MINISTRY OF ENERGY
Nairobi
Republic of Kenya

REREC
RURAL ELECTRIFICATION & RENEWABLE ENERGY CORPORATION

THE WORLD BANK

KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP) FOR UNDERSERVED COUNTIES

Component 1: Mini grids for Community Facilities, Enterprises, and Households

Comprehensive Project Report (CPR) FOR THE PROPOSED GATAB OFF-GRID SOLAR PROJECT AT COORDINATES 2°38'51.7"N 36°55'44.0"E

Rev	Description	Date
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Norken International Ltd
ENGINEERING AND MANAGEMENT CONSULTANTS
ISO 9001:2015 CERTIFIED

CENTRIC AFRICA LTD

CERTIFICATION

This Comprehensive Project Report (CPR) has been prepared by ESIA /EA Firm of Experts, **Centric Africa Ltd, Reg. No.7112 and Norken International Ltd, Reg. No.0181.** The report has been written with diligence in accordance with the World Bank Safeguards Policies, Environmental Safeguards Standards (ESS), the EMCA 1999 *(Amended, 2015)* and the Environmental and Social Impact Assessment and Audit Regulations, 2003 to bring out the true nature of the intended development**.** The report was prepared based on the information provided by various stakeholders and village elders at Gatab location in Marsabit County as well as from primary and secondary sources. It is therefore, issued without any prejudice.

We the undersigned, certify that the particulars in this CPR are correct and righteous to the best of our knowledge.

ESIA/EA FIRM OF EXPERTS:

Norken International Ltd
ENGINEERING AND MANAGEMENT CONSULTANTS

CENTRIC
AFRICA LTD

Signature: _____ Date: _____

Isaiah Kegora

NEMA Expert (Reg. No. 1893).
For Norken (I) Ltd & Centric Africa Ltd

PROPONENT:

Mr. Rodney I. Sultani
Project Coordinator, KOSAP
Ministry of Energy and Petroleum,
P.O. Box 30582-00100,
Kawi House, Nairobi, Kenya.

Signature: _____ Date: _____

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LIST OF ACRONYMS

ACRONYM	DEFINITION
ADR	Alternative Dispute Resolution
AoI	Area of Influence
CBOs	Community Based Organizations
CoK	Constitution of Kenya
CDI	County Development Index
CEMP	Construction Environmental Management Plan
CGRCs	County Grievance Redress Committees
CRA	Commission on Revenue Allocation
CSR	Customer Social Responsibility
CIDP	County Integrated Development Plan
CPS	Country Partnerships Strategy
DOSHS	Directorate of Occupational Safety and Health Services
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EPRA	Energy Petroleum Regulatory Authority
EPT	Energy and Petroleum Tribunal
EPRA	Energy and Petroleum Regulatory Authority
ESI	Electrical Supply Industry
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMMP	Environmental and Social Management and Monitoring Plan
ESMS	Environmental and Social Management Systems
EMCA	Environmental Management and Coordination Act
EMF	Electromagnetic Field
FGD	Focus Group Discussions
GDC	Geothermal Development Company
GoK	Government of Kenya
HDPE	High Density Poly Ethylene
IAs	Implementing Agencies
IPPs	Independent Power Procedures
IPs	Indigenous Peoples
JV	Joint Venture
KETRACO	Kenya Electricity Transmission Company
KII	Key Informant Interviews
KOSAP	Kenya Off-Grid Solar Access Project
KPLC	Kenya Power and Lighting Company
LEP	Labour and Employment Plan
LGRCs	Local Grievance Redress committee
MGs	Mini Grids
MOE	Ministry of Energy
MSDS	Material Safety Datasheet
NEMA	National Environmental Management Authority
NGOs	Non-Governmental Organizations
NLC	National Land Commission

NTSA	National Transport and Safety Authority
OHS	Occupational Health and Safety
OM	Operation and Maintenance
OP	Operational Policies
PAD	Project Appraisal Document
PAPs	Project Affected Persons
PCU	Project Co-ordination Unit
PPAs	Power Purchase Agreements
PPEs	Personal Protective Equipment
PV	Photo-voltaic
REREC	Rural Electrification and Renewable Energy Corporation
RPF	Resettlement Policy Framework
SA	Social Assessment
SEA	Strategic Environmental Assessment
SHS	Solar Home Systems
SIA	Social Impact Assessment
SOP	Safe Operation Procedure
STDs	Sexually Transmitted Diseases
STI	Science, technology and innovation
SMMP	Social Management and Monitoring Plan
ToR	Terms of Reference
VMGF	Vulnerable and Marginalised Groups Framework
VMGs	Vulnerable and marginalized groups
VMGP	Vulnerable and Marginalised Group Plan
WB	World Bank
WMP	Waste Management Plan
WRA	Water Resources Authority

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EXECUTIVE SUMMARY

E-1- Introduction and Project Brief

The Ministry of Energy (MOE) hereinafter refer to as proponent is implementing the Kenya Off-Grid Solar Access Project (KOSAP) in 14 underserved counties in Kenya. The aim of the project is to provide clean and modern energy services through off-grid solar solutions. The Proponent is coordinating the implementation of the project through the implementing agencies; Kenya Power (KP) and the Rural Electrification and Renewable Emergency Corporation (REREC). The project is funded by the World Bank Group with $150 million and a $5 million grant from the Carbon Initiative for Development. The goal of the project is to bring electricity to around 250,000 households, 476 community facilities, and 380 boreholes in the target counties, benefiting low-income groups. It also includes the sale and installation of 150,000 efficient cook stoves. The project focuses on marginalized areas based on the County Development Index (CDI) and aims to address infrastructure deficits, lack of access to roads, electricity, water, and social services in these underserved counties. To ensure sustainability, the project relies on public funding, local community participation, and the institutional capacity of KP, REREC, and the MOE.

The KOSAP consists of four main components. The first component, focuses on the implementation of mini-grids to provide electricity to community facilities, enterprises, and households in areas where mini-grids are the most cost-effective option. The second component, aims to electrify households through standalone solar systems in areas without load clusters where standalone systems are the best technical and financial solution. The third component, supports the electrification of public institutions and community facilities using standalone solar systems. It also includes the installation of solar PV-powered water pumps for consumptive purposes. Lastly, the fourth component, provides funding for implementation support, technical assistance, and capacity building activities to ensure the sustainability and impact assessment of the interventions carried out under the other components of KOSAP.

In Marsabit County, one of the target counties, the Proponent is proposing to develop 15 No. mini grid facilities including Gatab Mini Grid discussed in this report. In order to adhere to both national and donor requirements, the Proponent engaged the services to the consortium of Norken International Limited and Centric Africa Limited to undertake the ESIA. The ESIA has been conducted following the requirements outlined in the Environmental Management and Coordination Act (EMCA) 1999 and its amendments, as well as international environmental and social policies such as the World Bank's OP 4.01 on environmental assessment.

E-2- Project Categorization and Justification

In the World Bank context, there have been several projects supported by the organization that aim to provide electricity to communities located far from the national grid. These projects utilize off-grid approaches, meaning they are independent of a national or regional grid. The experience gained from these projects provides valuable guidance for designing sustainable off-grid electrification initiatives, particularly those targeting dispersed and economically disadvantaged communities. The Gatab proposed site aligns with this category of projects that the World Bank has been involved in.

In the Kenyan context, the Environmental Management and Coordination Act (EMCA) of 1999, as amended in April 2019 through Legal Notice No. 31, classifies solar power farms and plants as medium risk projects. This categorization provides a framework for assessing and managing the potential environmental and social impacts associated with such projects. By categorizing the

Gatab site as a solar power facility, it falls within the medium risk project category as per the Kenyan legislative framework.

E-3 Approach and Methodology

The Environmental and Social Impact Assessment (ESIA) for the proposed project followed a structured process, beginning with kick-off meetings and online discussions involving the Proponent, Implementing agencies, and the World Bank Environmental and Social Safeguard Team. These consultations were instrumental in establishing the project's scope, deliverables, timeline, and methodology. Subsequently, screening and scoping exercises were conducted to evaluate potential social and environmental risks. A thorough desk-based review was also undertaken to assess existing project documentation, legal requirements, and relevant plans.

The study employed a comprehensive approach to gather primary and secondary data for the project. Both qualitative and quantitative methods were utilized, with secondary data obtained through literature reviews. Primary data collection involved various techniques, including physical observations, photography, interviews, and stakeholder consultations. This comprehensive approach enabled a comprehensive examination of the project's environmental and social aspects, ensuring a holistic understanding of its potential impacts.

The study further involved the identification and assessment of potential impacts throughout the project's life cycle. Key areas of evaluation included land use, water resources, biodiversity, air quality, noise levels, community health and safety, and socio-economic conditions. To mitigate adverse effects, the study developed environmental and social management and monitoring plan, aiming to address both positive and negative impacts that may arise from the project. These measures aimed to ensure the project's sustainability and enhance its overall environmental and social performance.

E-4 Legislative Regulatory Framework

The evaluation, planning, and implementation of the proposed project is guided by the World Bank's Environmental and Social Framework, the national legislative framework, and the project's safeguard instruments. These measures aim to ensure environmental sustainability, protect the rights and needs of indigenous peoples and marginalized groups, and minimize adverse impacts through effective management and mitigation measures.

The Government of Kenya established the Environmental Management and Coordination Act (EMCA) in 1999, providing a legal framework for environmental management. EMCA takes precedence over other sectoral laws related to the environment. In 2013, the government formulated a national Environmental Policy with the goal of promoting sustainable management and use of the environment.

Collaboration and consultation among government agencies and stakeholders are essential for coordinating environmental management effectively. Key institutions in Kenya responsible for environmental issues include the National Environment Management Authority (NEMA), County Environment Committees, National Environmental Complaints Committee, National Environment Action Plan Committee, Standards and Enforcement Review Committee, National Environment Tribunal, and National Environment Council (NEC).

The project also adheres to the World Bank Safeguard Policies, which aim to improve decision-making processes, promote sustainable project options, and involve affected people in

consultations. The applicable operational policies for this project include Environment Assessment, Natural Habitats, Indigenous Peoples, and Involuntary Resettlement. The Environmental and Social Impact Assessment (ESIA) considers these policies and addresses potential environmental and social concerns.

Additionally, the ESIA references other Safeguard Instruments prepared under the Kenya Off-Grid Solar Access Project (KOSAP), including the Environmental and Social Management Framework (ESMF), Resettlement Policy Framework (RPF), and Vulnerable and Marginalized Groups Framework (VMGF). These instruments provide procedures and guidelines for assessing and managing environmental and social aspects specific to the proposed subprojects under KOSAP.

E-5 Environmental Setting

The project area in Gatab village, Loiyangalani Ward, Laisamis subcounty in Marsabit County, the specific project location consists mainly of sandy soil with some patches of depressed loam soil. The project site is on Mt. Kulal, which reaches 2,235 meters above sea level, however, the surrounding topography of the county is predominantly flat, ranging from 300 to 900 meters above sea level. The area relies on groundwater, with three water catchments found in higher elevations, while lower regions depend on boreholes and shallow wells. The surrounding area falls into four main zones: sub-humid, semi-arid (woodlands), arid (bushlands), and very arid (scrubland). The project area on Mt. Kulal falls under the semi-arid woodland zone, supporting dense evergreen forests with high rainfall and low evapo-transpiration. This zone is suitable for agro-pastoral livelihoods and rain-fed agriculture, serving as an important water catchment for surrounding areas and feeding seasonal rivers flowing westwards to Lake Turkana.

E-6 Project Description

The Gatab Mini Grid project aims to provide electricity to approximately 338 residential and 6 nonresidential consumers in Gatab village, Loiyangalani Ward, Laisamis subcounty in Marsabit County.

The project will utilize solar photovoltaic panels, a Battery Energy Storage System, and a Diesel Generator to generate electricity. A 17.5km Low Voltage Power Distribution Network will be established to distribute the power to customers. The project utilizes solar panels with a total capacity of 100 kWp to harness solar energy. Solar power is a clean and renewable energy source that will provide a significant portion of the electricity needed for the project. A 250kWh Battery Energy Storage System is incorporated to store excess solar energy during the day, ensuring a consistent power supply even during cloudy or nighttime conditions. A 60 kVA diesel generator is included to serve as a backup power source for periods of low solar generation or in case of battery depletion. It provides reliability and backup in the event of extended periods of cloudy weather or high demand. A 2,000-liter fuel tank is provided to store diesel fuel for the generator, ensuring continuous operation during extended periods of low solar or high demand. Additionally, a 100-kW solar PV inverter is used to convert the direct current (DC) electricity generated by the solar panels into alternating current (AC) electricity suitable for consumer use.

The estimated cost of the project is around USD 582, 749.48 although this amount may change as more detailed plans are developed.

The project consists of two main components: Hybrid Mini-Grids and power line reticulation lines. The Hybrid Mini-Grids will combine solar panels and diesel power generation. These energy sources will be integrated through a centralized photovoltaic plant connected to a 3-phase AC busbar line. The configuration is designed to prioritize direct supply from the solar generator during daylight hours, reducing reliance on battery storage. The battery storage will primarily be used when solar generation is low, or demand is high. The construction of power line reticulation lines will ensure the efficient distribution of electricity to residential, commercial, and other consumers, ensuring a reliable and efficient power supply.

To develop the Gatab Mini Grid approximately 0.6647 hectares of land will be acquired from the community in line with the national laws and World Bank provisions. In accordance with the World Bank's Operation Policy (OP) 4.12 on Involuntary Resettlement, an abbreviated Resettlement Action Plan (A-RAP) was prepared, outlining the principles and procedures for land acquisition and compensation. This plan is annexed to this ESIA.

E-7 Project Alternatives

Solar energy is identified as a non-polluting and site-specific option, and the proposed site for Gatab MG is chosen as the most suitable location for the mini grid based on factors such as sunlight availability and the community's lack of grid connectivity. The use of wind power, thermal power, fossil fuels, and power import from neighboring countries are considered as alternative methods of power generation but are found to have limitations or environmental concerns. Solar energy is favored due to its low production costs, versatility, clean nature, and economic savings. The "No Project" alternative is deemed unfavorable as it would maintain the current lack of electricity access and hinder socio-economic development. The project will be constructed using modern materials and technology, with a focus on public health, safety, security, and environmental requirements. The technology will involve a Battery Energy Storage System.

E-8 Stakeholder Engagement

It is important to highlight that two forms of stakeholder engagement were carried out for the project. The first form as noted earlier, focused on the acquisition of land for the project and involved the Proponent and the implementing agency (KPLC). The second form of engagement was conducted specifically for the Environmental and Social Impact Assessment (ESIA) study.

For the ESIA study, various methods were employed to engage stakeholders, taking into consideration their different categories. Face-to-face discussions were held with government officials and key stakeholders, while separate focused group discussions were conducted with men, women, and youth. Additionally, a public baraza or meeting was organized to allow community members to participate.

During the ESIA stakeholder engagement public meeting, which took place on January 19, 2022, a total of 47 stakeholders attended. The meeting provided an opportunity to discuss project details, including the preliminary design, positive and negative impacts, and mitigation measures. Stakeholders were encouraged to share their views and provide feedback on the project.

Some of the concerns raised by stakeholders included Mindray hematology analyzer for the local dispensary, repairs of the water network and repairs at Gatab primary school-general repairs (replacement of 5 doors, lockable drawers for all classes, replacement of window panes and paintings. The priority project will be undertaken for the community as compensation in kind.

Furthermore, public facilities such as schools, health centers, and boreholes would be connected to the electricity supply.

The community's priority project as compensation in kind was spread across the three sectors in order of priority as follows; Mindray hematology analyzer for the local dispensary, repairs of the water network and repairs at Gatab primary school-general repairs (replacement of 5 doors, lockable drawers for all classes, replacement of window panes and paintings

E-9 – Impacts and Mitigation Measures

The Environmental and Social Impact Assessment (ESIA) for the proposed Solar Mini-grid project has identified both positive and negative impacts across its different phases: pre-construction, construction, operation, and decommissioning. In the construction phase, positive impacts include local employment opportunities, boosting local businesses, and sourcing materials locally. During the operation phase, positive impacts encompass reliable power supply, economic improvement, education, health benefits, improved living standards, and enhanced security and communication. Similarly, the decommissioning phase offers positive impacts such as local employment and sourcing.

On the negative side, the pre-construction phase involves minor impacts like land acquisition, while the construction phase encompasses various minor to moderate impacts such as vegetation clearance, soil erosion, dust emissions, and occupational health and safety concerns. Challenges related to stakeholder engagement, labor influx, child labor, and exclusion of vulnerable individuals are also anticipated. In the operation phase, negative impacts include waste generation, increased oil consumption, fire outbreaks, occupational health and safety concerns, and inadequate stakeholder engagement. Issues of exclusion, inadequate grievance management, and public health concerns may arise as well.

During the decommissioning phase, negative impacts primarily relate to solid waste generation, noise and vibration, and challenges in stakeholder engagement, labor influx, child labor, gender-based violence, and exclusion of vulnerable individuals and households.

Table 0-2 below present summaries of anticipated impacts and their corresponding levels of significance, both pre- and post-mitigation.

Table 0-1: Summary of Pre-construction, Construction, Operations and Decommissioning Impacts

Summary of Pre-construction Impacts		
Impact	**Significance Of Impact (Pre-Mitigation)**	**Residual Impacts (Post-Mitigation)**
Land acquisition	Minor	Negligible
Way leaves	Minor	Negligible
Stakeholder identification and consultations	Major	Minor
Summary of Construction and Decommissioning Phases Impacts		
Impact	**Construction phase**	**Decommissioning phase**
Impacts on Local Economy and Employment	Positive	Positive
Change in land use	Moderate	Positive
Site rehabilitation	Not Applicable	Positive
Topography	Minor	Not Applicable
Soil environment	Minor	Minor
Air Quality	Moderate	Moderate

Summary of Pre-construction Impacts		
Impact	**Significance Of Impact (Pre-Mitigation)**	**Residual Impacts (Post-Mitigation)**
Ambient noise	Minor	Minor
Visual intrusion and change in landscape	Minor	Positive
Waste generation and soil contamination	Minor	Minor
Impact on water environment	Minor	Not Applicable
Impacts from hazardous materials	Minor	Not Applicable
Fire hazards	Moderate	Minor
Impacts of construction material sourcing	Moderate	Not Applicable
Energy consumption	Negligible	Not Applicable
Occupational safety and health	Moderate	Moderate
Community safety and health	Moderate	Moderate
Labor influx	Minor	Minor
Child labor	Minor	Negligible
Cultural heritage	Minor	Not Applicable
Gender based violence, SEA and SH	Minor	Minor
Exclusion of VMGs, Vulnerable individuals and households	Major	Major
Risk of communicable diseases	Minor	Minor
Increased water demand	Negligible	Negligible
Forced labor	Minor	Negligible
Summary of Operation Phase Impacts		
Impact	**Significance Of Impact (Pre-Mitigation)**	**Residual Impacts (Post-Mitigation)**
Impact On Economy and Employment	Positive	Positive
Quality, reliable power supply	Positive	Positive
Reduction of pollution associated with thermal power generation, kerosine and wood fuel usage	Positive	Positive
Education	Positive	Positive
Health benefits	Positive	Positive
Improved standard of living	Positive	Positive
Security	Positive	Positive
Communication	Positive	Positive
Soil environment	Minor	Negligible
Waste generation and management	Minor	Negligible
Water environment	Negligible	Negligible
Landscape and visual impacts	Minor	Negligible
Increased oil consumption	Minor	Negligible
Increased storm water flow	Minor	Negligible
Fire outbreaks	Moderate	Minor
Water demand	Negligible	Negligible
Sanitary waste	Negligible	Negligible
Flooding	Negligible	Negligible
Noise and Vibration	Negligible	Negligible
Electric and magnetic fields (EMFs)	Negligible	Negligible
Dust Emission	Negligible	Negligible
Vehicle Exhaust emission	Minor	Negligible

Summary of Pre-construction Impacts		
Impact	**Significance Of Impact (Pre-Mitigation)**	**Residual Impacts (Post-Mitigation)**
Collision and electrical hazards from distribution infrastructure	Minor	Negligible
Occupational safety and health	Moderate	Minor
Community safety and health	Moderate	Minor
Gender based violence, SEA and SH	Minor	Negligible
Exclusion of VMGs, Vulnerable individuals and households	Major	Minor
Risk of communicable diseases	Minor	Negligible
Shocks and electrocution to the beneficiaries	Moderate	Minor
Risks related to poor and inadequate stakeholder engagement (conflict)	Minor	Negligible

E-10 Environmental and Social Management and Monitoring Plan

A comprehensive set of mitigation measures in the form of an Environmental and Social Management and Monitoring Plan (ESMMP) have been prepared for the project. The ESMMP serves as a comprehensive framework for the integrated management of all environmental and social impacts throughout the project's lifecycle. It has been prepared to ensure that the social and environmental impacts and risks identified during the Environmental and Social Impact Assessment (ESIA) process are appropriately managed during the construction, operations, and decommissioning phases of the project. It specifies the mitigation and management measures that the project proponent and contractor are committed to implementing and outlines how organizational capacity and resources will be mobilized to achieve these measures. The ESMMP also ensures compliance with the relevant laws, regulations within Kenya, as well as the environmental and social sustainability requirements of the World Bank's Operational Policies (OPs).

These measures emphasize a proactive approach, prioritizing prevention rather than reaction. They encompass various aspects such as proper waste handling and disposal to prevent pollution, engaging stakeholders to address grievances, providing personal protective equipment (PPE) for workers, ensuring adequate supervision, and emphasizing good workmanship from the contractor. Specific plans are also outlined to address specific issues that may arise. The ESMMP also highlights environmental performance indicators that should be regularly monitored. Monitoring serves as a means to detect and draw attention to any changes or problems in environmental quality. It involves continuous or periodic reviews of the ESMMP implementation progress, allowing for adjustments and improvements as necessary.

While accommodating the recommended mitigation measures to the extent practical and economically viable, the project proponent and contractor should ensure that the measures do not compromise the economic viability of the project or have long-lasting adverse impacts on the environment.

For the mitigation measures to be successful, it is imperative that the Kenya Power and Lighting Company (KPLC) allocates sufficient resources for the implementation of the ESMMP. Adequate

resources will enable the proper execution of the proposed measures and ensure their effectiveness in minimizing the identified negative impacts.

Following the project's commissioning, it is mandatory to conduct statutory Environmental and Safety Audits in accordance with national legal requirements. These audits serve to evaluate the environmental performance of the site operations and assess their compliance with the recommended mitigation measures.

E- 11 Conclusion

Based on the assessment findings, the consultant concludes that there are no substantial reasons to hinder the proposed project from progressing to the next stage of planning and development. However, this progression is conditional upon the implementation of the recommended mitigations and the monitoring of potential environmental and socio-economic impacts as outlined in the ESMMP.

It is in the opinion of the Environmental expert that the anticipated negative impacts can readily and effectively be mitigated and on the whole the proposed project does not pose any significant threat to the Environment and may be licensed to proceed.

1 INTRODUCTION

The Ministry of Energy (MOE) Kenya is coordinating the implementation of the Kenya Off-Grid Solar Access Project (KOSAP) to provide access to clean and modern energy services through off-grid solar to 14 underserved counties. Marsabit county was identified as one of the underserved Counties and others include Mandera, Narok, Garissa, Tana River, Samburu, Isiolo, Marsabit, West Pokot, Turkana, Taita Taveta, Kwale, Kilifi and Lamu.

Driven by the imperative to provide equal opportunities across the entire Kenyan territory as key to achieving Kenya's Vision 2030, and the National target of achieving universal access to electricity, the GoK now seeks to close the access gap by providing electricity services to remote, low density, and traditionally underserved areas of the country. The World Bank's (WB)Country Partnerships Strategy (CPS) for Kenya (2014-18) also recognizes the access to basic electricity, as a key developmental issue. The strategy sets at improving core infrastructure as one of the Projects the WB will be engaged in. It also emphasizes the importance of mobilizing concessional funding to expand the sector including electricity generation, transmission, and distribution to meet the Government's economic growth targets.

KOSAP directly promotes the achievement of these objectives by supporting the use of solar and clean cooking Solutions to drive electrification of households (including host communities), enterprises, community facilities, and water pumps in Marsabit county as one of the counties in Kenya that have been defined as "marginalized areas" based on the County Development Index (CDI) by the Commission on Revenue Allocation (CRA). According to the CRA as the communities in the marginalized areas have been excluded from social and economic life of Kenya for different reasons" (CRA, 2013).

Marsabit County and other identified underserved counties, collectively represent 72% of the Country's total land area and 20% of the Country's population, including historically nomadic societies that even today continue to rely on pastoralism. The population in Marsabit county is highly dispersed, at a density of about 75,000 per sq. km with the lowest being 46,000 per sq. km to 105,000 per sq. km. They present profound infrastructure deficits, including lack of access to roads, electricity, water, and social services. There is also significant insecurity in certain areas, giving rise to substantial numbers of displaced persons and livelihood adaptations that further undermine economic prosperity.

1.1 Context

This ESIA report has been prepared based on Site visit baseline survey, desktop survey, documentation review, consultation with stakeholders and in accordance Environmental Management and Coordination (Amendment) Act, 2015 and World Bank's Environmental and Social Safeguards. The study has also assessed the requirement of the project with respect to the local and national regulations relevant to the project.

Norken International Limited in Joint Venture with Centric Africa Limited were appointed by Ministry of Energy to undertake consultancy services for the Environmental and Social Impact Assessment (ESIA), Social Assessment (SA) and Vulnerable and Marginalized Groups Plan (VMGP) as per the standard TOR and NEMA and WB ESS. As reported, land acquisition has not resulted in any economic or physical displacement and no resettlement is envisaged for the proposed project.

Due to the remoteness and sometimes dispersed nature of the target populations and considering the lifestyles and socio-economic status of those residing in underserved Counties, the Project is designed to address low affordability of the potential users, and sustainability of service provision. Therefore, sustainability of the proposed approach to energy access expansion beyond the Nationally owned power network is predicated on two primary factors - public funding, local community participation: and institutional capacity of Kenya Power and, Rural Electrification and Renewable Energy Corporation (REREC) and the Ministry of Energy (MOE) as the implementing agencies.

The project components are:

- Component 1- US$40M: Mini-grids for Community Facilities, Enterprises, and Households -This component will support electrification of areas where electricity supply through mini-grids represents the least cost option from a country perspective.
- Component 2- US$48M: Stand-alone Solar Systems and Clean Cooking Solutions for Households; This component will support electrification of households using standalone solar systems in areas where load clusters do not exist, and the best technical and financial solution is standalone solar systems.
- Component 3- US$40M: Stand-alone Solar Systems and Solar Water Pumps for Community Facilities; This component will support electrification of public institutions and community facilities using standalone systems. This component will also support the installation of solar PV-powered water pumps for consumptive purposes.
- Component 4- US$22M: Implementation Support and Capacity Building; This component will finance various technical assistance and capacity building activities to ensure the sustainability and measure the impact of the interventions devised and implemented within the other components of KOSAP.

The MOE provides overall coordination of the project as well as lead in the implementation of components 2 and 4. Components 1 and 3(a&b) will be implemented by the Kenya Power and Lighting Company (KPLC) and the Rural Electrification and Renewable Energy Corporation (REREC), respectively.

1.2 Project Overview

The project is located at about 30km south east of Loiyangalani and 120km north west of Marsabit town in Mt. Kulal, Loiyangalani Ward in Laisamis subcounty in Marsabit County at coordinates of Latitude 2°38'51.7"N and Longitude 36°55'44.0"E. The proposed solar mini grid will be located on a 0.6647 HA piece of land.

Figure 1. Map showing the proposed site

The solar mini grid will contain Solar panels, batteries, invertors, perimeter fence and length of transmission line to cover a circuit distance of approximately 10.94 km.

1.3 Purpose and Scope of Work

This report discusses the environmental and social baseline within which the proposed solar power project is commissioned and assesses the potential adverse and beneficial impacts that the project could have, along with suitable mitigation measures and an Environmental and Social Management Plan (ESMP) for the project. The report also evaluates the environmental and social risks associated with the project and implements mitigation measures to avoid adverse impacts for the remainder of the project's lifecycle. The project must comply with international standards (World Bank Environmental and Social Safeguards) along with applicable national, state, and local regulations.

1.4 ESIA Methodology

1.4.1 Screening and Scoping

1.4.1.1 Screening Methodology

Evaluation of ESIA procedure has been undertaken as a fundamental procedure to implementation of the solar power mini-grid development project which is systematically mainstreamed into the project's Cycle. World Banks Social safeguards underpin and demonstrate this commitment. The main aim of this is to enhance positive social opportunities and benefits as well as ensure that adverse social and environmental risks and impacts are avoided, minimized, and mitigated.
The below steps were followed.

1.4.1.2 Kick-off Meeting

Norken and Centric team had a brief kick-off meeting with the Proponent on 12th July 2021 followed by subsequent online meetings and discussion on various aspects of the project up to 5th August, 2021 and 15th September, 2021. The meetings addressed varied deliverables and thresholds to be achieved and maintained during this assessment in terms of scope of work, deliverables, timeline and the methodology. All communication and meetings were done online.

1.4.1.3 Desk based review and baseline assessment

A comprehensive description of the KOSAP Component 1: project includes a desktop review of all the existing project documentation including the Project Appraisal Document and the four main safeguard framework documents prepared under KOSAP- these are Social Assessment, Vulnerable and Marginalized Group Framework, Resettlement Policy Framework and the Environmental and Social Management Framework.

1.4.2 Project Description

The report has concisely described the project location including its geographical, ecological and the general layout of associated infrastructure including maps at an appropriate scale where necessary. Location of all projects related development sites, including proximal offsite investments; general layout; flow diagrams/drawings of facilities/operation design basis, size, capacity, flow-through of unit operations, including pollution control technology included if any; pre-construction activities and construction activities; construction schedule; staffing size and support; facilities and services around; commissioning, operation and maintenance activities and plan

1.4.3 Baseline Condition

This entails description and collection of relevant primary data within the project site's bio-physical, socio-economic, and cultural profile with respect to the biodiversity profile, land use types, cultural heritage and practices, social and economic issues likely to be affected, expected project activities to be involved during the design, construction, and operation of the proposed facility. The information also includes description of the community social structure, employment and labour market, sources and distribution of income, cultural/religious sites and properties, vulnerable groups, and indigenous populations. This also covers description of the sites' physical environment including their topography, land cover, geology, climate and meteorology, air quality and hydrology. This entails use of secondary data sources and for some specific

environmental parameters the deployment of specialized equipment to measure and record the environmental readings as primary data for analysis and inclusion in the ESIA CPR report. The ecological and biophysical environment will focus on describing the *flora* and *fauna* resident in the Marsabit county at the mini-grid site level. This will be based on ecological surveys, KPIs on local indigenous knowledge on historical and status of rare, endemic, and endangered plant and animal species known to occur in these localities. Vegetation assessment was done to gain an understanding of the mini-grid sites habitat type. This has provided for an in-depth description of existing land use type and their linked socio-economic activities.

1.4.4 Impact Assessment Prediction

The anticipated impacts generated by the project and subsequent evaluation of their significance is provided by this report. A suite of field data collection methods was deployed including public forums discussions, Focus Group Discussions, Key Informant Interviews incorporating questionnaires for social risks assessment. Based on the outcome of the evaluation, the need for emphasis on critical areas was discussed. To accomplish this task an initial listing of the range of all issues and concerns identified during the study has been undertaken subsequently followed by analysis of the identified potential environmental and social impacts in terms of type (direct, indirect, cumulative, positive, negative), magnitude (local, widespread, random, severity) and duration (temporary, permanent, long term, short term). Consequently, an evaluation system will be used to categorize these impacts and evaluate them. This aided in determining the significance of the identified potential impacts in relation to established criteria or standards, geographic extent of effects, cumulative nature of the impact, community tolerance and preferences, etc. This culminated into generation of a short list of the most critical issues in terms of environmental, ecological, and social impacts both positive and negative associated which the different phases of the project activities that are likely to affect the baseline environmental and social conditions presently occurring at the mini-grid sites.

Socio-cultural risks linked to Component 1 of KOSAP were identified during the assessment. These include, Labour influx, Gender Based Violence, Sexual Exploitation and Abuse, workplace Sexual Harassment, Spread of HIV/AIDS, STDs & other communicable diseases, Gender biases and inequality exclusion of vulnerable and marginalized groups (VMGs) and vulnerable individuals and households from accessing project decision making and governance structures, engagement processes, opportunities, and benefits. The vulnerable individuals and households will include the poor, elderly persons, PWDs, the sick, poor women, poor single mothers, child-headed households. The VMG's include ethnic minority communities that are present in Gatab area.

The impacts and risks were identified in relation to free, prior, and informed comprehensive stakeholder consultations on land acquisition for construction of mini-grid, contractor's facilities e.g., yard and workers camp site, way leave acquisition for the powerline distribution network; restricted access to grazing lands, water resources, soils and tree resources, economic/livelihoods displacement etc.

1.4.5 Environmental and Social Management Plan (ESMP)

The ESMP as the implementation instrument of the ESIA has captured all the parameters that need to be monitored on a routine basis. The parameters as indicated in an Environmental and Social Management and Monitoring Plan (ESMMP) matrix, a detailed description of the implementation and monitoring program.

The ESMMP has a detailed arrangement of responsibilities for managing and monitoring the implementation of mitigation measures and the impacts of the project during construction, operation, and decommissioning. This include: a description of monitoring methodology, specific operations, and features to be monitored, monitoring reporting relationships and arrangements to ensure that monitoring is effective. Simple and straightforward monitoring processes established for ease of implementation through the project cycle. This plan follows through a description of the impacts and areas affected, key mitigation measures, monitor-able indicators, timeframe, responsibilities, and budget implications.

The ESMP include an implementation schedule and budget cost estimates for the mitigation measures both capital and recurrent costs estimates and the financing entity. It also describes institutional arrangements regarding the implementation of the ESMP among the implementing agencies, and the mini-grid contractor(s). This has specific responsibilities, procedures and resources required by each institutional actor engaged in implementing the ESMP.

The "Chance Find Procedures" has also been included in the ESMP as part of prevention and mitigation measures that will be implemented in the event physical cultural resources are encountered during subproject implementation.

Additionally, the ESMP has a component on contracting management that will ensure the implementation of the ESMP by all contractors and subcontractors. A contracting mechanism is included in the ESMP to incentivize contractors and their subcontractors to comply with the ESMP or alternatively penalize them for failure to comply with the ESMP. It also includes contractor clauses that will cover worksite health and safety, the environmental and social management of construction sites; labour camps/out of area workers, HIV/AIDS, and other Sexually Transmitted Diseases (STDs), stakeholder engagement plans, grievance redress mechanism, child protection, gender equity and sexual harassment, labor rights and the employment of community members. The ESMP also have a budget to guide the contractor on resources required for the implementation and monitoring of the ESMP.

Figure 3 is a summary of the methodology the firm will adopt in undertaking environmental and social impacts assessment for the proposed KOSAP project

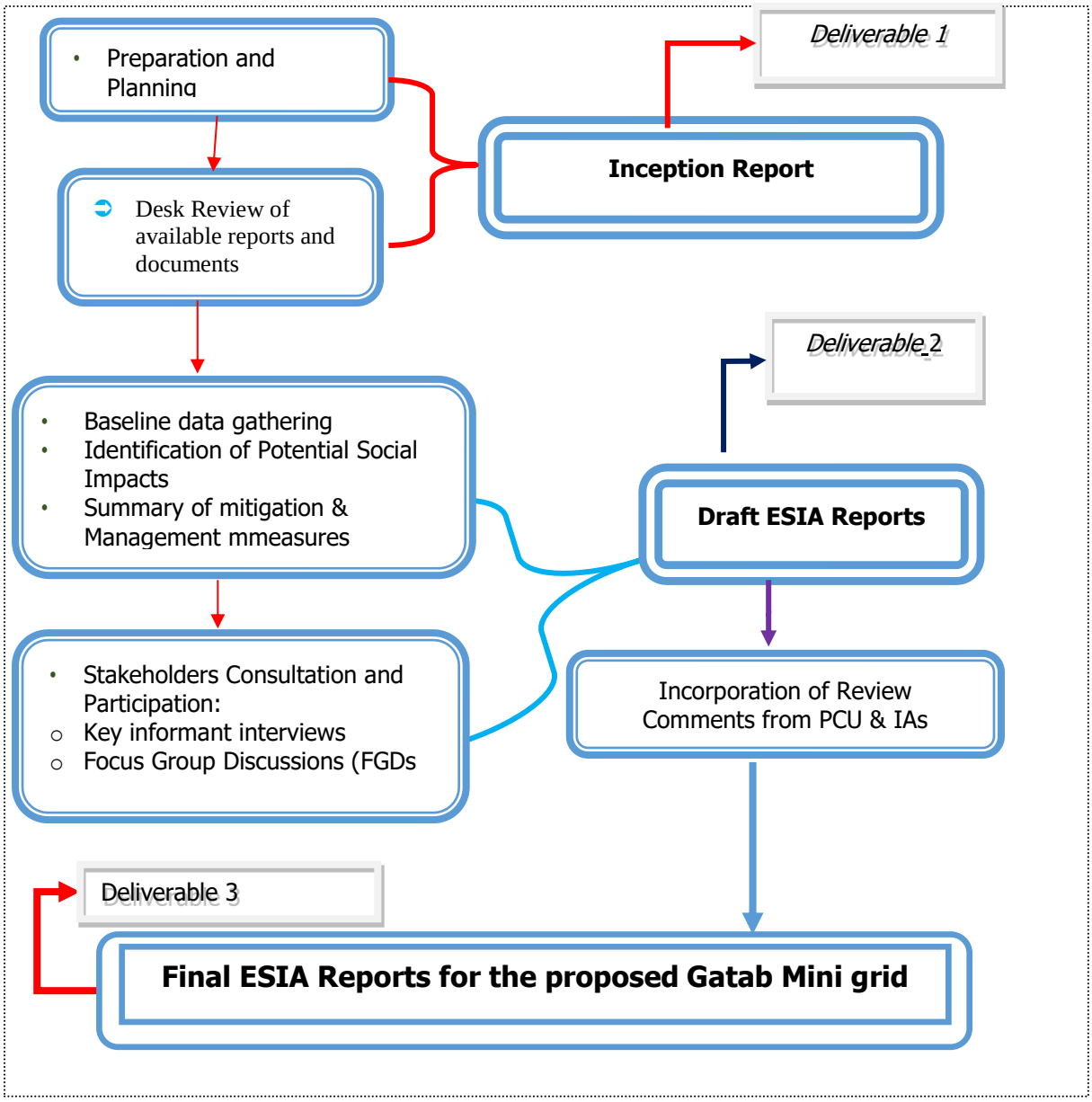


Figure 2: Summary of Environmental and Social Impact Assessment Methodology

1.5 ESIA Study Team

Below is the list of the planning and field team for the study:

NAME	INSTITUTION	POSITION
Bubicha Mohamed	Centric Africa Ltd	Environmentalist
Mathew Mutua	Centric Africa Ltd	Environmentalist
Daniel Chumo	Centric Africa Ltd	Environmentalist
Hottensia Kabuki	Centric Africa Ltd	Sociologist
CLIENT REPRESENTATIVES		
Jalle Gesille	Marsabit County Government	CREO
Jacob Chepkwony	Ministry of Energy	Engineer

1.6 Limitations

The limitation experienced during the study are illustrated below.

- ✓ Due to drought that was being experienced the community member were engaged in looking for water and pasture thus delaying in attending public participation meetings. This was mitigated by starting the meeting early enough
- ✓ Risk of being infected or transmitting COVID-19. The teams had to adopt preventive measures by wearing face mask and providing the community members with face mask and sanitizers during the public meetings and interactions.

1.7 Layout of the Report

Table 2. Structure of the ESIA Report

SECTION	TITLE	DESCRIPTION
Section 1	Introduction	(*This section*) Introduction to the Project and ESIA scope and methodology adopted.
Section 2	Project Description	Technical description of the Project & related infrastructure and activities.
Section 3	Applicable Legal and Regulatory Framework	Discusses the applicable environmental and social regulatory framework and its relevance for the Project. (The world bank safeguards and EMCA and environmental regulations)
Section 4	Environmental, Ecology and Social Baseline	Outlines Environmental, Ecology and Social Baseline status in the study area of the Project
Section 5	Stakeholder Engagement and Grievance Redress	Provides an overview of the stakeholder engagement activities undertaken during the ESIA, stakeholder categorization and profiling Additionally, it details the provision of Grievance Redress Mechanism for the project
Section 6	Impact Assessment and Mitigation Measures	This section includes details of identified environmental impacts and associated risks due to Project activities, assessment of significance of impacts and presents mitigation measures for minimizing and /or offsetting adverse impacts identified.
Section 7	Environmental and Social Management Plan	Outline of the ESMP considering identified impacts and planned mitigation measures and monitoring requirements.
Section 8	Impact Summary and Conclusion	Summary of impacts identified for the Project and conclusion of the study.

2 PROJECT DESCRIPTION

2.1 Introduction

This section provides a description of the project in terms of location, facilities and associated project infrastructure and activities during the project lifecycle and facilitates and identification of the potential impacts on resources and receptors that could result from project activities during the pre-construction, construction, operation, and decommissioning stages.

The components of the proposed solar mini grid are provided as follows.

Table 3. Component of the proposed Solar Mini-grid

S/NO.	PARTICULARS	DESCRIPTION
1.	Project location	The project is located in Mt. Kulal, Loiyangalani Ward in Laisamis subcounty in Marsabit County on 0.6647 HA of unregistered community land set aside for public use. Geographically, the site is located on Latitude 2°38'51.7"N and Longitude 36°55'44.0"E, at altitude of 1695 metres above the sea level.
2.	Land Size/Tenure	The proposed solar mini grid will be located on a 0.6647 HA piece of land next to Gatab primary school to the immediate south at Gatab sub-location, Mt. Kulal location. The land is an unregistered community land set aside for public use.
3.	Mini grid Power	Minimum PV Inverter of 100kw; 250kWh Battery;60kva generator capacity
4.	Distribution line	LV Circuit of 17.5km
5.	Target Consumers	344 (338 Residential and 6 Non-Residential)
6.	Climatic condition	The area supports dense evergreen forests and is characterized by high rainfall of up to 1,000mm per annum, low evapo-transpiration. The area is located at the top of Mt. Kulal which is at 1,700m above sea level supports dense evergreen forests and is characterized by high rainfall of up to 1,000mm per annum, low evapo-transpiration. This zone mainly supports agro-pastoral livelihood systems and have soils that are suitable for rain-fed agriculture. The area is an important water catchment point for the surrounding areas. The area is a source of water to several seasonal rivers that extends westwards to Lake Turkana and the surroundings.
8.	Site Conditions	The project site is located on a flat section at the top slopes of Mt. Kulal which is at 2,235m above sea level dwarf indigenous trees species such as cider. The area is characterized by sandy loam soils and with sharp escarpment to the northern side to the site.
9.	Road Accessibility	Earth and dirt Road to Loiyangalani and Gatab.
10.	Nearest Airport	Gatab Airstrip at about 1.5km south of the site.
11.	River/canal/nallah/ pond present in project footprint	Presence of dense streams and tributaries originating form Mt. Kulal Forest. Located near the site to the northern, western and eastern part of the site
12.	Protected areas (National Park/ Sanctuary)/ Forest land within 10 kms	Mt. Kulal Biosphere Reserve located at about 2km northeastern part of the site

2.2 Project Location

The project site is located in Gatab village next to Gatab Primary School at 100m to the south, a steep escarpment to the immediate north which extends to the north west and north eastern directions. The site is administratively located in Gatab village, Loiyangalani Ward, Laisamis subcounty in Marsabit County at coordinates of Latitude 02°38'51.7"N and Longitude 36°55'44.0"E. The proposed power mini grid will be constructed on approximately 0.6647 Ha.

The site is primary covered by red loam soils.

Figure 3: Proposed site for the Gatab Solar Mini-Grid with Scarce Vegetation

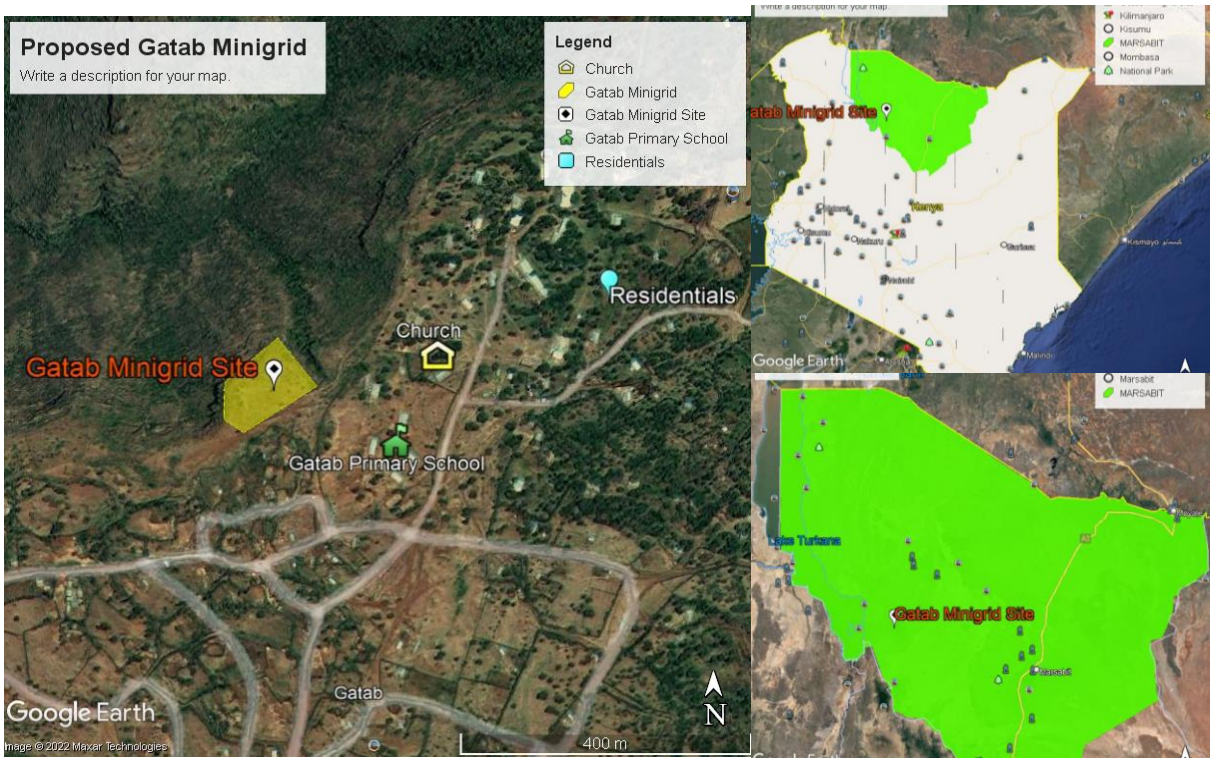


Figure 4: Project location

2.2.1 Project site setting

The proposed Gatab mini grid is in Marsabit County. It falls under cluster 3 with a total of 48 mini grids and lot 2 which has a total of 35 mini-grids. Geographically, Gatab site falls on coordinates Latitude 02°38'51.7"N and Longitude 36°55'44.0"E.

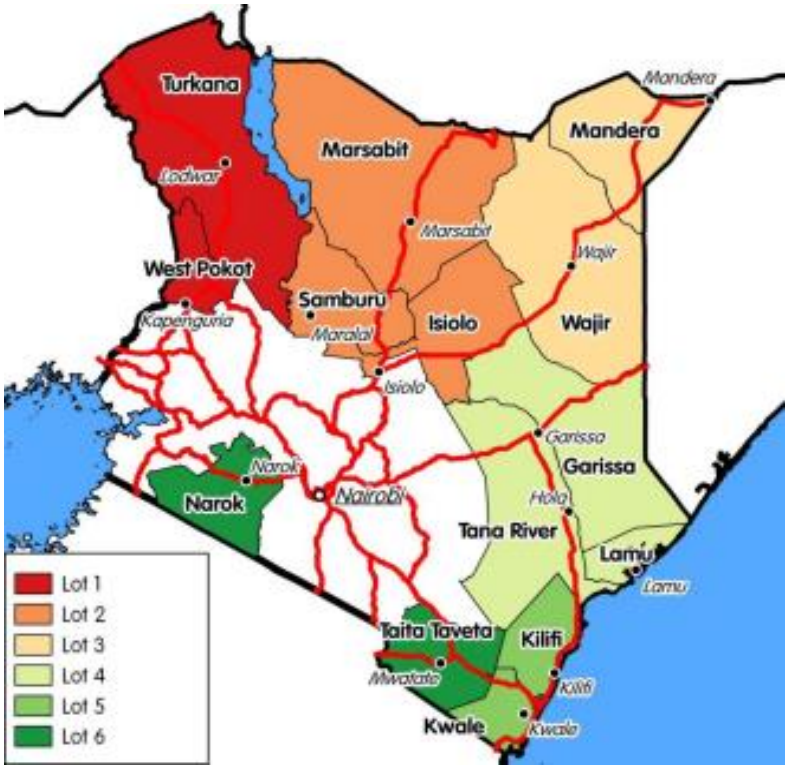


Figure 5: Map Showing the KOSAP Counties with Lot classification

2.3 Description of Project Facilities, Components and Activities

Name	Residential	Non-residential	LV Circuit (km)	Peak demand (kw)	Generation output (kw)	PV(DC-KWp)	Batteries	Generator (kva)	Generator Fuel Tank (L)	Cost (USD
Gatab	338	6	17.5	57	100	100	250	60	2000	582,749.48

2.3.1 Project Components

- **Solar Photovoltaic Panels**: The project utilizes solar panels with a total capacity of 100 kWp to harness solar energy. Solar power is a clean and renewable energy source that will provide a significant portion of the electricity needed for the project.
- **Battery Energy Storage System**: A 250 kWh Battery Energy Storage System is incorporated to store excess solar energy during the day, ensuring a consistent power supply even during cloudy or nighttime conditions.
- **Diesel Generator:** A 60 kVA diesel generator is included to serve as a backup power source for periods of low solar generation or in case of battery depletion. It provides reliability and backup in the event of extended periods of cloudy weather or high demand.
- **Fuel Tank for Diesel Generator**: A 2,000-liter fuel tank is provided to store diesel fuel for the generator, ensuring continuous operation during extended periods of low solar or high demand.
- **Inverters and Chargers:**

  PV Inverter: A 100kW solar PV inverter is used to convert the direct current (DC) electricity generated by the solar panels into alternating current (AC) electricity suitable for consumer use.

Battery Inverter Charger: A 60 kW battery inverter charger is employed to manage the energy flow to and from the battery storage system. It ensures efficient charging and discharging of the battery, maximizing the system's overall performance.

- **Transformers:** The solar mini- grid site will be equipped with one step up transformer with a rating of 100KVA and 2 step down transformers with a rating of 50 KVA.
- **Low Voltage Power Distribution Network:**

  A 17.5-kilometer Low Voltage (LV) power distribution network is established to distribute the generated electricity to the residential and nonresidential consumers. The LV network is designed to efficiently transmit power while minimizing losses, ensuring a stable supply to the customers.
- **Project Metrics:**

  Monthly Energy Demand: The project is expected to meet a total monthly energy demand of 9,160 kWh.

  Daily Energy Demand: The average daily energy demand is approximately 305 kWh, ensuring a consistent supply for the consumers.

  Peak Demand: The peak demand of the system is 57 kW, which is the maximum power requirement during any given moment.
- **PV Capacity**: The solar photovoltaic panels have a total capacity of 100 kWp.
- **Estimated Project Cost:** The estimated cost of the Gatab Mini Grid project is approximately USD 582,749.48. It's important to note that this cost may be subject to change as more detailed plans and implementation phases are developed. The investment is expected to provide long-term benefits to the local community, improving their quality of life, economic opportunities, and access to modern amenities.

2.3.1.1 Solar PV modules

The project will use PV Array (DC-kW) 90 polycrystalline silicon module with three strings connected in series. Each string will have five sets of panels connected in series, with output converged at the six-way combiners. The life expectancy of the PV modules is estimated at 25-30 years.

2.3.1.2 Battery Energy Storage System

The Battery Energy Storage System (BESS) will comprise of Lithium-ion Battery pack that conforms to IEC standards with warranty of 10 years, 3,000 cycles minimum. The Lithium-ion Battery Power Packs will be used to cater for required energy capacity, or equivalent as per approved design, minimum 80% DOD for Lithium-Ion. Batteries will be capable of at least C/4 charge and discharge rate. Batteries will be charged by Battery Inverter / Charger.

2.3.1.3 PV and Battery Inverter Charger

PV Inverter: A 100 kWp solar PV inverter will be used to convert the direct current (DC) electricity generated by the solar panels into alternating current (AC) electricity suitable for consumer use.

Battery Inverter Charger: A 60kW battery inverter charger will be employed to manage the energy flow to and from the battery storage system. The inverter charger ensures efficient charging and discharging of the battery, maximizing the system's overall performance

The Inverters/charges shall be designed for reliable power supply as per specification and shall have internal protection arrangement against any sustained fault in the feeder line and against lightning strikes in the feeder line. The inverters shall be capable of complete automatic operation including wake-up,

synchronization & shut down independently & automatically. The inverter shall be 3-phase multi-mode (DC to AC and AC to DC), bi-directional, four-quadrant capability.
The batteries will be stored separately at site on a suitable leak proof base before being collected and transported by NEMA licensed waste collector for proper disposal.

2.3.1.4 Distribution lines

The site will have a distribution line circuit of 17.5km in total. Supply of concrete poles for the distribution lines will be based on detailed survey and accessories like phase plates, circuit plates, number plates, danger plates, anti-climbing devices as per KPLC requirements/specifications. Erection of the Poles, fixing of insulator strings, stringing of conductor and earth wires along with all necessary line accessories and earthing will be as per KPLC requirements/specifications.

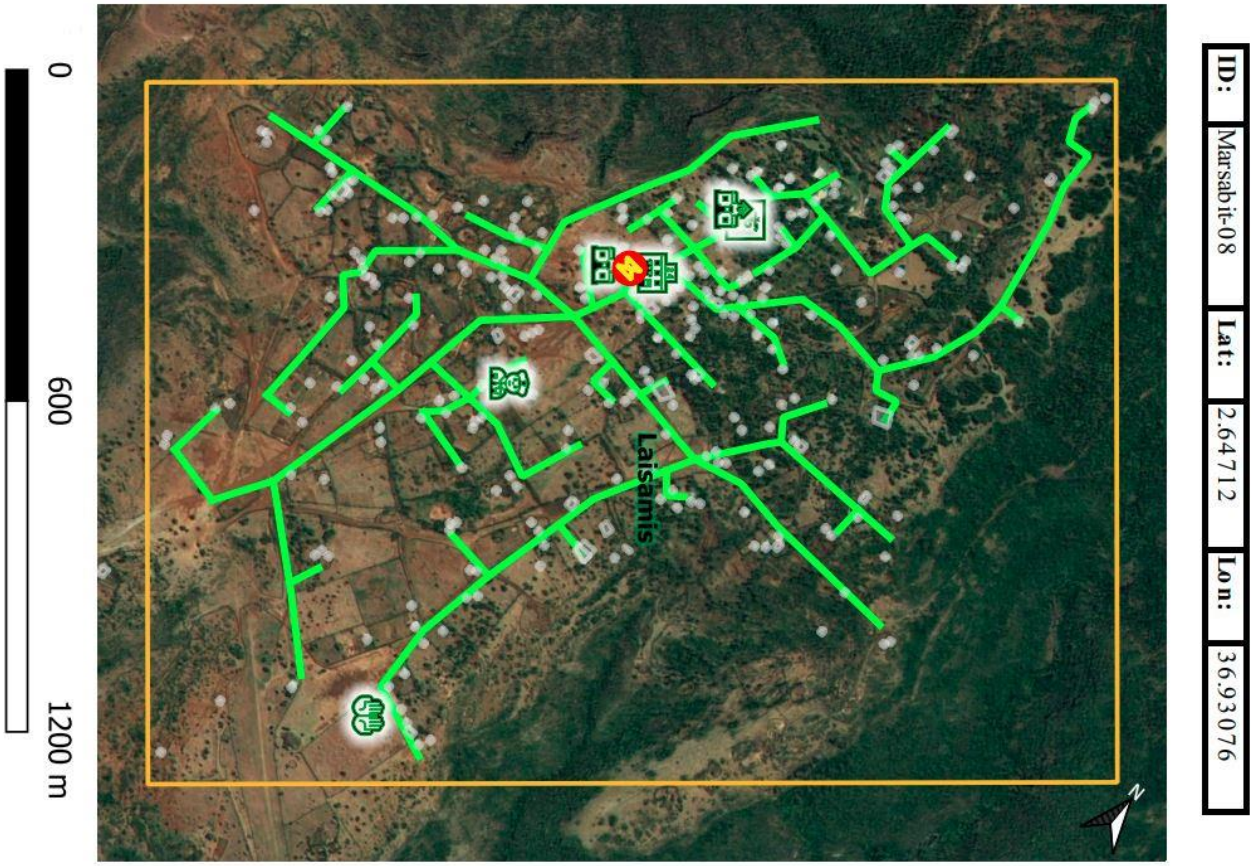


Figure 6: Gatab area distribution line circuit

2.3.2 Project Phases and Activities

The main project activities include site clearance and leveling, civil works and construction of utilities and structures for the facilities, installation, and connection of the mini grid.

2.3.2.1 Construction Procedures

The project will be constructed based on applicable standards of Kenya, environmental guidelines and health and safety measures in line with OSHA Act 2007.

The project inputs will include the following.

- Construction of raw materials will include solar modules, inverter, wires, metals, among others. All these will be obtained from licensed dealers and especially those that have complied with the environmental management guidelines and policies.
- Construction machines will include machinery such as trucks, and other relevant construction equipment. These will be used for the transportation of materials, clearing of resulting construction debris.
- A construction labour force of both skilled and non-skilled workers will be required.

Construction activities will include the following:

- Contractor mobilization.
- Site Preparation.
- Procurement of construction material from approved dealers and transport to the site.
- Storage of PV modules delivery and their installation.
- Laying of internal electrical connections.
- Installation of inverters, Battery Energy storage system and transformers.

2.3.2.2 Land Tenure

Land ownership in Marsabit County is mainly community land, and private land. The land for the proposed site is on communal land. The community has since offered the land to the project proponent for establishment of the proposed project. An abbreviated Resettlement Action Plan (A-RAP) outlining the principles and procedures for land acquisition and compensation is annexed to this ESIA. An A-RAP applies where affected persons are not physically displaced, and less than 10% of their productive assets are lost, or fewer than 200 people are displaced. In the case of KOSAP sub-projects, there is no physical displacement of affected persons, and the foreseen impacts on livelihoods such as grazing occasioned by mini-grid construction, wayleaves acquisition, and implementation of community projects are considered minor. A-RAPs will be implemented for sub-project sites on registered and unregistered community land/group ranches.

2.3.2.3 Compensation Details

Compensation for the land for the proposed project will be in kind; the community proposed a total of three projects in their order of priority for the client to choose. The identified project will be undertaken for the community by the project contractor.

2.4 Resource Requirement

2.4.1 Workforce Requirement

Approximately 40 skilled, semi-skilled and unskilled Laborers will be required at the construction stage. During the operation phase, the following personnel will be required; one operations and maintenance head, 2 engineers and 5 technicians.

Approximately 5 unskilled workers will be involved during operation phase of the project for grass cutting and module cleaning. Also, two trained security guards will be engaged at the operations phase.

2.4.2 Water Requirement and Source

2.4.2.1 Construction Phase

It has been estimated that approximately 50,000 liters of water will be required per day for civil works during construction stage. Further, water will be required for workers at project site. However, this quantity of water requirement will vary depending upon the mobilization of construction workers at site. The water

for the construction phase will be sourced from the local water points, the area has piped water that is sourced from springs located at about 18km from the proposed site. The nearest water point is located at about 100m from the site, in the adjacent Gatab primary school.
Additionally, the contractor can provide for a borehole for alternative water source so as to avert competition of the water resource with locals.

2.4.2.2 Operation Phase

The water required during operation phase of the project will be mainly for washing the face of the solar modules, Minimal water will be used for this purpose. Water requirement during operational phase of the project will be met from the water vendors in the area.

Approximately, 10 employees (direct and contractual) will be working during operation phase. For this workforce, approximately between 5,000 Liters of water will be required weekly for domestic consumption.

2.4.3 Raw Material Requirement

2.4.3.1 Construction Phase

The major raw materials required for the construction phase will be solar modules, fencing materials, construction materials like cement, sand, and aggregate. The fencing materials and the construction materials will be sourced from the local hardware facilities. Solar Modules for the project along with associated structures will be obtained from appropriate sources within or outside the country.

2.4.3.2 Operation Phase

There will not be major requirement of raw materials during operation phase. Only maintenance spares will be required at this phase.

2.4.4 Power Requirement

Power requirement during the construction phase will be met through Diesel Generators sets. The exact number of Diesel Generator sets to be used, as well as the quantity of fuel, will be ascertained once the project is in the implementation stage.

2.4.5 Fire Safety and Security

2.4.5.1 Construction Phase

Appropriate firefighting system and equipment shall be provided throughout the construction period. The fire extinguishers will be well distributed according to the fire risks and will be available in areas such as the site office, security area, storage yard etc. A comprehensive emergency response plan with all the emergency numbers will be well displayed at the site and on the fence.

2.4.5.2 Operation Phase

Suitable fire protection and fighting systems that will include portable fire extinguishers, automatic fire detection system and means of fire communication will be made available at the entire PV array area, inverter stations, main control room and switchyard.

The systems and equipment's will align to the Kenyan Fire Reduction Rules of 2007. The Fire protection and fighting systems will be maintained and serviced after every 6 months.

2.5 Pollution Streams during Construction Phase

2.5.1 Solid Waste Generation

2.5.1.1 Construction Phase

The key solid waste that is expected to be generated during construction phase include. Broken solar panels and PV Modules, Hazardous waste like waste oil, lubricants, oil contaminated rags and Domestic soil from the temporary site office.

The hazardous wastes will be stored onsite at separate designated covered area provided with impervious flooring and secondary containment. The storage containers/ bins/ drum will be clearly marked, and color coded for their hazards. The waste will then be collected by a NEMA approved waste handler.
Any broken solar panels or PV Modules will be sent back to the vendor as part of buyback arrangement. Alternatively, the e-waste will be disposed by licensed waste handlers in sites that are licensed by NEMA and local authorities to dump e-waste. All the other domestic solid waste will be disposed at the nearest county dumpsite.

2.5.1.2 Operation Phase

During operation phase, waste generated from the project will include domestic waste at site office, scrap materials like scrap tools, damaged PPEs etc.; hazardous waste like waste oil, lubricants, used transformer oil; damaged batteries; electronic waste like damaged PV modules etc.

The hazardous wastes will be stored onsite at separate designated covered area provided with impervious flooring and secondary containment. The storage containers/ bins/ drum will be clearly marked, and color coded for their hazards. The waste will then be collected by a NEMA approved waste handler.

Any broken solar panels or PV Modules will be sent back to the vendor as part of buyback arrangement. Alternatively, the e-waste will be disposed by licensed waste handlers in sites that are licensed by NEMA and local authorities to dump e-waste. All the other domestic solid waste will be disposed at the nearest county dumpsite.

2.5.2 Air Emissions

2.5.2.1 Construction Phase

Air quality will be impacted due to onsite construction activities. The likely emissions from construction activities would include the following:

- Dust emissions from the dusty roads leading to the site.
- Increased vehicular emissions due to the high traffic of vehicles transporting construction materials, PV Modules, and accessories.
- Dust emissions from site clearing, material handling, piling and use of the construction machinery.
- Exhaust emissions from the diesel generator.

The high dust emissions arising from various activities such as piling, transportation of material (loading and unloading), vehicular movement (on unpaved roads) should be minimized through sprinkling of water and maintaining vehicular speed to 10-15 km/hr.

All the vehicles and the Diesel generator should be well maintained and serviced to reduce the rate of

exhaust emissions.

2.5.2.2 Operation Phase

It is expected that the normal operations of the site will produce minimal gaseous emissions from all the operating areas. The minimal gaseous and fugitive dust emissions will be attributed to the in and out movement of the maintenance vehicles. It will be ensured that well maintained vehicles are used for maintenance purposes.

2.5.3 Waste Generation

2.5.3.1 Construction Phase

The liquid effluents generated during the construction phase will include domestic sewage from temporary site offices, kitchen and washing areas. As part of the site preparation stage, septic tank will be constructed for the camp and site office. Sewage disposal trucks should be used to periodically remove the sludge/sewage from the septic tank.

2.5.3.2 Operation Phase

The operational phase will have negligible wastewater generation at site office. Septic tank and soak pits will be provided at the site office for disposal of sewage.

2.5.4 Noise Emissions

2.5.4.1 Construction Phase

Noise emissions will be generated from piling, movement of vehicle and other construction machinery and operation of the Diesel Generator. The main noise receptors will be the neighboring settlements and the construction workers. Noise from Diesel Generators will be minimized through provision of acoustic enclosures and occasional maintenance of the generator. Every single noise generating activity will be restricted to Day time only.

2.5.4.2 Operation Phase

Under normal operations, none of the activities of solar mini grid will generate noise. The only noise that can be generated at this phase is during the maintenance works and it will be restricted to daytime only. However, during cloudy periods and when solar energy is low, the backup generator that will be utilized will produce noise. Mufflers and silencers will be installed so as to minimize noise pollution from the backup generator.

3 LAND REQUIREMENT AND PROCUREMENT PROCESS

3.1 Land Requirement and Procurement Process

3.1.1 Land Requirement

The land on which the proposed Gatab mini grid will be constructed covers a total 0.6647 Ha in size.

3.1.1.1 Land Tenure

The entire county is categorized as trust land. In Gatab, the site falls on Unregistered Communal land set aside for public use. An abbreviated Resettlement Action Plan (A-RAP) outlining the principles and procedures for land acquisition and compensation is annexed to this ESIA. An A-RAP applies where affected persons are not physically displaced, and less than 10% of their productive assets are lost, or fewer than 200 people are displaced. In the case of KOSAP sub-projects, there is no physical displacement of affected persons, and the foreseen impacts on livelihoods such as grazing occasioned by mini-grid construction, wayleaves acquisition, and implementation of community projects are considered minor. A-RAPs will be implemented for sub-project sites on registered and unregistered community land/group ranches.

3.1.1.2 Compensation Details

Compensation will be done in kind. The main key area for development activities identified by the community in Gatab included; water, road and school.

4 APPLICABLE POLICY AND REGULATORY FRAMEWORK

4.1 Introduction

This Chapter outlines the existing national and international environmental and social legislation, policies, and institutions applicable to energy generation that guide the development of the Project.

As Kenya is a signatory to various international conventions and laws, national projects need to be aligned with their requirements; relevant international conventions and laws are therefore presented in this chapter.

Finally, a summary of the World Bank (WB) Environmental and Social operational policies. S relevant to this Project are presented.

4.2 Kenya Policy Provisions

4.2.1 Kenya Energy Policy, 2014

The Energy Policy sets out the national policies and strategies for the energy sector that align to the Constitution of Kenya and Kenya's Vision 2030.

The Energy Policy envisages promoting an energy mix that includes solar energy at both the household/institutional levels as well as large-scale solar energy generation. The Government of Kenya has initiated and has been promoting programmes for the provision of electricity to institutions far from the grid through solar PV systems. The Government has also embarked on a programme to provide solar/diesel and solar/wind hybrid generation capacity to off-grid stations.

The Policy strategizes the need to:

- promote the widespread use of solar energy while enforcing existing regulations and standards.
- provide incentives to promote the local production and use of efficient solar systems.
- provide a framework for connecting electricity generated from solar energy to the national and isolated grids, through direct sale or net metering.
- promote the use of hybrid power generation systems involving solar and other energy sources; and
- facilitate the generation of electricity from solar energy by, among other things, funding, provision of land, fast-tracking issuance of permits and licenses, as well as acquisition of data and information to realize at least 100 MW from solar by 2017, 200 MW by 2022 and 500 MW by 2030.

The Kenya Electricity Supply Industry (ESI) is one of the sub-sectors in the energy sector which the Ministry of Energy and Petroleum oversees on behalf of the Government of Kenya (GoK). Under the Energy Act of 2006, the Ministry is responsible for formulation and articulation of policies to provide an enabling environment for operators and other stakeholders in the energy sector. Relevant stakeholders in the ESI are briefly described below.

Table 4. Kenya power stakeholders and their roles

Stakeholders	Role
Kenya Power Company	Responsible for distribution and retail supply of electrical energy to end users. Kenya Power purchases power in bulk from the Kenya Electricity Generating Company Limited (KenGen) and the Independent Power Producers (IPPs) through bilateral contracts or Power Purchase Agreements (PPAs) approved by the Energy Regulatory Commission (ERC) (1).
The Energy and Petroleum Regulatory Authority (EPRA)	Established by the Energy Act of 2019. The EPRA's mandate extends beyond electricity and includes natural gas (including petroleum), renewables and all other forms of energy. The generation, transmission, distribution, supply, import and export of electricity can only be carried out by parties in possession of a license, or a permit issued by the EPRA. If the capacity involved is for own use and less than 1 MW, authorization is not required. Although the generated electricity is expected to be less than 1 MW (0.3 – 1 MW), the fact that the generated electricity is intended for use in a factory and there is a possibility for connection to the national grid and sale of excess power to the government, The project requires a license from the EPRC to generate electricity as stipulated in the Energy Act, 2019.
Ministry of Energy and Petroleum	Aims to facilitate provision of clean, sustainable, affordable, reliable, and secure energy services for national development while protecting the environment.
The Rural Electrification and Renewable Energy Corporation (REREC):	Is established under Section 43 of the Energy Act, 2019 as a corporate body. The Corporation is the successor to the Rural Electrification Authority established under section 66 of the Energy Act No. 12 of 2006 (now repealed) and subject to this Act, all rights, duties, obligations, assets and liabilities of the Rural Electrification Authority existing at the commencement of this Act is to be automatically and fully transferred to the Corporation and any reference to the Rural Electrification Authority in any contract or document shall, for all purposes, be deemed to be a reference to the Corporation.
The Geothermal Development Company (GDC):	Is a 100% state-owned company, formed by the Government of Kenya as a Special Purpose Vehicle to fast track the development of geothermal resources in the country. The creation of GDC was based on the government's policy on energy - Sessional paper No. 4 of 2004, and the energy Act No. 12 of 2006.
The Kenya Electricity Transmission Company (KETRACO):	Was incorporated on 2nd December 2008 and registered under the Companies Act, Cap 486 pursuant to Sessional paper No. 4 of 2004 on Energy. KETRACO's mandate is to design, construct, operate and maintain new high voltage electricity transmission infrastructure that will form the backbone of the National Transmission Grid, in line with Kenya Vision 2030.
Energy and Petroleum Tribunal (EPT):	The tribunal is established under section 25 of The Energy Act, 2019. The tribunal is established for the purpose of hearing and determining disputes and appeals in accordance with The Energy Act, 2019 or any other written law. In relation to the proposed Project, any disputes or appeals if they arise will need to be addressed by the EPT.

(1) As per the Energy Act of 2019, this role will now be performed by the Energy and Petroleum Regulatory Authority (EPRA).

4.2.2 Policy paper on Environment and Development (Sessional Paper No. 6 of 1999)

The overall goal of this Sessional Paper is to ensure that environmental concerns are integrated into the national planning and management processes and provide guidelines for environmentally sustainable development. The objectives of the Paper are to conserve and manage the natural resources of Kenya including air, land, flora, and fauna and promote environmental conservation about soil fertility and conservation, biodiversity, to foster afforestation activities, and to protect water catchment areas. More importantly, the Policy emphasizes the enhancement of public awareness and appreciation of the essential linkages between development and environment, involving NGOs, private sector, and local communities in the management of natural resources and their living environment and ensures that an environmental impact assessment report is undertaken for all public and private projects and programmes.

The proposed solar plant facility must ensure that it promotes this integrated approach to environmental management and development, without compromising the livelihoods of the local community.

4.2.3 National Policy on Water Resources Management and Development, 1999

While the National Policy on Water Resources Management and Development enhances a systematic development of water facilities in all sectors for promotion of the country's socio-economic progress, it also recognizes the by-products of this process as wastewater. The Policy therefore calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. This implies that industrial and business development activities should be accompanied by corresponding waste management systems to handle the wastewater and other waste emanating therefrom.

During construction, water will be required for concrete works and during the operational period water supply may be necessary for cleaning the PV modules. Appropriate water treatment and waste handling must be incorporated into the Project design to be in alignment with this policy.

4.2.4 Sessional Paper No. 10 of 2014 on the National Environmental Policy, 2014

The overall goal of this Session Paper is to ensure better quality of life for present and future generations through sustainable management and use of the environment and natural resources. This Session Paper calls for the use of environmentally sound technologies based on the best available techniques and policies as a way of minimizing negative impacts to the environment.

Section 5.6 of this Session Paper focusses on infrastructure development and environment and makes explicit policy statements to ensure sustainable management and use of the environment and natural resources during the construction and operation of infrastructure developments. These policy statements require the commitment of the government to:

- Ensure Strategic Environmental Assessment (SEA), Environmental Impact Assessment, Social Impact Assessment and Public participation in the planning and approval of infrastructural projects.
- Develop and implement environmentally friendly national infrastructural development strategy and action plan.
- Ensure that periodic Environmental Audits are carried out for all infrastructural projects

In line with the above policy statements, this ESIA has been conducted for the proposed solar project (including the associated infrastructure) to ensure that environmental and social issues are appropriately addressed.

Once approved by NEMA, the Project Proponent will also need to conduct periodic Environmental Audits to ensure continuous conformity with the overall goal of this Session Paper. In addition, this ESIA has considered analysis of alternatives including alternatives to technology to ensure that the best available and appropriate technology is used.

4.3 National Legal Framework

4.3.1 Administrative Framework

In 2001, the Government established the administrative structures to implement the Environmental Management and Co-ordination Act of 1999 (EMCA). The main administrative structures are described in the following sections:

Table 5. Administrative stakeholders and their roles

Stakeholders	Role
NEC	The **National Environmental Council** is responsible for policy formulation and directions for the purposes of EMCA. The Council also sets national goals and objectives and determines policies and priorities for the protection of the environment. *The proponent should ensure that the project abides by the set goals and objectives of the Council.*
NEMA	The responsibility of NEMA is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment. *This ESIA has been prepared for submission to NEMA for review and approval prior to the commencement of the Project activities, in compliance to the EMCA.*
PCC	EMCA has also established a Public Complaints Committee, which provides the administrative mechanism for addressing environmental harm. The Committee has the mandate to investigate complaints relating to environmental damage and degradation. The members of the **Public Complaints Committee** include representatives from the Law Society of Kenya, NGOs, and the business community. *The proponent should address all issues arising from the Project in accordance with the above requirements, including a clear policy of stakeholder engagement and feedback.*
WRA	Water Resources Authority is responsible for regulation of water resources issues such as water allocation, source protection and conservation, water quality management and pollution control and international waters. One of its functions among others is to receive water permit applications for water abstraction, water use and recharge and determine issue, vary water permits; and enforce the conditions of those permits as well as formulate and enforce standards, procedures and Regulations for the management and use of water resources and flood mitigation. *The project area experiences serious water scarcity. The proponent will have to purchase water for use during construction.*

4.4 Relevant statutes

The current legal provisions for natural resource management in Kenya are contained in over seventy sector-specific statutes. For a long time, the country lacked an umbrella legislative guide for harmonious and holistic environmental management. As such, resources were managed sectoral in accordance with the statutes that were in place.

As these statutes were contradictory at times, in 1999, the Government of Kenya enacted the Environmental Management and Co-ordination Act (EMCA) which is an umbrella legal framework under which the environment is being managed. EMCA establishes the institutional framework under which environmental management is to be coordinated. EMCA prevails over all other Sectoral laws relating to the environment in cases of conflict or contradictions. It also grants the public a *locus standi* in matters of the environment.

Table 6. National Policy Framework

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
	NATIONAL POLICY FRAMEWORK		
1.	Vision 2030	Kenya Vision 2030 is the current national blueprint for development from its inception in 2008 until the milestone year of 2030. This plan is the national long-term development policy that aims to transform Kenya into a newly industrialised, middle-income country by 2030. The Vision is comprised of three key pillars (economic, social, and political), two of which are projected to be positively affected by project implementation.	Under Vision 2030, Energy is identified as one of the key sectors that form the foundation for socio-political and economic growth. Promoting equal opportunities across the entire Kenyan territory and enhancing access to competitively priced, reliable, quality, safe and sustainable energy is essential to the achievement of this vision.
2.	The Energy Policy, 2014	The Energy Policy sets out the national policies and strategies for the energy sector that align to the Constitution of Kenya and Kenya's Vision 2030. The Energy Policy envisages promoting an energy mix that includes solar energy at both the household/institutional levels as well as large-scale solar energy generation. The Government of Kenya has initiated and has been promoting programs for the provision of electricity to institutions far from the grid through solar PV systems. The Government has also embarked on a programme to provide solar/diesel and solar/wind hybrid generation capacity to off-grid stations. The Policy strategizes the need to: ✓ promote the widespread use of solar energy while enforcing existing regulations and standards. ✓ provide incentives to promote the local production and use of efficient solar systems. ✓ provide a framework for connecting electricity generated from solar energy to the national and isolated grids, through direct sale or net metering. ✓ promote the use of hybrid power generation systems involving solar and other energy sources; and ✓ facilitate the generation of electricity from solar energy by, among other things, funding, provision of land, fast-tracking issuance of permits and	

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
		licenses, as well as acquisition of data and information to realize at least 100 MW from solar by 2017, 200 MW by 2022 and 500 MW by 2030. The Kenya Electricity Supply Industry (ESI) is one of the sub-sectors in the energy sector which the Ministry of Energy and Petroleum oversees on behalf of the Government of Kenya (GoK). Under the Energy Act of 2006, the Ministry is responsible for formulation and articulation of policies to provide an enabling environment for operators and other stakeholders in the energy sector. Relevant stakeholders in the ESI are briefly described below.	
3.	Policy paper on Environment and Development (Sessional Paper No. 6 of 1999)	The overall goal of this Sessional Paper is to ensure that environmental concerns are integrated into the national planning and management processes and provide guidelines for environmentally sustainable development. The objectives of the Paper are to conserve and manage the natural resources of Kenya including air, land, flora, and fauna and promote environmental conservation about soil fertility and conservation, biodiversity, to foster afforestation activities, and to protect water catchment areas. More importantly, the Policy emphasizes the enhancement of public awareness and appreciation of the essential linkages between development and environment, involving NGOs, private sector, and local communities in the management of natural resources and their living environment and ensures that an environmental impact assessment report is undertaken for all public and private projects and programmes.	The proposed solar plant facility must ensure that it promotes this integrated approach to environmental management and development, without compromising the livelihoods of the local community.
4.	National Policy on Water Resources Management and Development, 1999	While the National Policy on Water Resources Management and Development enhances a systematic development of water facilities in all sectors for promotion of the country's socio-economic progress, it also recognizes the by-products of this process as wastewater. The Policy therefore calls for development of appropriate sanitation systems to protect people's health and water resources from institutional pollution. This implies that industrial and business development activities should be accompanied by corresponding waste management systems to handle the wastewater and other waste emanating therefrom.	During construction, water will be required for concrete works and during the operational period water supply may be necessary for cleaning the PV modules. Appropriate water treatment and waste handling must be incorporated into the Project design to be in alignment with this policy
5.	Sessional Paper No. 10 of 2014 on the National Environmental Policy, 2014	The overall goal of this Session Paper is to ensure better quality of life for present and future generations through sustainable management and use of the environment and natural resources. This Session Paper calls for the use of environmentally sound technologies based on the best available techniques and policies as a way of minimizing negative impacts to the environment. Section 5.6 of this Session Paper focusses on infrastructure development and environment and makes explicit policy statements to ensure sustainable	In line with the above policy statements, this ESIA has been conducted for the proposed solar project (including the associated infrastructure) to ensure that environmental and social issues are appropriately addressed. Once approved by NEMA, the Project Proponent will also need to conduct periodic Environmental Audits to ensure continuous

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
		management and use of the environment and natural resources during the construction and operation of infrastructure developments. These policy statements require the commitment of the government to: ✓ Ensure Strategic Environmental Assessment (SEA), Environmental Impact Assessment, Social Impact Assessment and Public participation in the planning and approval of infrastructural projects. ✓ Develop and implement environmentally friendly national infrastructural development strategy and action plan. ✓ Ensure that periodic Environmental Audits are carried out for all infrastructural projects	conformity with the overall goal of this Session Paper. In addition, this ESIA has considered analysis of alternatives including alternatives to technology to ensure that the best available and appropriate technology is used.
6.	The Poverty Reduction Strategy Paper (PRSP) of 2001	The PRSP has the twin objectives of poverty reduction and enhancing economic growth. The paper articulates Kenya 's commitment and approach to fighting poverty; with the basic rationale that the war against poverty cannot be won without the participation of the poor themselves.	• The proposed project aims at provision and access of renewable electricity geared towards improved economic performance and thus will contribute to poverty alleviation in the project area.
7.	National Environmental Action Plan (NEAP) of 1994	The NEAP for Kenya was prepared in mid 1990s. It was a deliberate policy whose main effort is to integrate environmental considerations into the country 's economic and social development. The integration process was to be achieved through multi-sectoral approach to develop a comprehensive framework to ensure that environmental management and the conservation of natural resources forms an integral part of societal decision-making.	• The NEMA does not approve a development project unless the impacts of the proposed project are evaluated and mitigation measures proposed for incorporation in the project 's development plan, which is in line with the requirements of the NEAP. The project will be reviewed by NEMA for approval before implementation.
8.	Environmental and Development Policy (Session Paper No.6 1999)	As a follow-up to the foregoing, the goal of this policy is to harmonize environmental and developmental goals to ensure sustainability. The paper provides comprehensive guidelines and strategies for government action regarding environment and development.	The proponent: • Is undertaking an Environmental Impact Assessment, Social Impact Assessment and Public participation as part of the planning and approval of infrastructural projects. • Will ensure that periodic Environmental Audits are carried out for the project
9.	The National Energy and Petroleum Policy 2015	The overall objective of the energy and petroleum policy is to ensure affordable, competitive, sustainable, and reliable supply of energy to meet national and county development needs at least cost, while protecting and conserving the environment. This policy stipulates the transformation of the Rural Electrification Authority (REA) to Rural Electrification and Renewable Energy Corporation (REREC) to be the lead agency for development of renewable energy resources.	The policy is relevant to the project in the sense that the project will provide sustainable and reliable energy supply and measures will be put in place to protect and conserve the environment during its development. REREC will oversee the development of the mini grid and maintenance.

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
10.	The Gender and Development Policy (Sessional paper no.2 2019)	The overall goal of this policy is to achieve gender equality by creating a just society where women, men, boys, and girls have equal access to opportunities in the political, economic, cultural, and social spheres of life.	• In the absence of appropriate measures, the project can exacerbate gender inequalities and sexual and gender-based violence. In adherence to this policy, measures will be put in place to: • ensure gender inclusivity in decision making, employment opportunity and access to the energy generated from the Mini-Grid • mitigate social risks including sexual and gender-based violence, and any form of discriminations
11.	The HIV/AIDS Policy 2009	In summary, the policy aims at: i. Establishing and promoting programmes to ensure non-discrimination and non- stigmatization of the infected. ii. Contributing to national efforts to minimize the spread and mitigate against the impact of HIV and AIDS. iii. Ensuring adequate allocation of resources to HIV and AIDS interventions;	The proposed project is to be implemented in the rural setting at Gatab area. The area is not economically empowered hence few HIV/AIDS prevention resources are available. This policy shall provide a framework to both the project proponent and contractor to address issues related to HIV/AIDS during the entire project phase.
12.	Workplace Policy on HIV/AIDS	The main objective of this Policy is to provide a framework to address HIV and AIDS in the workplace. The principles that guide the Policy are in accordance with international conventions, national laws, policies, guidelines and regulations. They include recognition of HIV/AIDS as a workplace issue; Non-discrimination; Gender equality, Safety and Health work Environment, Workplace ethics and Confidentiality.	The requirements of this policy are expected to be fulfilled by all contractors and their subcontractors, especially in regard to having an internal company HIV Policy and worker sensitization initiatives. This policy is of paramount relevance to the project as the implementation of the proposed mini-grid construction and operation is expected to spur substantial in-migration into the project area by people seeking employment opportunities. This, coupled with the expected economic growth, increased financial spending power and disruption of social / cultural norms may result in predisposing factors associated with the spread of HIV/AIDS such as prostitution and adultery.
NATIONAL LAWS			
1.	The Constitution of Kenya, 2010	The Constitution of Kenya promulgated in 2010 is the supreme law of the republic and binds all persons and all State organs at all levels of government. The Constitution provides the broad framework regulating all existence and development aspects of interest to the people of Kenya, and along which all national and sectoral legislative documents are drawn.	The proposed project complies with the Constitution by proposing a structure in its ESIA on how to deal with Social, Health, safety and environmental issues for sustainable development.

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
2.	Environmental Management and Coordination Act, 1999 (And the Amendments Of 2015)	The EMCA is a framework environmental law in Kenya. This Act (assented to on January 14, 2000) provides a structured approach to environmental management in Kenya. With the EMCA coming into effect, the environmental provisions within the sectoral laws were not superseded; instead, the environmental provisions within those laws were reinforced to better manage Kenya's ailing environment.	The proposed project will be undertaken in accordance with relevant sections of the EMCA, specifically Clauses 58 – 63. These sections of the Act are operationalised by subsidiary legislation promulgated under the Act and specifically Legal Notice (L.N.) 101: Environment (Impact Assessment and Audit) Regulations, 2003.
3.	L.N. 101: EIA/EA Regulations, 2003 And 2016 Amendments	These regulations provide the framework for undertaking EIAs and EAs in Kenya by NEMA licensed Lead Experts and Firms of Experts. An EIA or EA Study in Kenya is to be undertaken by a firm duly licensed by the NEMA. The EIA/EA Regulations also provide information to project proponents on the requirements of either an EIA or EA as required by the EMCA.	The proposed project is subject to relevant provisions of these regulations and subsequently, the ESIA has been undertaken in accordance with the requirements.
4.	L.N. 120: Water Quality Regulations, 2006	This regulation provides for the sustainable management of water used for various purposes in Kenya. The regulation contains discharge limits for various environmental parameters into public sewers and the environment.	The contractor will be required to properly manage the effluent from construction activities in accordance with the above regulations prior to discharge into the environment.
5.	L.N. 121: Waste Management Regulations, 2006	Generally, it is a requirement under the regulations that a waste generator segregates waste (hazardous and non-hazardous) by type and then disposes them in an environmentally acceptable manner.	Waste to be disposed in accordance with these regulations.
6.	L.N. 61: Noise and Excessive Vibration Control Regulations, 2009	The general prohibition of these regulations states that no person shall make or cause to be made any loud, unreasonable, unnecessary, or unusual noise which annoys, disturbs, injures, or endangers the comfort, repose, health, or safety of others and the environment.	Rules 13 and 14 of the regulations define the permissible noise levels for construction sites. These noise limits will be applicable to the proposed project.
7.	Licenses and Permits Required Under The EMCA	The subsidiary legislations under the EMCA are partially monitored using permits and licenses. Subsequently all licenses and permits required during the construction phase shall be the responsibility of the individual contractors and their agents. During the operational phase, all permits, and licenses required to operate the project will be the responsibility of the proponent.	The following permits to be available for inspection during the construction and operational phases of the project: ✓ Waste Transport License under Legal Notice 121: The Environment Management and Coordination (Waste Management) Regulations 2006 for disposal of all types of wastes; and Noise Permit under Legal Notice 61: The Environment Management and Coordination (Noise and Excessive Vibration Control) Regulations, 2009.

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
8.	Occupational Health and Safety Act, 2007	The Occupational Safety and Health Act (OSHA) was enacted to provide for the health, safety and welfare of persons employed in workplaces, and for matters incidental thereto and connected therewith.	The contractors will be required to fully comply with Legal Notice 40 titled: Building Operations and Works of Engineering Construction Rules, 1984 (BOWEC). Each contractor will develop and implement a formal construction health and safety plan.
9.	L.N. 31: The Safety and Health Committee Rules, 2004	These rules came into effect on April 28, 2004, and require that an Occupier formalise a S&H Committee if there is a minimum of 20 persons employed in the workplace. The size of the S&H Committee will depend on the number of workers employed at the place of work	The contractor will be required to constitute Health and Safety Committee to oversee safety and health at the construction site
10.	L.N. 24: Medical Examination Rules, 2005	These rules provide for Occupiers to mandatorily undertake pre-employment, periodic, and termination medical evaluations of workers whose occupations are stipulated in the Eighth Schedule to the OSHA and the First Schedule to this Rules. Workers that fall under the above two schedules are required to undergo medical evaluations by a registered medical health practitioner duly registered by the DOSHS.	The contractor should that the workers exposed to hazards and or accidents undergo requisite medical examinations as required by these rules
11.	L.N. 25: Noise Prevention and Control Rules, 2005	The rules set the permissible level for occupational noise in any workplace (which includes construction sites) The Proponent is to ensure that • any equipment brought to the site for use shall be designed or have built-in noise reduction devices that do not exceed 90 dB(A). those employees that may be exposed to continuous noise levels of 85 dB(A) are medically examined as indicated in Regulation 16. If found unfit, the occupational hearing loss to the worker will be compensated as an occupational disease.	The contractor to ensure that equipment is serviced properly and/or use equipment that complies with the threshold noise values provided in the act. Alternatively, each contractor will be required to develop and implement a written hearing conservation programme during the construction phase.
12.	L.N. 59: Fire Risk Reduction Rules, 2007	Several sections of the rules apply to the proposed project as enumerated below. - Regulation 16 requires Proponents to ensure that electrical equipment is installed in accordance with the respective hazardous area classification system. It is also a requirement that all electrical equipment is inspected every six months by a competent person and the Proponent is required to keep records of such inspections. - Regulation 22 provides a description of the functions of a fire-fighting team. - Regulation 23 requires Proponents to mandatorily undertake fire drills at least once a year.	The proponent is expected to comply with the requirements of L.N. 59: Fire Risk Reduction Rules, 2007 by i. Carrying out, and record, a fire risk assessment identifying any possible dangers and risks. ii. Reducing, or where possible remove, the risk of fire and take precautions to deal with the remaining risks. Developing an emergency plan should a fire occur which includes evacuation procedures etc

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
		- Regulation 34 requires Proponents to develop and implement a comprehensive written Fire Safety Policy Regulation 35 requires a Proponent to notify the nearest Occupational S&H area office of a fire incident within 24 hours of its occurrence and a written report sent to the Director of DOSHS within 7 days.	
13.	NEMA Guidelines for E-Waste Management, 2010	The E-waste Guidelines were developed to streamline the procedures of handling and disposal of e-waste generated by various sectors to enhance environmental conservation. The e-waste guidelines provide a framework for identification, collection, sorting, recycling and disposing of electrical and electronic waste (e-waste). The guidelines include approaches to enhance environmental protection, environmental awareness, categories of e-waste, e-waste treatment technologies and disposal procedures.	The Proponent and Contractor should put into use the e-waste guidelines in the handling and disposal of e-waste that will potentially be generated by the project i.e. solar array panels during all phases of the project.
14.	Draft E-Waste Regulations, 2013	These regulations were prepared in 2013 but are yet to be promulgated. Some sections of these regulations that apply to the proposed project include: • Regulation 13 stipulates proper transportation of e-waste • Regulation 16 requires all electrical and electronic equipment to bear labels indicating the year and country of manufacture • Regulation 17 states prohibitions on poor e-waste disposal • Regulation 18 requires Environmental Sound Management of e-waste Regulation 26 and 29 defines offences relating to false information, and general penalty, respectively.	The Proponent should ensure that procurement of equipment (electronic and electrical equipment) that will generate e-waste is done in accordance with the regulations. The Contractor should ensure that handling, storage and disposal of the e-waste in an environmentally sound manner
15.	The Energy Act, 2019	The Energy Act of 2019 deals with all matters relating to all forms of energy including the generation, transmission, distribution, supply and use of electrical energy as well as the legal basis for establishing the systems associated with these purposes. The Act also established the Energy and Petroleum Regulatory Authority (EPRA).	The proponent is in line with the Energy act regulations in the following ways. - The proponent has identified an available site - alignment of the Mini-Grid Project to County development plans. - the Mini-Grid proponent has the technical and financial capability to conduct the project The proponent has conducted the necessary engagement with the community.

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
16.	The Energy (Solar Photovoltaic Systems) Regulations, 2012	These regulations shall apply to a solar PV system manufacturer, importer, vendor, technician, contractor, system owner, a solar PV system installation and consumer devices. The Regulations prohibits any person from designing or installing any solar PV system unless he/she is licensed by EPRA.	The Regulations regulates the design and installation of PV systems. The persons engaged in the designing and installation of the Mini-Grid shall be licensed by EPRA
17.	The Public Health Act (Cap. 242)	The Act prohibits the proponents from engaging in activities that cause environmental nuisance or those that cause danger, discomfort or annoyance to inhabitants or is hazardous to human and environmental health and safety.	The proponent will be in line with the regulations of this act and will ensure suppression of infectious diseases and maintain proper sanitation during all the phases of the project.
18.	Community Land Act, 2016	This Act is critical for the proposed project is within community land. Section 6(1) of the Act provides that 'county governments shall hold in trust all unregistered community land on behalf of the communities for which it is held'. Furthermore, Section 6(2) maintains that 'the respective county government shall hold in trust for a community any monies payable as compensation for compulsory acquisition of any unregistered community land'. Section 30(1) states that 'Every member of the community has a right to equal benefit from community land'. Section 26(1) provides that 'a community may set aside part of the registered community land for public purposes and Sub-section (2) holds that 'where land is set aside for public purposes under Sub-section (1), the (Land) Commission shall gazette such parcel of land as public land'. These provisions offer a window for the proposed project to acquire land for project works legally for communities as necessary and to convert the same into public land. This is useful for the project as once done powerful groups will not have opportunity to exclude them on account of their socio - economic statuses. In any event, Section 35 holds that, 'subject to any other law, natural resources found in community land shall be used and managed- (a) Sustainably and productively. (b) For the benefit of the whole community including future generations. (c) With transparency and accountability; and (d) On the basis of equitable sharing of accruing benefits.	- The proposed project site falls on community land and the land belongs to the community in Gatab. The community has since offered to the land in kind for project use. The establishment of the mini grid will convert communal land to industrial use for long term. Further, based on community need assessment the proponent will undertake in kind development project to support the community water needs. The proponent should adhere to the provision of this legislation

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
		The concept of community land has been defined broadly enough to include VMGs. Women, children, old people, and future generations have been thought of as PAPs and thus their rights secured in this Act	
19.	The Land Act, 2012	The Land Act 2012 is the substantive law governing management of land in Kenya. It provides for the legal regime that will govern inter alia, the administration and management of public land and private land; contracts over land, leases, charges, compulsory acquisition, easements and related rights. The state organ responsible for land matters in Kenya is the National Land Commission (NLC).	Part VIII of the Land Act 2012 (Articles 107 – 133) describes the process that needs to be followed for compulsory acquisition of interests in public land. This part of the Land Act will be followed by the Proponent/Contractor for securing the and upon which the proposed solar power plant will be developed.
20.	Environment and Land Court Act, No. 19 of 2011	This Act gives effect to Article 162(2)(b) of the Constitution to establish a superior court to hear and determine disputes relating to the environment and the use and occupation of, and title to, land, and to make provision for its jurisdiction functions and powers, and for connected purposes	The project Grievance Redress Mechanism provides legal address as an option for alternative dispute resolution. The PAPs can seek redress on disputes relating to land and environment through the Environment and Land Court or if they are dissatisfied with NLC's decision in matters relating to compulsory land acquisition.
21.	The Physical and Land Use Planning Act, 2019	This Act of Parliament makes provision for the planning, use, regulation, and development of land and for connected purposes.	The proposed site is not in contravention of any Zoning regulations. The project site is within unregistered community land; necessary county approvals will be sought by the proponent e.g., Project design approval and change of use. The approvals shall be issued by the Physical planner in the department of Lands, Housing and Urban Development – Marsabit County.
22.	The Employment Act No 11 of 2007	This Act is important since it provides for employer – employee relationship that is important for the activities that would promote management of the environment within the energy sector.	With the Contractor and the Project Proponent being primary employers during the construction and operational phases of the Project, respectively, they are bound by this law to abide to its stipulations on employee management and relations
23.	The Work Injury Benefit Act, 2007	This is an Act of Parliament to provide for compensation to employees for work related injuries and diseases contracted in the course of their employment	The Proponent and Contractor will maintain an insurance policy cover for its employees, record of accident, carryout proper accident investigations; organize for pre-employment and regular medical examinations for staff.

No	Legislation/ Guidelines	Description of the Legislation/Guideline	Relevance of the legislation/regulations in terms of license, permits, and other requirements
24.	Children Act, 2012	This is an Act of Parliament to make provision for care and protection of children; 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 for connected purposes	The Proponent and contractor will not employ children in any manner that is economically exploitative, or 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.
25.	Persons with Disability Act, Chapter 133	This Act provides for the protection of the rights of people with disabilities ensuring they are not marginalized and that they enjoy all the necessities of life without discrimination. The Act guarantees that (1) No person shall deny a person with a disability access to opportunities for suitable employment. (2) 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. (3) An employee with a disability shall be entitled to exemption from tax on all income accruing from his employment.	The Act will be adhered to in order to ensure that persons with disability are included in all decision making that affects their lives and also monitored to make sure they are not excluded from project benefits and that negative impact of the project do not adversely affect them.
26.	The Sexual Offences Act,2006	This is a comprehensive law that criminalizes a wide range of behaviours including rape, sexual assault, defilement, compelled or induced indecent acts with child imbeciles or adults, gang rape, child pornography, child trafficking, child sex tourism, child prostitution, exploitation of prostitution, incest by male and female persons, sexual harassment, deliberate transmission of HIV or other life threatening sexually transmitted disease, stupefying with sexual intent, forced sexual acts for cultural or religious reasons among others. The Act also has orders for medical treatment for victims including free HIV prophylaxis, emergency pregnancy pill and counselling. The Act provides stiff penalties in which most of the crimes attract minimum of ten years imprisonment which can be enhanced to life imprisonment.	This Act mitigates the risk of GBV-SEA/SH foreseen in the mini grid project particularly during the construction and decommissioning phases due to labour influx.
27.	Air Quality Regulations (2014)	Regulation 3 stipulates that the objective of these Regulations is to provide for the prevention, control, and abatement of air pollution to ensure clean and healthy ambient air.	The Proponent and contractor will implement mitigation during construction to ensure neighbouring properties are not impacted by nuisance dust

4.5 National Administrative Requirements

A brief description of the relevant enforcement agencies with respect to the institutional framework is described in the table below.

Table 7: Relevant Enforcement agencies

Main Actors	Key Functions
Ministry of Energy	Under the leadership of a Cabinet Secretary, the ministry is responsible for formulation and articulation of energy policies through which it provides an enabling environment for all stakeholders. Its tasks include national energy planning, training of manpower and mobilization of financial resources.
Energy and Petroleum Regulatory Authority (EPRA)	The Energy Act establishes the EPRA to, among other functions: regulate production, conversion, distribution, supply, marketing and use of renewable energy; collect and maintain energy data; ensure, in collaboration with the Kenya Bureau of Standards, that only energy-efficient and cost-effective appliances and equipment are imported into the country; and co-ordinate the development and implementation of a national energy efficiency and conservation action plan. The powers of the Authority include, but are not limited to, the power to: issue and renew licenses and permits for all undertakings and activities in the energy sector; manage electric power tariffs and tariff structures; investigate tariff charges; formulate, set, enforce and review environmental, health, safety and quality standards for the energy sector; approve electric power purchase and network service contracts for all persons engaging in electric power undertakings; investigate and determine complaints or disputes between parties over any matter relating to licenses and license conditions under the Energy Act; and impose such sanctions and fines as may be appropriate for violation.
Energy and Petroleum Tribunal	The Energy Act establishes the Tribunal to hear and determine civil disputes and appeals from the EPRA and any other licensing authority relating to the energy and petroleum sector. The Tribunal has powers to grant equitable reliefs including, but not limited to injunctions, penalties, damages, specific performance, and the power to, on its own motion or upon application by an aggrieved party, review its judgments and orders.
Rural Electrification and Renewable Energy Corporation (REREC)	The main purposes of the RERC are to spearhead development of renewable energy resources in Kenya and to accelerate the pace of rural electrification in the country. The REREC is mandated under The Petroleum Act to undertake feasibility studies and maintain data with a view to availing the same to developers of renewable energy resources and provide an enabling framework for the efficient and sustainable production, conversion, distribution, marketing, and utilization of renewable sources in Kenya.
Renewable Energy Resource Advisory Committee	The Committee is intended to play an advisory role to the Cabinet Secretary for the Ministry of Energy and Petroleum on the criteria for allocation of renewable energy resource, licensing of renewable energy resource areas, management of water towers and catchment areas, development of multi-purpose projects such as dams and reservoirs for power generation and management and development of renewable energy resources.

4.6 International Safeguard Requirements

The table below shows the applicability of World Bank Operational Safeguards as it applies to the proposed project in Gatab site.

Table 8. World Bank Safeguards

OP	TITLE	APPLICABILITY	COMMENTS
4.01	Environmental Applicable	Applicable	The proposed project is likely to have potential environmental and social impacts. The objective of OP 4.01 is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate environmental and social screening, analysis of actions and mitigation of their likely environmental and social impacts and monitoring. The consultants have identified that the overwhelming majority of project beneficiaries in Gatab area are considered vulnerable and marginalized. Therefore, OP 4.01 is applicable, and in line with this operational policy, the environmental and social screening process for the mini-grid project.
4.04	Natural Habitats Applicable	Applicable	The proposed project may be in or close to areas with natural unique flora and fauna though the component is unlikely to have significant negative impacts on natural habitat. Works will nevertheless be implemented in an area in Gatab that may not negatively affect diverse flora, fauna, and avifauna. The area is dependent on pastoralism.
4.12	Involuntary Resettlement Applicable	Applicable	The proposed project will involve land take for construction purposes including, solar panels; generator rooms and distribution lines, as well as contractor yard and workers camp site
4.04	Natural	Applicable	This policy recognizes that the conservation of natural habitats is essential to

	Habitats OP/BP		safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. Predicated on the assumption that natural habitats may be affected by erection of poles and construction of mini-grid stations.

4.6.1 Comparison between the World Bank and Kenyan Laws to this Project

A comparison between the WB policies and the Kenyan law is presented in this section. The objective is to find out any gaps and propose a recommendation.

Table 9: Comparison between the WB safeguard policies and the Kenya Legislation

World Bank safeguard Policies	Kenyan laws	Comparison	Recommendation
O.P 4.01 **requires screening to determine level of environmental and social assessment to be done** **An ESIA is prepared before project implementation**	EMCA requires screening of project to determine level of environmental and social assessment to be done An ESIA is required once determination is done	Similar both require screening	Screening has been done and the project is established as medium risk which requires and ESIA
ESIA is needed once determination had been established and should be prepared identifying all environmental and social impacts and mitigation measures proposed to address the impacts	ESIA is needed once determination had been established and should be prepared identifying all environmental and social impacts and mitigation measures proposed to address the impacts	Similar-both require ESIA depending on the project impacts	ESIA is prepared in line with EMCA /EIA regulations and makes reference to WB safeguard policies
O.P 4.12 **Land Acquisition and Involuntary resettlement should be avoided wherever possible or minimized and exploring all alternatives**	The Government and any other organization shall prevent internal displacement linked to development projects to the extent possible by exploring other alternatives.	Similar- displacement in projects should be avoided to the extent possible by exploring alternatives.	WB policy is more elaborate than the Kenyan Law.
O.P 4.10 **on indigenous people seeks to promote the inclusion of these group in development project and especially through consultation to ensure they also share in the project benefits and ensure negative impacts do not disproportionately fall on them** **The policy requires these groups to be consulted separately to enhance their participation**	The Constitution of Kenya 2010 article 56 provides for the right of marginalized communities and the importance of their input in decision making that regards them. National Gender and Equality Act and the Children's Act and Persons with disability Act seeks to promote the inclusion of these persons in all issues as they are often overlooked and left out. Emphasis is also on consulting with them	Similar-both seek to promote inclusion of these group so that they do can share the projects benefits and ensure that negative impacts of the project do not fall on them disproportionately WB needs a social assessment to be conducted	WB policy more elaborate and the two are being used to compliment

World Bank safeguard Policies	Kenyan laws	Comparison	Recommendation
Project affected persons should be meaningfully consulted and be given opportunities to participate in planning and implementing of projects and especially where there is resettlement	EMCA requires that the project owner seeks the views of the people who are affected and explain the project information to them and especially the impacts of project and also obtain their opinions or comments	Both are similar	Consultation has been done and will be progressed in line with the two WB policy and Kenya legislation
O.P 4.04 **is a comprehensive set of standards that aim to promote sustainable development and protect the environment and communities from the adverse impacts of development projects. The ESIA must consider the impacts of the project on natural habitats, including wetlands, forests, and other sensitive ecosystems, as well as the impacts on biodiversity and wildlife.**	Under EMCA, an ESIA must be conducted before the implementation of any development project that is likely to have significant adverse impacts on the environment.	Similar-Both focus on protection of natural habitats and the assessment impacts of development projects on these habitats. However, OP/BP 4.04 provides more detailed guidance on the specific steps and considerations that must be taken into account when conducting an ESIA, while EMCA provides the legal framework for ESIA in Kenya	The World Bank policy is more detailed, and the two are used in a complementary manner

5 BASELINE SETTINGS- ENVIRONMENT, ECOLOGY AND SOCIAL

5.1 Study Area

The project site is located In Gatab village, Loiyangalani ward in Laisamis subcounty, Marsabit county. Based on the secondary information of the region, the following baseline information on environment, ecology and social has been discussed under the sections below.

5.2 Environment Baseline

5.2.1 Geology and Soil

The county is generally covered with young sedimentary rocks with loamy soils in the north bordering the Ethiopian highlands. The county has considerable deposits of Limestone and sand. The soils in the project location were predominantly sandy soil with patches of depressed land of loam soil.

5.2.2 Topography

Marsabit County is extensively plain and lies between 300 meters and 900 meters above sea level. The specific site however is on a mountain, Mt. Kulal that is 2235m above sea level (asl). The county also have several other topographical features that includes Ol Donyo Ranges (2,066m asl), Mt. Marsabit (1,865m asl) in the central part of the county, Hurri Hills in the north eastern part of the county (1,685m above sea level), Mt. Kulal in the north west (2,235m asl) and the Sololo-Moyale escarpment in the north east (up to 1,400m asl). The project area is a source of water to various drainage systems connecting to Chalbi desert. The general slope of the surrounding areas slopes downwards in varied uniformity in all directions. The project site is at Latitude 02°38'51.7"N and Longitude 36°55'44.0"E. The county is prone to seasonal flooding during the rainy seasons which makes roads impassable.

5.2.3 Hydrogeology and Drainage

Marsabit County has no permanent river, but has four drainage systems, covering an area of 948 sq. km. Chalbi Desert is the largest of these systems and it receives run-off from the surrounding lava and basement surfaces of Mt. Marsabit, Hurri Hills, Mt. Kulal and the Ethiopian plateau. In the south, the seasonal rivers of Milgis and Merille flows eastward and drain into the Sori Adio swamp. Other drainage systems include the Dida Galgallu plains which receive run-off from the eastern slopes of Hurri Hills and Lake Turkana into which seasonal rivers from Kulal and Nyiru mountains drains to. The county has three dryland forests, namely Mt. Marsabit, Hurri hills and Mt. Kulal where the project area is located.

5.2.4 Ground Water Development

The ground water resources were majorly identified during the site assessment by means of observation and selected data hydrological model of the area. The site has tapped water connected from a spring locate at about 25km offsite.

There are three water catchments in the county i.e. the upper horizon of mountains and hills, over 1,500m to the summits of Mt Marsabit and Mt Kulal where there are a number of springs. The second catchment is 1,200m to 1,500m, still on Mt. Marsabit are springs like Badassa, Songa and Balesa Bongole. The rest of the county, which generally lies between 400 and 460m, depends mostly on underground water (i.e.

boreholes and shallow wells). In these areas, the ground water table varies greatly

5.3 Ecological Conditions

Marsabit County lies in four main ecological zones, namely, sub-humid, semi-arid (mainly woodlands), arid (predominantly bushlands) and very arid (scrubland). The area is located at the top of Mt. Kulal which is at 1,700m above sea level supports dense evergreen forests and is characterized by high rainfall of up to 1,000mm per annum, low evapo-transpiration. This falls under ecological zine IV of semi-arid areas/woodland zones. The semi-arid areas have medium potential for supporting both pastoralism and agriculture. These comprise areas that constitutes the lower slopes of Mt. Marsabit, the middle slopes of Mt. Kulal and the top of Huri Hills which has increasingly become an area of sedentarized agro-pastoral production. Some pockets within Sololo and Moyale fall in this zone as well

This zone mainly supports agro-pastoral livelihood systems and have soils that are suitable for rain-fed agriculture. The area is an important water catchment point for the surrounding areas. The area is a source of water to several seasonal rivers that extends westwards to Lake Turkana and the surroundings.

Plate 1. View of site locality with some of the tree species present

The project area suffers from paucity of wildlife. This is mainly due to increasing population with subsequent increase in poaching activities especially for the big game. For example, Elephants *(Loxodonta africana)* and black rhinoceroses (*Diceros bicornis)* were once plentiful on the lower slopes of Mt. Kulal until 1976 but have now been exterminated by poaching. Other wildlife species including Greater kudu *(Tragelaphus strepsiceros)* Oryx *(Oryx beisa*), Gerenuk *(Litocranius walleri),* Grant's gazelle *(Gazella granti),* Giraffe *(Giraffa camelopardalis)* and Grevy's zebra *(Equus grevyi)* occurred on the middle and upper slopes of Mt. Kulal. The last buffaloes *(Syncerus caffer),* which lived in the higher levels of the montane forest, were seen in 1976 and the species is apparently extinct on Mt. Kulal now. During the field study, the team saw gerenuk, stripped hyaena, jackal and ostrich between the project area and Marsabit (outside the project area). The exceptionally low densities of wildlife especially the mega fauna within the project area is attributed to poaching and intense competition between the wildlife and livestock.

5.4 Climatic Conditions

The county has arid climatic condition with the exception of the areas around Mt. Marsabit, Mt. Kulal, Hurri Hills and the Moyale-Sololo escarpment which represent typical semi-arid condition. The temperature ranges from a low of 150C to a high of 26oC, with an annual average of 20.50C (World Weather and Climate Information, 2015). It has a bi-modal rainfall pattern. The long rain season fall between April and May while the short rain season falls between November and December. Rainfall ranges between 200mm and 1,000mm per annum and its duration, amount and reliability increases with rise in altitude. North Horr

(550m) has a mean annual rainfall of 150mm; Mt. Marsabit and Mt. Kulal experience 800mm while Moyale receives a mean annual rainfall of 700mm.

5.5 Socio-economic Environment

5.5.1 Community Profile

Gatab village is in Loiyangalani ward, Laisamis subcounty in Marsabit County. It is located 30 km east of Loiyangalani town. The top community development priorities are 1st water, 2nd road 3rd school in that order. The village has been in existence since the year 1966 with the community having lived in the area before colonial period. Houses in the community mainly composed of thatched and/or polythene covered manyattas with a few that are roofed by iron sheet. The main clans are the Samburu tribe with the minority tribes being Somali, Rendile and Turkana present in the area. The African Traditional Religion (ATR) and Christians are the dominant religions. Below is a summary of demographic profile of Gatab.

Attribute	**Magnitude/Number**
Approx. population	4,000
Households	840
Gender.	Male – 40% Female – 60%
Ave. No. per household	6 per household
Indigenous	Indigenous- 99% Settlers – 1%
Vulnerable classes	Disabled, Elderly, Orphans and Widows
Dominant ethnic group	Samburu
Primary religion	ATR Christianity
Other groups	Somali, Rendile and Turkana
Employment (formal/Informal)	Formal – Less than 5% Informal – 95%

Table 10. Demographic profile of Gatab

Plate 8. Manyatta household at the immediate north of the site

5.5.2 Socio-economic status of Study Area

5.5.2.1 Demographic Profile

The information shared on community profile by the area chief (Mt. Kulal location) showed that Gatab area has a population of approximately 4,000, and with an estimated number of households to be 840 with an average of 6 people. Gatab has a gender ration that is currently estimated to be about 40% male and 60% female.

5.5.2.2 Educational Infrastructure

The village has only one primary school - Gatab Primary School located at the immediate south of the site. The school has a total of 449 pupils (198 Boys and 251 Girls) with 12 teachers; (10 employed by Teachers Service Commission (TSC) and 2 employed by the Board of Management). The school completion rate among the boys is approximately (90%) while that of the girls is at (89%).

Marsabit county in general has a total of 231 primary schools, 43 secondary schools, three constituent colleges in the county - Kenyatta University, University of Nairobi and Maasai Mara in Saku Sub-county.

5.5.2.3 Occupation and Livelihood Profile

Gatab community mainly keep livestock and small-scale farming. Major livestock kept are cattle, sheep, goats and local chicken. Crops grown are mainly for subsistence purposes whereas, the livestock reared are sold in main markets near Mt. Kulal. The markets include; Merilles, Kurungu, South Horr and Oltorot market centres. Livestock is transported to these markets by foot, motorcycles and donkeys.

5.5.2.4 Land Use

Land in the community is mainly communal. The land is used for homesteads, crop growing and mainly for livestock grazing. The crops are grown in small scale within the households (kitchen gardening) for local consumption. Livestock are reared communially in the available grazing land at Mt. Kulal.

5.5.2.5 Health facilities

Gatab has only one public health center located within the settlement area and at about 300m from the site. The facility has four (4) nurses, one (1) clinical officer, two (2) community health assistants, four (4) support staffs and one (1) lab technologist. Main services provided immunization, ANC services, laboratory services and general Out-patient services. The facility is in good condition; however, the facility has equipment that are not in use due to lack of skilled personnel, also, reportedly, the employees usually register financial constraints.

Plate 9. Community water point with water storage tank

5.5.2.6 Social and Physical Infrastructure

Water: Water utilized in Gatab is sourced from a spring located at about 18km away from the site. The water is conveyed and distributed all through the area by use of water pipes. The connection and supply have been done to individual homesteads and public facilities provided in Gatab area.

Sanitation: Private toilet facilities are provided in the school and dispensary and few households within the area. Open defecation (OP) also practiced in the village leading into poor waste management.

Road Network: Roads connectivity within the area is also poor and not regularly maintained. The main forms of transport within the area are Motor bikes and donkeys as alternative modes of transport. the project area is located in the top section of Mt. Kulal and therefore the available road is steep. The road types are gravel and dirt roads.

Mobile Network Coverage: Network coverage within the village is good. The available network providers are Safaricom, Telkom and Airtel.

Power/electricity: the community is not connected to the mains. The population use mainly portable solar at the household for charging mobiles and lighting.

6 STAKEHOLDER ENGAGEMENT

This section profiles the key stakeholders for the Gatab site solar project and assesses their potential concerns and levels of influence. The process of stakeholder engagement involved.

i. Stakeholder identification and analysis
ii. Planning how the engagement with stakeholders will take place.
iii. Disclosure of information.
iv. Consultation with stakeholders
v. Addressing and responding to grievances; and
vi. Reporting to stakeholders

6.1 Stakeholder Consultation and Disclosure Requirement for the Project

The World Bank Environmental Social OPs 10 emphasizes on engagement in meaningful consultations with all stakeholders. The stakeholders with timely, relevant, understandable, and accessible information, and consult with them in a culturally appropriate manner, which is free of manipulation, interference, coercion, discrimination, and intimidation.

A documented record of stakeholder engagement, including a description of the stakeholders consulted, a summary of the feedback received, and a brief explanation of how the feedback was considered is in place.

The respective minutes and list of participants for the public consultation undertaken at Gatab baraza park is enclosed under appendices in page 12-2 of this report. Further, an initial communication was shared with the county commissioner Garissa and Chief for Mt. Kulal location on 5th January 2022, two (2) weeks prior to the public participation meeting held on 19th January 2022 at Gatab baraza park. Background information document (BID) was share with the chief and posted at main public facilities at Gatab.

6.2 Stakeholder Characterization and Identification

A stakeholder is "a person, group, or organization that has a direct or indirect stake in a project/organization because it can affect or be affected by the Project/organization's actions, objectives, and policies" Stakeholders thus vary in terms of degree of interest, influence and control they have over the project. Stakeholders are classified in the following two categories.

- **Primary Stakeholders**- Stakeholders who have a direct impact on or are directly impacted by the project.
- **Secondary Stakeholders**- Stakeholders who have an indirect impact or are indirectly impacted by the project.

In line with the nature of the project and its setting in Gatab the stakeholders have been identified and listed in the table given below.

Table 11. Identified Stakeholders

Stakeholder Groups	Primary Stakeholders
Community	Local Laborers Land sellers VMG's Local Community
Institutions	Community & Faith Based Organizations Education & Healthcare institutions
Government Bodies	NEMA County Government District and local administration

6.2.1 Stakeholder Mapping

Stakeholder mapping is a process of examining the relative influence that different individuals and groups have over a project as well as the influence of the project over them. The purpose of a stakeholder mapping is to:

- ✓ Identify each stakeholder group.
- ✓ Study their profile and the nature of the stakes.
- ✓ Understand each group's specific issues, concerns as well as expectations from the project
- ✓ Gauge their influence on the Project.

The significance of a stakeholder group is categorized considering the magnitude of impact (type, extent, duration, scale, and frequency) or degree of influence (power and proximity) of a stakeholder group and urgency/likelihood of the impact/influence associated with the stakeholder group in the project context. The magnitude of stakeholder impact/influence is assessed taking the power/responsibility and proximity of the stakeholder group and the group is consequently categorized as negligible, small, medium, or large. The urgency or likelihood of the impact on/influence by the stakeholder is assessed in a scale of low, medium, and high. The overall significance of the stakeholder group is assessed as per the matrix provided in Table below.

Table 12: Stakeholder Significance and Engagement Requirement

		Likelihood of Influence on/ by Stakeholder		
		Low	Medium	High
Magnitude of impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major

6.3 Stakeholder Analysis

The table below has been used to classify the identified stakeholders (directly or indirectly impacting the project) in accordance with their levels of influence on the project. The influence and priority have both been primarily rated as:

- **High Influence**: This implies a high degree of influence of the stakeholder on the project in terms of participation and decision making or high priority to engage with the stakeholder.
- **Medium Influence**: Which implies a moderate level of influence and participation of the stakeholder in the project as well as a priority level to engage the stakeholder which is neither highly critical nor are insignificant in terms of influence; and
- **Low Influence**: This implies a low degree of influence of the stakeholder on the project in terms of participation and decision making or low priority to engage that stakeholder.

The intermediary categories s of low to medium or medium to high primarily imply that their influence and importance could vary in that range subject to context specific conditions or also based on the responses of the project towards the community.

The coverage of stakeholders as stated above includes any person, group, institution, or organization that is likely to be impacted (directly or indirectly) or may have interest/influence over project. Keeping this wide scope of inclusion in stakeholder category and the long life of project, it is difficult to identify all potential stakeholders and gauge their level of influence over project at the outset of the project. Therefore, the project proponent is advised to consider this stakeholder mapping as a live document which should be revised in a timely manner to make it comprehensive for any given period.

6.4 KEY SUMMARY OF COMMUNITY CONSULTATIVE MEETING LEADING TO LAND ACQUISITION

Land requirements for the project

During the community meeting, the project team led explained their objectives for visiting, which included assessing the land/site identified by the community for the solar Mini-grid project. They emphasized the need for an environmental and social screening to ensure the suitability of the land. Several criteria were listed for identifying the land, such as flatness, absence of flooding, stable soils, lack of residential occupation, ample sunlight, absence of conflicts, and centrality to residents and public facilities. The project was estimated to require approximately 2-3 acres of land.

The community were informed that the identified land fell under the category of community land, governed by the Community Land Act of 2016. The land was owned by the community but held in trust by the County Government of Marsabit due to the community's non-registration. The Kenyan government had secured a loan from the World Bank for the KOSAP project and sought a partnership with the community. The community would identify the land for the solar mini-grid, while the government would provide the necessary funding for its implementation.

The team explained the three main land ownership categories in Kenya: private land, public land, and community land. Compensation options for land included cash payment, land-for-land compensation, or compensation in the form of a community project identified by the community. The government proposed the latter option, wherein the community would identify a project to be implemented alongside the solar Mini-grid.

The community were educated on various issues, such as the County government's role in holding the land in trust and the community's ownership rights. The team emphasized the importance of public participation during the project's planning and operation phases, allowing the community to express their views, opinions, and concerns. The ownership of the land would eventually be transferred to REREC, and the community would have the opportunity to choose three projects in health, education, and water as compensation. One of these projects, subject to a budget of one million Kenyan shillings, would be implemented based on community priorities. Once the community agrees to identify a piece of land, the community leaders would sign a commitment form, which would be forwarded to the county government for information and further land registration processes.

Survey of the land and request for advance possession.

It was noted that the process of land allocation, land surveying and land transfers and registration are long and requested the community for advance possession of the land. This meant that the community would allow construction works to take place as the process of land registration is being progressed. The community agreed to the advance possession request. The team explained to the community members that the surveyor will need to pick exact GPS points of the agreed identified portion of land for the solar mini-grid so that the process of land allocation and registration may be progressed. The team explained to the community that the rationale and importance of sharing all that information was to facilitate the community in making informed decisions about the project.

The community in agreed to set aside land for Mini grid construction. A Land Identification form was signed by the representative of the community, the county government and the Implementing Agencies summarizing the process of land identification and the agreements reached with the community. The Land Identification Form has been attached at the end of this report.

6.5 KEY FEEDBACK RECEIVED DURING STAKEHOLDER CONSULTATION PROCESS

A Consultative Public Participation (CPPs) session is conducted to provide project information and facts to the local community and other stakeholders especially local government administrator thus giving them a platform to enable them to express their appreciation, concerns and fears as well as contribute ideas and opinions towards the project sustainability.

A detailed CPP and community engagement for Gatab Solar Mini Grid was held in Gatab village, at Gatab Baraza Park on 19th January 2022 chaired by the area chief.

The general stakeholder consultation/public meeting (Baraza) organized at Gatab community baraza point was attended by 32 males and 15 women were in attendance. The meeting was chaired by the area ward administrator assisted by the chief and the "Nyumba Kumi" leaders. The feedback received during the stakeholder consultation process have been summarized below.

Table 13: Summary of feedback received during the stakeholder consultation process

No	Issue/Comments	Response
1.	Mr. Sammy Poikan Lepalat and Lentawa enquired on clarity on the exact charges to be affected during installation and the subsequent electricity consumption on use. Mr. Daniel Lolpejalal enquired on the price per unit use for consumed power supplied from the proposed mini grid.	The MoE representative, Mr. Peter Maneno responded by indicating that the electricity distribution will be done within a radius of approximately 2km from the source and a connection fee of 1000 shillings will be required for each household and structure connected. The County Renewable Energy Officer (CREO), Mr. Jalle added that the electricity consumed will be charged in accordance with the national and regional charging rates set out by the regulator which is currently costed at between 18 to 19 shillings per Kwh. He further explained that charges will be dependent on consumer usage.
2.	Mr. Sammy Lepalat enquired on the magnitude and impact of air pollution from the generator that is aimed to utilised as a backup system for the mini grid.	The environmental expert and consultant's representative, Mr. Daniel Chumo, indicated that air emissions from the generator will be very minimal as the generator will be utilised only as a backup during limited electricity supply and unfavourable weather conditions. He further informed the members present that the generator design conditions will ensure that very minimal emissions are discharged.
3.	Mr. Daniel Lengarite enquired on the reliability of solar power generated from the mini grid facility and if in effect power will still be available even at unfavourable periods such as during rainy season and cloudy weather.	Mr. Peter Maneno informed the meeting that the project components include batteries with bigger capacities that will run for some time even when the solar energy is not available. He further highlighted that the design may include a backup generator to supplement solar and batteries when fully exhausted.

6.5.1 Positive Comments about the Project from the Participants

Some of the positive impacts that were identified by the participants include the following.

- ✓ Learning will improve due to availability of lighting
- ✓ Business opportunities will improve since farmers will be able to cool their milk, welding business will arise
- ✓ Employment opportunities will increase for the youth due to increase in business opportunities
- ✓ Security will improve due to availability of lighting
- ✓ Medical services will improve due to availability of refrigeration services
- ✓ The electricity will assist in pumping of water from the boreholes

6.5.2 The identified negative impacts of the project

Some of the positive impacts that were identified by the participants include the following.

- ✓ **Accidents**: some of the members raised concerns of possible accidents from falling poles, electrocution especially the children as well as possible accidents from falling of the electric poles. The community suggested extra care when, protection of appliances and reinforcement of electric poles to mitigate these accidents.
- ✓ **Employment Disputes:** There was a concern over the possibility of disputes arising between the local community with people of different cultures in the construction sites. The community suggested that proponent should consider employing local construction workers.
- ✓ **Dust Generation:** The participants expressed concern over possibility of generation of large amounts of dust within the project site and surrounding areas because of demolition, excavation works and transportation of building materials.

  The proponent will ensure that dust levels at the site are minimized through sprinkling water in areas being excavated and along the tracks used by the transport trucks within the site. Additional mitigation measures presented in this report will be fully implemented to minimize the impacts of dust generation.
- ✓ **Environmental Aesthetics** It was seen that the aesthetics of the area would be affected negatively during construction. It was suggested that the proponent should ensure landscaping is conducted after construction.
- ✓ **Noise Pollution**: The neighbouring school and neighbors will be affected by possible noise and exhaust fumes from the site.

  Other concerns
  - Some of the members asked whether they be required to pay the cost of connection or only the daily usage
  - Questions were also raised on whether the labor and raw materials will be sourced from the community.
  - A youth felt that the proposed site was an individual's plot and suggested that an alternative site be considered

6.5.3 Additional Responses from the Consultant

The consultant while addressing the community's issues raised, gave the following response.

- ✓ Every resident, business or public facility will be connected to the electricity at an affordable cost
- ✓ That the Contractor/KOSAP will rehabilitate and plant trees after the construction phase of the project
- ✓ The contractor will be advised to source all non-skilled labor from the Gatab Community
- ✓ He assured the community that the project will commence soon after ESIA
- ✓ That noise form the Machinery will be minimized.

6.5.4 Consent

The Community members present agreed unanimously and accepted the Project Proposal.

6.5.5 Community Presentation

6.5.5.1 Adult to youth Representation

During the stakeholder's consultation adults were more represented than the youth as shown in the table below.

6.5.5.2 Gender Representation

Table 14. The consultative meeting had a wide representation

Category	Male	Female
Youth	11	2
Adult	21	12
TOTAL	**32**	**15**

6.5.5.3 Heads of Households

It was noted during the stakeholder consultation that male are the household heads during the stakeholder engagement consultation.

6.5.6 Focused Group Discussions analysis

The in-depth interviews were used as a tool for stakeholder identification and mobilization as well as collection of baseline data to enable identification of the likely project impacts. In addition, it provided an opportunity to the participants to raise their fears and concerns as well as make recommendation as pertains to the project.

During the discussions, information was gathered different roles, livelihood, health issues, challenges, perception of quality of life, education options for children, health care and project perception.

The consultative meeting had a wide representation as follows:

Table 15. The FGD consultative meeting had a wide representation

Category	Male	Female	Total
Youth	11	2	13
Adult	21	13	34
TOTAL	**32**	**15**	**47**

The target groups of the FGD were Males, Females, Health sector, Education sector as well as and the Youths.

6.5.6.1 Female Stakeholders' Consultation and Participation

The females' participants in the FGD were N=15 and between 21-64 years of age. The group had 7 female headed households in the meeting. The following were their responses.

6.5.6.2 Male Stakeholders' Consultation and Participation

- ✓ The male participants were N=10 in number. The following were the response during the male FGD.

6.5.6.3 Youth Stakeholders' Consultation and Participation

- ✓ The youth participants were 18 in number, and consisted of 14 males and 4 females. The following opinions were provided by the youth participants during the FGD.
- ✓ .

6.5.6.4 Education Stakeholders' Consultation and Participation

- ✓ The Education Stakeholder in Gatab, the head teacher, Mr. Shadrack L. Lengoyiap at Gatab Primary School which is a government sponsored institution. The head teacher has worked at the school for 16 years. The following responses were recorded from the stakeholder.

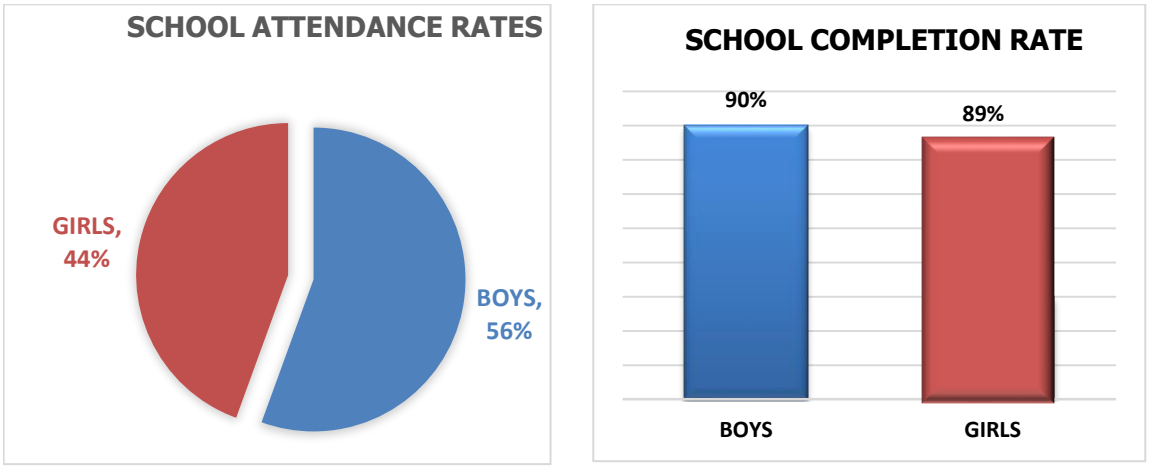


Figure 7. School Attendance rates and School Completion rate

6.5.6.5 Health Stakeholders' Consultation and Participation

- ✓ The following were responses from the health facility administrator, Mr. Joseph Lekochere who was present at the facility.

Plate 31. Public Participation

Plate 37. Youth FGD

Plate 31. Female FGD

Plate 31. Male FGD

7 GRIEVANCE REDRESS MECHANISM

7.1 Introduction

Grievance mechanisms should receive and facilitate resolution of the affected institutional or communities' concerns and grievances. Community concerns should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities, at no cost and without retribution. Mechanisms should be appropriate to the scale of impacts and risks presented by a project. Grievances can be an indication of growing stakeholder concerns (real and perceived) and can escalate if not identified and resolved. The management of grievances is therefore a vital component of stakeholder management and an important aspect of risk management for a project. Projects may have a range of potential adverse impacts to people and the environment in general, identifying grievances and ensuring timely resolution is therefore very necessary. As such the project has developed a grievance management process to serve as a guide during project implementation.

The constitution of Kenya section 159, Land and Environmental Court Act 2011, National Land Commission Act 2012, and Land Act 2012 advocates for alternative dispute resolution mechanisms before seeking formal legal redress in disputes relating to environment, land, and resettlement. In practice this can be the village head and other local or traditional dispute resolution mechanisms.

The Land Act 2012 and National Land Commission Act 2012 obligate the NLC to support grievances and disputes related to resettlement or land amicably in conjunction with the implementing agencies-KPLC/REREC. KPLC/REREC will be expected to put in place mechanisms and structures that arbitrate or negotiate with PAPs whenever there are any grievances concerning land or environment.

7.2 Grievance Mechanism

One of the key roles of the Grievance Redress Committees, is to address disputes led by the administrative chiefs. All PAPs will be informed how to register grievances or complaints, including specific concerns about land and environment. The PAPs will be informed about the dispute resolution process, specifically about how the disputes will be resolved in an impartial and timely manner. Environmental and Land Court will provide opportunity for appeal when a solution will not be found using the established local mechanisms. The court will deal with land related disputes. However, the Land Act 2012 and Environment and Land Court Act 2011 advocates for Alternative Dispute Resolution (ADR) methods in tackling land related disputes. Alternative dispute resolution approaches will be given preference and based on customary rules, arbitration, or third-party mediation. ADR will be promoted or defended as a resolution to disputes related to land.

7.3 National Grievances Redress Committee (NGRC)

NGRC has been established at the National level to ensure participatory and transparent implementation of the project. The NGRC will help the project carry out its mandate efficiently- particularly ensuring effective and amicable settling of disputes among the communities/PAP's.

Members to **NGRC** include representation from the following agencies and entities

1. Representative from the Ministry, chair of the Committee
2. Representative from NLC to handle matters that involve land take
3. Representative of the Implementing Agencies (IA)-KPLC and REREC
4. Representative from the Ministry's Legal office to guide on Alternative Dispute Resolution methods
5. Representative from the County Grievance Redress Committee-depending on the matter at hand; Land or Environment
6. Representative from Gender and Social Development Office who will be responsible for ensuring

gender issues are well addressed.
7. Representative from NEMA to handle environmental issues
8. County Surveyor/Physical planner from the county Lands office
9. Project Affected Person's-to represent the matter before the committee

Functions of the National Grievances Redress Committee

a) Ensuring effective flow of information between PAPs, the implementing agency and the County Grievance Redress committee on matters brought before the committee
b) Co-ordinate County Grievance Redress Committees (LGRC)
c) Co-ordinate activities between the various organizations involved; facilitate grievance and conflict resolution at the highest level
d) Resolving disputes that may arise within the project. If it is unable to resolve any such problems, the PAP's can seek legal redress.

7.4 County Grievance Redress Committees (CGRC)

CGRC has been established at the county level to ensure participatory and transparent implementation of the project. The CGRC will help the project carry out its mandate efficiently- particularly ensuring effective communication with the communities.

Members to **CGRC** will include representation from the following agencies and entities

1. Representative of NLC, to grant legitimacy to the acquisition process and ensure that legal procedures as outlined in Land Act 2012
2. Representative of the implementing agency
3. Representative of NEMA to handle environmental issues
4. The County Administration representative, which will provide the much-needed community mobilization, and support to the sub-project.
5. County Land Survey Officer will survey all affected land and produce maps.
6. The County Gender and Social Development Officer who will be responsible for ensuring gender programs are adhered to.
7. The County Lands Registrar will verify all affected land and validate the same.
8. Two PAP representatives from Location Grievance Resettlement Committee – act as voice for the PAPs
9. NGOs and CBOs locally active in relevant fields

The CGRC will have the following **specific responsibilities:**

a) Ensuring effective flow of information between PAPs and the implementing agency
b) Coordinate Locational Grievance Redress Committees (LGRC)
c) Coordinate activities between the various organizations involved; facilitate grievance and conflict resolution; and provide support and assistance to vulnerable groups.
d) Conducting extensive public awareness and consultations with the affected people so that they can air their concerns, interests, and grievances.
e) Resolving disputes that may arise within the project. If it is unable to resolve any such problems, channel it to the National Grievance Redress committee before utilizing the appropriate formal grievance procedures.

7.5 Locational Grievance Redress Committee (LGRC)

Since counties are large, further decentralized Grievance Redress Committee for Gatab has been established and will handle the grievances arising from Gatab solar off grid project.

At the time of assessment, it was noted that the committee was constituted in July 2021 during the land acquisition forum. The membership of LGRCs were elected from each category of PAPs except the locational Chief and assistant chiefs who will be automatic members of the team by virtue of their positions.

The implementing agency representatives present during this forum included MoE, KPLC and REREC (County Renewable Energy Officer). They held a consultative forum with the community and constituted an LGRC consisting of nine (9) members. The members consisted of three (3) ladies, four (4) men and two (2) youth all identified and elected from each category of PAP except for the location Chief and village administrator who are automatic members of the team.

It was however identified that the LGRC was yet to elect their chairperson and secretary and also yet to formulate a leadership structure among themselves.

The LGRCs will work under guidance and coordination of CGRC and the implementing agencies. Their membership comprises of the following:

1. The locational Chief, who is the Government administrative representative at the locational unit and who deals with community disputes will represent the Government in LGRC
2. Assistant Chief, who supports the locational Chief and Government in managing local community disputes in village units will form membership of the team.
3. Female PAP, elected by women PAPs, will represent women and children related issues regarding the project
4. Youth representative, elected by youths, represents youth related concerns in the LGRCs
5. Male representatives elected by the members of the PAPs
6. Vulnerable persons representative will deal and represent vulnerable persons issues in the LGRCs.
7. CBO representatives

The committee representatives present during the public consultation forum informed that they were yet to have an initial meeting and equally the members were yet to be informed of their specific roles on the project.

The LGRC will be assigned specific roles for the projects. The anticipated roles will include the following;

The roles of LRCCs will include among others:

a) Conducting extensive public awareness and consultations with the affected people.
b) Help ensure that local concerns raised by PAPs as regards to the project are promptly addressed by relevant authorities.
c) Resolve manageable disputes that may arise relating to the project. If it is unable to resolve/help refer such grievances to the CGRCs instituted.
d) Ensure that the concerns of vulnerable persons such as the disabled, widowed women, orphaned children affected by the sub project are addressed.
e) Assist the community in recording grievances, including helping those who cannot write or read.
f) Help the vulnerable groups access project benefits
g) Ensure that all the PAPs in their locality are informed about the project.

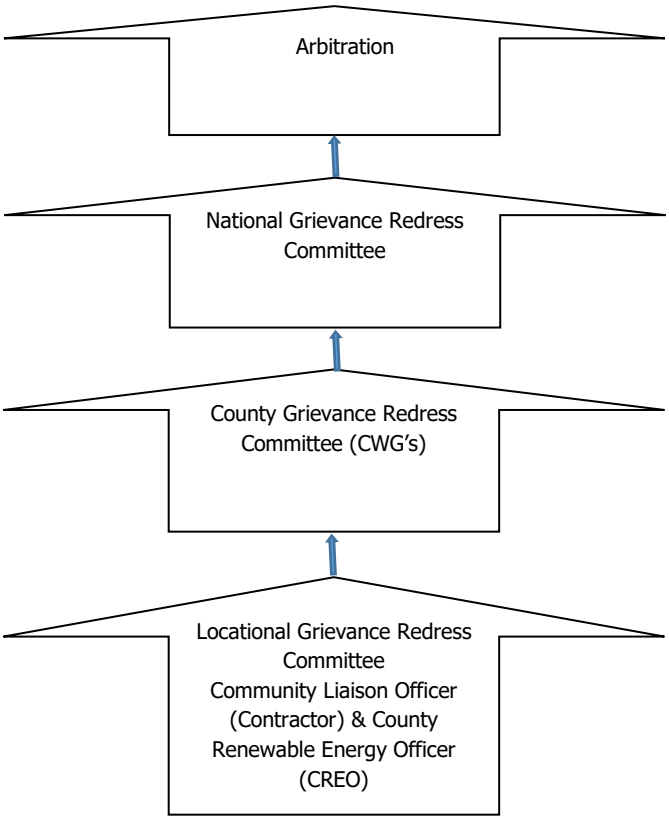


Figure 8. KOSAP Grievance Redress Mechanism

It should be noted that if complainants are not satisfied with the grievance process, even after arbitration they have the right to present their complaint through the court system.

It is expected that most disputes will be resolved at the lowest level-Locational Grievance Redress Committee in coordination with existing GRM.

A record of any/all grievances received and handled should be kept at all phases of the implementation process.

8 ANALYSIS OF ALTERNATIVES AND PROJECT JUSTIFICATION

This section analyses the project alternatives in terms of site and technology. Solar projects are non - polluting energy generation projects which are site specific and dependent on the availability of solar irradiance resource. The current site selected is a high solar power potential site with high irradiation and consistent sunny days throughout the year.

8.1 Site Selection

Solar projects are non-polluting energy generation projects which are site-specific and dependent on the availability of solar irradiance resource.

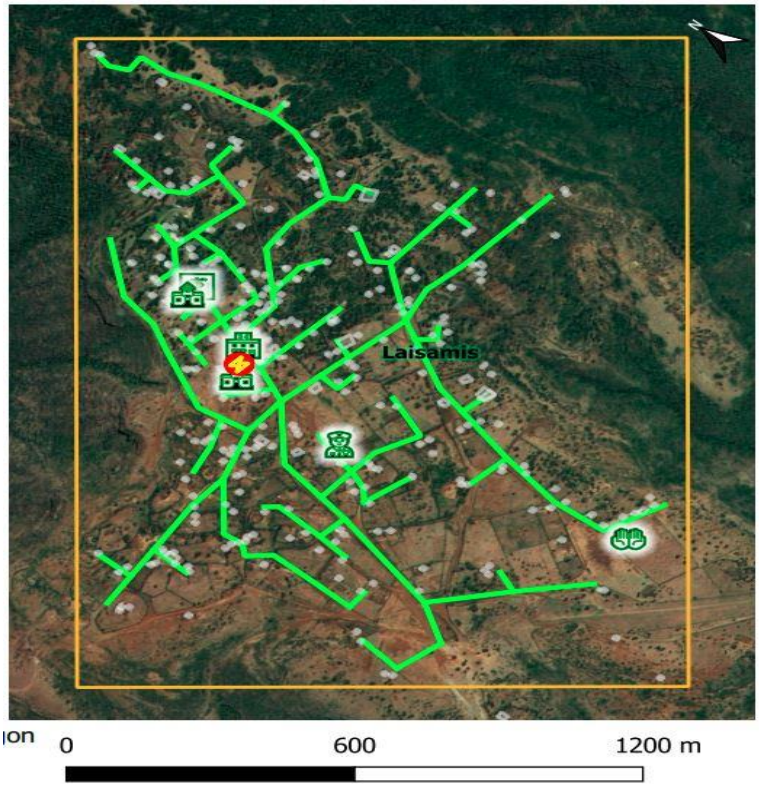
The proponent identified one location for the proposed solar project which located to the immediate north western part of Gatab primary school. The site was identified based on the location of settlement areas, commercial/ public facilities in Gatab. The site is within 1km to the shopping center and at an accessible central location to the settlement areas within Gatab.

Further details on the other locations identified were not available.

- No settlement present in the project site;
- The project site land is predominantly unregistered community land;
- The project site has few scattered trees and grass and located near school and community settlement area;

The proposed project site has the following location advantages:

- The land is unoccupied and is not located in any ecological sensitive receptor. However, Mt. Kulal Biosphere reserve is located at about 2km to the northern part of the site;
- No cultural property of archeological importance within 5 km radius, and
- The closest available power from National grid is located at about 125 km away, at Marsabit township



PROPOSED PROJECT SITE & PROXIMITY TO CONSUMER SITES

8.2 Power Scenario at Gatab

Gatab Sub-location has an estimate of 4,000 number of people with approximately 840 households within the area. The proposed solar off grid project is estimated to cover up to 344 residential and non-residential consumers within the area.

The existing sources of energy at Gatab include solar powered appliances supplied by private enterprises such as D-light. The current energy availability provided by the solar appliances is insufficient and does not meet the objective of the aim of project. Solar energy is mainly utilized for lighting and charging mobile phones. Whereas wood fuel is utilized for cooking, heating water and providing for warmth.

The use of firewood contributes to massive environmental degradation, increased health risks and additional workload for women and girls, and increased emissions of carbon content. Moreover, low enrollment, retention and transition for girls is partly attributed to increased workload related to energy search (firewood).

The county has a huge potential for renewable energy in which some have been tapped through wind and solar energy. The tapped energy from close location of Loiyangalani has been transmitted to the national grid. The area therefore has a chance of producing power and channeling power to productive sectors as well as export to other close locations.

Failure to construct and operate the mini grid in Gatab will lead to the failure of achieving one of the Kenya's national long-term development policies that aims to transform Kenya into a newly industrializing, middle-income country, by providing a high quality of life to all its citizens by 2030 in a clean and secure environment. Beneficiaries will be households, public and community institutions, enterprises and community facilities that cannot access electricity through the national grid and whose use of electricity will replace kerosene and other fuels for lighting and other activities like pumping water.

8.2.1 Vision 2030

Kenya Vision 2030 is the country's development blueprint covering the period 2008-2030. It aims to transform Kenya into a newly industrialized, *'middle income' country providing a high-quality life to all its citizens by the year 2030.'*

Vision 2030 is based on three key pillars namely: Economic, Social, and Political. 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 (STI).
- Land reform.
- Human resources development.
- Security; and
- Public sector reforms.

This policy recognizes that infrastructure, and in particular, a reliable power supply is vital in sparking economic growth. The challenges facing the power sector in Kenya include weak transmission and distribution infrastructure, high cost of power, low per capita power consumption, and low electricity access countrywide.

The Proponent aims to generate power mainly for community use which will contribute towards meeting the growing energy needs and targets as envisioned in Vision 2030.

8.3 Analysis of Alternative

As per IFC Performance Standards, an analysis of probable alternatives for the chosen technology and location of project site along with other similar factors that contribute to the project as a whole has been carried out. The following scenarios have been taken into consideration:

- Alternate Location for Project Site
- Alternate Sources of Energy
- Zero or No Project Alternative

8.3.1 Site Selection

Solar projects are non-polluting energy generation projects which are site-specific and dependent on the availability of solar irradiance resource.

Mini grid Sites under KOSAP were selected based on a number of factors.

1. Geophysical Factors-Proximity to Hills-Shade effect, Soil erosion, Drainage of the area, Flooding etc.
2. Land identified is free from any dispute on ownership or any other encumbrances
3. Proximity to public utilities-Schools, Dispensaries, Places of worship and community settlements
4. No squatters, encroachers or other claims to the land
5. The Size of the Mini grid to be constructed and the optimal coverage of a Mini grid in terms of the number of people to be reached.
6. The Land identified should be on spaces set aside for public use within the community centres.

The land was identified by the beneficiary communities and confirmed by technical staff to be suitable for the sub-project and free from any environmental or health risks. The impacts on the Community will be marginal and will not result in displacement of households or cause loss of household's incomes and livelihood.

The site identified was considered against the criteria highlighted above and was found suitable for Mini grid construction.

8.3.2 Alternate Location for Project Site

In determining the most appropriate site for the establishment of the mini grid, several options were explored. This site selection process considered the following criteria:

- The availability of primary resources required for the operation of the mini grid i.e. Sunlight
- Availability of land to locate the site and associated infrastructure.
- The availability and accessibility of infrastructure for the provision of services, manpower and social structure for the construction and operation of the solar mini grid.
- General environmental acceptability in terms of social impacts, water utilization, general ecology, etc.

Gatab was identified as the most suitable area for the establishment of the proposed mini grid based on

the following factors:

Location: The site location is an empty parcel of land with scattered cider tree species. The surrounding area is largely forested and has trees that are densely populated which makes it unsuitable for locating the project. Construction of the mini grid on the identified site will be appropriate. There is enough grazing land for the community and use of the site to construct the mini grid will not significantly impact grazing land.

Proximity to consumer sites: Gatab area has an estimate of 4,000 number of people with approximately 840 households within the area. The proposed solar off grid project is estimated to cover up to 344 residential and non-residential consumers within the area.

8.3.3 Alternate Sources of Energy

Harnessing solar energy is an eco-friendly process, with an inexhaustible solar resource and minimal pollution. There are minimal fuel requirements for operational activities. Solar energy has a short development timeframe, more predictable energy output and low maintenance costs as compared to some other forms of renewable energy sources.

The possible alternatives to solar energy include;

- Wind power: shortfalls associated with wind power includes; lack of time series data of wind, trained human resources to intricate design of wind power etc., providing wind power for Gatab residents is technically and financially challenging, expensive to install, dependent on wind pattern (not strong in Gatab). However, generation is cheap, low emissions & insignificant pollution levels.
- Thermal power: High fossil consumption, high emissions levels, high water consumption levels (water highly scarce in Gatab). Besides coal and petroleum products used in thermal power processing are not readily available within Gatab area and may have to be sourced from far locations. Therefore, thermal power option based on coal and petroleum products is not a viable option for Gatab. It however has high distribution and large-scale production potential.
- Nuclear power: disadvantages include; use of other fuel sources, has hazards associated with radioactive materials, expensive disposal of waste, high cost of project and long gestation period. The mode however does not emit smoke particles, low fuel cost, low emission levels and continuous electricity production.
- Wood fuel/ Firewood: The use of firewood and solid waste for electricity generation using thermal technology is another option. But the issue of air pollution and destruction of vegetative cover through firewood harvesting and charcoal burning already are environmental problems of serious concern which will further aggravate the natural environment. For these reasons, the wood fuel options evaluated above seem inappropriate for Gatab on environmental as well as economic grounds
- Fossil fuel

Solar energy was a desirable option because:

- It has low energy-production costs
- The project is environment friendly with minimal greenhouse gas emissions
- Versatile installation
- It is a clean source of energy hence minimal impact on the environment air quality
- Economic savings.

8.3.4 Zero or No Project Alternative

The No Project option in respect to the proposed project implies that the status quo is maintained. This option is the most suitable alternative from an extreme environmental perspective as it ensures non-interference with the existing conditions. This option will, however, involve several losses both to Gatab area and Laisamis as a whole. The village and the surrounding area will continue to have no electricity, and this will not help in maximizing and utilizing the area facilities. The No Project Option is the least preferred from the socio-economic and partly environmental perspective due to the following factors:

- The economic status of the local people would remain unchanged.
- Employment opportunities will not be created.
- Increased poverty in the area.

From the analysis above, it becomes apparent that the No Project alternative is no alternative to the local people, Kenyan Government, and Investors.

8.3.5 Analysis of Alternative Construction Materials and Technology

The proposed project will be constructed using modern, locally, and internationally accepted materials to achieve public health, safety, security, and environmental aesthetic requirements. These may not be desirable from a cost and durability perspective. The technology to be adopted will be the most economical and one sensitive to the environment.

8.3.6 Conclusion

The proposed project should be upheld to support the local community based on the need and location suitability.

9 IMPACT ASSESSMENT AND MITIGATION MEASURES

9.1 Identification of Impacts

This Section identifies and discusses both negative and positive impacts associated with the proposed construction of solar Mini-grid. The impacts are identified across all the phases namely: Pre-construction Phase, Construction Phase, Operational Phase and Decommissioning Phase.

Identification of project's positive and negative environmental impacts was done through observations, literature review, consultations and use of experts' analysis. The positive impacts are presented first then the negative impacts and their mitigation measures.

9.2 Impact Assessment Methodology

An impact is essentially any change to a resource or receptor brought about by the presence of the Project component or by the execution of a Project related activity. In general, the assessment of impacts will proceed through an iterative process considering four key elements:

- Prediction of potential impacts and their magnitude (i.e., the consequences of the development on the natural and social environment);
- Evaluation of the importance (or significance) of potential impacts taking the sensitivity of the environmental resources or human receptors into account;
- Development of mitigation measures to avoid, reduce or manage the potential impacts or enhancement measures to increase positive impacts; and
- Assessment of residual significant impacts after the application of mitigation and enhancement measures.

Where significant residual impacts remain, further options for mitigation may be considered and impacts re-assessed until they are as low as reasonably practicable for the Project and would be deemed to be within acceptable levels:

9.3 Defining Impact

Impacts will be defined in a number of ways, including:

- Nature of impact: positive or negative;
- Type of impact: direct, indirect, or cumulative;
- Duration of impact: temporary, short-term, national, international
- Scale of impact: onsite, local, regional, national, international.

9.4 Assessment of Significance

Criteria for assessing the significance of impacts will stem from the following key elements:

- Status of compliance with relevant Kenyan legislation, policies and plans and any relevant Kenyan or industry policies, standards or guidelines, as well as international best practice standards and guidelines;
- The magnitude (including nature, scale and duration) of the change to the natural or socioeconomic environment (e.g. an increase in coastal erosion, or an increase in employment opportunities), expressed, wherever practicable, in quantitative terms. The

magnitude of all impacts is viewed from the perspective of those affected by considering the likely perceived importance as understood through stakeholder engagement;

- The nature and sensitivity of the impact receptor (physical, biological, or human). Where the receptor is physical, the assessment considers the quality, sensitivity to change and importance of the receptor. For a human receptor, the sensitivity of the household, community or wider societal group is considered along with their ability to adapt to and manage the effects of the impact; and
- The likelihood (probability) that the identified impact will occur. This is estimated based upon experience or evidence that such an outcome has previously occurred.

It is generally accepted that significance is a function of the magnitude of the impact and the likelihood of the impact occurring.

For this assessment, significance has been defined in *Table 9-1* based on five levels described in table below;

Table 9-1: Categories of Significance

Category	Significance
Positive impacts	Positive impacts provide resources or receptors, most often people, with positive benefits. It is noted that concepts of equity need to be considered in assessing the overall positive nature of some impacts such as economic benefits, or opportunities for employment
Negligible impacts (or Insignificant impacts)	Negligible impacts (or Insignificant impacts) are where a resource or receptor (including people) will not be affected in any way by a particular activity or the predicted effect is deemed to be 'negligible' or 'imperceptible' or is indistinguishable from natural background variations.
Minor	An impact of minor significance ('Minor impact') is one where an effect will be experienced, but the impact magnitude is sufficiently small (with or without mitigation) and well within accepted standards, and/or the receptor is of low sensitivity/value.
Moderate	An impact of moderate significance ('Moderate impact') is one within accepted limits and standards. Moderate impacts may cover a broad range, from a threshold below which the impact is minor, up to a level that might be just short of breaching a legal limit. Clearly to design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for moderate impacts is therefore on demonstrating that the impact has been reduced to a level that is ALARP (as-low-as-reasonably-possible). This does not necessarily mean that 'Moderate' impacts have to be reduced to 'Minor' impacts, but that moderate impacts are being managed effectively and efficiently.
Major	An impact of major significance ('Major impact') is one where an accepted limit or standard may be exceeded, or large magnitude impacts occur to highly valued/sensitive resource/receptors. An aim of EIA is to get to a

	position where the Project does not have any major residual impacts, certainly not ones that would endure into the long-term or extend over a large area. However, for some aspects there may be major residual impacts after all practicable mitigation options have been exhausted (i.e., ALARP has been applied). It is then the function of regulators and stakeholders to weigh such negative factors against the positive ones in coming to a decision on the Project.

For environmental impacts the significance criteria used in this ESIA is shown in Table 9-2:

Table 9-2: Overall Significance Criteria for Environmental Impacts

Receptor sensitivity	**Impact Magnitude**		
	Low	**Medium**	**High**
Low	Minor	Minor	Moderate
Medium	Minor	Moderate	Major
High	Moderate	Major	Major

For the social impact assessment, the perceptions of stakeholders, expressed as opinions around certain issues, can be as important as actual impacts. Consequently, the concept of perception is explicitly brought into the evaluation of significance after an impact is evaluated. When an impact is of significant stakeholder concern, this may be causing to raise the significance rating. This prompts the formulation of more rigorous and appropriate mitigation measures which focus on the source of the impact and also address stakeholder perceptions. The risk of not addressing stakeholder perceptions is that reputational damage could arise, resulting in the loss of a 'social license to operate.

9.5 Magnitude of Impact

The impact assessment describes what will happen by predicting the magnitude of impacts and quantifying these to the extent practical. The term 'magnitude' covers all the dimensions of the predicted impact to the natural and social environment including:

- the nature of the change (what resource or receptor is affected and how);
- the spatial extent of the area impacted, or proportion of the population or community affected;
- its temporal extent (i.e., duration, frequency, reversibility); and
- where relevant (accidental or unplanned events), the probability of the impact occurring.

For social impacts, the magnitude considers the perspective of those affected by taking into account the likely perceived importance of the impact, the ability of people to manage and adapt to change and the extent to which a human receptor gains or loses access to, or control over, socio-economic resources resulting in a positive or negative effect on their well-being (a concept combining an individual's health, prosperity, their quality of life, and their satisfaction).

9.6 Sensitivity of Resources and Receptors

Sensitivities are defined as aspects of the natural or social environment which support and sustain people and the physical environment. Once affected, their disruption could lead to a disturbance of the stability or the integrity of that environment. For ecological impacts, sensitivity can be assigned as low, medium or high based on the conservation importance of habitats and species. For habitats, these are based on naturalness, extent, rarity, fragility, diversity and importance as a community resource.

For socio-economic impacts, the degree of sensitivity of a receptor is defined as 'a stakeholder's (or groups of stakeholders') resilience or capacity to cope with sudden changes or economic shocks. The sensitivity of a resource is based on its quality and value/importance, for example, by its local, regional, national or international designation, its importance to the local or wider community, or its economic value.

9.7 Likelihood

Terms used to define likelihood of occurrence of an impact are explained in Table 9-3 below.

Table 9-3: Explanation of Terms Used for Likelihood of Occurrence

An impact with a		
High probability	Refers to a very likely impact	Refers to very frequent impacts
Medium probability	Refers to a likely impact	Refers to occasional impacts
Low probability	Refers to rare impacts	Refers to rare impacts
	As far as one-time events (e.g., air emissions) or slowly developing effects are concerned (e.g., impacts on local lifestyle)	As far as possibly recurring impacts are concerned, such as accident or unplanned events (e.g., traffic accident, fire)

9.8 Definition of Mitigation Measures

Mitigation measures are developed to avoid, reduce, remedy or compensate for significant potential negative impacts, and to create or enhance potential positive impacts, such as environmental and social benefits. In this context, the term "mitigation measures" includes operational controls as well as management actions. These measures are often established through industry standards and may include:

- Changes to the design of the project during the design process (e.g., changing the development approach);
- Engineering controls and other physical measures applied (e.g., wastewater treatment facilities);
- Operational plans and procedures (e.g., waste management plans); and
- The provision of like-for-like replacement, restoration or compensation.

For potential impacts that are assessed to be of major significance, a change in design is sometimes required to avoid or reduce the significance. For potential impacts assessed to be of moderate significance, specific mitigation measures such as engineering controls are often sufficient to reduce these impacts to ALARP ('as-low-as-reasonably-possible') levels. This approach takes into account the technical and financial feasibility of mitigation measures.

Potential impacts assessed to be of minor significance are usually sufficiently managed through good industry practice, operational plans and procedures.
In developing mitigation measures, the first focus is on measures that will prevent or minimize potential impacts through the design and management of the Project rather than on reinstatement and compensation measures.

9.9 Positive Impacts During Construction Phase

This section enumerates and discusses the positive impacts associated with the proposed project during construction phase of the project.

9.9.1 Creation of Employment Opportunities

Various employment opportunities will be available during construction. The opportunities will be both skilled and unskilled. Majority of the unskilled and semi-skilled jobs will be taken up by the local community. Employment of the locals will increase skill transfer from the contractors.
The approximate number of workers to be employed by the proposed project is not yet known, however, this will contribute to easing unemployment level in the area. There will be a trickledown effect to the economy at large resulting from new income revenues as well as services provided through this project.

The impact significance is low as it will employ few people over a short period

Enhancement Measures

- Contractor should ensure that they prioritise the local community in allocating job opportunities.
- Contractor should ensure that job opportunities are not discriminatory
- Equal opportunities should be given to both men and women

9.9.2 Improving local economy

During this phase, the project will require supply of building materials most of which will be sourced locally at the nearest trading centre and its environs to the extent possible. Therefore, the project will provide ready market for local enterprises with such materials and boosts the local economy.

The businesses that will benefit during this phase are such as hotel, shops, artisan industries and food vending who will be benefit directly from the construction, as people working there will need commodities from them. This will promote the informal sector in securing some temporary revenues and hence improved livelihoods.
One of the responsibilities of the beneficiaries of the proposed Solar Mini-grid is to undertake wiring of their premises before there are connected and payment of a connection fee of Ksh 1000. The MOE through its implementing agency KPLC should consider supporting at least 50 households that are very poor through installation of ready boards to offset the cost of wiring so that they can also access electricity.
The impact significance is low as it will buy few materials over a short period of time

- REREC should ensure that their contractors/suppliers remit taxes and have a tax compliance certificate
- Prioritise local purchases over imports.
- Remit taxes on behalf of employees
- Contractor should prioritise local purchases over imports;
- Contractor should give preference to local labour which increases the local's ability to spend

9.10 Positive Impacts during Operation Phase

9.10.1 Quality, Reliable Power Supply

There is no electricity in Gatab. This is a maiden project with an aim of supplying power through solar because the area is far away from the national power grid. Once operational, household and public institutions (dispensary, primary school) and shopping centre in the area will greatly benefit from the stable power supply.

The impact significance is high as it will provide power where it wasn't for a long period

Enhancement Measures

- KPLC should ensure that they have a functional customer support team and a field response team;
- KPLC should ensure that they communicate power outages early to consumers

9.10.2 Employment Creation

Employment opportunities will also be created during the operation phase of the project. Opportunities that will be created include unskilled, semi-skilled to skilled jobs. These will involve security personnel, and staff to operate and maintain the Mini-grid. Employment will increase skill transfers.

The impact significance is low as it will employee people to manage the mini grid facility.

Enhancement Measures

- KPLC should ensure that they prioritise the local community in allocating job opportunities.
- KPLC should ensure that job opportunities are not discriminatory
- Equal opportunities should be given to both men and women

9.10.3 Reduction of Pollution Associated with Thermal Power Generation, Kerosene and Wood Fuel Usage:

Residents in the area use different sources of energy. Electricity supply will imply that as many as are willing can apply for connection and get connected. This will result in reduced individuals

and organizations using diesel generators, less reliance on kerosene, wood fuel and charcoal. This would mean less carbon dioxide is released to the environment and destruction of forests will be reduced hence decreasing greenhouse gases.

The impact significance is high as it will provide cleaner energy over a long [eriof of time for many households

Enhancement Measures

- KPLC should ensure that the power provided cost is competitive to discourage the locals from using unclean source of power.
- KPLC should ensure that they communicate power outages early to consumers

9.10.4 Improvement of Local and National Economy

The mini-grid project will ensure supply of a stable power that will reduce damage to the electronics and this will result in promotion of businesses both in the formal and informal sectors. Availability of power will enable businessmen to scale up their businesses while making it is possible to set up businesses such as salons, barber shops, photocopying machines, cyber cafes, welding, refrigeration of drinks among others. This will result in income improvements at the individual level and for the national economy. More customers will be connected and retail of reliable electricity by the power utility firm will attract increased tax revenues to the government.

The impact significance is low as it will buy few materials over a long period of time

Enhancement Measures

- KPLC should ensure that their contractors/suppliers remit taxes and have a tax compliance certificate
- Prioritise local purchases over imports.
- Remit taxes on behalf of employees

9.10.5 Education

Access to electricity at the household level and schools will create opportunities for children be able to study even for longer hours. Additionally, children in households can also access education programs being aired through different radio and T.V. channels. Schools will be able to take advantage of information technology and communication that are becoming a way of life in education sector and learning in general.'

The impact significance is high as it will provide power to schools over a long period for additional study time in the night and morning

Enhancement Measures

- KPLC should consider having the transmission lines are closer to schools for them to benefit from the power supply;
- KPLC should consider partnering with the county government in providing street lighting to improve security for children and teachers leaving for school early or leaving late for home

9.10.6 Health Benefits of the Project

Solar energy for lighting is better than kerosene lamps that are in use currently. This is because kerosene lamps emit particles that cause air pollution. The health risks posed by this indoor air pollution mainly include acute lower respiratory infections. Additionally, insufficient illumination (low light) conditions can cause some degree of eye strain and reading in these conditions over long periods of time may have the potential to increase the development of near-sightedness in children and adults. The project will result in many families replacing kerosene lamps for lighting with electricity there-by reducing chances of the afore mentioned disease incidences.

9.10.7 Improved Standard of Living

Availability of power will result in lifestyle changes through improved night lighting, pumping of water instead of manual pumping and refrigeration to maintain food safety and quality.

9.10.8 Security

The area will benefit from improved security since houses, businesses and public institutions will be well lit using electricity. This is as a result of more security flood lights bulbs which helps keep off opportunistic crimes including gender-based violence.

9.10.9 Communications

Access to electricity will lead to improved communication. This will be enabled by the fact that charging of mobile phones will be easier and cheaper. Access to mass media like radio and T.V will provide opportunity for the households to access a wide range of information which is useful for decision making.

9.11 Positive Impacts during Decommissioning Phase

9.11.1 Employment Opportunities

Once the project has served its purpose it will then be decommissioned. This will involve demolition and removal of the facility. During demolition, unskilled, semi-skilled and skilled employment opportunities will be available to the public.

9.11.2 Site Rehabilitation

After demolition of the proposed project, rehabilitation of the project site will be carried out to restore it to its original status or to a better state than it was. This will include replacement of topsoil and re-vegetation which will lead to restoration of the visual, vegetative and aesthetic state of the site.

9.12 Negative Impacts during Pre-construction Phase

9.12.1 Land Take

The identified site for the proposed Mini-grid is on a 0.6647 Ha unregistered Communal land set aside for public use. The assessment found that;

- No residential houses or businesses premises were on the piece of land
- No socio-economic activity was taking place on the land
- No physical relocation will take place.

9.12.2 Way Leaves

Supply of electricity will involve passing of low voltage (LV) lines to connect the customers to power. It is estimated that a total of 13.1 km of LV circuit will be constructed mainly along the road reserve and along the boundaries to supply power.

The impact significance for this impact is assessed minor considering the community wilfully allocated the land for project construction.

Mitigation Measures

- Land for mini-grids will be acquired by NLC compulsorily and affected communities compensated in-kind.
- The contractor will sign and adhere to the agreement for use of community land for contractor facilities and worker's camps, and restoration of the site after use.
- The construction activities will be restricted to within the allocated land and the immediate surroundings only.
- After construction work, any land taken for a temporary basis for storage of material will be restored to their original form.
- Consultations with the community during construction of the low voltage lines

9.13 Negative Impacts During Construction Phase

Despite the positive impacts identified, the project will also have negative impacts. However, adverse impacts are not anticipated due to its size and nature and most of the impacts will be experienced during construction phase of the project. The negative impacts and their mitigation are discussed below.

9.13.1 Vegetation Clearance

The construction process of the proposed Mini-grid and other associated facilities and structures will involve clearing of the existing vegetation cover (mainly grass) and trees. The project site is located in open area with minimal settlement around besides the dispensary and residential homes. Both the magnitude and sensitivity of this impact will be low. The impact will be direct, permanent and minor.

Mitigation Measures

- Clear only the necessary areas.
- Ensure proper demarcation and delineation of the project area to be affected by construction works.
- Specify locations for vehicles and equipment, and areas of the site which should be kept free of traffic, equipment, and storage.
- Designate access routes and parking areas.
- Re-vegetation including planting of trees around the plant/facility.

9.13.2 Soil Erosion Impact

During clearing of the area to pave way for ground-breaking soil erosion may take place. This will be due to surface run off or blowing away by the wind if not properly managed. This is bound to

happen because the soil will be loose. The area is gently sloppy on the lower side and surface run off can also result to soil erosion. The impact significance will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- The contractor shall avoid ground-breaking during the seasons of high rainfall to avoid erosion.
- Monitoring of areas of exposed soil during rainy seasons to ensure that any incidents of erosion are quickly controlled.
- The contractor should ensure that construction related impacts like erosion and cut slope destabilizing should be addressed through landscaping and grassing, carting away and proper disposal of construction materials
- Use silt traps where necessary
- Cover soil stockpiles.
- Landscaping with grass on areas without electrical installation (lower areas)
- The contractor should ensure recovery of exposed soils with grass and other ground cover as soon as possible.
- The contractor should put up proper drainage to avoid unnecessary erosion and do compaction of spoil areas to avoid land instability in form of soil subsidence, slip and mass movement.
- Areas compacted by vehicles during site preparation and construction should be scarified (ripped) by the contractor in order to allow penetration of plant roots and the re growth of the natural vegetation

9.13.3 Contamination of Soil from Fossil Fuels

The potential sources of soil contamination during construction phase are oil /fuel leaks or spills from machinery used in site preparation and trucks used in transporting construction materials. Depending on the size and source of the spill, liquid and gaseous state, petroleum hydrocarbons may remain mobile for long periods of time, threatening to contaminate the soil. The significance of the impact to the soil will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- Construction vehicles must be maintained in good state and proper servicing to ensure no oils are likely to leak
- Care must be exercised not to spill any fossil fuels
- Any contaminated soil shall be scooped and disposed-off appropriately.

9.13.4 Dust Emissions

Initial activities such as site clearing, excavation if done in dry weather conditions will result in dust pollution. Dust emission from construction machinery is regarded as a nuisance when it reduces visibility and is aesthetically displeasing. This is expected during construction works. Dust will be generated from construction earthworks, transportation activities and aggregate mixing.

The receptors were noted to be mainly residential and a health facility. The distances from a source that dust impacts can occur is highly site specific and will depend on the extent and nature

of incorporated mitigation measures, prevailing wind conditions, rainfall and the presence of natural screening. Due to the variability of the weather, it is impossible to predict what the weather conditions will be when specific construction activities are being undertaken. Therefore, the assessment of construction dust impacts is typically qualitative.

Mitigation Measures

- The construction area should be fenced off to reduce dust to the public
- Sprinkle loose surface earth areas with water to keep dust levels down.
- Construction trucks moving materials to site, delivering sand and cement to the site should be covered to prevent material dust emissions into the surrounding areas;
- Masks should be provided to all personnel in areas prone to dust emissions during construction
- Stockpiles of excavated soil should be enclosed/covered/watered during dry or windy conditions to reduce dust emissions.
- Drivers of construction vehicles must be sensitized so that they limit their speeds so that dust levels are lowered.
- Trees can be planted around the plant provided they do not cast shadows to the solar panels to act as wind breakers and hence decrease dust pollution

9.13.5 Vehicle Exhaust Emissions

Exhaust emissions are likely to be generated by the construction vehicles and equipment. Motor vehicles that will be used to ferry construction materials would cause air quality impact by emitting pollutants through exhaust emissions. There are few Receptors (settlements) within 500 m of the project site and the impact magnitude will be medium and sensitivity medium hence the impact significance will be moderate.

Mitigation Measures

- Drivers of construction vehicles must be sensitized so that they do not leave vehicles idling so that exhaust emissions are lowered.
- Maintain all machinery and equipment in good working order to ensure minimum emissions of carbon monoxide, NO_X, SO_X and suspended particulate matter;

9.13.6 Pollution from Solid Waste Generation

It is expected that solid waste will be generated during construction phase of the project. Solid waste is anticipated to be produced during site preparation, civil works, spoil from excavations and will include; mortar, wood, paper, waste paper wrappings, conductor off cuts, masonry chips and left-over food stuffs. Effects of mismanaged waste include:

- Public nuisance due to littering or smell in case of rotting
- Contamination of soils and water courses
- Creation of breeding grounds for vermin like rodents and cockroaches

The significance of this impact will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- Ensure spoil from excavations is arranged according to the various soil layers. This soil can then be returned during landscaping and then rehabilitation, in the correct order which they were removed that is top soil last;
- Segregate waste and dispose of appropriately using a licensed waste handler
- Provide litter collection facilities such as bins and create awareness campaigns to segregate as early as possible, using the appropriate bins

- Contractor to put in place and comply with a site waste management plan
- The contractor should comply with the requirement of OSHA ACT 2007 and Building rules on storage of construction materials
- Use of durable, long-lasting materials that will not need to be replaced as often, thereby reducing the amount of waste generated over time
- Recovery of materials remains and return to stores
- Re-use of materials where possible
- Proper budgeting to avoid waste generation.

9.13.7 Impacts on Water Resources and Water Quality

During construction, excavation activities will involve soil exposure which results in soil erosion due to wind and surface runoff due to rains. Seepage from spilled fuels and oils and leaking machinery can also negatively impact groundwater water which could lead to potential contamination. Generally, due to the localized area of impact, the overall significance of the related impacts on water quality is considered to be minor, provided the necessary mitigation/ management measures are implemented.

Mitigation Measures

Measures shall be put in place to minimize erosion and sediment mobility, especially during construction. These measures include:

- Clear the necessary areas only.
- Appropriate remedial measures shall be implemented by the contractor in the event of erosion.
- Infrastructure shall be designed to ensure that contaminated run-off does not reach watercourses.
- In the event of an oil spill the procedures contained in the emergency response plan of the contractor will come into effect.
- No vehicle maintenance and service shall be done at project site but in approved garages or service stations to avoid any possible oil and fuel spills that could contaminate soils and possibly ground water quality.
- Ensure that potential sources of petro-chemical pollution are handled in such a way to reduce chances of spills and leaks.
- Construction activities to avoid any unchanneled flow of water at the site
- Storage areas that contain hazardous substances should be bundled with an approved impermeable liner and provision for a pit to be made in case of oil spill.
- The excavation and use of rubbish pits during construction should be strictly prohibited.
- A waste disposal area should be designated within the active construction area and this should be equipped with suitable containers i.e., skips or bins of sufficient capacity and designed to contain and prevent refuse from being blown by wind,
- Areas contaminated by spilled concrete and/or fuels and oils leaking from vehicles and machinery should be cleaned immediately.
- The contractor to source for alternative source of water for construction purposes to avoid potential conflict with the community.

9.13.8 Noise and vibration

During construction activities noise pollution will occur and is bound to be a nuisance and a disturbance to neighboring communities. This noise is from construction equipment, excavation works, concrete mixing and vehicles coming to site but will be temporary. From the prediction of

the specialist study on ambient noise quality measurements, the traffic noise that will be emitted by traffic accessing the proposed project site during construction is expected to have an adverse impact on ambient noise. The level of traffic noise will increase depending on the traffic volume. General guideline indicates that an increase of 20% in traffic volume approximates to a noise level increase of around 1 dB, while a doubling of traffic volume results in a noise level increase of about 3 dB. It is however, worth noting that the level of noise is attenuated with increase in distance from the source and thus the sites/objects in close proximity to the source will receive more noise in comparison to those at remote location. The impact significance has therefore been assessed minor. This due to the fact that the impact magnitude is low and the receptor sensitivity is medium. The site is on very close proximity to Gatab dispensary and few residential houses nearby.

Mitigation Measures for Noise and Vibration

These proposed mitigation measures aim to ensure that noise generated during construction is kept to minimum and adheres to relevant noise standards. They include:

- Fencing off the construction site with iron sheet during construction
- Install portable barriers to shield compactors thereby reducing noise levels.
- Use of noise-suppression techniques to minimize the impact of construction noise at the project site.
- Use equipment designed with noise control elements.
- Co-ordinate with relevant agencies regarding all construction activities.
- Limit vehicles to minimum idling time and observe a common-sense approach to vehicle use, and encourage drivers to switch off vehicle engines whenever possible.
- Set and observe speed limits and avoid raving of engines
- The Contractor shall ensure that construction activities are limited to working hours (i.e., between 8am and 5pm daily) from Monday to Saturday, or as required in terms of legislation.
- Compliance with Noise and Vibration Regulations of 2009 is expected

9.13.9 Impacts from Hazardous Materials

Some hazardous materials will be used during construction phase of the project. They include insulating oil, paints, solvents and oils. Spilled chemicals can contaminate soil as well as pollute water resources. Additionally, hazardous and flammable substances if improperly stored and handled on site become potential health hazard for construction workers and the public. The amount of hazardous waste generated will be minimal. The significance of the impact will be minor due to a low magnitude and medium sensitivity.

Mitigation Measures

- Maintenance of construction vehicles will not be done on site
- All hazardous products and waste should be labelled and handled properly to avoid contact with the ground
- Material handling to be done by trained and qualified staff
- The contractor site should have designated area (concrete bunded) for storing hazards materials

9.13.10 Accidental Oil Spills or Leaks

There is possibility of oil leaks from construction vehicles. The construction machines on the proposed site have moving parts which will require continuous oiling to minimize the usual corrosion or wear and tear. These processes may lead to oil spill to the ground. The impact significance will be minor due to the nature of the works and the fact that construction activities will be confined in the small project area.

Mitigation Measures

- In the event of accidental leaks, contaminated top soil should be scooped and disposed of appropriately.
- It is proposed that the refuelling and maintenance of vehicles will not take place at the construction site.
- Contractor to create awareness for the employees on site on procedures of dealing with spills and leaks from oil for the construction machinery
- Vehicles and equipment must be serviced regularly and kept in good state to avoid leaks.
- In case of spillage the contractor should isolate the source of oil spill and contain the spillage using sandbags, sawdust, absorbent materials and/or other materials approved by materials.
- Proper training for the handling and use of fuels and hazardous material for construction workers.
- All chemicals should be stored within the bunded areas and clearly labelled detailing the nature and quantity of chemicals within individual containers.

9.13.11 Fire Hazards

During construction of the project, fire hazards are likely to occur especially when precaution measures are not taken to account. Smoking is one of causes of fires and this can happen if cigarette butts are left carelessly. Additionally, keeping of fuels onsite during construction can be a potential cause of fire. This impact is evaluated to be of moderate significance. All the construction activities will be confined at the project site hence high sensitivity and low magnitude.

Mitigation Measures

The following measures should be put in place to prevent fire hazards:

- Create awareness to the construction workers on potential fire hazards
- Provision of firefighting equipment (extinguishers) on site during construction.
- No smoking shall be done on construction site
- 'No smoking' signs shall be posted at the construction site
- A fire evacuation plan must be posted in various points of the construction site including procedures to take when a fire is reported.

9.13.12 Impacts of construction material sourcing (e.g., quarrying)

The construction of the project will utilize materials such as; stone, ballast, sand and hard core. It is anticipated that they will be obtained from quarry and mining operations. Conscious or unwitting purchase of these materials from unlicensed operations indirectly supports, encourages and promotes environmental degradation at the illegal quarry sites and causes medium to long

term negative impacts at source, including landslides. The significance of this impact will be moderate due to high sensitivity and low magnitude.

Mitigation Measures

- The contractor should source all building materials such as stone, sand, ballast and hard core from NEMA approved sites.
- Ensure accurate budgeting and estimation of actual construction materials to avoid wastage.
- Reuse of construction materials where possible.

9.13.13 Increased Water Demand

During the construction of the project there will be increased demand for water by the construction workers and the construction works. Water will be mostly used in the construction works and for wetting surfaces or cleaning completed structures. It will also be used by the construction workers to wash themselves and even drink. Although the sensitivity of the receptor (surface water) in the project area is high owing to unavailability of feasible alternative source of water for the local community, the overall significance of impacts is assessed to be negligible due to negligible magnitude of the impact.

Mitigation Measures

- Prudent use of available water
- Consultations with the project local committee on use of water in the community to avoid conflicts with the community
- Contractor to make own arrangements to provide water for construction works different from the community dam to avoid any conflicts with community.

9.13.14 Energy Consumption

The construction works 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. This impact will be negligible owing to the size of the project that will require very few trucks during the construction phase.

Mitigation Measures

Proper planning of transportation of materials will ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts. Complementary to these measures, the contractor shall monitor energy use during construction and set targets for reduction of energy use.

- Regular maintenance of vehicles to ensure efficient consumption of fuels.

9.13.15 Occupational Health and Safety Impacts

There are several activities involved during construction. These activities can pose potential health and safety risks to the workers. The activities include excavation, backfilling, civil works, pole erection, stringing of conductors. Risk of accidents and incidents are likely during construction activities. As already noted during construction, the safety and health of employees may be

exposed to risk as a result of the use of tools and other machinery to construct the Mini-grid. Occupation safety and health risks includes accidents, fall from heights, pricks by sharp objects etc. The impact on occupational health and safety during the construction phase is evaluated to be of moderate significance. All the construction activities will be confined at the project site hence high sensitivity and low magnitude.

Mitigation Measures

- The contractor should use skilled personnel for activities that demand that.
- Awareness creation/Tool box talks on safety to workers while at construction site and documentation kept
- Workers coming to the site should be knowledgeable on safety precautions to take
- Appropriate PPE (helmet, safety harness, gloves, safety shoes, masks, climbing irons among others)
- Proper housekeeping and maintain good hygiene
- Close supervision of workers
- Engagement of trained first aider on site
- Provide safe drinking water for workers
- Availability of equipped first aid box on site
- Risk assessment by contractor of the construction activities and implement mitigation measures appropriately
- Adherence to occupational Safety and Health Act 2007
- Establish Safety committees
- The contractor must acquire insurance for the workers-WIBA cover

9.13.16 Community Safety -Access to Site by General Public

If access to the Mini-grid site is not controlled then it can lead to people entering the site including animals. This can result to accidents. Impact significate is rated as moderate considering the high impact magnitude and low receptor sensitivity.

Mitigation Measures

- Proper barricading
- Awareness creation to community
- Hazard communication.
- Controlled access to the site by designated personnel
- Maintain records of any person who comes to site

9.13.17 Spread of HIV/AIDS and STIs

HIV and AIDS remain a major challenge in Kenya as well as in Marsabit County. The epidemic continues to adversely impact on all spheres of the County; economic, social and health sectors. With an estimated HIV prevalence of 5.7% (National HIV Estimates 2014) Marsabit County is ranked as a medium-epidemic county. With 21,159 People Living with HIV (PLHIV) in the county, it is of concern that two thirds of this population are women and over 2,600 of them are children. These facts prompt us to audit our efforts towards elimination of mother-to-child HIV transmission (eMTCT) and other related programmes.

The project construction will improve the economic status of some of the people employed thus increasing the disposable income with the probability of indulgence in substance abuse and using the money to solicit for sex. Researchers have indicated that HIV prevalence rates are higher in areas where there is high disposable income as might be the case during construction of the project

Mitigation measures include:

- Develop and implement at HIV/AIDS Policy to promote awareness of HIV/AIDS and access to treatment.
- Employees contractors and subcontractors will be required to follow, and will be trained in, the Worker Code of Conduct which includes context specific guidelines on worker-community interactions, worker-worker interactions and alcohol and drug use.
- Employees, contractors, and subcontractors will be trained and educated to improve awareness of transmission routes and methods of prevention of sexually transmitted infections, communicable diseases and vector borne diseases, notably malaria, prior to working on the Project site. Other diseases will be covered as appropriate.
- Provide access to free condoms at all worker sites and accommodation.
- Work with NGOs or the Ministry of Health to develop and implement a community sensitisation programme on HIV/AIDs and communicable diseases.
- Continue to implement a programme of stakeholder engagement including a grievance mechanism in communities in the Project Area.
- Monitor health trends during Project construction (and operations) in order to be aware of and respond appropriately to any negative health trends that may be linked to the Project and its workers.

9.13.18 Increase in competition for scarce resources and strain on public utilities

The influx of workers in the area is expected to lead to increase in demand for public amenities such as hospitals, transport, schools water resources etc. This could lead to a loss of access to these services by locals especially those who could be among the vulnerable categories. Due an increase in demand, cost of housing near the sites will disadvantage the locals.

The nature of the project will require technical skills that might not be available in the community. This might require movement of construction workers into the community.. It is expected that technically skilled personnel might be sourced from outside the community while the unskilled labour is expected to be sourced locally. It is therefore a possibility that the neigbouring communities might go out looking for opportunities in project area thus creating competition. The significance of this impact is considered to be minor because the receptor sensitivity will be medium, and the impact magnitude is low.

Mitigation Measures

- Reduction of labor influx by tapping into the local workforce to the extent possible
- Recruitment of local workforce to the extent possible especially unskilled and semi-skilled jobs
- Consultations with and involvement of local community in project planning and other

phases of the project

- Awareness-raising among local community and workers on the need to have a good /cordial working relation
- Sensitization/awareness to workers regarding engagement with local community.
- Contactor shall make provision to provide resources needed by the workers if the need for such resources may result to competition e.g., water
- Establishment and operationalization of an effective Grievance Redress Mechanism accessible to community members
- The contractor and the project/community grievance redress committee to work closely address complains raised on time.
- Gender considerations in employment opportunities
- Appropriate compensation for work done
- Respect for community values/culture
- Prompt payments as per the contractual agreements/terms

9.13.19 Child Labor

Implementation of the project will lead to increased opportunities for the host community to sell goods and services to the incoming workers. This can lead to child labor to produce and deliver these goods and services, which in turn can lead to school truancy. The impact significance is rated minor, based on low sensitivity of the receptor and medium magnitude of the impact.

Mitigation Measures

- Awareness creation to the community that child labor is illegal and that children have a right to education.
- Communication to the contractor that child labor is illegal and adherence to employment act is required.

9.13.20 Gender Based Violence- SEA and SH

Gender-based violence (GBV) is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (i.e., gender) differences between males and females. It includes acts that inflict physical, sexual or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. GBV in project may manifest in terms of sexual exploitation and abuse (SEA) and workplace sexual harassment (SH).

Sexual Exploitation and Abuse (SEA) is any actual or attempted abuse of a position of vulnerability, differential power, or trust, for sexual purposes, including but not limited to, profiting monetarily and socially from the sexual exploitation of another. Sexual abuse is further defined as "the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions." Women, girls, boys and men can experience SEA.

Workplace sexual harassment (SH) includes unwanted sexual advances, request for sexual favours and sexual physical contact.

Sexual exploitation and abuse (SEA) of community members by project workers and sexual harassment (SH) among project workers are forms of GBV that are a potential risk and impacts to this proposed project. GBV has serious and far-reaching negative effects including physical injuries resulting in death or disfigurement, psychological trauma, infection with HIV/AIDS, unwanted pregnancies, social stigmatization and exclusion and economic deprivation among others. Consequently, it is incumbent that preventive measures be mooted to prevent occurrence of such cases.

There is no incident of gender-based violence in Gatab as identified during FGD with Men, women and youths. However, it cannot be ruled out during project implementation. Thus, the significance of this impact is considered to be Minor considering low sensitivity of the receptor and low magnitude of the impact.

Mitigation Measures

To manage GBV risks, the contractor will prepare a SEA/SH Prevention and Response Action Plan that will include a GRM that ensures confidentiality. The plan should have an Accountability and Response Framework. The plan will include the necessary measures for prevention and response. The contractor can make reference to World Bank's Good Practice Note for Addressing Gender-based Violence in Investment Project Financing involving Major Civil Works (Sept 2020) for further guidance.

It should be noted that the decision to report a GBV case lies with the survivor or the guardians if the survivor (in case of a minor) and such a decision must be respected. Therefore, the contractor or project will only refer the survivor of guardian to the established referral pathway, including the nearest police station with a gender desk for handling GBV cases. Also, should a survivor choose legal redress, the project will similarly facilitate him/her by referring him/her to the nearest established legal support facility that offers legal support to GBV survivors.

Key tasks will include:

- Community engagement to create awareness on SEA/SH risk/ issues
- Creating awareness to workers on the need to refrain from SEA/SH incidences
- Mandatory awareness creation for workers on required lawful conduct in the community and legal consequences for failure to comply with laws
- Mandatory signing and implementation of code of conduct for the workers
- Creation of partnership or liaison with specialized actors in GBV who can respond appropriately in case of any incidence (provide contacts to community)
- Ensure a survivor centred approach in responding to SEA/SH incidences i.e., decision to report lies with the survivor or the guardian in case of a minor.
- Contractor to provide established referral pathway including police station with a gender desk for handling SEA/SH cases and also free toll numbers/hot lines for reporting GBV
- The contractor will also facilitate any survivor who decides to take legal action by referring them to the nearest established legal support facility that offers legal support to GBV survivors.
- Ensure Confidential reporting and responding to SEA/SH cases if reported;

- Encourage reporting of all SEA/SH incidences to the chief or the grievance redress committee members or community elders; and
- Ensure all complaints on SEA/SH or harassment are reported directly through CREO - county renewable energy officer.

9.13.21 Public Health Impacts

Construction works/activities will bring people together and new interactions between people are likely to happen. These interactions are likely to pose risks to the social fabric of the community. Such risks include public health related issues such as (COVID-19 infections and spread, HIV/AIDS, communicable and sexually transmitted diseases (STDs). The receptor sensitivity is medium and low magnitude, hence Minor significance.

Proposed Mitigation Measures

- Sensitize workers and the community on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff training, awareness campaigns and community *Barazas.*
- Awareness creation and consultations with local communities prior and during construction on the dangers of these diseases
- Informing workers on local cultural values and health matters.
- Provision of condoms to workers
- Allowing migrant workers time to be with their families
- The contractor is impressed upon not to set a construction camp on site.
- The contractor will provide public education/information about HIV/AIDS transmission and prevention measures.
- Ensure equal treatment of workers
- Provide all appropriate COVID-19 preventive measures including campaign to maintain individual measures at the work place.

w) Public Health Impacts Sanitary Waste

Currently at the site there is not sanitary waste system (toilet) except one that is being constructed for the dispensary. There is need to dispose sanitary waste in manner that will not pose health hazards to the workers and the community. The receptor sensitivity is medium and low magnitude, hence Minor significance.

Mitigation Measures

- Construct/ install pit latrines for both genders clearly labelled

9.13.22 Forced Labor

During construction of the mini-grid the risk of forced labor is likely to occur and precaution is need to safe guard the community from being subjected to forced labor. The impact significance is rated minor, based on low sensitivity of the receptor and medium magnitude of the impact.

Mitigation Measures

- Contractor must adhere to the employment Act which outlaws any form of forced labor

- Community to report any form of forced labor at the site
- Contractor to ensure that all workers have a national ID card or documentation to show they are adults (above 18 years).

9.13.23 Risks related to Inadequate Stakeholder Engagement

Lack of timely and adequate stakeholder engagement during construction is a recipe for dissatisfaction among stakeholders affected and can result to grievances which may turn to conflicts and delays in project construction. With the implementation of the mitigation measures the impact significance is minor.

Mitigation measures;

- The contractor will design and implement a stakeholder engagement schedule to ensure various stakeholders are engaged at and informed about the project on a timely basis and respond to issues that the stakeholders may require.
- The contractor will also prepare and implement a grievance redress mechanism to deal with grievances. The grievance redress mechanism committee of this GRM should also include representatives from the community.

9.14 Negative impacts during Operation phase of the project

NOTE: According to the MOE the proposed project will be constructed by a third party (contractor) on behalf of REREC. The contractor will also operate and maintain the solar mini grid for a period of seven years and then hand over the plant to Kenya Power. Therefore, mitigation measures against negative impacts during the first seven years will be monitored by KPLC.

9.14.1 Solid Waste Generation

The proposed Mini-grid is expected to generate some amounts of solid waste during its operation phase. The type of the solid waste generated during the operation of the project will consist of paper, drums, plastic, cables, meters, panels. Such wastes can be injurious to the environment. Some of these waste materials especially the plastic, cables, metals, polythene among others are not biodegradable hence may cause long-term injurious effects to the environment. The overall impact significance on land due to waste disposal during O&M phase has been assessed as minor due to medium sensitivity and low magnitude.

Mitigation measures

The contractor will be responsible for efficient management of solid waste generated by the project during its operation. In this regard, the contractor;

- Will provide waste handling facilities such as labelled waste bins for temporarily holding solid waste generated at the site.
- He shall put in place an emphasis on prudent waste generation and will give priority to reduction at source. This option will demand a solid waste management awareness among the employees.
- Separation of hazardous waste from non-hazardous waste is required
- Use long-lasting materials that will not need to be replaced as often, thereby reducing the amount of waste generated.

- He will ensure that waste is disposed of regularly and appropriately.
- Waste should then be handled, collected, transported and disposed according to the Environmental Management and coordination (waste management) regulations of 2006.

9.14.2 Liquid Waste/Oils Generation

The solar Mini-grid will have a small diesel backup generator which will operate in the event that the solar energy is limited for example during rainy and cloudy seasons. From its operations there will be waste oil. There is also potential for oil spills and accidents during oil loading to the generator, storage and operations. These oil spills can pollute the soil and even ground water. The liquid waste to be generated is hazardous hence may cause long-term injurious effects to the environment. The overall impact significance on land due to liquid waste disposal has been assessed as minor due to medium sensitivity and low magnitude.

Proposed mitigation measures

- Proper storage of the oil is required to ensure no leakages/ spills to the ground
- Frequent inspection and maintenance of the generator to minimize leakages.
- No vehicles should be serviced or maintained at the Mini-grid area.
- The waste oil or used oil must be disposed-off using NEMA approved waste handlers
- Proper training for the handling and use of fuels for the operators of the Mini-grid.
- In the event of accidental leaks, contaminated top soil should be scooped and disposed of in accordance to the law

9.14.3 Increased oil Consumption

The proposed Mini-grid shall consume fuel/oil in the process of backing up the solar energy required. The fuel is produced mainly through non-renewable resources, implying this will have adverse impacts on these non-renewable resources base and their sustainability. The impact will be of minor significance.

Mitigation Measures

To ensure efficient energy consumption during the operation phase of the project, the contractor to install an energy-efficient lighting system at the project site facilities. This will contribute immensely to energy saving during the operational phase of the project. In addition, the plant operators will be sensitized to ensure energy efficiently in their daily operations.

9.14.4 Increased Storm Water Flow

The panels, building roofs and pavements of the proposed Mini-grid will lead to increased volume and velocity of storm water or run-off flowing across the area covered by the solar panels during operation phase. This will lead to increased amounts of storm water entering the drainage systems. The impact will be of minor significance.

Mitigation Measures

- Construct the drainage system in a way to follow natural drain of the water
- Concrete only the required area and leave the rest of the land with vegetation like grass
- Construct rain harvesting system on the control buildings/office and harness into storage tanks for use.

9.14.5 Fire Outbreaks

Carelessness and negligence both at the solar mini-grid and by the beneficiaries of electricity may cause fires. With the mitigation measures in place the impact is evaluated to be of moderate significance due to high sensitivity and low magnitude.

Mitigation Measures

- The power plant must contain firefighting equipment (Portable fire extinguishers) of recommended standards and in key strategic points
- Detection/alarm systems that can detect fire should be considered and installed
- A fire risk assessment and evacuation plan should be prepared and posted at strategic points and should include procedures to take when a fire is reported.
- Workers especially operators of the plant must be trained on fire fighting and management
- 'No smoking' signs shall be posted within the Mini-grid area
- A fire Assembly point should be identified and marked

9.14.6 Visual Impacts

Once complete the Mini-grid will present visual impacts, both by its physical presence and by visual impacts of its associated structures. Visual intrusion caused by the Mini-grid may cause alteration to the natural scenery of the project area. Some people however, do not notice structures or do not find them objectionable from an aesthetic perspective. To some, the Mini-grid and its utilities may be viewed as part of the infrastructure necessary to enhance everyday lives and activities while to other it represents economic development. The project and its surrounding area are new for such developmental project and will have visual impacts during initial period of Project and the same will disappear over a period of time. Based on the above, significance of visual impact on landscape during operation phase of the project has been assessed as minor due to low receptor sensitivity and impact magnitude being medium.

Mitigation Measures

- The visual negative impacts can be mitigated through putting up a fence round to keep off/screen the solar panels.
- Planting of short trees along the fence.

9.14.7 Water demand

During this period the demand for water will be lesser than that used in construction. However, some amounts of water will be needed in wiping of the panels and use at the solar plant facility. Therefore, caution need to be exercised to ensure prudent use of water. The impact is assessed to be negligible due to very low magnitude of the impact.

Mitigation Measures

- There is need to source for a sustainable water source for use
- Install water-conserving automatic taps
- Encourage water harvesting from rooftops and storage for cleaning purposes (washing the panels off dust)
- Any water leaks through damaged pipes and faulty taps should be fixed promptly.

9.14.8 Sanitary waste

Although there are few people who will be running the Mini-grid during operation phase provision for disposal of sanitary waste must be put in place through septic tanks. The impact is assessed to be negligible due to very low magnitude of the impact.

Mitigation Measures

The area is not served by a sewer system and sanitary waste will be drained through use of septic tanks.

9.14.9 Flooding

Flooding may occur and cause damage to the plant and other associated infrastructure but the risk of occurrence is low since the area is not known for regular flooding. The impact is assessed to be negligible due to very low magnitude of the impact.

Mitigation measures

- Ensure drainage channels are free of any obstruction at all times i.e., not blocked
- Construct more channels and or expand existing ones
- Raise foundations of the solar panels and ensure a proper and firm concrete base
- Create flooding diversions and or spill ways to divert water from getting into the solar power facility

9.14.10 Workers Occupation Health and Safety

Working within the Mini-grid can poses potential health hazards and accidents to workers. Therefore, caution must be taken to ensure that the Mini-grid does not pose a health and safety risks to workers. Because the maintenance activities will be conducted less frequently, the impact magnitude on occupational Safety and Health will be low. Considering that the accidents may result in injuries and death, the sensitivity is considered to be High. Therefore, the significance is Moderate.

Mitigation Measures

- Ensure only qualified staff are employed to work in the facility
- All workers operating the Mini-grid must be equipped with appropriate and adequate person protective equipment (PPE) such as; safety footwear, helmet among others.
- Operators must be skilled on firefighting management
- Annual environmental audits should be done
- WIBA cover for staff is mandatory

9.14.11 Hazardous waste

The amount of hazardous waste generated will be very low and possibly originate from maintenance works and would include; used up batteries, damaged panes, waste oil, and their containers, used rags and spent clean-up rags. This impact is assessed as minor due to medium sensitivity and low magnitude.

Mitigation Measures

- These waste wastes should not be mixed with other non-hazardous waste
- Operator to have a designated waste storage area for absolute lead-acid batteries awaiting disposal
- These wastes should be disposed by NEMA approved handlers

9.14.12 Noise and Vibration

Negligible noise and vibration will be produced during operation phase of the project and would be from the backup generator.

Mitigation Measures

The generator room should be made sound proof to ensure no noise of a nuisance level will be produced. The contractor should also monitor noise levels by taking tests and putting in appropriate measures.

9.14.13 Electric and magnetic fields (EMFs)

Electric magnetic fields are only anticipated during operation period, but these are negligible. The exposure to would be little EMFs is highly negligible because the EMFs produced by the electrical installation are low. Consequently, the study does not anticipate impacts of EMFs.

9.14.14 Shocks and electrocutions to the beneficiaries

Majority of the beneficiaries who will be customers and users of the power have not used electricity before. Failure to take appropriate precaution while interacting with electricity can result in electric shocks, fires and even electrocution/death. Impact significate is rated as moderate considering the high impact magnitude and low receptor sensitivity.

Mitigation Measures

The following precaution/preventive measures need to be observed in order to prevent risk of electric shocks, fires and electrocutions.

- Inspect the wiring of the houses before connecting power
- Safety awareness campaigns to the community before connection of power on safety precautions such as
  - ✓ Require community to engage a certified technician to do wiring in the premises
  - ✓ Use of quality materials while wiring
  - ✓ Refraining from individual illegal extensions of power lines to other houses
  - ✓ Observing safety measures while using electricity such as not touching sockets and switches with wet hands or wiping with wet cloths
  - ✓ Keeping off all electricity infrastructure e.g., not tying livestock on electric poles, no cutting earth wires along some electric poles, not interfering with sockets or switches
  - ✓ Reporting any electric wire/conductors if found fallen on the ground
  - ✓ Report any incident on electricity at local office –staff in charge of operating Mini-grid.

9.14.15 Community safety -Access to the facility by general public

Once operational the facility/plant will need controlled access from the public to avoid any safety risks. The contractor will put the following measures to ensure the public will not access the site without permission. Impact significance is rated as moderate considering the high impact magnitude and low receptor sensitivity.

Mitigation Measures

- Fencing off the facility to keep of community members, children and livestock from entering into the facility
- Controlled access to the site only with prior approval
- Maintain records of any person who comes to site

9.14.16 Risks related to poor or inadequate stakeholder engagement (Conflict)

During operation of the project there are grievances that may arise from community and other stakeholders related to poor or inadequate engagement of stakeholders and other need for information or challenges in using power by the community. Therefore, the contractor will design and implement a grievance redress mechanism to deal with grievances. The grievance redress mechanism committee should also include representatives from the community. With the implementation of the mitigation measures the impact significance is minor to negligible.

Mitigation measures

- Employ from the community to the extent possible
- Engage the community members and other stakeholders in a timely manner
- Work closely with the GRM committee members in solving the conflicts
- Solve all conflicts/grievances at the earliest time possible
- Ensure all grievances are logged and closed
- Monitoring the pattern of grievances to come up will long term measures

9.14.17 Gender Based Violence- SEA/ SH

Gender based violence risk is also possible during operation phase although the labor force will be smaller. the impact is assessed as minor due to the low magnitude and medium receptor sensitivity. Therefore, measures must be put in place to address GBV risks.

Mitigation Measures

To manage GBV risks, the contractor will prepare a SEA/SH Prevention and Response Action Plan that will include a GRM that ensures confidentiality. The plan will include the necessary measures for prevention and response.

Key tasks will include

- Community engagement to create awareness on GBV risk/ issues
- Creating awareness to workers on the need to refrain from GBV incidences
- Mandatory awareness creation for workers on required lawful conduct in the community and legal consequences for failure to comply with laws
- Mandatory signing and implementation of code of conduct for the workers
- Creation of partnership or liaison with specialized actors in GBV who can respond appropriately in case of any incidence (provide contacts to community)
- Ensure a survivor centred approach in responding to GBV incidences i.e., decision to report lies with the survivor or the guardian in case of a minor.
- Contractor to provide established referral pathway including police station with a gender desk for handling GBV cases and also free toll numbers/hot lines for reporting GBV
- The contractor will also facilitate any survivor who decides to take legal action by referring them to the nearest established legal support facility that offers legal support to GBV survivors.
- Ensure Confidential reporting and responding to GBV cases if reported;
- Encourage reporting of all GBV incidences to the chief or the grievance redress committee members or community elders; and
- Ensure all complaints on GBV or harassment are reported directly through CREO - county renewable energy officer.

9.14.18 Public Health Impacts –HIV/AIDs

There is potential for HIV/AIDs risks during operation phase. Therefore, the contractor need to put measures to prevent the same. Based on the fact that the receptor sensitivity will be medium and the impact magnitude low, the impact significance will be Minor.

Mitigation Measures

- Sensitize workers and the community on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff awareness and awareness campaigns for the community
- The contractor will provide public education/information about HIV/AIDS transmission and prevention measures.
- Provision of condoms to workers
- Allowing migrant workers time to be with their families

9.14.19 Public health Impacts -Covid 19 disease

It is likely that the project will be implemented during the Covid 19 pandemic and so preventive measures must be put in place to prevent the disease from spreading. The receptor sensitivity will be medium and the impact magnitude low, therefore, the impact significance will be Minor.

Mitigation Measures

- Social distance must be observed
- Provision of hand wash facilities before access
- Provide thermal guards for temperature check and monitoring for workers and any other person coming to site
- Enforce wearing of masks
- Make provision for testing and treating especially of workers
- Display Ministry of Health guidelines on COVID 19 at strategic points and ensure adherence
- Create awareness on COVID 19 preventive measures
- Provision of contact numbers for the nearest health facility for testing and treatment
- Adhering to any other measures from the ministry of health which may be issued from time to time

9.14.20 Dust emissions

During operation phase not much dust will be generated from the facility but wind and dust storms are potential impacts. This impact will be negligible because there will be no activities on site that will have the potential to generate dust.

Mitigation Measures

- Trees can be planted around the plant/facility provided they do not cast shadows to the solar panels to act as wind breakers and hence decrease dust pollution
- Ensure planting of grass around and within the facility compound

9.14.21 Vehicle exhaust emissions

Exhaust emissions are likely to be generated by the vehicles coming to the facility though on a low risk. Due to the low magnitude of the impact and the low sensitivity, the significance will be minor.

Mitigation Measures

- Drivers of the vehicles must be sensitized so that they do not leave vehicles idling so that exhaust emissions are lowered.
- Company vehicles should be well maintained.

9.15 Negative impacts during decommissioning phase

Preparation for decommissioning

The solar power plant may be decommissioned due to various reasons and there are impacts that will need to be mitigated. Once the KPLC makes the decision for decommissioning the following will be required;

- Prepare a Decommissioning Plan and submit to NEMA and the County Government of Marsabit to obtain approval for implementation.
- Implement the decommissioning plan including backfilling, revegetation, disposal of waste material, recycling of recyclable material among others

Some of the negative impacts associated with the proposed project during its decommissioning phase include;

9.15.1 Noise and Vibration

The demolition works will lead to significant deterioration of the acoustic environment within the project site and the surrounding areas. This will be as a result of the noise from demolition works. The impact significance has been assessed minor due to the fact that the impact magnitude is low and the receptor sensitivity is medium.

Mitigation Measures

Significant impacts on the acoustic environment will be mitigated by the KPLC who will put in place several measures that will mitigate noise pollution. The following noise-suppression techniques will be employed to minimize the impact of temporary noise at the project site.

- Install portable barriers to shield compressors and other small stationary equipment where necessary.
- Use quiet equipment (i.e., equipment designed with noise control elements).
- Co-ordinate with relevant agencies in case the noise produced will require a license.
- Limit pickup trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use and encourage workers to shut off vehicle engines whenever possible.
- Demolish mainly during the day when most of the neighbours are out working.

9.15.2 Solid Waste Generation

Demolition of the Mini-grid and related infrastructure will result in generation of solid waste. The waste will contain the materials used in construction including concrete, metal, wood, glass, paints, adhesives, sealants and fasteners, conductors, poles solar panels and batteries. 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. The impact will be of major significance due to high magnitude and medium receptor sensitivity. The batteries and panels need to be disposed in a specific way, in accordance to the manufacturer's guidelines and relevant regulations (both National and Marsabit County Government regulations).

Mitigation Measures

- Demolition contractor to adhere to the various manufacturer's guidelines and requirements regarding demolition and disposal
- Segregation of waste in order to separate hazardous waste from non-hazardous waste and other streams of waste
- Provision of facilities for proper handling and storage of demolition materials to reduce the amount of waste caused by damage or exposure to the elements
- Adequate collection and storage of waste on site
- Safe transportation to the disposal sites / designated area
- Hazardous waste must be disposed by NEMA approved waste handler.

9.15.3 Dust Emissions

Some dust will be generated during demolition works. This will affect demolition staff as well as the neighbours. The impact will be of minor significance.

Mitigation Measures

High levels of dust concentration resulting from demolition or dismantling works will be minimized as follows:

- Watering all active demolition areas to kill dust.
- Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard.

9.15.4 HIV/AIDs awareness and prevention

Interactions during the decommissioning phase will be for a very limited time. The project will sensitize workers and the surrounding communities on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff training and awareness campaigns/ to the community. This impact is assessed to be Minor due to the low magnitude and medium receptor sensitivity.

9.16 Social Protection

There will adequate mechanisms in place to protect local vulnerable population especially women and minors from risks associated with influx of workers (harassment, underage sex). This system will ensure having security on site provided by the contractor as well as sensitization and enforcement by the contractor. There will also be a code of conduct established for contractor employees and contract workers acknowledging a zero-tolerance policy towards child labor and child sexual exploitation. Additionally, the contractor will employ their skilled staff and apply unskilled construction labor from the local population as far as possible to minimize on influx of foreigners into the community.

9.17 Social Inclusion

Gender Mainstreaming

Projects usually affect women and men differently, and their roles are highly delineated. The project shall ensure that both men and women are equally consulted about the project and benefit from employment and other opportunities the project will present.

In addition, among communities, some groups are faced with barriers that prevent them from fully participating in political, economic, and social life. Disadvantage is often based on social identity, which may be derived from gender, age, economic status, ethnicity, disability, among other factors. These factors make some groups of people more vulnerable to project impacts than others alongside posing barriers to accessing project benefits. Thus, development projects affect people differently but vulnerable groups are more severely affected than those that are better off. In this project, some groups of the society that can be categorized as the vulnerable. These include the very poor, poor female headed households, poor children headed households, the poor elderly and the special needs persons (disabled). To ensure social inclusion and social sustainability, deliberate effort must be made to ensure the vulnerable take advantage of the project benefits as well as shielding them adverse impacts of the project.

10 ENVIRONMENTAL AND SOCIAL MANAGEMENT AND MONITORING PLAN (ESMPP)

Environmental and Social Management and Monitoring Plan (ESMMP) for development projects provides a logical framework within which identified negative environmental and socio–economic impacts can be mitigated and monitored. The ESMMP has been developed to be used as tool to manage the environmental and social impacts that the activities of the proposed project will cause. The contractor before construction will refer to this ESMMP and develop specific implementation plans. In addition, the ESMMP assigns responsibilities of actions to various actors and provides a timeframe within which mitigation measures and monitoring can be done.

10.1 Purpose and Objectives of ESMMP

Serve as a guiding document for the specific objectives of the ESMMP are to:

- Environmental and social monitoring activities for the supervising consultant, contractor and the client management including requisite progress reports.
- Provide detailed specifications for the management and mitigation of activities that have the potential to impact negatively on the environment and/or the affected population
- Provide instructions to relevant Project personnel regarding procedures for protecting the environment and minimizing environmental and/or the affected population effects, thereby supporting the Project goal of minimal or zero incidents.
- Document environmental concerns and appropriate protection measures; while ensuring that corrective actions are completed in a timely manner.

10.2 Auditing of ESMMP

The Ministry of Energy and the contractor shall conduct an initial and subsequent annual self-audit to the ESMMP to ensure that the system for implementation of the ESMMP is operating effectively. The World Bank will also supervise progress during regular supervision missions. The audit shall check that a procedure is in place to ensure that:

- The ESMMP being used is the up-to-date version;
- Variations to the ESMMP and non-compliance and corrective action are documented;
- Appropriate environmental training of personnel is undertaken;
- Emergency procedures are in place and effectively communicated to personnel;
- A register of major incidents (spills, injuries, complaints is in place and other documentation related to the ESMMP.
- A discrete mechanism for safely and confidentially reporting issues of SEA and of GBV at the community level triggered by the Project
- Referral pathways are in place for support of survivors of SEA and of GBV at the community level triggered by the Project
- Ensure that appropriate corrective and preventive action is taken by the Contractor once instructions have been issued

10.3 Incident Reporting

In line with the requirement of the Occupational Health and Safety Act (OSHA) 2007, EMCA 1999 and its 2015 revisions, and World Bank EHS guidelines, all ESHS incidents, accidents, dangerous occurrences including occupational diseases shall be promptly reported to the respective regulatory institutions in the prescribed manner and template outlined in DOSH ML/DOSH/FORM 1 and further to the World Bank.

Records of all incidents shall also be maintained and made available for inspection on site throughout the project implementation phase. Investigation shall be conducted, and a corrective action plan developed for every reportable incident to prevent recurrence.

10.4 Management Responsibility of ESMMP

In order to ensure the sound development and effective implementation of the ESMMP including monitoring implementation of GBV and SEA, it will be necessary to identify and define the responsibilities and authority of the various persons and Organizations that will be involved in the project.
The following entities should be involved in the implementation of this ESMMP:

- ✓ Kenya Power And Lighting/Rural Electrification and Renewable Energy Corparation/Ministry of Energy
- ✓ NEMA Marsabit County
- ✓ Contractor
- ✓ Supervising Consultant;
- ✓ County Government of Marsabit
- ✓ Community members

10.4.1 Kenya Power and Lighting/Rural Electrification and Renewable Energy Corporation/ Ministry of Energy

KPLC and REREC in conjunction with MOE the project proponent will be charged with the responsibility of ensuring that the proposed development has been put up in an environmentally sound manner. This can be achieved by inclusion of environmental specifications in the tender documents, selection of renowned environmentally conscious contractors and supervision to ensure that the objectives of this ESMMP are met.

10.4.2 National Environment Management Authority (NEMA)

The responsibility of NEMA is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government of Kenya in the implementation of all policies relating to the environment. Specific NEMA roles are listed below.

- ✓ Reviewing and provide approval or issuance of improvement comments on the project ESIA report.
- ✓ Issue ESIA license and the associated conditions
- ✓ Routinely monitor the ESMP, ESIA license conditions compliance and issuance of compliance note or stoppage or improvement orders to the project

10.4.3 Contractor

The persons/firms contracted to put up the proposed water Projects plant will be required to comply with the requirements of the ESMMP within this report. To ensure strict compliance environmental specifications and social risk mitigation measures that address project related SEA and GBV at the community level and SH of this ESMMP should form part of the contract documents. The contractor will be required under the contract to engage a competent Environment Safety Health and Safety Advisor/officer to advise them on the ESMP compliance; Undertake risk assessments and prepare project specific Construction ESMPs for review and approval and implement the approved C-ESMP.

Records and reports on the following environmental, health and social issues of the proposed project should be kept.

- *Safety*: hours worked, recordable incidents and corresponding root cause analysis (lost time incidents, medical treatment cases), first aid cases, high potential near misses, and remedial and preventive activities required (for example, revised job safety analysis, new or different equipment, skills training, and so forth).
- *Environmental incidents and near misses*: environmental incidents and high potential near misses and how they have been addressed, what is outstanding, and lessons learned.
- *Major works*: those undertaken and completed, progress against project schedule, and key work fronts (work areas).
- *E&S requirements*: noncompliance incidents with permits and national law (legal noncompliance), project commitments, or other E&S requirements.
- *E&S inspections and audits*: to include date, inspector or auditor name, and records reviewed, major findings, and actions recommended and implemented.
- *Workers*: number of workers, indication of origin (expatriate, local, nonlocal nationals), gender, age and skill level (unskilled, skilled, supervisory, professional, management).
- *Training on E&S issues*: including dates, number of trainees, and topics.
- *Footprint management*: details of any work outside boundaries or major off-site impacts caused by ongoing construction—to include date, location, impacts, and actions taken.
- *External stakeholder engagement*: highlights, including number of formal and informal meetings, and information disclosure and dissemination—to include a breakdown of women and men consulted and themes coming from various stakeholder groups, including vulnerable groups (e.g., disabled, elderly, children, etc.).
- *Details of any security risks*: details of risks the contractor may be exposed to while performing its work—the threats may come from third parties external to the project.
- *Worker grievances*: details including occurrence date, grievance, and date submitted; actions taken and dates; resolution (if any) and date; and follow-up yet to be taken—grievances listed should include those received since the preceding report and those that were unresolved at the time of that report.
- *External stakeholder e.g., community grievances*: grievance and date submitted, action(s) taken and date(s), resolution (if any) and date, and follow-up yet to be taken—grievances listed should include those received since the preceding report and those that were unresolved at the time of that report. Grievance data should be age and gender-disaggregated.
- Major changes to contractor's environmental and social practices.
- *Deficiency and performance management*: actions taken in response to previous notices of deficiency or observations regarding E&S performance and/or plans for actions to be taken—these should continue to be reported until KPLC determines the issue is resolved satisfactorily

10.4.4 Consultant

The sourced consultant will have to ensure that the relevant sections related to the contractor's responsibilities are up to date and is being used by the contractor. Periodic audits of the ESMMP will have to be done to ensure full compliance. The Consultant will also be responsible for mitigating social risks (detailed above) during implementation stage and developing monthly and quarterly E&S monitoring reports as envisaged in the project ESMF.

10.4.5 County Government of Marsabit

The relevant departmental officers within Marsabit County will be called upon where necessary during Project implementation to provide the necessary permits and advisory services to the Ministry of Energy.

10.5 Environmental and Social Management Plan

The ESMP is integrated into the overall project planning process and covers all project cycle phases. The prediction of impacts aids in the development of a robust management plan that will be implemented in order to minimize the negative effects on the environment. For each area of impact, mitigation measures have been prepared.

Broad cost estimates have been included to provide an indication of the resources required to successfully implement the control measures. These can be used for planning or to help prioritize implementation, and they can be refined further by the Project team. The roles and responsibilities for the implementation and enforcement of environmental and social controls (including health and safety) will need to be designated to individuals with the capacity and capabilities to undertake the work. The internal reports stipulated below should be submitted to management for record.

10.5.1 Management Plan during Construction Phase

The contractor will prepare targeted management plans to deal with specific environmental and social aspects guided by the ESMMP and any other emerging issues on the ground. The contractor shall prepare these plans and have them approved by both the proponent and the Bank before they mobilize to the site:

- Construction management plan
- Rehabilitation and site closure plan
- Local recruitment plan
- Workplace health and safety plan
- Community safety plan
- Emergency management and response plan
- SEA/SH Prevention and Response plan
- Stakeholder Engagement management plan
- Grievance Redress mechanism
- Labor influx management plan

10.5.2 Management Plan during Operational Phase

The operation phase of the proposed project will be mainly power supply, line maintenance and clearing of wayleaves. A contractor (contracted to run the plant for a number of years before handing over to KPLC) will be responsible for all the mitigation measures for negative impacts during the operation phase for the first seven years after which responsibility will be KPLC. This will be done by implementation of the following steps:

- Inspections
- Inspections
- Corrective action
- Reporting

A detailed Environmental and social management plan for preconstruction, construction and decommissioning phase is well illustrated in **table 20.**

Table 4: Environmental and Social Management Plan

Social Impacts

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Local employment	-Prioritize hire of locals for all unskilled labour. -Implement a local recruitment plan that is fair and transparent (including recruitment processes that ensure inclusivity of both men and women, vulnerable individuals, minority clans, ethnic groups and VMGs. -Adhere to labour laws, and labour management practices (timely renumeration, equitable compensation for both genders for equal work etc.) -Create awareness to workers and the community on worker and project grievance redress mechanisms.	Construction Operations Decommissioning	Contractor REREC O&M Contractor/KPLC	-Fair and transparent local recruitment plan in place. -Recruitment processes (job adverts, interviews, selection etc.). -Number of locals employed based on gender, vulnerability, ethnic group, clan etc. -Type of employment (skilled, semi-skilled and unskilled). -Grievances raised, those aggrieved, status of resolution.	Quarterly	Contractor's cost
Local Sourcing	-Source materials from local businesses/communities, and where necessary give opportunities to businesses owned or operated by vulnerable individuals.	Construction Decommissioning	Contractor REREC	-Number and types of businesses sourced from, businesses owned and operated by vulnerable individuals, types and quantities of materials etc.	Quarterly	No additional cost

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Land acquisition and compensation for land and assets on land	In line with the RPF provisions; -Prepare and implement an Abbreviated Resettlement Action Plan (A-RAP) to guide land acquisition for the mini-grid, and wayleaves for power distribution. Further, the proponent will fast-track A-RAP preparation to ensure that land acquisition and contractor mobilization to the site is undertaken after the A-RAP is finalized, cleared, and disclosed. -The contractor will implement and adhere to agreements for temporal use of land and restoration of land after use. -Compensate affected communities in-kind (priority project) for the loss of land. -The construction activities will be restricted to within the allocated land and the immediate surroundings only. -After construction work, any land taken for a temporary basis for storage of material will be restored to their original form. -Consultations with the community on the low voltage lines.	Pre- Construction	Contractor-(contractors' facilities, workers camps) Proponent-(project land for generation assets)	-Land Acquisition and consultation report (consultation (minutes and lists of participants). -Type and amount of compensation paid to affected persons. - Priority community project implemented and handed over to affected communities. -Signed agreements with communities on the use and restoration of their land.	Quarterly	Value of compensation in kind project will be equivalent to the value of land acquired as per NLC

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	-The design of the distribution line will utilize the existing road reserves. However, any damage to structures, crops, trees, community facilities and other assets will be compensated in line with the RPF provisions.					
Labor Influx and related impacts (SEA/SH, HIV/AIDs and other STIs)	-Tap into the local workforce to the extent possible to reduce labor influx. -Recruit local workforce to the extent possible especially for unskilled and semi-skilled jobs. -Consult with and involve local community in project planning and other phases of the project. -Raise awareness among local community and workers on the need to have a good /cordial working relation -Sensitize workers regarding engagement with local community. -Make provision to provide resources needed by the workers if the need for such resources may result to competition e.g., water. -Establish and operationalize an effective Grievance	Construction Decommissioning	Contractor REREC	-Records of employees/updated employee register. -Number of local community employees and external employees/ updated employee register.	Quarterly	50,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Redress Mechanism accessible to community members. -The contractor and the project/community grievance redress committee to work closely address complains raised on time. -Include gender considerations in employment opportunities. -Provide appropriate compensation for work done. -Respect for community values/culture. -Prompt payment of workers as per the contractual agreements/terms.					
Child labor	-Employ workers who are 18 years and above, and with a valid national ID at the time of hire. -Implement and monitor the employment register regularly. Compliance with the national labor laws and labour management practices. -Put visible signage on site "No Jobs for children" -Do not allow children at the project site.	Construction Decommissioning	Contractor REREC	-Updated employment register indicating locals employed, their ages, national identification numbers etc. -Grievances raised, aggrieved persons and status on resolution etc.	Quarterly	20,000.00
GBV- SEA and SH	-Prepare an SEA/SH Prevention and Response Action Plan, to manage the SEA/SH risks.	Construction Operations Decommissioning	Contractor REREC	-Minutes of awareness creation sessions for the community and	Quarterly	50,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	-The Action Plan to be proportionate to potential SEA/SH risks, and to include measures such as awareness creation for communities and workers; identification of referral services for survivors and a GRM that ensures confidential reporting of GBV cases. -Implement a code of conduct signed by all those with physical presence on site.			workers on GBV-SEA/SH. -Code of conduct signed by all those with physical presence on site. -GRM that ensures confidentiality of GBV cases in place. Documented referral services for survivors. -Grievances raised, aggrieved persons and status on resolution etc		
Forced Labor	-Adhere to the Employment Act which outlaws any form of forced labor. -Report any form of forced labor at the site. -Ensure that all workers have a national ID card or documentation to show they are adults (above 18 years).	Construction Decommissioning	Contractor REREC	-Number of reported cases of forced labor.	Quarterly	20,000.00
Risks related to Inadequate stakeholder engagement	-Prepare a stakeholder engagement/consultation plan (SEP) that is proportionate to the subproject and the identified stakeholders. -Timely and prior disclosure of project all project information, including project instruments, the full rights and entitlements	Construction Operations Decommissioning	Contractor REREC	-Availability of and implementation of the Stakeholder Engagement Plan. -# of stakeholder consultations held -Record of stakeholder consultations held	Quarterly	30,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	of project affected persons, sub-project positive and negative impacts and opportunities, proposed subproject budget. -In line with the SEP, undertake adequate consultations prior to construction and throughout the project cycle with all segments of the community and other relevant stakeholders. -Prepare and implement a grievance redress mechanism to deal with grievances. -The grievance redress committee to include representatives from the community. -Sensitize stakeholders on SEP and GRM.			(minutes of meetings and list of participants). -Information disclosed, to whom it was disclosed (men women, PWD, youth, vulnerable individuals and households etc., methods and languages used in the disclosure (culturally appropriate and accessible), grievances raised and status on resolution etc. -Concerns raised and actions raised.		
Exclusion of VMGs and vulnerable individuals and households	In line with the provisions of the ESMF, VMGF and Social Assessment ensure the following. Early identification and inclusion of VMGs and disadvantaged groups. Meaningful consultation to effectively participate in the project.	Pre-construction Construction Operations Decommissioning	Contractor REREC	Minutes of consultative meetings with all community segments including VMGs and vulnerable individuals and households, grievances raised and status on resolution etc.	Quarterly	No additional cost

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Timely and prior disclosure of relevant project information to VMGs and disadvantaged groups. Adequate and ongoing consultations with VMGs and disadvantaged groups in line with the SEP. All concerns or grievances raised are fully resolved in a timely manner. Access to culturally appropriate project benefits and opportunities.					
Inaccessibility of project benefits to VMGs and other vulnerable individuals due to affordability challenges	-Consult VMGs and Vulnerable individuals and households on charges for sub project services, and put in place specific interventions to ensure the vulnerable equally access project benefits.	Operations	Contractor KPLC	-Interventions to enable those vulnerable access project benefits. -Number of complaints raised by VMGs/vulnerable individuals regarding access to project services. -GRM that is culturally appropriate and accessible. Grievances raised and status on resolution etc	Quarterly	No additional cost

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Inadequate grievances management	Constitute a Local Grievances Committee is in consultation with all community segments, and incorporates the existing local dispute resolution mechanism. -Implement a workers grievances mechanism. -Awareness on the culturally appropriate and accessible GRM to all community segments including VMGs, vulnerable individuals and households and CSOs -All reported grievances are logged, dated, processed, resolved and closed out in a timely manner. -Proportionate representation of VMGs and vulnerable individuals in the local grievances committee. -GRM provides for confidential reporting of particularly sensitive social aspects such as GBV, as well as anonymity.	Construction Operations Decommissioning	Contractor REREC	-Local Grievances Committee in place, composition of committee, awareness of community and workers on project and worker GRMs, updated GRM logs, types of grievances -Availability of grievance redress process -Number of grievances reported -Number of grievances resolved in a timely manner -Number of grievances escalated to national courts and the World Bank Grievances Redress Service and Inspection Panel.	Quarterly	No additional cost
Impacts on Security	-A Security Management Plan that involves a threat assessment and analysis should be developed by the Contractor and the Proponent. -The plan should address security threats such as	Construction Operations Decommissioning	Contractor REREC	-A Security Management plan -Number of reported crimes -Number of complaints	Monthly	300,000

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Terrorism, bomb threats, workplace violence and vandalism etc. of the solar plant. -Working hours should be kept within daylight hours during the construction phase -Security personnel should be trained on how to deal with the community to avoid confrontations -Access in and out of the site should be strictly controlled by a security company -The contractor should provide workers with identity tags and prohibit access of unauthorized people to the construction site. -A method of communication should be implemented whereby procedures to lodge complaints are set out in order for the local community to express any complaints or grievances with the construction process -The Project Contractor should also be guided by the Voluntary Principles on Security and Human Rights in managing security during the construction phase.					

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Environmental Impacts						
Vegetation clearance	Clear only the necessary areas Ensure proper demarcation and delineation of the project area to be affected by construction works. Specify locations for vehicles and equipment, and areas of the site which should be kept free of traffic, equipment, and storage. Designate access routes and parking areas Re-vegetation including planting of trees around the plant/facility	Construction	Contractor REREC	-Number of trees cleared -Planted trees	Once off	50,000.00
Soil erosion	Avoid ground-breaking during the seasons of high rainfall to avoid erosion. Monitoring of areas of exposed soil during rainy seasons to ensure that any incidents of erosion are quickly controlled. Construction related impacts like erosion and cut slope destabilizing should be addressed through landscaping and grassing, carting away and proper disposal of construction materials Use silt traps where necessary	Construction	Contractor REREC	Assess size of rills or Gulleys forming from accelerated run off from compacted areas	Quarterly	Part of contractor's fee

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Cover soil stock piles Landscaping with grass on areas without electrical installation (lower areas) Monitoring of areas of exposed soil during rainy seasons to ensure that any incidents of erosion are quickly controlled.					
Contamination of soil from fossil fuels	Ensure wastewater generated is discharged or drained into approved drainage facilities Construction vehicles must be maintained in good state and proper servicing to ensure no oils are likely to leak Care must be exercised not to spill any fossil fuels Any contaminated soil shall be scooped and disposed-off appropriately. No servicing vehicles on site	Construction	Contractor REREC	Records of any leakages from construction equipment/ vehicles.	Quarterly	50,000.00
Dust emissions	The construction area should be fenced off to reduce dust to the public Suppress dust during dry periods by use of water sprays; Stockpiles of excavated soil should be enclosed/covered/watered during dry or windy conditions to reduce dust emissions.	Construction	Contractor REREC	-Visual Observation of dust -Provision of PPEs especially masks	Daily	100,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Burning of woody debris & construction waste to be prohibited Use of personnel protective equipment (PPE) -masks should be provided to all personnel in areas prone to dust emissions Restrict speed on loose surface roads during dry or dusty conditions Keep stockpiles and exposed soils compacted and re-vegetate as soon as possible. Construction trucks moving materials to site, delivering sand and cement to the site should be covered to prevent material dust emissions into the surrounding areas Plant short trees to break speed of wind					
Vehicle exhaust and emissions from Generator	Drivers of construction vehicles must be sensitized so that they do not leave vehicles idling so that exhaust emissions are lowered. Maintain all machinery and equipment in good working order to ensure minimum emissions of carbon monoxide, NOX, SOX and suspended particulate matter	Construction	Contractor REREC	-Engine maintenance records - inspection of stacks	Quarterly	100,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Maintain equipment in good running condition – no vehicles to be used that generate excessive black smoke Use of diesel which is Sulphur-free to run the power producing generators to be encouraged The stack chimney of the generators will be increased from its normal height of 3 meters to 6 meters					
Solid waste generation	Ensure spoil from excavations is arranged according to the various soil layers. This soil can then be returned during landscaping and then rehabilitation, in the correct order which they were removed that is top soil last; Segregate waste Provide litter collection facilities such as bins Contractor to put in place and comply with a site waste management plan The contractor should comply with the requirement of OSHA ACT 2007 and Building rules on storage of construction materials Use of durable, long-lasting materials that will not need to be replaced as often, thereby	Construction	Contractor REREC	Presence of well-maintained receptacles and centralized collection points	Quarterly	100,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	reducing the amount of waste generated over time Recovery of materials remains and return to stores Re-use of materials where possible Proper budgeting to avoid waste generation Proper disposal of waste in line with solid waste regulation Construction wastes to be managed in accordance with construction standards in Kenya					
Impacts on Water Resources and Water Quality	Clear the necessary areas only. Appropriate remedial measures shall be implemented by the contractor in the event of erosion. Infrastructure shall be designed to ensure that contaminated run-off does not reach water source i.e., earth dam. Contractor to develop an oil-spill containment plan as part of the emergency response plan. In the event of an oil spill the procedures contained in the emergency response plan	Construction	Contractor REREC	-Oil spill containment plan. -Provision of fuel/oil drip and spill trays	Quarterly	150,000

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	of the contractor will come into effect. No vehicle maintenance and service shall be done at project site Ensure that potential sources of petro-chemical pollution are handled in such a way to reduce chances of spills and leaks.					
Noise & vibration	Construction activities to avoid any unchanneled flow of water at the site Storage areas that contain hazardous substances should be bunded with an approved impermeable liner and provision for a pit to be made in case of oil spill. The excavation and use of rubbish pits during construction should be strictly prohibited. A waste disposal area should be designated within the active construction area and this should be equipped with suitable containers i.e., skips or bins of sufficient capacity and designed to contain and prevent refuse from being blown by wind, Areas contaminated by spilled concrete and/or fuels and oils	Construction	Contractor REREC	Noise levels-Records of noise measurements done by contractor within the project area and at distances of 30m from the Solar mini-grid	Quarterly	150,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	leaking from vehicles and machinery should be cleaned immediately					
Impacts from Hazardous materials -	Maintenance of construction vehicles will not be done on site All hazardous products and waste should be labelled and handled properly to avoid contact with the ground Dispose hazardous waste through a NEMA approved waste handler	Construction	Contractor REREC	Presence of well-maintained receptacles and centralized collection points	Quarterly	100,000.00
Accidental Oil Spills or Leaks	In the event of accidental leaks, contaminated top soil should be scooped and disposed of appropriately. Refueling and maintenance of vehicles will not take place at the construction site. Create awareness for the employees on site on procedures of dealing with spills and leaks Vehicles and equipment must be serviced regularly and kept in good state to avoid leaks. In case of spillage the contractor should isolate the source of oil spill and contain the spillage using sandbags, sawdust, absorbent materials	Construction	Contractor REREC	Records of all accidental spills and number of litres	Quarterly	150,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	and/or other materials approved by materials. All chemicals should be stored within the bunded areas and clearly labeled detailing the nature and quantity of chemicals within individual containers.					
Fire Hazards	Create awareness to the construction workers on potential fire hazards Provision of firefighting equipment on site during construction. No smoking shall be done on construction site 'No smoking' signs shall be posted at the construction site A fire risk assessment and evacuation plan should be prepared and must be posted in various points of the construction site including procedures to take when a fire is reported. Designate an assembly point	Construction	Contractor REREC	-Records of any Fire incidences -Fire equipment and evacuation plan	Quarterly	100,000.00
Impacts of construction material sourcing (e.g., quarrying)	Source all building materials such as stone, sand, ballast and hard core from NEMA approved sites. Ensure accurate budgeting and estimation of actual construction materials to avoid wastage.	Construction	Contractor REREC	Sources of raw materials (from local community)	Quarterly	Part of contractor's cost

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Reuse of construction materials where possible.					
Increased water demand	Prudent use of available water Consultations with the project local committee on use of water in the community to avoid conflicts with the community Source and utilize a sustainable and reliable water supply for both construction and operation phase.	Construction	Contractor REREC	Water usage records	Quarterly	Part of contractor's cost
Energy Consumption	Ensure responsible electricity use at the construction site through sensitization of staff to conserve electricity by switching off electrical equipment or appliances when they are not being used. Proper planning of transportation of materials will ensure that fossil fuels (diesel, petrol) are not consumed in excessive amounts. Complementary to these measures, they monitor energy use during construction and set targets for reduction of energy use.	Construction	Contractor REREC	Energy consumption records	Quarterly	No additional cost

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Occupational Health and safety Impacts	Use skilled personnel for activities which demand skills/technical tasks Awareness creation/Tool box talks on safety to workers while at construction site Workers coming to the site should be knowledgeable on safety precautions to take Appropriate PPE (helmet, safety harness, boots, masks, climbing irons) Proper general house keeping Close supervision of workers Risk assessment by contractor of the construction activities and implement mitigation measures appropriately Adherence to occupational Safety and Health Act 2007 Availability of equipped first aid box on site Provide safe drinking water for workers Engagement of trained first aider on site Ensure the WIBA cover is taken for the staff Establish safety committees	Construction	Contractor REREC	Records of any near misses, incident, and accidents. Records of corrective actions implemented if there was an accident.	Quarterly	1,000,000.00
Community safety –access	Proper barricading Hazard communication. Controlled access to the site by designated personnel	Construction	Contractor REREC	Presence of a controlled access and records of every person accessing the site	Daily	20,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Maintain records of any person who comes to site					
Public Health Impacts	Sensitize workers and the community on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff training, awareness campaigns and community Barazas. Awareness creation and consultations with local communities prior and during construction on the dangers of these diseases Informing workers on local cultural values and health matters. Provision of condoms to workers Allowing migrant workers time to be with their families The contractor is impressed upon not to set a construction camp on site. The contractor will provide public education/information about HIV/AIDS transmission and prevention measures. Ensure equal treatment of workers	Construction	Contractor REREC	Number of awareness creation sessions conducted. -Availability of and distribution of condoms	Quarterly	20,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Provide all appropriate COVID-19 preventive measures including campaign to maintain individual measures at the workplace.					
Sanitary waste	Construct/ install pit latrines for both genders clearly labelled	Construction	Contractor REREC	Presence of separate and clean washrooms for both the gents and ladies	Quarterly	300,000.00
Solid Waste Generation	Provide waste handling facilities such as labelled waste bins Emphasis on prudent waste generation and give priority to reduction at source Solid waste management awareness to operators Operator to contract a NEMA licensed waste handler to collect and dispose solid waste	Operation	O&M Contractor KPLC	Presence of well-maintained receptacles and centralized collection points	Quarterly	50,000.00
Liquid Waste/Oils Generation	Proper storage of the oil is required to ensure no leakages Frequent inspection and maintenance of the generator to minimize leakages. No vehicles should be serviced or maintained at the Mini-grid area. The waste oil or used oil must be disposed-off appropriately. Proper training for the handling and use of fuels for the operators of the Mini-grid.	Operation	O&M Contractor KPLC	-Engine maintenance records -Oil spill containment plan	Quarterly	200,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	In the event of accidental leaks, contaminated top soil should be scooped and disposed of appropriately.					
Increased oil Consumption	Efficient energy consumption Install an energy-efficient lighting system	Operation	O&M Contractor KPLC	Energy consumption records	Quarterly	No additional cost
Increased storm water flow	Construct the drainage system in a way to follow natural drain of the water Concrete only the required area and leave the rest of the land with vegetation like grass Construct rain water harvesting system on the control buildings/office and harness into storage tanks for use	Operation	O&M Contractor KPLC	Provision of a drainage system and a rain water harvesting system	Quarterly inspections	200,000.00
Fire Outbreaks	The power plant must contain firefighting equipment (Portable fire extinguishers) of recommended standards and in key strategic points Detection/alarm systems that can detect fire should be and installed A fire evacuation plan should be prepared and posted at strategic points and should include procedures to take when a fire is reported.	Operation	O&M Contractor KPLC	-Provision of serviced fire equipment, evacuation plan and safety signages -Records of fire safety training	Quarterly	50,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Workers especially operators of the plant must be trained on fire management 'No smoking' signs shall be posted within the Mini-grid area A fire Assembly point should be identified and marked					
Water demand	Ensure prudent use of water. Install water-conserving automatic taps. Any water leaks through damaged pipes and faulty taps should be fixed promptly.	Operation	O&M Contractor KPLC	Water usage records	Quarterly	20,000.00
Sanitary waste	Provide sanitary waste facilities for both genders clearly marked Disposal of waste through septic tanks	Operation	O&M Contractor KPLC	Presence of separate and clean washrooms for both the gents and ladies	Quarterly	No additional cost
Flooding	Ensure drainage channels are free of any obstruction at all times i.e., not blocked Construct more channels and or expand existing ones Raise foundations of the solar panels and ensure a proper and from concrete base Create flooding diversions and or spill ways to divert water from getting into the solar power facility	Operation	O&M Contractor KPLC	-Provision of drainage system -Raised foundations for the structures	Quarterly	100,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Occupation health and Safety	Ensure only qualified staff are employed to work in the facility All workers operating the Mini-grid must be equipped with appropriate and adequate person protective equipment (PPE) such as; safety footwear, helmet among others. Operators must be skilled on firefighting management Annual environmental audits should be done WIBA cover for staff is mandatory	Operation	O&M Contractor KPLC	-Provision of PPEs and WIBA cover -Environmental audit reports	Quarterly	100,000.00
Hazardous waste-damaged panels	Segregation from other waste streams Proper disposal through a NEMA approved/licensed handler	Operation	O&M Contractor KPLC	Presence of well-maintained receptacles and centralized collection	Quarterly	200,000.00
Noise and Vibration	Generator room should be soundproof to ensure no noise of a nuisance level will be produced. Monitor noise levels	Operation	O&M Contractor KPLC	Noise levels-Records of noise measurements done by contractor within the project area and at distances of 30m from the Solar mini-grid	Quarterly	Part of contractor's cost
Shocks and electrocutions	Inspect the wiring of the houses before connecting power	Operation	O&M Contractor KPLC	-Records of awareness sessions conducted -Incidences report	Quarterly	No additional cost

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	Safety awareness campaigns to the community before connection of power on safety precautions such as: Require community to engage a certified technician to do wiring in the premises Use of quality materials while wiring Refraining from individual illegal extensions of power lines to other houses Observing safety measures while using electricity such as not touching sockets and switches with wet hands or wiping with wet cloths Keeping off all electricity infrastructure e.g., not tying livestock on electric poles, no cutting earth wires that run along some electric poles, not interfering with sockets or switches Reporting any electric wire/conductors if found fallen on the ground Report any incident regarding electricity at the local office – staff in charge of operating the Mini-grid					

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Community Safety- Access to site by general public	Fencing off the facility to keep of community members, children and livestock from entering into the facility Controlled access to the site only with prior approval Maintain records of any person who comes to site	Operation	O&M Contractor KPLC	Presence of a controlled access and records of every person accessing the site	Daily	Part of contractor's cost
Risks related to poor or inadequate stakeholder engagement (Conflict)	Employ from the community to the extent possible Engage the community members and other stakeholders in a timely manner Work closely with the GRM committee members in solving the conflicts Solve all conflicts/grievances at the earliest time possible Ensure all grievances are logged and closed Monitoring the pattern of grievances to come up will long term measures	Operations	O&M Contractor KPLC	Grievance records	Quarterly	20,000.00
Gender Based Violence –SEA and SH	To manage GBV risks, the contractor will prepare a SEA/SH Prevention and Response Action Plan that will include a GRM that ensures confidentiality. The plan will include the necessary measures for prevention and response and must ensure survivor-based approach	Operations	O&M Contractor KPLC	-SEA/SH Prevention and Response Action Plan -Grievance records	Quarterly	20,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Public Health Impacts – HIV/AIDs	Sensitize workers and the community on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff awareness and awareness campaigns for the community Provision of condoms to workers Allowing migrant workers time to be with their families	Operations	O&M Contractor KPLC	Number of awareness creation sessions conducted. -Availability of and distribution of condoms		20,000.00
Public health Impacts -Covid 19 disease	Social distance must be observed Provision of hand wash facilities before access Temperature check and monitoring of the temperature of workers and any other person coming to site Enforce wearing of masks Make provision for testing and treating especially of workers Provision of contact numbers for the nearest health facility for testing and treatment Adhering to any other measures from the ministry of health which may be issued from time to time	Operations	O&M Contractor KPLC	Availability of hand washing facilities Utilization of hand washing facilities Number of Covid-19 cases reported	Quarterly	30,000.00
Dust Emission	Trees can be planted around the plant/facility provided they do not cast shadows to the solar panels to act as wind	Operations	O&M Contractor KPLC	Visual inspection	Quarterly	50,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	breakers and hence decrease dust pollution Ensure planting of grass around and within the facility compound					
Vehicle Exhaust Emissions	Drivers of the vehicles must be sensitized so that they do not leave vehicles idling so that exhaust emissions are lowered. Company vehicles should be well maintained	Operations	O&M Contractor KPLC	Engine maintenance records	Quarterly	No additional cost
Noise and Vibration	Install portable barriers to shield compressors and other small stationary equipment where necessary. Use quiet equipment (i.e., equipment designed with noise control elements). Co-ordinate with relevant agencies in case the noise produced will require a license. Limit pickup trucks and other small equipment to a minimum idling time and observe a common-sense approach to vehicle use and encourage workers to shut off vehicle engines whenever possible. Demolish mainly during the day when most of the neighbors are out working.	Decommissioning	Contractor REREC	Noise levels-Records of noise measurements done by contractor within the project area and at distances of 30m from the Solar mini-grid	Once off	20,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
Solid Waste Generation	Demolition contractor to adhere to the various manufacturer's guidelines and requirements regarding demolition and disposal Segregation of waste in order to separate hazardous waste from non-hazardous waste and other streams of waste Provision of facilities for proper handling and storage of demolition materials to reduce the amount of waste caused by damage or exposure to the elements Adequate collection and storage of waste on site Safe transportation to the disposal sites / designated area Hazardous waste must be disposed by NEMA approved waste handler	Decommissioning	Contractor	Presence of well-maintained receptacles and centralized collection points	Daily	700,000.00
Dust Emissions	Cover all trucks hauling soil, sand and other loose materials or require all trucks to maintain at least two feet of freeboard	Decommissioning	Contractor	Visual inspection	Daily	20,000.00
Public Health-HIV/AIDS	The project will sensitize workers and the surrounding communities on prevention and mitigation of HIV/AIDS and other sexually transmitted diseases, through staff	Decommissioning	Contractor	Records of awareness creation sessions conducted. -Availability of and distribution of condoms	Once off	20,000.00

Potential Impacts	Recommended Mitigation Measures	Project phase	Responsibility	Monitoring Indicator	Frequency	Estimated Cost (Ksh)
	training and awareness campaigns/ to the community.					
	Total					**4,680,000.00**

11 IMPACT SUMMARY AND CONCLUSION

11.1 Introduction

The Ministry of Energy (MOE) Kenya is coordinating the implementation of the Kenya Off-Grid Solar Access Project (KOSAP) to provide access to clean and modern energy services through off-grid solar to Gatab Village, Loiyangalani ward, Laisamis subcounty in Marsabit County. During the implementation of the project, there shall be some impacts both positive and negative. The negative impact shall be controlled through suggested mitigation measures.

11.2 Impacts Requiring Detailed Assessment

During the assessment of the proposed site the following negative impacts were identified by the experts in consultation with the community and other stakeholders. They included air pollution (dust/particulate, smoke emissions and noise/vibrations) which shall be minimized through sprinkling of water in dusty areas, provision of mouth masks to reduce the inhalation of emissions by the construction worker, repair of vehicles and grout machineries to avoid excess emission of smoke. Degradation of vegetation and associated fauna. Destruction of trees and other vegetation shall be avoided at any cost. Construction waste generation like empty cement bags, cartons, and empty containers of paint shall be managed through collection and dumping in receptacles later transported for disposal to designated sites by the authorities. Accidents (falls, slips, flying object are some of the causes of accidents) during construction shall be managed by provision of PPEs to the construction workers. Signage and warnings shall be placed conspicuously. Fire or explosion within the store shall be managed by training the workers and installing fire extinguishers with construction materials.

11.3 Conclusion

Before implementation of the project, environmental and social impact assessment has been undertaken to fulfil the legal requirements, obtain background biophysical information of the site, assess and predict the potential environmental and social impacts and associated mitigation measures during the project cycle, suggestions of possible alterations to the proposed design based on the assessment findings were made, public and stakeholder consultation and participation was undertaken, an environmental and social management plan (ESMP) and monitoring plan were developed. The project has been guided by World Bank safeguards regulations and EMCA 1999 *(amended 2015).* During the ESIA various stakeholders including VMGs were consulted, and their views incorporated in the report.

The proponent/contractor to consult all relevant service providers and authorities (i.e., County Administrators, NEMA, amongst others) to harmonize the projects infrastructural and socio-economic developments with existing facilities.

It is recommended that during the project cycle the proponent and contractor shall adhere to ESMP to minimize risks and delays that may occur. This shall also reduce the cost of the project in the long run. It is also suggested that the positive impacts that emanate from such activities shall be enhanced as much as possible.

Lastly, this CPR to be cleared and approved by WB while the National Environment Management Authority (NEMA) to issue ESIA license subject to annual environmental audits after operating for one year. It is recommended that an Environmental Audit (EA) be undertaken annually.

12 APPENDICES

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Appendix 1: Abbreviated Resettlement Action Plan (A-RAP)

1. Gatab Sub-project Site

The Gatab sub-project site is on unregistered community land and held in trust by the County Government of Marsabit on behalf of the community, in line with the Community Land Act 2016. The proposed site is uninhabited, has no structures, community facilities, or encumbrances. Consultations leading to the identification and selection of the sub-project site are captured in the Environmental and Social Screening report for Gatab. *Refer to Chapter 5 of the ESIA for the comprehensive socio-economic profile.*

2. Actual Census Survey of PAPs and Valuation of Affected Assets

The number of project-affected persons (PAPs) is 4000 (approximately 840 households). The land acquisition-related impacts are loss of- land and pasture. Mitigation measures include in-kind compensation for loss of land and pasture, and designing power distribution lines to avoid impacting trees, crops, structures, and community facilities. No physical displacement is anticipated; however, there is minimal loss of pasture occasioned by the acquisition of land utilized by the community for grazing. The 0.6647 Hectares identified for the sub-project will be acquired compulsorily by the National Land Commission (NLC). The proposed site will be valued and compensated in line with the provisions of the Resettlement Policy Framework (RPF) prepared under KOSAP. *Refer to section 1 of the ESIA for the sketch map of the site.*

3. Compensation Measures Agreed with the PAPs and other Resettlement Assistance to be Provided

The proponent requested the community identify three priority projects, whereby one out of the three would be provided as in-kind compensation for loss of land and pasture. The Gatab community requested the Mindray hematology analyzer for the local dispensary, Water networks repairs and Gatab primary school general repairs (replacement of 5 doors, lockable drawers for all classes, replacement of windowpanes and paintings). The value of the priority community project will be proportional to or higher than the value of land under acquisition. In addition, loss or damage to crops, trees, structures, and community facilities will be compensated in line with the provisions of the RPF, and as summarized in the entitlement matrix below.

3.1 Entitlement Matrix

Types of Impact	Person(s) Affected/Eligible for Compensation	Compensation/Entitlement/Benefits	Responsible organization
1. Loss of Land			
Loss of unregistered community land.	Community.	Compensation in-kind as prioritized by the community.	REREC
Loss of land in unregistered group ranches.	Group ranch members.	Compensation in-kind as prioritized by the community.	
Loss of land in registered group ranches.	Group ranch members.	Compensation in-kind as prioritized by the community.	

Loss of land owned by the National Police, county governments and the Ministry of Interior	Government agencies.	No compensation for public land allocated to another government body.	
Loss of land owned by the Kenya Forest Service (KFS) and Kenya Wildlife Service (KWS).	Government agencies.	No compensation for public land allocated to another government body. However, payment of conservation fees to KWS and KFS as stipulated under their respective regulations is foreseen.	
2. Loss of Use on Land			
Loss of use on public land (e.g., grazing, farming etc.).	Communities utilizing public land.	Communities do not own public land; however, they utilize public land with consent from the relevant agencies. The project will implement the infrastructure project prioritized by the community as compensation for the loss of public land use.	REREC
Loss of use on unregistered community land, unregistered group ranches and registered group ranches (e.g., grazing, farming etc.).	Communities utilizing unregistered community land, unregistered group ranches, and registered group ranches.	Compensation in-kind as prioritized by the community.	
3. Loss of /Damage to Assets on Land			
Trees	Community members on unregistered community land; community members utilizing public land; members of registered and unregistered group ranches and government entities.	During detailed design for power distribution lines and construction of the mini grid and community project, any crops, structures, trees, and community facilities shall be avoided to the extent possible. However, loss or damage to the above will be compensated/restored at full replacement cost,[2] in line with the provisions of the RPF.	REREC
Crops			
Structures			
Community facilities e.g., water sources (earth pans, boreholes etc.).	Community members on unregistered community land, community members utilizing public land, and members of registered and unregistered group ranches.		

[2] A cost basis that will yield compensation sufficient to replace assets, plus necessary transaction costs associated with asset replacement).

4. Consultations with PAPs About Acceptable Compensation Options and Alternatives that have been Considered

Detailed consultations with PAPs on land acquisition and compensation, including the modalities of acquiring land and compensation options, were undertaken during the Environmental and Social Screening, Environmental and Social Impact Assessment, and the NLC land valuation process. The following sections provide a summary of the consultations.

4.1 Engagement of Project -Affected Persons (PAPs)

Local administration and County Renewable Energy Officers (CREOs) supported the proponent and implementing agency (IA) to mobilize community members and other stakeholders for public consultations and engagement activities. National and county government entities, community segments (men, women, youth, elders, persons with disability, vulnerable and marginalized groups, etc.), NGOs, and local leaders were engaged through key informant interviews, community meetings, and focus-group discussions. The proponent and IA implemented appropriate measures to ensure PAPs effectively participated in the consultations. *Refer to Chapter 6 of the ESIA on public consultation and engagement.*

Once the compensation award and Bill of Quantities (BoQs) are known, the Implementing Agency (IA) will engage the community and agree on the community project to be executed as in-kind compensation. During these consultations, the IA and the community will define the roles and responsibilities of the community in monitoring the implementation of in-kind compensation and maintenance once the IA hands it over to the community. Thus, the IA and the community will effect an agreement to be signed by the local leadership; representatives of the Grievance Redress Committees at the locational, county, and national levels; A-RAP Implementation Committee, and Implementing Agencies.

4.2 Identification of Community Representatives

The Gatab Locational Grievance Redress Committee (LGRC), constituting a chairperson, secretary, and three members, was formed through community consensus. The committee's membership comprises men, women, youth, persons with disabilities, and ethnic minorities. The LGRC is responsible for engaging PAPs and resolving complaints. Refer to Chapter 6 of the ESIA on the Grievance Redress Committees. Further, the community will constitute the A-RAP Implementation Committee responsible for coordinating community engagements on the A-RAP and monitoring the implementation and closure of the A-RAP. The representation of the committee will consider gender, vulnerability, and intergenerational sensitivities.

4.3 Summary of Consultations on Land Acquisition and Compensation Options

Date	Objective	Implementing Entities	Land Acquisition & Compensation Aspects Discussed	Key Issues Raised	Responses Given
October 23rd 2021	Environmental and Social Screening. Voluntary land donation (VLD). Constitution of the Locational Grievance Redress	Ministry of Energy (MoE) Kenya Power (KPLC) Rural Electrification and Renewable Energy	Site identification and land allocation for the sub-project. Criteria for VLD. Community entitlements (forms of compensation and implications for each).	None	None

	Committee (GRC).	Corporation (REREC)			
5th and 19th January 2022	Environmental and Social Impact Assessment.	Consultants MoE KPLC REREC	Land acquisition through compulsory acquisition (not voluntary land donation). Selection of three priority community projects, whereby one is to be implemented as in-kind compensation for land.	Community requested the following projects. 1.Mindray haematology analyser for the local dispensary 2. Water networks repairs 3. Gatab primary school general repairs (replacement of 5 doors, lockable drawers for all classes, replacement of windowpanes and paintings)	The proponent has set aside KES 1 million to implement the priority in-kind compensation project. The value of the project will be proportional to or greater than the value of land. NLC will determine the value of land.
				A youth felt that the proposed site was an individual's plot and suggested that an alternative site be considered	-
May 2023	Compulsory Land Acquisition.	NLC	Site inspection and inquiries. Land valuation. Award of compensation.		

5. Institutional Responsibility for Implementation of the ARAP

Entity	Role
Ministry of Energy	• Coordinate A-RAP implementation and provide budget for in-kind compensation.
National Land Commission	• Implement the statutory process for compulsorily land acquisition, including site gazettement and inspections, inquiries, valuation, and award of compensation.
REREC	• Monitor all land acquisition and compensation aspects (including A-RAP closure), complemented by a third-party monitor. • Provide budgets for stakeholder engagement, grievance management, and monitoring, including the facilitation of the Land Acquisition and Compensation Implementation Committee, and the Grievance Redress Committee.
Mini-grid Contractor	• Implement in-kind compensation concurrently with the solar mini-grid project.
Supervising Consultant	• Monitor and report on implementation of in-kind compensation, and overall project compliance with social safeguards.
Grievance Redress Committees	• Formed at the locational, county, and national levels, and responsible for resolving complaints, including A-RAP related grievances.

A-RAP Implementation Committee	• Coordinate A-RAP engagements at the community level, monitoring A-RAP implementation and closure.
Affected Community	• Responsible for the operation and maintenance (O&M) of in-kind compensation project. An agreement stipulating the O&M roles and responsibilities of the community will be effected.

6. Procedures for Grievance Redress

The Project procedures for grievance redress were established through a public consultation process and informed by the existing conflict resolution structures in the community. The Grievance Redress Mechanism (GRM) comprises tiers at the project, county, and national levels. *Refer to Chapter 7 of the ESIA for a detailed GRM.*

7. Implementation Timetable and Budget for the ARAP Implementation

7.1 Timelines

The proponent will commission the community project by May 25th, 2025, before operationalizing the mini-grid. The mini-grid contractor will implement the mini-grid and the community project simultaneously. The Supervision Consultant and IAs will implement a commitment register to ensure the mini-grid contractor can achieve the agreed-upon milestones. The register will be complete with clear and practical time bound indicators, which can be monitored by all parties – the PAPs, IAs, the Ministry, third-party monitor, and the Bank.

7.2 Budget

The proponent has set aside KES 1 million for the community project (budget captured in the ESMP). The compensation award from NLC and the Bill of Quantities will inform the final cost of the community project. The costs for in-kind compensation, stakeholder engagement, grievance management (including the facilitation of the GRCs and the A-RAP Implementation Committee), and monitoring are covered under the project.

Appendix 2: Summary of Community Consultation Meeting Leading to Land Identification and GRC Constitution

Minutes of Community Consultation meeting leading to Land Identification and Grievance Redress Committee Constitution

Project: Proposed Gatab Solar Mini-grid

Venue of meeting: Gatab shopping centre, Gatab sub location in Mt Kulal location of Marsabit County

Date: 21/10/2021

Agendas

1. Preliminaries
2. Project description
3. Technical aspects of the project
4. Positive Impacts of the project –Solar Mini-grid
5. Negative Impacts of the project and mitigations measures
6. Need for land for the project
7. Grievance Redress Mechanism for the project
8. Plenary session
9. Focus Group discussions
10. Environmental and social screening of the site

Minute 1/KOSAP/2021: Preliminaries

The Chief called the meeting to order at 11.30 a.m. The meeting began with a word of prayer. The chief spoke in Kiswahili and translation to the local dialect was done by two of the community members (teachers). The chief welcomed the visitors from the national and county government alongside the community members. He told the community that the meeting was called so that the people can be briefed of developments in their area and so that they can have one common information and make a common decision. He added that citizen engagement is now very key in government projects. He noted that government projects are meant to benefit the project even if in a small way, he told them that if they did not welcome the communications masts in their area they would be out of network and unable to communicate. He then asked the community members to participate in the consultation session.

He called the CREO (County Renewable Energy Officer) to welcome the project team to carry on with the meeting. The officer greeted the people and notified them that the KOSAP team which they had heard about two years ago was still on course. He noted that the national government is the one funding the project through a loan facility and the county government is also a key stake holder in the implementation. He told them that he had brought the KOSAP team who would share more in-depth information on the project.

He then welcomed the Director (Lands and Energy) who introduced the project officers briefly and the team is as shown below.

KOSAP Project Team

S/No	Names	Position
1	Ramat Ibrae	Director Lands- Marsabit
2	Rebecca Muniu	Communications officer- Ministry of Energy
3	Samuel Mbugua	Environmentalist-KPLC
4	Suleyman Gavawahle	Physical Planner - Marsabit
5	Gideon Jalle	County Renewable Energy Officer-Marsabit
6	Jacob Chepkwony	Engineer -MOE

7	Roseline Njeru	Socio Economist-KPLC

The Director noted that the County government of Marsabit is in support of the project as it is key in speeding up development in the County. He noted that most of the land in the area is community land and much of it is not registered nor adjudicated. The director noted that land in the area falls under the category of community land and its use and management is governed by the Community Land Act 2016. The community was told that land under this Act is owned by the community but is held in trust for them by the County Government of Marsabit because the community is not registered. He added that the ministry of lands and planning in the county will assist in the necessary processes in regard to land to ensure the project complies with the relevant requirements.

He said the county government of Marsabit is ready to support the MOE in the KOSAP project to ensure land identified for the project will comply with the requirements of the community land Act and other relevant laws and especially that land identified for the Solar Mini-grid will be used for public purpose only i.e. to supply power to the community. He said that the team had come to create more awareness on the project to the community.

Minute 2/KOSAP/2021: Project Background Information.

Rebbeca explained that the national government is implementing KOSAP in partnership with County Government in 14 Counties in areas that are far away from the national electricity grid. She said the proposed project called KOSAP-(Kenya Off-grid Solar Access Project) or ''Umeme Mashinani'' is being implemented jointly by the Ministry of Energy, the Kenya Power and Lighting Company (KPLC) and the Rural Electrification and Renewable Energy Corporation (REREC) in partnership with the World Bank as a development partner, County Government as a partner and the communities in Off-grid areas being the beneficiaries. She noted that Off-grid areas are those areas where the national electricity grid has not reached, and whose electricity access has been very low. The reason for choosing solar energy was because the area is far away from the national grid and the fact that the area is well endowed with natural sunlight with high temperatures.

She further expounded that the proposed Solar Mini-grid is part of the government's effort towards universal access to power. She said the proposed Gatab solar Mini-grid is one of the sixteen Solar Mini-grids to be funded through KOSAP in Marsabit County. She told the community that the project was in the preliminary implementation stages which requires public participation of various stakeholders.

She outlined the agenda of the visit was to;

- Undertake community engagement to sensitize the community on the project, need to identify land for the project and sensitize the community on their rights in regard to the project so that they can make informed decisions.
- Undertake an environmental and social screening of the identified site to check suitability in terms of environmental, technical, social, safety and health requirements.
- Explain the need to set up Grievance Redress Mechanism for the project, guide the community in electing Grievance Redress Mechanism committee members and sensitize the members of their role during project implementation

Minute 3/KOSAP/2021: Technical aspects of the project

Jacob (engineer) explained that the technical aspects of the Mini grids will entail; the installation of solar PV panels, battery, and thermal diesel backup unit (generator) to support solar and street lights. He explained to them that once constructed the Solar mini-grid will be operated by the implementing agency REREC and the beneficiaries/those interested will be expected to pay for connection of electricity (one thousand shillings) and do wiring in their houses. He told them that connection of power will involve passing

of electrical lines along the roads in order to reach their houses, business premises and public facilities and the route for passing the lines is called way leave. He noted that once the designs are done, the community will be notified of the exact routes during future consultations and that they will be required to give way leave consent (allowing the service lines to pass through their land boundaries. He noted that the project will not compensate for way leaves due to budget constraints so that they can make an informed decision. He added that distribution or supply lines will cover a radius of 1-1.5km from the mini-grid for quality supply.

He told them that once connected, the beneficiaries will be expected to pay for electricity consumed and that the tariff employed will be the same as what other Kenya Power customers pay.

Minute 4/KOSAP/2021: Positive Impacts/Benefits of the Project

Roseline (KPLC) explained that, every project has both positive impacts and negative impacts. Our assignment is to explain to you the impacts of the project so that you understand how the project will benefit you and the community at large and also explain to you the negative impacts of the project and their mitigation measures. The project benefit both direct and indirect positive impacts discussed are as follows:

1. Better source of lighting- replacement of Kerosene lamp and small de-lite lamps with electricity lighting which is clean energy and has better lighting
2. Benefits to education- provide source of lighting which enables pupils and students to take advantage of longer hours of preps/study in school and at homes. Electricity will be useful in availing power needed to enable use of radio and television sets therefore pupils can access electronic educational information
3. Business opportunities-Power provides energy needed to power some gadgets that are difficult and expensive to power with generators. Access to electricity will therefore allow the community to take advantage of new business opportunities and enhance the existing ones e.g. Barber shops, salons, posho/maize mills, welding, photo copying, printing, fuel stations, milk coolers and fridges to preserve meat, milk among others. He asked the community to take advantage and set up such businesses
4. Employment and wealth creation- community members will get opportunities to provide non-skilled and skilled labor during construction and operation phases of the project
5. Local material supplies and other requirements- the proposed project provides opportunities to supply materials that are locally available
6. Up Scaling Electricity Access to the off-grid areas- this area is far away from the grid and so the proposed project helps to reach this area faster and in a cost effective manner as opposed to grid connections.
7. Impact on health education-due to availability of power, communities can purchase communication equipment like radios and televisions which in turn provides access to information on various issues such as health topics on HIV/AIDs, nutrition and the current Covid-19 pandemic among other information
8. Health benefits of the project- health benefits of the project are linked to replacement/elimination of use of kerosene lamps and candles, no need to use fuel generators which emits smoke causing respiratory diseases, the dispensary will also benefit from power that can be used to preserve drugs and vaccines alongside powering other medical equipment.
9. Improved standard of living- Living standards of the community is bound to improve as they take advantage of small house hold appliances like e.g. TV, Fridges, radios, blenders, iron boxes e.t.c.
10. Security- Enhanced security due to improvement in lighting up of the area through the street lights. Improved security also means more hours of business. The place will also be safe as lighting puts

off opportunistic criminals who take advantage of darkness.

11. Communications- improved communication due to availability of electricity to charge phones, opportunities to set up information communication and technology related business-like cyber cafes, access to E-government services among others.
12. Presence of electricity will also attract other business investors to invest in the area

Minute 5/KOSAP/2021: Negative impacts of the project

Having discussed the benefits of the project, Roseline explained that projects also have negative impacts. She explained that the most important thing is to be able to mitigate the negative impacts so that they do not affect the community adversely. She said ''the proposed solar Mini-grid will have some environmental and occupational and social negative impacts and presented them alongside their mitigation measures most of which will be implemented mainly by the contractor.

1.	**Negative impact**	**Mitigation measures to be implemented by contractor**
2.	Vegetation clearance	• Clear only the areas that are needed to put up the mini-grid according to designs • After construction, do landscaping with grass to areas that have no electrical installation as opposed to living areas bare • Re-vegetation by planting of trees
3.	Air pollution linked to dust from construction activities	• Water active areas to suppress dust • Fence off construction site • Use of masks by workers • Limit vehicle speed to minimum possible when passing residential areas and the centre
4.	Air pollution from vehicle emissions	• Maintain and service vehicles • No idling of vehicle's engines
5.	Solid waste	• Clear all solid waste and dispose in line with NEMA guidelines
6.	Land. As you had been briefed before, the site identified should; -must not result in displacement of community members - We must avoid land that is currently settled or which has squatters.	• The MOE is going to give compensation in kind for the land identified for the project.
7.	Occupation safety and health hazards e.g. accidents, fall from heights, pricks by sharp objects	• Use of proper personal protective equipment like gloves, overalls, helmet, safety shoes • Allocating work according to skills • Toolbox talks to workers to identify hazards and risky activities and putting mitigation measures • Close supervision of work

8.	Labor influx. The nature of the project will require technical skills that are not all available in this community. This will require movement of construction workers (labour influx) into this community. There are some risks that are involved with labor influx and we need to mitigate them as follows to avoid negative impacts on our community.	• Reduction of labor influx by recruitment of local workforce to the extent possible especially unskilled and semi-skilled jobs by the contractor as much as possible.
9.	Risk of social conflict due to competition for resources and opportunities	• We shall establishment and operationalize an effective Grievance Redress Mechanism accessible to community members where your grievances can be sorted • Awareness-raising among local community and workers on the need to have a good /cordial working relation • Consultations with and involvement of local communities in project planning • Provision of cultural sensitization awareness for workers regarding engagement with local community. • Contactor shall make provision to provide resources needed by the workers if the need for such resources may result to competition and conflicts e.g. water • Working closely between contractor and the project grievance redress committee to address complains on time.
10.	Increased illicit behavior and crime (including prostitution, theft and substance abuse)	• Sensitization campaigns both for workers and local communities against such social evils (like we are doing) • Enforcement of sanctions (e.g., dismissal) for workers involved in criminal activities
11.	Spread of diseases (including STDs and HIV/AIDS)	• Education/awareness about transmission of diseases • Awareness creation on STDs among the workers and local community on ethics, morals, general good behavior and the need for the project to co-exist with the neighbours during the community and worker engagement forums. • Provide condoms to employees
12.	Public health issues such as spread of diseases like Covid 19	• Adherence to ministry of health protocols issued • Avail hand washing facilities –water and soap • Keeping social distance to the extent possible • Use of face masks • Encourage workers to be vaccinated
13.	Gender-based violence i.e. sexual exploitation and abuse of the community members by workers	• Information and awareness raising campaigns to you community members and specifically women and girls on need to be on the look-out and raise such issues/complaints • Mandatory awareness creation for workers by contractor on required lawful conduct in the community and legal consequences for failure to comply with laws • Requirement of contractor to have code of conduct for the workers and to implement them

		• Working closely with chiefs and local law enforcement to act on community complaints on time
14.	Gender-based violence i.e. sexual harassment among workers	• Requirement of contractor to have code of conduct for the workers and to implement them • Inclusion of GBV specific mitigation measures in the environmental and social management plan of contractor
15.	Child labour	• Ensuring that children and minors are not employed directly or indirectly on the project. • Enforcement of Employment Act that requires contractor to adhere to minimum age • Allowing your children to be employed is illegal and punishable by law because it interferes with the children's right to education • Report any case to the chief's office
16.	Demand for Material/resources e.g water, sand, ballast	Contractor to consult with elders before using scarce resources in the community like the water to avoid conflicts.
17.	Storm water and erosion	• Contractor to put measures to harvest rainwater and control erosion during construction
18.	Wastewater/ effluent	Contractor will provide sanitation facilities for workers
19.	Noise resulting from excavation machinery, vehicles and workers	• Contractor to work only during the day • In case of blasting contractor to give notice to community through the village elders, grievance committee and chiefs office
20.	Visual and Aesthetic Landscape Impacts	• The visual negative impacts can be mitigated through putting up a wall round the facility to keep off/screen the project stacks, poles, panels • Proper siting decisions can help to avoid aesthetic impacts to the landscape.
21.	Fuel storage on site	• Contractor will undertake proper installation of the fuel storage tanks for the back-up generator. • Have a budded wall 1.5 times the fuel stored to allow controlled collection in case of a spill. • During operation implementing agency will ensure proper maintenance of the solar panels
22.	Public safety –potential risk of shocks and electrocution	As explained below in details

Public safety in regards to electricity

Roseline educated the community by highlighting the importance of using electricity safely. She said electricity is good but failure to take safety precautions while interacting with power infrastructure can result in electric shocks, fires and even electrocution/death. She emphasized the following precaution/preventive measures to observe in order to prevent risk of electric shocks, fires and electrocutions.

- ✓ Engage a certified technician to do wiring in your premises
- ✓ Use quality materials while wiring
- ✓ Do not engage in individual illegal extensions of power lines to other houses
- ✓ Don't touch sockets and switches with wet hands or wipe with wet cloths

- ✓ Do not tie your livestock on electric poles
- ✓ Do not cut earth wires that run along some electric poles
- ✓ Do not touch or go near any electric wire if you find it fallen on the ground
- ✓ Report any incident regarding electricity at the local office –staff in charge of operating the Mini-grid
- ✓ Vet all new people coming to the village by checking whether they have registered their presence with the office of the chief especially those purporting to be technicians
- ✓ In case of a black out/no power supply do not open sockets or switches

Minute 6/KOSAP/2021: Land requirements for the project

Rebecca told the community that one of the agendas of the project team's visit was to check the land/site that the community had or would identify for the project. The project team together with the community would undertake an environmental and social screening to determine whether it is appropriate for the proposed solar Mini-grid project. She then emphasized the aspects to consider while identifying the land for the project. She explained to the public forum that the land identified need to meet certain criteria to ensure it is suitable for the Mini-grid. She listed the criteria as follows; the land need to be relatively flat, not prone to flooding, stable soils, not resided by families, ability to receive maximum sunlight, land which has no conflicts and one that is central to residents and public facilities so that it will be possible to supply more people in the target community. He added that the project needs about 2-3 acres of land.

Rebecca told them that land falls under the category of community land and its use and management is governed by the Community Land Act 2016. The community was told that land under this Act is owned by the community but is held in trust for them by the County Government of Marsabit because the community is not registered. She noted that the government of Kenya had secured a loan from its development partners i.e. World Bank to implement the KOSAP project. She explained that the government was seeking partnership with the community in the KOSAP project where by the community would identify land for setting up the solar mini-grid while the government would provide the money for setting up the solar mini-grid.

She added that there are three main land ownership categories in Kenya which are private land, public land and community land. She informed the community that land in the area falls under community land and is governed by Community Land Act 2016. She added that compensation for land in Kenya includes; cash payment -which would involve all community members being identified and registered and then open an account where the fund would be deposited and the community would draw the funds. The second option is compensation of land for land which involves identifying another piece of land to be purchased. The third option is compensation in kind e.g. getting a project in exchange for the land identified for the project. Rebecca explained that the government proposes the third option which is compensation in kind i.e. through a community project to be identified by the community and the project would be implemented/constructed alongside the solar Mini-grid.

Rebbeca educated the community on the following issues;

- That in the Community Land Act, the County government of Marsabit only holds the land in trust for them and that they are the owners of the land
- Importance of public participation by key stakeholders including community members during the planning and operation phase of the project.
- That they have a right to give their views, opinions or fears on the proposed project
- The ownership of the land will be transferred to REREC and that the project will be managed by REREC

- The community will choose three projects as payment in kind in three main sectors namely; health, education and water and one of their (priority) would be implemented subject to a total amount of Kenya shillings one million. The community would be given a chance to deliberate on these projects

She told them that once the community agrees to identify a piece of land for the project there was a form which the leaders of the community would sign as a form of commitment and that it would be forwarded to the county government for information and for progressing other processes needed in the land registration.

Survey of the land and request for advance possession.

She noted that the process of land allocation, land surveying and land transfers and registration are long and requested the community for advance possession of the land. This meant that the community would allow construction works to take place as the process of land registration is being progressed. The community agreed to the advance possession request. She explained to the community members that the surveyor will need to pick exact GPS points of the agreed identified portion of land for the solar mini-grid so that the process of land allocation and registration may be progressed. She explained to the community that the rationale and importance of sharing all that information was to facilitate the community in making informed decisions about the project.

Selection of the community projects

The community was given time to deliberate on land for the solar Mini-grid and also on the community project. The community identified a piece of land that was to be screened for suitability and also choose three community project in order of priority as follows;

1. Mindray hematology analyzer for the local dispensary
2. Water networks repairs
3. Gatab primary school general repairs (replacement of 5 doors, lockable drawers for all classes, replacement of window panes and paintings)

Minute 7/KOSAP/2021: Plenary session

Rebecca then invited the community members to a plenary session for the community members to ask questions or seek clarifications on the information shared. The questions raised are presented in the table below.

	Name	**Questions/suggestions**	**Response**	**Response by agency on how feedback will be used or acted upon**
1	Shukri Lasapicho	Our community needs the jobs available, make sure we get the jobs that our community members can do	The community is given priority for the unskilled jobs. Other people who have other skills can talk to the contractor and fill up available jobs	-
2	Shukri Lasapicho	In the month of June and July our area has mist and at that time the solar may	We shall have a back-up generator so supply is	-

		not work well so what will happen as such times we look forward to good supply	assured even in such months	
3	Shukri Lasapicho	To the county government, it is shameful we do not have power and we have a big wind power near us. We look forward to connecting to the grid one day.	Noted	-
4	Njelly	Thanks for educating us on various issues. We have small solar units here but during the cold seasons they so not give light we hope this Mini-grid will be better. We look forward to the project	The mini-grid will be better because it has batteries and back up generator.	-
4	Lucy Lekupuni	We as women support the project because we spend more time in the kitchen and power will make things easier.	Noted	-
5	Lucy Lekupuni	You have seen the road to this place is terrible can you do grading for us	Road construction is beyond the mandate of the ministry of Energy. This is not possible but you can approach the county government	-
6	Sony	I feel that the one million for the community project is too little	For now this is what the government has availed	-
7	Penina	As a community we are ready to identify land and during construction our people should be given priority for the jobs including the women - contractor should employ the one third gender rule	Noted	-

Photo of the community Meeting at Gatab

Minute 8/KOSAP/2021: Grievance Redress Mechanism (GRM)

Roseline explained that in a project, grievances may arise and it important to have a grievance redress mechanism that is known to all the community members and accessible with no costs to the community members. Before explaining how to set the GRM, she asked the community to explain how they deal with grievances/issues

Existing grievance redress mechanism in the village.

It was reported that the elders in the community provide leadership to the community. These elders also resolve the conflicts or grievances or any issue in the village. Any of the grievances that is difficult to resolve is referred to the office of the Chief

KOSAP Project GRM:

Roseline explained to the community that it is important to put in place a project grievance redress mechanism (GRM). She noted that the GRM to be set should borrow heavily from the existing conflict resolution structures in the community. She added that the need for a GRM is to provide the community and other stakeholder's opportunity to share project information and raise questions and grievances about the project. She told the community that they are free to raise any complain or request information about the project. She further explained that the project will have a three-tier grievance redress mechanism as follows.

1. Locational grievance redress committee. This is the lowest level (forum) where the community will get project information and also ask questions. At this level you the community will choose project committee members who will also double as grievance redress committee. The membership will comprise; elders/men representatives, representatives from women, youth, special needs (persons with disability), and the office of the chief as Ex-officials. This will be the first stop for receiving

information and raising grievances. The members to be chosen should possess leadership skills and it is hoped that most of the grievances will be resolved at this level.

2. The second level of grievance redress will be the County Grievance Redress Committee comprising members of the County working group. This committee is at the county level and will resolve complains or issues that are unable to be resolved at the locational/project level. The chairman of the project grievance redress committee at the community will forward issues/ complains to the county grievance redress committee through CREO who will also be responsible for giving feed back to the local committee.
3. The third level will be the National grievance redress committee comprising of KOSAP Project Implementation Unit at the Ministry of Energy and the implementing agencies. Matters that not resolved at the County level will be escalated to this National GRC by the CEC-Energy
4. The last level of the GRM for the community or project affected persons will be arbitration or legal redress in a court of law once all the three levels have been exhausted.

She explained further that members of the project/ grievance redress committee will be chosen by the community members themselves. The committee chosen will be in charge of giving project information to the community and be a focal point for reporting project related issues of concern or grievances. She added that the composition of the committee should have representatives from all groups in the community including men, women, youth and persons with disability. The table below indicates the members of the GRC chosen by the community members.

S/No	Name	Representative of	Contacts
1	Gabrial Wamuro	Men	0710839828
2	Joshua L Lengoycap	Men	0702640071
3	Damaris Leparsanti	Women	0727962717
4	Fatuma Omar	Special ability	
5	Jeremiah Lenangina	Youth	

Minute 9/KOSAP/2021: Focus Group Discussions

The community members were told of the need to have focus group discussions to discuss the project further and allow the people more opportunities to ask questions or give suggestions regarding the project. Therefore, three separate meetings for men, women and youth were held. In these meetings the message on the project was echoed again especially on benefits and impacts (both positive and Negative) of the project to the community, rights of the community in regard to land and the need to have a grievance redress committee with representation from all groups in the community. Each group was told to elect their representatives to the GRC.

a) Focus Group Discussion with the women

Roseline (KPLC) explained to the women that it was important to hold a separate discussion with them so that they have opportunity to freely express themselves. One focus group discussion was held with the women. She explained the agenda of the visit by the officers from national government and county government i.e. was to undertake an environmental and social screening of the identified site to check suitability in terms of environmental, technical, social and health requirements. The second objective was to undertake community engagement to sensitize the community on the project. The third objective was to explain the land requirements for the project and the need for a project grievance redress mechanism.

She then gave a summary of the project in terms of its positive and negative impacts and their mitigation measures and the requirements for identifying land for the project. She also explained the need for the women to select a representative to the project committee who would represent their views/issues to the committee for redress.

The discussion went further to bring out issues on how the women can take advantage of the project benefits rather than taking a back seat. She then explained to them that women would benefit more from the electricity because there are the ones who are more exposed to unclean energy as they are the ones who take more time in the kitchen. They would also benefit from access to information through use of radios and TV that are powered by electricity enabling them to make informed choices on different issues such as nutrition, health among others. They were also set to benefit if they could set up small businesses like salons, cold drink kiosks, children will have time to study and enhanced security due to the fact that the area will be well lit among other benefits.

Gender based violence issues were also discussed and emphasized because women and girls are more affected by gender-based violence due to the subordinate status of women in many societies, discrimination against them and their higher vulnerabilities to violence. She noted Gender-based violence takes many forms, including sexual, physical, and psychological abuse. Other issues discussed were the importance of addressing GBV incidences and the need to report and document any complaints against workers, while ensuring survivor centred approach (respect for the choices, wishes, rights and dignity of the survivor). The women were told to be more vigilant to ensure young girls do not fall prey to GBV incidences (sexual exploitation and abuse). The women were requested to keep talking to the girls on GBV risks and the need to raise alarm in case of risk factors to ensure prompt redress.

Plenary Session

The women were allowed time to ask questions, give suggestions and or seek clarifications regarding the proposed project.

Table 5: Question, Suggestions, feedback and response for Focus group discussion with women

Name of Person making the contribution (e.g. comment or question)	Question, Comment, Suggestion	Feedback/Responses by project team	Response by agency on how feedback will be used or acted upon
Alice	You have talked about qualified and registered technicians, here we do not have such so we shall need the support of the county officer	Noted. When the time comes you can reach out to him through the chief	
Lucy	We shall need more education on safety of using power because by that time we may have forgotten what you have taught us	Noted	

Photo of Focus Group discussion with the women

b) Focus group discussion with the youth

The youth were also invited to a separate discussion. Chepkwony (MOE) explained to the youth that they are also key to the decisions that are made in the community and so discussion with them was necessary so that they have opportunity to express themselves. He explained the agenda of the visit by the KOSAP team from national government and county government was to undertake an environmental and social screening of the proposed site to check suitability in terms of environmental, technical, social and health requirements. The need to undertake community engagement to sensitize the community on the project. The third objective was to explain the land requirements for the project, rights of the community members and the need for a project grievance redress mechanism and committee. He then gave a summary of the project in terms of its positive and negative impacts and their mitigation measures and their rights and requirements for identifying land. He told the youth to select a representative to the project committee who would represent their views/issues to the committee for redress. He explained to the youth that they would benefit from the project in terms of job opportunities, ability to set up shops or enhance their businesses due to power supply, entertainment, use of ICT while those in school could benefit from better lighting and ability to access e-learning opportunities through radios, T.V and internet services.

Plenary Session

He asked the youth to feel free to air their opinions on the project. The youth said they support the project. The youth were then allowed to ask questions.

Table 6: Question, Suggestions, feedback and response for Focus group discussion with youth

Name of Person making the contribution (e.g. comment or question)	Question, Comment, Suggestion	Feedback/Responses by project team	Response by agency on how feedback will be used or acted upon
Jeremiah Lenagina	We look forward to employment opportunities for the community members	Noted	-

Photo of the Focus group discussion with the Youth

c) Elders/men discussions

Samuel explained to the men that it was important to hold separate discussion so that the community get enough opportunities to be informed of the project and be free to ask questions. He told the men that public participation in projects is crucial as it helps build consensus and enables people to make informed choices regarding projects. He repeated the agenda of the visit by the officers was to; undertake an environmental and social screening of the proposed site to check suitability in terms of environmental, technical, social and health requirements. The second objective was to undertake community engagement to sensitize the community on the project. The third objective was to explain the land requirements for the project, rights of the community in regard to the project and the need for a project grievance redress mechanism. Samuel then gave a summary of the project in terms of its positive and negative impacts and their mitigation measures and the requirements for identifying land for the project. He also explained the need for the men to select representatives to the project committee who would represent their views/issues to the committee for redress. Further, the men were educated on how they can take up economic opportunities that will raise during project implementation.

Gender based violence issues were also discussed including; forms of GBV, rationale for addressing GBV, ways in which a project can worsen existing GBV risks or create new risks, the need to report and document any complaints against workers and report incidences of GBV. The men were told to be more vigilant to

ensure young girls do not fall prey to GBV incidences. All the Men were in agreement for the project to be brought to the area

The elders said they welcome the project and that they had already agreed on the portion of land where the project would be implemented. The discussion was then opened up for questions.

Plenary Session

Question, Suggestions, feedback and response for focus group discussion with Men

Name of Person making the contribution (e.g. comment or question)	Question, Comment, Suggestion	Feedback/Responses by project team	Response by agency on how feedback will be used or acted upon
No questions were raised			

Photo of Focus Group discussion with the Men

Minute 10 /KOSAP/2021: Environmental and social screening of the site

The project team and the community members proceeded to site for the actual screening of the identified site. The site was found suitable for the mini-grid.

CONCLUSION

1. The community welcomed the project and is in support of the project.
2. No residential houses and no economic activity or business premises were on site during the site screening
3. Land identified belong to the community and is communally owned, representatives of the community signed the land forms as a sign of commitment
4. There will be no physical or economic displacement because the site identified was already set aside for community social projects

5. In terms of consultations one public meeting was held with the residents of Gatab. In addition, focus group discussions were held separately with the men, the women and the youth to enhance the stakeholder engagements. The engagements were fruitful and the community identified land for the proposed Mini-grid.
6. The need for a grievance redress mechanism (GRM) was explained to the community including the need and roles of a grievance redress committee (GRC). A GRC was chosen with representatives from the men, women and youth.
7. The need for advance possession of the land as the process of survey and registration progresses was explained to the community and the community agreed to the request.
8. It was explained to the community that it will be their responsibility to pay for connection to power, wiring of their premises and to pay for power consumed
9. The community's priority project as compensation in kind was spread across the three sectors in order of priority as follows; Mindray hematology analyzer for the local dispensary, repairs of the water network and repairs at Gatab primary school-general repairs (replacement of 5 doors, lockable drawers for all classes, replacement of window panes and paintings)

The meeting ended at 3.40 p.m.

Recommendations

1. Environmental Social Impact Assessment for the identified site can be progressed.

Appendix 3: List of Attendance for the Land Acquisition Meeting

REPUBLIC OF KENYA

MINISTRY OF ENERGY

MARSABIT

KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP).
ENVIRONMENTAL, SOCIAL SCREENING AND LAND ACQUISITION FOR PROPOSED SOLAR MINI-GRID FOR COMMUNITY FACILITIES, ENTERPRISES, AND HOUSEHOLDS.

SITE GATAB MINIGRID

MEETING VENUE GATAB CENTRE

DATE 21/10/2021

LIST OF ATTENDANCE/PARTICIPANTS LIST

No	NAME	Identification number – ID No	Mobile No.	Gender Male/Female	Village	Sign
1.	Timothy Lokkidong	37383421	0757924709	M	Gatab	
2.	Abel Lenaikor	38779731	0768229335	M	Gatab	
3.	DANIEL LENGARITE	23414550	0742749040	M	GATAB	
4.	SAMUEL LOKOKOTE	29206636	0701635527	M	Gatab	
5.	Sonni Loparsanti	D632862	0703379154	M	Gatab	
6.	Matthew Leshuwo Lewaw	27502883	0790690497	M	Gatab	
7.	AMBROSE TOROME	23245871	0721784641	M	KPS	
8.	DAVID TOMMI	13020737	0708504389	M	KPS	
9.	DANIEL MUIRINDI	33228193	0702072238	M	KPS	
10.	DAVID MBURU	31634270	0115979053	M	K.PS	
11.	SARWNYE LEKALDERO	29912910	0762243984	M	Gatab	
12.	Sammy Galbile		0718213010	M	Gatab	
13.	Boniface lengotiap	39336806	0757962987	M	Gatab	
14.	ADAN HUSIEN	27698825	0707222842 ~~0707229222~~	M	Gatab	
15.	Lesingadale Maxcimal	N/A	0797681465	M	Gatab	
16.	LOIRUTAT LENGOYIAP	N/A	0759810417	M	Gatab	
17.	Evans Lengoyiap	N/A	0706169086	M	Gatab	
18.	Lkapuken Lenawamuro	N/A	0710839828	M	Gatab	
19.	Manaze Leparsanty	N/A	0711894394	M	Gatab	

20.	Loibole Lengoyiap.	33591429	0796180372 [illegible]	m	Gatab.	
21.	Katelo Lekoper			m	mborraot	
22.	Lporania Lepargonty			m	Luai	
23.	Mohamed Loorpiche	26166616	0793257673	M	Luki	
24.	Lemirian Lengodo			m	Gatab.	
25.	JOSHUA Lenawamuro		0764470401	m	Gatab	
26.	SAMMY LEPALAT	0631962	0727 094132	M	LAMANGUR	
27.	Ltabayan Leyamyan		07936800[illegible]	m	Gatab	
28.	JOHN LOKURIA	0061269	07014919[illegible]	M	Gatab	
29.	Lenatamay.			m	Luai	
30.	Lofusai Lesurkai	3040577	0712912964	m	Gatab.	
31.	Nasubonya Lomiti			m	Gatab.	
32.	Nkibara Lepotsanty			m	Gatab	
33.	[illegible]				[illegible]	

34.	SHUKAI LAJAPICHO	Q3767223	0729924437	M	Gatab	
35.	James Leparmits	0635637	0725771833	m	Gatab	
36.	SHADRACK LENGOYIAP	70752763	0714800436	M	Gatab	
37.	LTUMOSON. B. LEMUNI	23414833	0710734248	M	MT. KULAL	
38.	Nchikuti Lekumale	20534699	0712949936	m	Gatab.	
39.	Moses Lenatamay.	N/A	0795938770	m	Luai	
40.	Peter Leparsanti	23788588	0719268848	m	Gatab	
41.	Moses Lepotsanty.	35306607	0741292113	m	Gatab	
42.	Lachangai Lokuria	N/A	07[illegible]109928	m	Gatab	
43.	Amos Lengeene			m	Gatab	
44.	Lochenu Lekoper			m	Losikirian	
45.	Ilmuate Lemanto			m	Luai	
46.	MOSIAMBA Peter	12757080	0728709637	m	Gatab	
47.	Mukasi Lesuper			m	Luai	

48.	Wilson Lekaro			M	Lesoy	
49.	Saikon Lemolopeldo		070739058?	M	Loborranet	
50.	MIKE LENAIKOI	32260469	0706307780	M	Gotab	
51.	Matthew -L Lengees	23396837	0724468462	M	Lmagor	
52.	LORNA G. Lenaitukusho	27693010	0717515213	F	LGOON	
53.	Nkirasion Lekaitogo		0705114585	F	Lgoon	
54.	NJELLY LEPARSANTI	12757009	0728361958	F	Lgoon	
55.	PENINA LERUK	24754983	0725336482	F	Lgoon	
56.	NTIMELION LELEMARE	4198723	0757243610	F	Kiwanja	
57.	Josephine M. Lochere	22468373	0725589875	F	Gatab Chini	
58.	Naipima Galgidale			F	Gatab Chini	
59.	David L Parsanty	12753830	0707204084	M	Gatab	
60.	Ntikayon Lemosor			F	Gatab	
61.	Rael Salaloani Leparsanty.	0635638	0727801264	F	Gatab	

62.	SAina Haman		0794026653	F	Gatab.	
63.	SARAH EISIMFOFEN	25278311	0796204710	F	Gatab.	
64.	Lucy Lopelalai					
65.	Sampayon leamno	32246228	071227410	F	Gatab	
66.	Dorcas ledaany	32542509	0795822782	F	Gatab	
67.	SELII Leyomyam			F	Gatab	
68.	DESI Galgitele	2581906	0705114945?	F	Gatab.	
69.	Moriiti Leparsanty.			F	Gatab	
70.	Natitore Leparsanty.	28466680	0700517082	F	Loai	
71.	Rupeyon lelekumani	23448682		F	Gatab	
72.	Durmuge lengoyiap	23418682	0727801004	F	Gatab	
73.	Selina Kamua			F	Lossy	
74.	Naliwan Lengoyiap.			F	2027?	
75.	Naomi Humurua Leparsanti	25256218	0743363112	F	Gatab	

76.	Soson Lenatamany		[illegible]	F	Gatab.	[signature]
77.	Nteperian Cu'yo		0714724129	F	Gatab.	[signature]
78.	Naimosi Lentoro			F	Gatab.	[thumbprint]
79.	Fatuma Lesapicho			F	Gatab.	[thumbprint]
80.	Eliza Lengeene			F	Gatab.	[thumbprint]
81.	Salalai Lesagi			F	Gatab.	[thumbprint]
82.	Mayana Lemaloda			F	Gatab.	[thumbprint]
83.	Ntimiti Lengorite			F	Lngoori	[thumbprint]
84.	Rangais Ledany			F	Mbrama	[thumbprint]
85.	NDeyoo Lewenit			F	Gatab.	[thumbprint]
86.	Doroso Leporsanty			F	Gatab	[thumbprint]
87.	Nkichipan Lewano			F	Gatab	[thumbprint]
88.	Jane Lekumalo.			F	Lngoon	[thumbprint]
89.	Juckline Leporsanty	35546829	0757257615	F	Gatab	[thumbprint]

90.	Santorwan Leporsanty			F	Gatab	[thumbprint]
91.	Stella Lekuria			F	Gatab	[signature]
92.	Nakisan Lepile			F	Gatab	[thumbprint]
93.	Mbeapi Lepalaiyo			F	Gatab.	[thumbprint]
94.	Nairochi Lepile			F	Gatab.	[thumbprint]
95.	Gesio Sahado	38938513	0741382218	F	Gatap	[signature]
96.	Andrew Lemosor	37492670	0757239224	M	Gatab	[signature]
97.	Ltalhamwa Wamuro	24205105	0741709428	M	Gatab	[signature]
98.	Sikawon Lengoyiap		[illegible]	M	Loony	[signature]
99.	Gideon [illegible] [illegible]	2977893	[illegible]	M		[signature]
100	Damaris Leparsanty	22814638	072796277	F	Gatab	[signature]
101	Jacob Chepkwony	22369704	0722945719	M	MOE	[signature]
102	Samuel Mbugua	22268101	0720985634	M	KPLC	[signature]
103						

104	ROSELINE NJERU		0720057017	F	KPIC	[illegible]
105	Suleyman Garweile	—	-	—	County	[illegible]
106	Ramat Ibrae	27882027	0726171720	m	County	[illegible]
107	Rebecca Mumic	13077776	0723472250	F	Mar	[illegible]
108						
109						
110						
111						

List of Attendance for the Men Focus Group Discussion

REPUBLIC OF KENYA

MINISTRY OF ENERGY

KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP).
ENVIRONMENTAL, SOCIAL SCREENING AND LAND ACQUISITION FOR PROPOSED SOLAR MINI-GRID FOR COMMUNITY FACILITIES, ENTERPRISES, AND HOUSEHOLDS.

SITE: Gatab Minigrid

MEETING VENUE: Gatab/Mt. kulal minigrid

DATE: 21/10/2021

LIST OF ATTENDANCE/PARTICIPANTS LIST - FGD MEN

No	NAME	Identification number – ID No	Mobile No.	Gender Male/Female	Village	Sign
1.	James Leparsanti	0635637	0725061683	M	Gatab	[illegible]
2.	NGARDEI LENGARITE	8205821	0712578263	M	GATAB	[illegible]
3.	Mitchell L. Lengeno	23316832	0724168162	M	Lmongoi	[illegible]
4.	Johana Londalach	0701149	8553-27	M	LoiD	Johana
5.	Joshua Lesiten Lengoyapo	~~0702064127~~ 10903088	07026437171	m	Loskunuti	Joshua
6.	Poikan Lentawa	[illegible]	0791215675	m	Gatab	[illegible]
7.	Sigakwe Leparsanti	8205823	0708576088	M	Gatab	
8.	Lekonai Lengodo	20859619	0768923400	m	Gatab	[illegible]
9.	Sammy Lepalat	0631960	0727094130	m	Gatab	[illegible]
10.	Mpereyo Lemadada	25055906	0729287651	m	Lesikunuti	[illegible]
11.	Lchokuti Legumata	20584699	0712949834	m	Gatab	
12.	Lparanda Leparsanti			m	Gatab	
13.	Lkatelo Lekoper			m	Mbanat	
14.	LGulayon Leparsanti					
15.	Gabriel wamuro	21141603	0711839828	m	Gatab	[illegible]
16.	SHUKRI LASAPICETO	23767227	0729924433	M	Gatab	[illegible]
17.	Saikon Lemotopodo	24245828		m	Gatab	[illegible]
18.	Peter Leparsanti	2378823	0719261	M	Gatab	[illegible]
19.	Sonni Leparsanti	0632862	0703379154	M	Gatab	[illegible]

20.	Lmolasi Lesupor			M	Gafah	
21.	MESIAMBA Peter			M	Watch	
22.	Ramat Ibrae	27882047	0726171720	M	County	
23.	Samuel Mbugua	22268101	0720758514	M	KPLC	
24.						
25.						
26.						
27.						
28.						
29.						

List of Attendance for the Women Focus Group Discussions

REPUBLIC OF KENYA

MINISTRY OF ENERGY

MARSABIT

KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP).
ENVIRONMENTAL, SOCIAL SCREENING AND LAND ACQUISITION FOR PROPOSED SOLAR MINI-GRID FOR COMMUNITY FACILITIES, ENTERPRISES, AND HOUSEHOLDS.

SITE: GATAB MINIGRID

MEETING VENUE: CHIEF BARAZA GROUND

DATE: 21/10/2021

LIST OF ATTENDANCE/PARTICIPANTS LIST - FGD WOMEN

No	NAME	Identification number – ID No	Mobile No.	Gender Male/Female	Village	Sign
1.	Mtala Leyaniyam		0793680000	F	Losikiriki	[signature]
2.	Juliana Lenkoyap	20585489	0717517175	F	Losikirich	[signature]
3.	Echa Lenaikoi	12757016	0715825809	F	Gatap	[signature]
4.	Sankilan Lerama	29200520		F	Gatar	[signature]
5.	Derasa Leparsanb			F	Gatar	[signature]

6.	Stella Lolomuria			F	Gatap	[signature]
7.	Narochi Lepile			F	Gatap	NR
8.	Valentina Lengoyiap			F	Gatap	[signature]
9.	Gesio Sahado			F	Gatap	G S
10.	Sakalayai Lemadada			F	Gatap	[signature]
11.	Mayana Lemadada			F	Gatap	M S
12.	Santapwan Leparsanti		0759287617	F	Gatap	[signature]
13.	Jackline Leparsanty		0759287005	F	Gatab	[signature]
14.	Ruth Leparsanti	0635638	0727822064	F	Gatap	[signature]
15.	Eliza Lenkiyene			F	Gatap	[signature]
16.	Fatuma Losapicho			F	Gatap	E L
17.	Nalmasi Lentoroyo			F	Gatap	N L
18.	Naluwan Lenkoyap			F	Gatap	[signature]
19.	Celina Ogom			F	Gatap	[signature]

20.	Rankasi	Ledany			F	Gatap	~~A-L~~
21.	Ndumume	Leparsanti			F	Gatap	~~N-P~~
22.	Ndeyo	Lekeniti			F	Gatap	
23.	MPurdan	Leparsanti			F	Gatap	
24.	Sampayan	Learamo			F	Gatap	
25.	Saina	Gaigithele			F	Gatap	
26.	Lililayan	mosor			F	Gatap	
27.	Risina	Ledany			F	Gatap	
28.	Nkirasian	lenatanga			F	Gatap	
29.	Lona	Lenatukucha			F	Gatap	
30.	Penina	Leruk			F	Gatap	
31.	Sarah	Lelerai			F	Gatap	
32.	Lucy	Lolpesalai			F	Gatap	
33.	Desi	Gaigithele			F	Gatap	

34.	Naipina	Gaigithele			F	Gatap	
35.	Nalangu	Leparsanti			F	Gatap	
36.	Ntiani	Lolokuri			F	Gatap	
37.	Lucy	Lokupuny			F	Gatap	
38.	NJeliy	Leparsanti			F	Gatap	
39.	Josephine	Kochere			F	Gatap	
40.	Daniels	Leparsanti			F	Gatap	
41.	Rumperan	Lelukumeni			F	Gatap	
42.	ROSELINE	NJERU		0722571017	F	KPIC	
43.							
44.							
45.							

List of Attendance for the Youth Focus Group Discussion

REPUBLIC OF KENYA

MINISTRY OF ENERGY

KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP).
ENVIRONMENTAL, SOCIAL SCREENING AND LAND ACQUISITION FOR PROPOSED SOLAR MINI-GRID FOR COMMUNITY FACILITIES, ENTERPRISES, AND HOUSEHOLDS.

SITE: GATAB (MT. KULAL)

MEETING VENUE: GATAB (MT. KULAL)

DATE: 21/10/2021

LIST OF ATTENDANCE/PARTICIPANTS LIST - FGD YOUTH

No	NAME	Identification number – ID No	Mobile No.	Gender Male/Female	Village	Sign
1.	Andreul Lemosok	37492670	0757229974	M	Gatab	[signature]
2.	Abel Leminin Lenaikoi	38779731	0768229335	M	Gatab	[signature]
3.	Moses Leparsanty	35306607	0741892113	M	Gatab	[signature]
4.	Evans Lengo-iiap	N/A	0706169056	M	Gatab	[signature]
5.	William Lolokunen	N/A	0741105927	M	Gatab	[signature]
6.	Mattew Lolokiro	38687723	0710523424	M	GATAB	[signature]
7.	Adesh husian	27693325	0707222343	M	Gatab	[signature]
8.	Philip Lenaarudu	N/A	0789810417	M	Gatab	[signature]
9.	Leikuban Lengojeap	N/A	0798564995	M	Luai	[signature]
10.	Apuyo Lingedo	N/A	N/A	M	Gatab	[signature]
11.	Labaru Lenawamuro	N/A	N/A	M	Gatab	[signature]
12.	Lokore Lengodo	N/A	0796180348	M	Gatab	[signature]
13.	Ntiaki Lengoriap		0727415609	M	Gatab	[signature]
14.	James Lenyumunai	32246277	0713872318	M	Gatab	[signature]
15.	Boniface Lengotiap	39336806	0757162987	M	Gatab	[signature]
16.	Nakorum Lengires		0702780146	M	Gatab	[thumbprint]
17.	Ravasi Lekoke	29893381	0769073370	M	GatAb	[signature]
18.	Timothy Lokidong	37383421	0757303709	M	Gatab	[signature]
19.						

20.	Reuben lelayon learamo	11503005	0725545213	M	Gateb	[signature]
21.	Gideon Gasile Jalle	29752031	0716874456	m	KAG	[signature]
22.	Suleyman Garawahle	—	—	—	County	[signature]
23.	Jacob Chepkurong	025697014	0722995714	M	MOE	[signature]
24.	Rebecca Muniu	11307776	0723422575	F	MOC	[signature]
25.						
26.						
27.						
28.						

Appendix 4: Summary of Community Consultation meeting during ESIA Public Participation

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ISO 9001:2015 CERTIFIED

MINUTES OF EIA CONSULTATION HELD AT ..... GATAB. .....

Date: 19/1/2022	**Time:** 3:15 PM
Venue: Mt. Kulal, Gatab.	

PRESENT

List is attached

AGENDA

1. Introduction
2. Opening Remarks
3. Remarks by the consultant
4. Concerns/ Issues from participants
5. Responses given by the consultant
6. Project Acceptance/Rejection of the proposed project
7. Adjournment

Item No	Description	Action by
Min 1/22	**Introduction**	
	- Meeting was called to order by the area Chief at 3:15 pm. - One of the village Elders opened the Meeting with a Prayer. - The area Chief proceeded to introduce the Consultancy team and welcomed the Members to the Meeting.	
Min 2/22	**Opening Remarks**	
	- The Consultants led by Mr Daniel thanked the Members for their attendance and introduced the team of experts, the representatives from the Ministry of Energy & Marsabit County Renewable energy officer. - The CREO from Marsabit went ahead and thanked the Members and clearly described the agenda of the Meeting. - He went ahead and gave a brief description of the project.	Mr. Daniel Centric Africa Ltd. Mr. Jalle-CREO Marsabit County.

CHIEF MT. K... LOCA...
LOIYANGALA... SUB-CO...
P.O. BOX 351-60500, MAR... BIT

Min 3/22	Remarks by the Consultant	
	(CREO Marsabit County), Mr. Jalle gave a description of the proposed project, its Sub Components and the Scope of the project. - The project will involve power/electricity generation from an installed Solar power Minigrid. - The power will be distributed within a radius of 2Km. - Connection charges from the pole will be 1000/= fo. each household or Structure. - Charges accrued from the use will be dependent on the Consumer usage rate. - Household wiring will be ~~done~~ the responsibility of the owners. It is advised that an electric Specialist be engaged during wiring.	CREO Marsabit County Mr Jalle
	Mr Daniel informed the Members of the EOIA Process and how it relates to the proposed Project. He explained the NEMA guidlines as Stipulated under the Environmental Impact assessment and audit) Regulation 2003 that requires a Public participation before Commencing any Project. - The Consultant gave a brief presentation on the anticipated positive and Negative impacts. - He further gave a Clear description of the Mitigation Measures to be adhered to during the project Cycle by the Contractor. - The Contractor Shall be expected to Conform to these Mitigation Measures by ensuring proper Management of the Environment - ~~and~~ and Social factors.	Mr Daniel Environmentalist Centric Africa
	Positive impacts - Improved lighting - Improved Security - Job opportunities - Business opportunities - Improved learning experience in Schools. Negative impacts - Air pollution from the backup generator - Cultural Changes - Increase waste generation. - Health & Safety Concerns	

CHIEF MT. KULAL LOCATION
LOIYANGALANI SUB-COUNTY
P.O. BOX 351-60500, MARSABIT
Date.....

Min 4/22	Concerns / Issues from participants	
Q1	Enquired about the Changes to be accrued during Electricity Consumption and installation.	Mr Sammy
Q2.	Enquired about the ~~es~~ Cost of using the electricity.	Mr. Lendawa
Q3.	What will be the price per unit Charge of electricity Consumed.	Mr. Daniel
Q4.	Enquired about the Magnitude of the generator impacts on the environment in regards to air pollution through emmission	Mr Sammy.
Q5	Are the Solar panels to be used at the Mini grids be able to withstand / run / generate power / electricity during ~~a~~ unfavourable weather Conditions i.e rainy seasons, Cloud Cover.	Mr Daniel
Comments & Suggestions.	- Community Sensitization and education in regards to the project benefits and the use of electricity should be done / Considered through the project Cycle. - Village Elders should be involved all through the project implementation Cycle. -	

Page 3 of 5

CHIEF MT. ... LOCATION
LOIYANGA... ...-COUNTY
P.O. BOX 351-... ..., MARSABIT
Date....

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Min 5/22	Responses given by the consultant	
Q1 Q2	Electricity distribution will be done at a radius of 2 Km from the Source. A Connection Charge of 1000/= will be required for each Household or Structure.	Mr Peter Mameno MoE Rep.
Q3	→ Charges of Electric Consumption will be at 18-19 KWh. Charges however will be dependent on the rate of Consumer usage..	Mr Jalle. CREO Marsabit County.
Q4.	The emmissions from the generator will be negligable as the generator will be only used as backup during limited electricity Supply and unfavorable weather Conditions. Since the backup generator will not be running at all times, the emmission impacts on the environment will be Negligible and not Significant	Mr Dawe. Environmentalist Centric Africa..

Page 4 of 5

CHIEF MT. KULAL LOCATION
LOIYANGALANI SUB-COUNTY
P.O. BOX 331-60500, MARSABIT

Min 6/22	**Acceptance/Rejection of the project**	
	All the Members demonstrated acceptance of the project	All Members.
Min 7/22	**Adjournment**	
	The Meeting was adjourned at 5:20 pm	

Minutes Prepared by: Mathews Kasiwa Mutua..... Date.....19/1/2022

Position ....Environmentalist.....

Signature .....

Minutes Confirmed by: HOSEA L. AEMUNI..... Date.....19/1/2022

Position ....Chief-Mt-Kulal.....

Signature .....

CHIEF MT. KULAL LOCATION
LOIYANGALANI SUB-COUNTY
P.O. BOX 251-60500, MARSABIT
Date.....

Appendix 5: List of Attendance for the ESIA Public Participation Meeting

REREC Kenya Power

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP) FOR UNDERSERVED COUNTIES, MARSABIT COUNTY

Venue: .....

Date: 20/01/2022

Time: 10.00am

#	Name	Position/Institution/ Location/Village	Phone No.	
1.	Raphael A. Gonne	Ass. chief Galas	0700142315	
2.	ALI WARIO GODANA	GALAS	0723828548	ALI WARIO
3.	GODANA Gonche Duffu	GALAS	0790588283	
4.	Mdu KUNGTE GODANA	GALAS	–	
5.	GONICHA ROBA DOYO	GALAS	–	
6.	DOTI ELEMA TASI	GALAS	–	
7.	BARILLE ALI	GALAS	0702626489	
8.	LUKA DENGE WARIO	GALAS	0792911157	
9.	BORU DABELLO ADANO	GALAS	0704915785	
10.	BAICAYE GUYO GECHA	GALAS	0705258432	

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REREC Kenya Power

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP) FOR UNDERSERVED COUNTIES, MARSABIT COUNTY

Venue:

Date: 20/01/2022

Time: 10.00 Am

#	Name	Position/Institution/ Location/Village	Phone No.	
1.	DAUDI DIDA	GALAS		Daudi Di
2.	Gonole GALGALLO	GALAS		
3.	BOYA KOSSO	GALAS		
4.	KONCHORO JILLO	GALAS	0726581631	
5.	BARAKU ELEMA	GALAS		
6.	BORU ARIO ABANE	GALAS		
7.	SHAMO SOLE	GALAS	0714024843	
8.	ELEMA ARERO GATHE	GALAS	0718203518	
9.	ISAKU DAMBALA	GALAS	0713084804	
10.	Barille katelo Galgallo	GALAS	0745489308	

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REREC

Kenya Power

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP) FOR UNDERSERVED COUNTIES, MARSABIT COUNTY

Venue:

Date: 28/01/2022

Time: 10:00 AM

#	Name	Position/Institution/ Location/Village	Phone No.	
1.	Kunchoiro Dambalia	Galas	0768444322	
2.	Guyo Boru Abio	Galas	0790587421	
3.	Isacko Jarso Robu	Galas	0706241767	
4.	Boru Mamo Yara	Galas	0701456306	
5.	Abudba Shama Boru	Galas	0707278739	
6.	Guyo Shama	Galas	0710139428	
7.	Adano Guyo	Galas	0706275727	
8.	Halkano Abio	Galas	0748149433	
9.	Halkano Dida	Galas	0727790188	
10.	Guyo Sora	Galas	—	

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REREC

Kenya Power

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FOR THE PROPOSED KENYA OFF-GRID SOLAR ACCESS PROJECT (KOSAP) FOR UNDERSERVED COUNTIES, MARSABIT COUNTY

Venue:

Date: 20/01/2022

Time: 10:00 Am

#	Name	Position/Institution/ Location/Village	Phone No.	
1.	Isacko Shama Ushu	Galas	0799494118	
2.	ROBA MANO ARANKESA	Galas		
3.	Jillo koto Galgallo	Galas	0759814402	
4.	ROBA GUDANA	GALAS	0746641013	
5.	BATI GUDANA	GALAS	0792663968	
6.	DARO DIDA	GALAS	0707463709	
7.	Hugo Korchura	GALAS		
8.	SIMPIRE DIKA	Galas	0748352008	
9.	ARBE Shartamo	Galas	0713389341	
10.	BULKE WARIO	GALAS	0792665632	

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Appendix 6: Lead Expert's Practicing License

FORM 7 (r.18(3))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/ERPL/18163

Application Reference No: NEMA/EIA/EL/23329

M/S **Norken International Limited**
(individual or firm) of address
P.O. Box 9882 - 00100 NAIROBI

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Firm of Experts** registration number **0181**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: 12/30/2022 Expiry Date: **12/31/2023**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.

ISO 9001:2015 Certified

FORM 7 (r.19(2))

NATIONAL ENVIRONMENT MANAGEMENT AUTHORITY(NEMA)

THE ENVIRONMENTAL MANAGEMENT AND CO-ORDINATION ACT

ENVIRONMENTAL IMPACT ASSESSMENT/AUDIT (EIA/EA) PRACTICING LICENSE

License No : NEMA/EIA/EBPL/18279

Application Reference No: NEMA/EIA/EL/23951

M/S **Isaiah Kegora**
(Individual or firm) of address
P.O. Box 860 - 20200 Kericho

is licensed to practice in the capacity of a (Lead Expert/Associate Expert/Firm of Experts) **Lead Expert General**

registration number **1893**

in accordance with the provision of the Environmental Management and Coordination Act Cap 387.

Issued Date: **12/30/2022** Expiry Date: **12/31/2023**

Signature.....

(Seal)
Director General
The National Environment Management Authority

P.T.O.