Covid-19</li> </ul>	<p>Contractor Site Manager and Health &amp; Safety Team (Implementing role)</p> <p>KETRACO Site Manager and Health &amp; Safety Team (supervisory and</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"> <li>▪ Sensitize all workers (skilled, semi-skilled and unskilled) on COVID-19 risk mitigation measures with sufficient information to keep them and local community safe.</li> <li>▪ 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"> <li>✓ Infection control plans,</li> <li>✓ Ensuring social distancing of not less 1.5 meters between employees in all directions,</li> <li>✓ Hygiene promotion through suitable hand sanitizing facility or handwashing soap and water</li> <li>✓ Strict and proper use of face masks throughout all working hours and public places.</li> <li>✓ Implement Ministry of Health guidelines for staff safety and health, including daily temperature checks for everyone in the workplace</li> <li>✓ Increase frequency of cleaning commonly touched surfaces / objects</li> </ul> </li> </ul>	Monitoring role)		
<b>Illicit behaviour / drug and alcohol abuse</b>	<ul style="list-style-type: none"> <li>• The contractor and proponent will be responsible for 'their respective workers' conduct on site.</li> <li>• Contractors, subcontractors, and all project staff to behave in a culturally appropriate manner.</li> <li>• 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.</li> </ul>	Contractor Site Manager and Health & Safety Team (implementing role)  KETRACO Site Manager and Health & Safety Team (supervisory and monitoring)	Throughout the project cycle	1,000,000
<b>Population / labour influx and pressure on social infrastructure</b>	<ul style="list-style-type: none"> <li>▪ Implement the developed Labour Management plan- see Annex 5</li> <li>▪ 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</li> </ul>	Contractor Site Manager / Social Safeguards Team (Implementing role)  KETRACO Site	Throughout the project period	Labour Management Plan Budget

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>available. The local recruitment policy should be carefully developed with relevant stakeholders such as the local administration before the commencement of project activities.</p> <ul style="list-style-type: none"> <li>▪ Encourage community business interaction within project where possible e.g. local procurement where possible, selling of consumable like food etc. to discourage influx.</li> <li>▪ Provision of camps to alleviate pressure on existing community housing infrastructure and basic services viz., food, water, and sanitation. This will minimize the interactions with the locals, consequently reducing competition for resources and the spread of diseases.</li> <li>▪ 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 centers close to the project site.</li> <li>▪ Ensure induction of all immigrant workers to abide by the code of conduct and respect the community cultural norms and values.</li> <li>▪ Contractors to develop a code of conduct and ensure it's 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.</li> <li>▪ Establish and ensure early uptake of a Grievance Redress mechanism for local community and Workers.</li> <li>▪ Undertake stakeholder engagement / awareness to prepare local communities psychologically. Awareness will include efforts toward instilling attitudes of tolerance, support and understanding of labour immigrants by the local communities. Discuss issues, risks and opportunities linked to immigration; Understand the concerns of local communities; Raise awareness of risk and opportunities; and Identify solutions to issues relating to in-migration.</li> </ul>	Manager / Social Safeguards team (supervisory and monitoring role)		

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<b>Gender Based Violence-Sexual Exploitation and Harassment (GBV-SEA/SH)</b>	<ul style="list-style-type: none"> <li>Proposed mitigation measures for GBV-SEA/SH using a survivor-centered approach are:</li> <li>Strengthen KETRACO's institutional capacity for GBV-SEA/SH risk mitigation and response. This includes developing and implementing policies, procedures, codes of conduct, reporting mechanisms, and accountability systems to prevent and address GBV-SEA/SH in project activities and operations.</li> <li>Provide GBV-SEA/SH capacity building for project implementing partners. This includes training and sensitizing project staff, contractors, and other stakeholders on the causes, consequences, and prevention of GBV-SEA/SH, as well as on the survivor-centered approach and the referral pathways for survivors. In turn, the contractor/ subcontractors shall ensure GBV-SEA/SH capacity building and awareness raising for all workers on the causes, consequences, and prevention of GBV-SEA/SH and their roles and obligations in addressing them. The contractor/ subcontractor(s) shall also ensure induction of all workers to abide by the code of conduct and respect the community's cultural norms and values.</li> <li>Conduct GBV-SEA/SH risk assessments in project areas. This includes identifying the contextual and project-related factors that may increase the vulnerability of certain groups or individuals to GBV-SEA/SH, such as poverty, displacement, insecurity, social norms, gender inequality, etc.</li> <li>Implement GBV-SEA/SH prevention and mitigation measures in project design and implementation. This includes integrating GBV-SEA/SH considerations into environmental and social assessments, management plans, monitoring and evaluation frameworks, procurement processes, civil works contracts. Specifically, the contractor shall develop and implement a GBV-SEA/SH prevention and response action plan that outlines the specific actions, responsibilities, resources, indicators,</li> </ul>	<p>Contractor Site Manager &amp; E&amp;S Team (Implementing role)</p> <p>KETRACO Site Manager &amp; Social Safeguards Team (the supervisory and monitoring role)</p>	Throughout	3,500,000

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
	<p>and monitoring mechanisms for mitigating GBV-SEA/SH risks during construction.</p> <ul style="list-style-type: none"> <li>Establish and support grievance mechanisms for GBV) – SEA/SH complaints. This includes setting up accessible, confidential, safe, and responsive channels for reporting and addressing GBV-SEA/SH incidents or concerns related to the project.</li> <li>Facilitate access to quality services for GBV-SEA/SH survivors. This includes ensuring that survivors have timely and appropriate access to health care, psychosocial support, legal aid, protection, and other services that meet their needs and preferences.</li> <li>Engage with communities and stakeholders on GBV-SEA/SH prevention and response. This includes raising awareness, promoting dialogue, fostering participation, building trust, and mobilizing support for addressing GBV-SEA/SH issues in the project context.</li> <li>Establish and ensure early uptake of a Grievance Redress mechanism for the local community and Workers.</li> </ul>			
<b>Operational phase</b>				
<p><b><i>Mitigation measures, responsibility for mitigation for the operation phase's Environmental and social impacts are same as those of construction phase already presented in this ESMP.</i></b></p> <ul style="list-style-type: none"> <li><b><i>Solid waste generation</i></b></li> <li><b><i>Increased generation of storm water and impact on drainage.</i></b></li> <li><b><i>Increased social ills and disputes exacerbated by labour influx</i></b></li> <li><b><i>Increased water usage</i></b></li> </ul>				
<b>Decommissioning phase</b>				
<p><b><i>Mitigation measures for the decommissioning phase's environmental and social impacts are same as those of construction phase already presented in this EMP.</i></b></p> <ul style="list-style-type: none"> <li><b><i>Increased solid waste generation.</i></b></li> <li><b><i>Occupational Safety and Health risks</i></b></li> <li><b><i>Air pollution due to dust generation and air emissions</i></b></li> <li><b><i>Social ills and Disputes exacerbated by labour influx.</i></b></li> </ul>				

## Section B – Negative Impacts

Potential Impact	Proposed Mitigation Measures	Responsibility for Mitigation	Timeline	Cost (Kshs)
<ul style="list-style-type: none"> <li><i>Illicit behavior / drug and alcohol abuse</i></li> <li><i>Noise pollution and excessive vibrations</i></li> <li><i>Introduction and spread of invasive alien species</i></li> </ul>				



## 10 CHAPTER TEN: ENVIRONMENTAL AND SOCIAL MONITORING PLAN

### **Introduction**

Monitoring will be a continuous process essential for identification of unforeseen impacts during the ESIA study. Monitoring parameters/indicators have been identified and programmes developed for their observation and action.

### **10.2 Monitoring Guidelines**

Monitoring programmes were developed taking into account 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 the 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**

- 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, 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 with procedures and the WB ESS8 on physical cultural resources.
- Monitor Community, Health, and Safety issues in accordance with the ESMP.

#### **(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 15- Environmental and Social monitoring plan for the proposed STATCOM 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
<b>Environmental Issues</b>									
<b>Noise and Vibrations</b>	Decibels (dBs)	(Nearby villages) These include areas such as; - <ul style="list-style-type: none"> <li>Simakeni "A"</li> <li>Simakeni "B"</li> <li>Ganga "B"</li> <li>Monzo village</li> </ul>	Monthly/ during the construction and decommissioning phase	4 keys receptor points	18 months*4 sample points- Total =52	10,000	720,000	Noise & vibrations Meter	KETRACO Health and safety team / Contractor health and Safety team
<b>Air Quality</b>	TSP, NO <sub>x</sub> , SO <sub>2</sub> , CO, Dust particles, particulate matter etc.	Construction, campsites, and villages	Quarterly air quality measurement during construction and decommissioning phase	5	6	30,000.00	900,000.00	Air sampling equipment	KETRACO Environmental Safeguards Team / Contractor Environmental Safeguards Team
<b>Solid Waste Generation</b>	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
<b>HIV/AIDS Incidences</b>	-Training programmes, number of incidents, number of condoms distributed, seminars, and participants trained etc. -COVID 19 prevention strategies in place during sensitization / training (Hand washing facilities,	Campsites, construction sites, towns (Simakeni "A", Simakeni "B" Ganga "B" and Monzo village), villages,	Quarterly throughout the project cycle	N/A				Administrative/ Office Supplies	KETRACO Social Safeguards Team / Contractor Social Safeguards Team

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
	physical distancing, use of masks, adherence to restrictions as per Gok directive.)								
<b>Soil Erosion</b>	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
<b>Storm Water Drainage</b>	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
<b>Environmental Risks</b>	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
<b>Health and Safety Issues</b>									
<b>Occupational Health and Safety Issues</b>	- Evaluation against ICNIRP published occupational exposure limits guidelines to electric and magnetic fields. - Number of occupational diseases and accidents - Record(s) of occupational accidents, near misses and	Campsites, construction sites, Nearby villages- These include areas such as- <ul style="list-style-type: none"> <li>Simakeni "A"</li> <li>Simakeni "B"</li> <li>Ganga "B"</li> <li>Monzo village,</li> </ul>	Continuous throughout the project cycle	N/A				Field inspections and information from EHS Personnel	KETRACO Health & Safety Team and Contractor Health and Safety team

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
	dangerous occurrences - Record(s) of occupational diseases								
Community Health issues and spread of diseases	-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, Nearby villages These include areas such as- <ul style="list-style-type: none"><li>Simakeni “A”</li><li>Simakeni “B”</li><li>Ganga “B</li><li>Monzo village,</li></ul>	Continuous throughout the project cycle	N/A				Field surveys and information from EHS Personnel	KETRACO Health & Safety Team/ Contractor social safeguards team.
Reforestation	No. of planted tress	Tree planting sites to be determined in collaboration with KFS, CFA's	Continuous throughout the project cycle	8,500,000 kes monitoring component to monitor afforested areas.				Field surveys and information from EHS Personnel	KETRACO environmental & social safeguards Team
Social Impacts									
Training and Capacity Building  /  Transfer of Skills	- Number of trainings held disaggregated by target group/institutions and issues amongst employed locals.	Nearby villages These include areas such as- <ul style="list-style-type: none"><li>Simakeni “A”</li><li>Simakeni “B”</li><li>Ganga “B</li></ul> Monzo village, Camp, construction sites	Continuous throughout the project cycle.	N/A				Field surveys and information from EHS Personnel	KETRACO social safeguards Team/ Contractor social safeguards team.

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
	<ul style="list-style-type: none"> <li>- The number and type of participants disaggregated by gender.</li> <li>- Number of staff trained in implementation of the ESMP.</li> <li>- COVID 19 prevention strategies in place during information disclosure (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per Gok directive.)</li> </ul>								
<b>Grievance management</b>	<ul style="list-style-type: none"> <li>- Implementation of the GRM</li> <li>- Number &amp; type of grievances received and recorded in the grievances log.</li> <li>- Number &amp; type of grievances resolved promptly (within the duration allowed in the grievance redress mechanism) and resolutions reached.</li> <li>- Number &amp; type of</li> </ul>	Nearby villages These include areas such as- <ul style="list-style-type: none"> <li>• Simakeni “A”</li> <li>• Simakeni “B”</li> <li>• Ganga “B”</li> </ul> Monzo village, Camp, construction sites	continuous throughout project cycle	N/A				Field surveys; grievance log / acknowledgement form and information from EHS Personnel	KETRACO social safeguards Team / Contractor social safeguards team.



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
	<p>grievances not resolved in time but completed</p> <p>-Number &amp; type of outstanding grievances not resolved</p> <p>-Average timelines for resolution of grievances disaggregated by the various levels of grievance redress mechanism/institutions</p> <p>-Number of grievances referred to Level 3 (Courts of Law)</p> <p>-Number of complaints referred to KETRACO</p>								
<b>GBV-SEA/SH</b>	<ul style="list-style-type: none"> <li>- Number of training courses related to GBV – SEA/SH delivered.</li> <li>- Percentage of workers that have signed a Code of Conduct (CoC); and/or</li> <li>- Percentage of workers that have attended CoC training.</li> <li>- Implementation of labour influx management plan</li> </ul>	<p>Nearby villages</p> <p>These include areas such as-</p> <ul style="list-style-type: none"> <li>• Simakeni “A”</li> <li>• Simakeni “B”</li> <li>• Ganga “B”</li> </ul> <p>Monzo village, Camp, construction sites</p>	Continuous throughout project cycle	N/A				Field surveys; grievance log / acknowledgement form and information from EHS Personnel	KETRACO social safeguards Team / Contractor social safeguards team

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
<b>Stakeholder engagement and information disclosure;</b>	<ul style="list-style-type: none"> <li>- Implementation of Stakeholder Engagement plan.</li> <li>- Disclosure of ESIA report on KETRACO and World Bank websites.</li> <li>- Availability of ESIA report at the county level.</li> <li>- Disclosure of ESIA report summary at in a culturally appropriate language, and in locations accessible to all.</li> <li>- Number of consultative meetings held, by type.</li> <li>- Stakeholders' awareness of ESIA</li> <li>- Number of County and National Government leaders engaged/briefed about the ESIA process.</li> <li>- Number of stakeholders consultative meetings held.</li> <li>- Type of information</li> </ul>	<p>Project area (Buffer zone of 1km which include villages</p> <ul style="list-style-type: none"> <li>• Simakeni "A"</li> <li>• Simakeni "B"</li> <li>• Ganga "B"</li> <li>• Monzo village,</li> </ul> <p>Also Key stakeholders located within</p> <ul style="list-style-type: none"> <li>• Ruruma- Rabai Sub County HQ-National government</li> <li>• Ribe- Rabai Sub county- Chief ward administration.</li> </ul> <p>Camp, construction sites</p>	Continuous throughout project cycle	SEP budget				Field surveys / information from EHS Personnel	KETRACO via social safeguards Team / Contractor social safeguards team.

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
	<p>provided in meetings.</p> <ul style="list-style-type: none"> <li>- Type of issues raised at public consultation meetings, and response rate.</li> <li>- The number of participants attending public consultation meetings related to projects disaggregated by gender.</li> <li>- Modes and language of communication.</li> <li>- Minutes of meetings held and lists of attendance.</li> <li>- Number of people seeking information on displacement and compensation</li> <li>- COVID 19 prevention strategies in place during information disclosure (Hand washing facilities, physical distancing, use of masks, adherence to restrictions as per Gok directive.)</li> </ul>								
<b>Local recruitment.</b>	<ul style="list-style-type: none"> <li>- Grievances lodged by type and number,</li> </ul>	Construction and Camp sites	Continuous throughout project cycle	N/A				Field surveys / Project Implementation	KETRACO Site Managers social

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
/ <b>Creation of employment</b> / <b>Labour Influx</b>	illustrated with graphs. Open grievances by type and number - Disciplinary cases – type and number - 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 employees and immigrant workers (labour influx)- actual against planned. - Industrial relations incidents – stoppages go slows, threats, damage to property, violence.							Team (PIT)	safeguards Team / Contractor Site Managers , social safeguards team

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
	<ul style="list-style-type: none"> <li>- Lost hours by category</li> <li>- Absenteeism, sick leave, and late arrivals</li> <li>- Issues raised by camp committees and action taken.</li> <li>- Workers Camp numbers by local and foreign workers – actual against planned.</li> <li>- Camp incidents</li> <li>- 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.)</li> <li>- Existence of COVID 19 preparedness management action plan applicable to all workers (skilled, semiskilled, and unskilled),</li> </ul>								
<b>HIV/AIDs and other STDs;</b>	- Number of HIV/AIDs and	Project area (Buffer zone of 1km which	Continuous throughout project	N/A				Field surveys / Project	KETRACO Site Managers

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
	<p>other STDs awareness trainings held disaggregated by target group/institutions / Gender and issues amongst stakeholders / workers / community.</p> <ul style="list-style-type: none"> <li>- The number of condoms distributed per gender.</li> <li>- Adequacy and accessibility in provision of condoms to workers both male and female</li> <li>- Levels and knowledge of condom use or other safer sex methods.</li> <li>- Knowledge and attitudes about HIV and STDs</li> <li>- Potential channels, methods, materials, and messages for reaching target groups.</li> <li>- Factors that can facilitate or hinder intervention.</li> </ul>	<p>include villages</p> <ul style="list-style-type: none"> <li>• Simakeni “A”</li> <li>• Simakeni “B”</li> <li>• Ganga “B”</li> <li>• Monzo village,</li> </ul> <p>Camp, construction sites</p>	cycle					Implementation Team ( PIT)	social safeguards Team / Contractor Site Managers , social safeguards team



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
	<ul style="list-style-type: none"> <li>- Cultural beliefs about sex, sexuality, sexual health and HIV/AIDs and STDs</li> <li>- Involvement of community stakeholders</li> <li>- Number of workers who have signed a code of conduct.</li> <li>- 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.)</li> <li>-</li> </ul>								
<b>Child labour and forced labour</b>	<ul style="list-style-type: none"> <li>-Number of workers employed and ID numbers</li> <li>-implementation of Labour Management Plan</li> <li>-Implementation of Grievances Redress Mechanism and recorded</li> </ul>	Nearby villages These include areas such as- <ul style="list-style-type: none"> <li>• Simakeni “A”</li> <li>• Simakeni “B”</li> <li>• Ganga “B”</li> <li>• Monzo village,</li> </ul> Campsites / Worksites	Continuous throughout project cycle	SEP budgets				Project Implementation Team ( PIT)	KETRACO Site Managers, social safeguards Team / Contractor Site Managers, social safeguards team

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
	grievances on child and forced labour -Implementation of stakeholder's engagement plan (SEP) – with awareness creation sessions on child and forced labour								
<b>Provision of market and supply for building materials</b>	Receipts and LPOs on the purchase of building materials such as sand, cement etc. from suppliers including hardware shops in nearby towns.	Camp, construction sites	During construction phase	N/A				Field surveys	KETRACO via Social Safeguards Team / Contractor Social Safeguards Team
<b>Improvement of local trade and business opportunities</b>	Enhancement of skills on small-scale businesses such as food vendors and kiosk owners	Nearby villages These include areas such as- <ul style="list-style-type: none"> <li>Simakeni "A"</li> <li>Simakeni "B"</li> <li>Ganga "B"</li> <li>Monzo village,</li> </ul>	Throughout construction and operation phases	N/A				Field surveys	KETRACO via Social Safeguards Team / Contractor Social Safeguards Team
<b>Interference of existing development infrastructure</b>	Implementation of the stakeholder's engagement plan (SEP) (Adoption and implementation of a Grievances Redress Mechanism)	Construction site	During construction phase	SEP budget				Field surveys	KETRACO via Social safeguards team / Contractor Social Safeguards Team

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
	- Liaison with Kenya Power at design stage and on planned shutdowns.								
<b>Safeguarding against insecurity/ theft and Vandalism</b>	<ul style="list-style-type: none"> <li>- Insecurity incidences in the project area</li> <li>- Implementation of the Grievances Redress Mechanism</li> <li>- Implementation of the stakeholder's engagement plan (SEP)</li> <li>- Existence of screening for workers, suppliers, and distributors</li> <li>- Vehicle scanning systems in place at Rabai substation and construction sites.</li> <li>- Existence of 24-hour surveillance by Administration Police services</li> </ul>	Nearby villages These include areas such as- <ul style="list-style-type: none"> <li>• Simakeni "A"</li> <li>• Simakeni "B"</li> <li>• Ganga "B"</li> <li>• Monzo village, Campsites, Construction sites</li> </ul>	Throughout the project cycle	SEP budget				Field surveys	KETRACO via Social safeguards team / Contractor Social Safeguards Team
<b>Loss of social fabrics</b>	- Implementation of Stakeholder	Nearby villages These include areas such as-	Pre-construction and construction phase	SEP budget				Field surveys	KETRACO via Social safeguards

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
	<ul style="list-style-type: none"> <li>- engagement plan (SEP)</li> <li>- Implementation of a Grievances Redress Mechanism</li> </ul>	<ul style="list-style-type: none"> <li>• Simakeni “A”</li> <li>• Simakeni “B”</li> <li>• Ganga “B”</li> <li>• Monzo village, Campsites, Construction sites</li> </ul>							team
<b>Illicit behavior / drug and alcohol abuse</b>	<ul style="list-style-type: none"> <li>- Existence of a code of conduct to ensure workers’ conduct.</li> <li>- Trainings on civic and health education on HIV/AIDS and STIs</li> <li>- Accessible provision of condoms to workers both male and female</li> <li>- Implementation of Stakeholder engagement plan (SEP)</li> <li>- Implementation of a Grievances Redress Mechanism</li> <li>-</li> </ul>	Camp sites/ construction sites,	Throughout project cycle	SEP budget				Field surveys	KETRACO via Social Safeguards Team / Contractor Social Safeguards Team

## 11 CHAPTER ELEVEN: CONCLUSION AND RECOMMENDATION

The ESIA study has established that the proposed STATCOM project to be established within the existing Rabai 220 kV/132 kV Substation is a worthy investment by the proponent. It will contribute significantly to voltage stabilization within the coastal region, with far reaching effects in the national transmission grid.

However, the ESIA study has established that the proposed project will also come along with some negative impacts. Amongst some of the key impacts anticipated by the proposed project include-

### Environmental Impacts

- Increased air pollution from exhaust emissions and dust
- Noise and excessive vibrations
- Increased generation of solid waste
- Increased discharge of Wastewater / Sewage/
- Increased water demand
- Increased storm water generation
- Increased soil erosion and degradation
- Increased risk of introduction and spread of invasive alien species.
- Loss of vegetation cover

### Occupational Health and Safety

- Electrical hazards
- Working at heights on poles and structures
- Exposure of electric magnetic fields to workers
- Community Health and Safety issues
- Increased health impacts exacerbated by hot and humid weather.

### Social Impacts

- Social ills and disputes resulting from labour influx.
- Increased risk of GBV-SEA/SH
- Risk of child labour/forced labor.
- Illicit behavior/ drugs and alcohol abuse
- HIV/AIDS and other Sexually transmitted diseases

KETRACO is committed to putting in place several measures to mitigate the negative environmental, safety, health and social impacts associated with the life cycle of the project. KETRACO will focus on implementing the measures outlined in the ESMP as well as adhering to all relevant national and international environmental, health and safety standards, World Bank ESF and regulations that govern establishment and operation of such projects.

It is expected that the positive impacts that emanate from such activities shall be maximized as much as possible as exhaustively outlined within the report. These measures will go a long way in ensuring the best possible environmental compliance and performance standards.

The ESIA study has established detailed environmental and social management plan (ESMP); and a comprehensive environmental and social monitoring plan (ESMnP); 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/GRM (*Annex 6*) 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.

Taking into cognizance the anticipated project benefits to the Country on power stability, reliability, support decarbonization of the national transmission grid, spur on the national and local 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, ESMnP and respective management plans.



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## **13 ANNEXES**