(DRAFT)

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

FOR

NIGERIA ELECTRIFICATION PROJECT (NEP)

- Solar Hybrid Mini grids
- Standalone Solar Systems
- Energizing Education Program

CONSULTATION DRAFT

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ACRONYMS AND ABBREVIATIONS

AEAM	Adaptive Environmental Assessment and Management
AIDS	Acquired Immune Deficiency Syndrome
AP	Affected Person
ARAR	Applicable or Relevant and Appropriate Requirements
CBO	Community Based Organizations
CO	Cleaner Operation
DDI	Diversity and Disaster Initiative
EA	Environmental Assessment
EEP	Energizing Education Program
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
EMSP	Environmental and Social Management Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESSF	Environmental and Social Screening Form
FGD	Focused Group Discussions
FME/FMEnv	Federal Ministry of Environment
FMPW&H	Federal Ministry of Power Works & Housing
FMWR	Federal Ministry of Water Resources
GIS	Geographic Information Systems
GRC	Grievance Redress Committee
GRM	Grievance Re-dress Mechanism
HAP/HMP	Health Action Plan/Health Management Plan
HAZCOM	Hazard Communication Programs
HIA	Health Impact Assessment
HIV	Human Immunodeficiency Virus
HSE	Health Safety and Environment
IDA	International Development Association
IFC	International Finance Corporation
ILO	International Labour Organization
IMM	Impact Mitigation and Monitoring
IMT	Institute of Management and Technology
IPP	Indigenous Peoples Plan
IPPF	Indigenous Peoples Planning Framework
INDC	Intended Nationally Determined Contributions
ITC	Instruction to Consultants
JHA	Job Hazard Analysis
LGA	Local Government Area
LOI	Letter of Invitation
MOUAU	Michael Okpara University of Agriculture Umudike
M&E	Monitoring and Evaluation
MDA	Ministry Department and Agencies
MSDS	Material Safety Data Sheets
PMU	Project Management Unit
NGO	Non-Governmental Organization

NERC	National Electricity Regulatory Commission
NDA	National Defense Academy
NPE	National Policy on Environment
OHS	Occupational Health and Safety
OP/BP	Operational Procedures/Bank Procedures
PAPs	Project Affected Persons
PC	Pollution Control
PPE	Personal Protection Equipment
PSRP	Power Sector Recovery Program
RAP	Resettlement Action Plan
REA	Rural Electrification Agency
TOR	Terms of Reference
TCN	Transmission Company of Nigeria
RE	Rural Electrification
UniAbuja	University of Abuja
UniCal	University of Calabar
UniMaid	University of Maiduguri
WB	World Bank

EXECUTIVE SUMMARY

Project Background

The Federal Executive Council approved the Power Sector Reform Program (PSRP) on 22 March 2017. The Federal Government of Nigeria (FGN) seeks to increase electricity access in remote, low density and traditionally underserved areas of the country through the Rural Electrification Agency (REA). The Nigeria Electrification Project (NEP) directly promotes these objectives, and will provide electricity access to serve households, enterprises, community facilities, and small businesses. While the project is technology neutral, it is expected that most of the power under the project will be generated by solar technology.

The project is nationwide in scope. The project aims to provide electricity to households, firms and public institutions in a least-cost and timely manner. Most of the project's funds will be used to stimulate private construction and operation of off-grid electricity supply systems by providing financial incentives and technical support. Some of the project funds will be used to acquire, by competitive tender, supply systems for selected Federal universities. The project will also co-finance Technical Assistance.

The project has three distinct and different investment components, with IDA fund allocation as presented in Table 1.

Table 1: NEP project scale and components

Component	IDA Allocation (US$ million)
Solar Hybrid Mini grids for Rural Economic Development	150
Standalone Solar Systems for Homes, Enterprises and Farms	75
Power Systems for Public Universities and Teaching Hospitals	105
Implementation Support and Technical Assistance	20
Total	**350**

- **Component 1 Solar Hybrid Mini Grids for Rural Economic Development** will provide subsidies and/or performance-based grants to private mini grid developers to build solar hybrid mini grids in unserved and underserved rural areas.
- **Component 2 Standalone Solar Systems for Homes, Enterprises and Farms** will provide market-based incentives to standalone private sector solar system providers to install solar home systems (SHS) for underserved households and SMEs in dedicated areas.
- **Component 3 Power Systems for Public Universities and Teaching Hospitals**[1] will support the construction and operations of solar mini-gird for beneficiary universities and teaching hospitals. This component will be implemented by REA in collaboration with universities. A contractor(s) will be engaged directly by REA to construct the power systems under this component, which will then be operated by the universities.

[1] Nigeria's Federal Energizing Education program's scope is 37 federal universities and 7 associated university teaching hospitals across the country. World Bank will support a subset of this program, which is already under implementation by REA.

Due to the remoteness and dispersed nature of the target populations, communities and their socio-economic status, the project will address the high costs of provision of infrastructure services, low ability to pay of potential users, and sustainability of service provision.

Therefore, sustainability of the proposed approach to expand energy access beyond the nationally owned power grid depends on two primary factors: institutional capacity of REA, and the involvement of the private sector. Moving forward, REA remains the primary institution enshrined in the law to carry out these activities.

Key Environmental and Social Risks and Impacts

The key E&S issues are limited in number. Further, their magnitude is mostly proportionate to the small size of subprojects. The identified risks are systemic and expected to manifest themselves frequently across components.

The specific identified environmental and social (E&S) risks for each project component are:

- **Component 1** supports construction and operation of a large number of rural mini grids by private developers. The expected key issues are: land acquisition associated with potential involuntary resettlement and/or economic displacement, and land use changes. possible voluntary land donation.[2] In the medium term, risks associated with disposal of lead-acid batteries and lithium batteries used in mini grids will present a challenge for the project's sustainability. Additional risks include stress on local water use and supply, construction impacts (including community and occupational health and safety), waste management (in addition to batteries) and bird mortality. All of these can become systemic risks, if not managed well.
- **Component 2** supports stand-alone solar home systems provided by private firms. The core issue with SHS is long-term implications of the increased number of the energy storage units (containing batteries). This impact requires a strategic solution through a program for battery disposal/recycling, in which SHS distributors play a role. Additional risks would include weak labor practices among SHS companies, such as possible use of child or forced labor, or inadequate occupational health and safety (OHS) practices.
- **Component 3** supports construction and operation of power systems for Nigerian universities and associated hospitals. The E&S impacts will be similar for Components 1 and 3, with the key difference being the predominant locations (rural areas for Component 1 and peri-urban areas for Component 3). Main E&S risks as water availability, OHS issues, land-related issues, e-waste management. Most of all, a major risk is expected to be encroachment on land that may be used for power systems that is allocated to universities and traditionally used by communities.

[2] Voluntary Land Donation (VLD) is open to abuse and coercion, as such, it should not be encouraged on this project except in instances where the donation meets the requirements set out in the VLD guidelines in the annex of this ESMF.

Purpose and Objectives of the Environmental and Social Management Framework

The Environmental and Social Management Framework (ESMF) clarifies E&S management policies, processes, and mitigation principles, organizational arrangements and design criteria to be applied to subprojects, which are to be prepared during project implementation by both REA and private sector companies participating in the project.

ESMF has these core objectives:

- To ensure that the implementation of the project, for which the exact locations of the subproject sites are not definitively identified at this stage, will be carried out in an environmentally and socially sustainable manner.
- To provide information about scope of adverse E&S risks and impacts expected during subproject planning, construction and operation; describe the approach to mitigation and monitoring actions to be taken; and cost implications.
- To clarify the roles and responsibilities of REA, private sector mini grid developers and operators for components 1 and 3, SHS distributors for component 2, and other stakeholders with regard to E&S due diligence, management of risks and impacts, and monitoring.
- To provide the project implementers with an E&S screening process and risk management procedures that will enable them to identify, assess and mitigate potential E&S impacts of subproject activities, including through the preparation of a site-specific Environmental and Social Impact Assessments (ESIA) and/ or Environmental and Social Management Plans (ESMP) where applicable.[3]

ESMF's provisions must be operationalized by including E&S processes in all relevant operating guidelines and other practical applications (e.g. electricity demand surveys, SHS questionnaire tools) for each component.

Applicable Environmental and Social Requirements

Applicable E&S requirements are comprised of the following (full description of the criteria is presented in Chapter 2):

a. Regulatory, Administrative and Legal Framework of Nigeria, including federal, state, and local legislation as well as international treaties, acts and conventions;

b. E&S Exclusion Criteria:

   - Exclusion Criteria for Mini-Gird and Power Generation Sites (applicable to component 1 and 3);
   - Exclusion Criteria for Min-Grid Developers, SHS Companies, and Contractors (applicable to all components);

c. World Banks Safeguard policies, including World Bank Group Environmental, Health, and Safety Guidelines.

[3] This will be necessary for components 1 and 3, but not component 2.

Institutional and Implementation Arrangements for E&S Risk Management

REA will provide overall coordination of the project and lead in the implementation of the project components, which will include overall responsibility for E&S due diligence and compliance monitoring. Specific arrangements and responsibilities for each component are as follows:

- Under **Component 1**, REA will establish operating guidelines[4] and specific construction requirements for site and developer selection, which include E&S aspects. Competent developers who apply for grants to support their activities for identification,[5] development, construction, and operation of mini grids across the country will have to indicate in their respective proposals how they intend to address E&S sustainability issues that could be associated with these activities. These selected companies will be responsible for putting in place a corporate Environmental and Social Management System (ESMS), satisfactory to REA, for implementing the E&S risk identification and management measures on the ground, to ensure subproject compliance with applicable E&S requirements as stated above.

- Under **Component 2**, REA will establish SHS company selection criteria and compliance clauses in the grant agreement, both of which will include E&S requirements. Qualified SHS companies will install units of SHS per the grant agreement and will be required to have an ESMS that will focus on key risks for this component (labor issues, battery/ waste management, and OHS issues).

- Under **Component 3**, REA will lead by coordinating the design of each system and hiring qualified contractors to conduct the construction. The contractors will need to comply with government and REA's requirements, including World Bank E&S requirements. Contractor bidding documents will be reviewed by the World Bank to ensure all required E&S clauses are incorporated. The beneficiary universities will provide land and all other support needed to enable construction and then operate the system once built. As the universities are expected to provide land for the project (however, REA will be responsible for compensation costs, where compensation and livelihood restoration are needed as well as be responsible for conducting stakeholder engagement).

REA's Project Management Unit (PMU) will oversee implementation of all E&S processes. REA will ensure that mini grid developers and SHS companies have adequate Environmental and Social Management Systems (ESMS), and Terms of Reference (TOR) for hiring the consultants/contractors and that other project documents are consistent with relevant country and World Bank requirements.

Furthermore, REA will supervise REA's zonal offices in the six geopolitical zones, which will support REA in managing and monitoring subprojects in their specific zones.

[4] There are two processes for E&S risk management for this component. One covers the minimum subsidy tender and the second covers the performance-based grant process for mini grid developers. Conceptually, these processes are very similar (with the difference in timing of certain steps) and thus are presented here as one.

[5] REA's involvement will primarily be through identification of demand for electrification in a range of communities for the minimum subsidy tender, but the actual mini grid sites within these communities will be identified by private sector developers. For the performance based grants, private sector developers will select both the community and the exact location of the proposed mini grids within those communities.

It is also REA's responsibility to provide leadership around strategic E&S issues, including strategy and engagement with private sector project participants to deal with out-of-use solar devices, such as batteries and other e-waste disposal and recycling.

Environmental and Social Risk Management Process

The successful implementation of the ESMF depends on the commitment of the private sector and related institutions, and the capacity within the institutions to apply or use the ESMF effectively, and the appropriate and functional institutional arrangements, among others. The details of institutional arrangements, the roles and responsibilities of the institutions that would be involved in the implementation of the ESMF, including primary and secondary institutions, are presented in Table 2 below for each project component.

Table 2. Roles and Responsibilities for E&S Risk Management by Project Component

Operational process steps (by component)	**Roles and responsibilities (REA and private sector)**		
	REA	**Private sector**	**Other key stakeholders**
Component 1: Solar Hybrid Mini grids for Rural Economic Development			
1. Setting applicable E&S requirements	Sets applicable E&S requirements and includes them in the grant application process for mini grid developers (including applying ***Exclusion Criteria for Min-Grid Developers, SHS Companies, and Contractors***) Requires mini grid developers to prepare Environmental and Social Management Systems (ESMS) to manage E&S risks across subprojects each developer will design and implement Integrates E&S requirements in legal agreements with mini grid developers	**Mini grid developers** incorporate applicable E&S requirements in their institutional ESMS	N/A
2. Screening for E&S risks and impacts	Validates / verifies developer process and risk categorization	Determine key E&S risks and impacts of individual mini grids, applies ***Exclusion Criteria for Mini-Gird and Power Generation Sites,*** and assign E&S	N/A

		risk category (I or II)[6]. *Any subproject requiring resettlement must be category I.* Submits list of category I sites to REA before construction for verification	
3. E&S due diligence and risk management	Conducts site visits for all category I mini grids and for a sample selection of category II mini grids	Prepare and integrate into design: • For category I, ESIA, as well as RAP and LRP as required • For category II, ESMP • For both, Stakeholder Engagement Plan (SEP) and grievance mechanism	Federal Ministry of Environment (FMoE) provides environmental clearance, as required
4. Monitoring	Conducts monitoring activities during mini grid construction and operation (sample, risk-based checks and site visits)	Conduct self-monitoring activities in line with their ESMS, maintain monitoring records	Communities participate in monitoring, as per SEP
5. Reporting	Reviews annual E&S reports from developers and conducts follow-ups Maintains records of developer screening, ESIAs, ESMPs, RAPs/ LRPs, other relevant documents	Prepare annual E&S reports to REA Report any incidents or accidents within several days of occurrence	N/A
6. Independent E&S audit	Engages independent E&S auditor	Provide all relevant reports and documents to the independent E&S auditor	Independent E&S auditor conducts annual review of developers' E&S performance
Component 2: Standalone Solar Systems for Homes, Enterprises and Farms			
1. SHS company grant application	Incorporates E&S requirements (ESMS, clean track E&S record, applies ***Exclusion Criteria for***	**SHS companies** prepare elements required for ESMS in	N/A

[6] Corresponding to high or medium / low risk.

	Min-Grid Developers, SHS Companies, and Contractors) into application and grant agreements Conducts review of SHS companies' ESMS	line with REA's requirements Submit statement of current practice for battery disposal/ recycling	
2. SHS company operations	Conducts sample performance checks, as needed	Remain in good compliance to all relevant requirements. Participate in battery disposal/recycle program	N/A
3. Monitoring	Oversees (under TOR for general monitoring of SHS companies) monitoring E&S compliance by independent company	Conduct self-monitoring, provide relevant documentation	N/A
Component 3: Power systems for public universities and teaching hospitals			
1. E&S impact assessment	Prepares ESIAs and ESMPs for university mini grid subprojects Applies ***Exclusion Criteria for Min-Grid Developers, SHS Companies, and Contractors***) Applies ***Exclusion Criteria for Mini-Gird and Power Generation Sites*** Integrates E&S clauses in bidding documents for contractors	**Contractors** engaged to construct university power systems integrate ESIA/ESMP requirements into their activities	FMoE provides environmental clearance
2. Resettlement planning	Prepares RAPs, as needed, and provide funds for compensation, as needed, at full replacement cost in line with World Bank requirements Maintains targeted stakeholder engagement efforts and a grievance mechanism, in addition to general grievance mechanism	Contractors ensure that works are not started until resettlement is completed	REA prepares and implement RAPs. and stakeholder engagement with support from the Universities
3. Monitoring	Monitors contractor E&S performance before and during construction	Self-monitors against ESMPs	**Universities** support REA in monitoring process
4. Independent	Engages independent E&S	Provide all relevant	**Universities**

E&S audit	auditor	reports and documents to the independent E&S auditor	will assist independent auditors by providing necessary documents and information

Environmental and Social Monitoring

REA has the primary responsibility to ensure safeguards specialist are trained, and, in turn, ensure WB safeguards are implemented for the projects. M&E is essential to inform corrective actions during implementation. Both the PMU and regional REA staff will monitor and evaluate the Project, collect and assess data and statistics on project outputs and outcomes to include in half-yearly progress reports to the PMU, which will submit same to the WB. They are also expected to use the Geographic Information System (GIS) to plan and monitor Project outputs and outcomes for both grid and off-grid electrification. It is expected that REA staff will be trained to develop high capacity for M&E. Moving forward, REA will develop the M&E framework, train staff, and establish a system for regular implementation progress reporting.

Key Gender Actions

Enhancing gender equality in energy delivery contributes to Nigeria's growth and poverty reduction strategies. The National Gender Policy of the Federal Ministry of Women Affairs and Social Development focuses on female empowerment and a commitment to gender mainstreaming. In addition, a Gender Focal Point has been established in the Federal Ministry of Power, Works and Housing, located within the Sustainable Development, Climate Change, Gender and Human Rights Unit, which ensures compliance with various measures, e.g., the National Gender Policy.

Based on the findings of the gender gap analysis and other country-level targets, the following key actions are a core part of the operation.

Component 1 (mini grids). Given how closely women's gendered responsibilities within the home are connected to their under- recognized role as energy consumers and producers (as well as energy entrepreneurs), mini grid operators have an incentive to enhance women's participation in mini- grid operations in order to increase sustainability of operations. Depending on the scope of the mini grid, entry points related to the business model will be explored by REA together with the WB and the mini grid operators, including the market analysis which can help collect sex-disaggregated data, the marketing and community outreach activities and training programs that will be delivered at various levels. Actions will also focus on potential win- win interventions that could be adopted, such as the provision of key social services such as lighting at markets or transport stops to increase safety.

Given the gender gaps identified in agro- processing activities, which is found particularly in sub- Saharan Africa, attention will be paid to enhancing the productive uses of energy. Applications of electricity in rural areas such as milling, grinding, carpentry, food processing,

phone charging and tailoring help save the time and labor burden of men and women. However, women's access to resources and community participation are usually more restricted and limited, and their agricultural contributions often go largely unrecognized.

In the studies related to component 1, specific focus will be placed on exploring how energy services can reduce the time and labor burden of women and ways to enhance and create income generating opportunities for women e.g. through entrepreneurship or enhanced productivity and agro-processing.

Component 2 (Standalone Solar Systems). The adoption, use, and scaling of clean technology solutions are central to the energy access challenge. In these processes, women need to be seen and engaged as valuable partners along the entire value chain—in the design, marketing, sales, and after-sale services.

Under the technical assistance activities for the project, solar providers that do not currently integrate gender considerations across their operations will be offered the opportunity to access earmarked grants to address gender gaps in job opportunities to both men and women in the areas of marketing, sales and after sales services for solar technologies. The technical assistance will also include looking at consumer finance issues and the overall supply chain to ensure equitable benefit sharing around decision making, skills and attainment of solar systems at the community level through solar provider's business approaches.

Developing Strategic Solutions for Systemic E&S Risks

Developing strategic solutions for E&S risk management is imperative for the success of the project. These are cross-cutting issues that go beyond the specific E&S due diligence of separate subprojects. Instead, they require strategic consideration and collaboration at the market/sector level.

The following issues have been identified as systemic and resources have been allocated to developing strategic solutions for them (as specified in the capacity building section below).

Battery storage, recycling, and disposal. Lack of good alternatives of current battery recycling and disposal options used for accumulating and storing energy is a long-term issue that requires sector-wide solutions. Lead-acid batteries, the most widely used type in this project, are expected to be phased out due to recent international initiatives and market forces; however this will not happen in Nigeria in the medium to long term. This will present an issue once batteries reach its recycling age. It has been estimated that should Nigeria reach its target of installing 30,000 MW of solar PV by 2030, about 280 million used batteries will end up needing disposal/ recycling (assuming battery life of 3 years). Lead-acid battery recycling facilities in Nigeria are currently uncertified and known to have unsafe occupational health and safety practices. REA will engage private sector developers in resolving this risk to develop a targeted strategy without compromising project efficiency.

Land issues and competing land use challenges for mini grids. Since solar systems require considerable land, this issue has emerged as one of the most prominent risks for the project. Beyond project-level solutions requiring careful screening and mitigation of the risks as part of E&S due diligence process at each subproject level, managing land-related risks might require solutions that enable a uniform/ standardized approach where both government and private sector come together and share responsibilities on this aspect.

Harmonization of E&S standards among private mini grid developers and their financiers. The Nigerian market, especially for SHS, has started to enjoy the entry of international companies and financiers, who have varying standards, including E&S standards they use (companies) or require as a condition of investment (financiers). On the other hand, local Nigerian companies may lag in this area. This can lead to inconsistencies of E&S risk management, so it would be important to ensure level playing field for all market participants. This can include encouraging both voluntary market-based solutions and streamlining of policy and regulatory environment, such as licensing, for sustainable solar power development. With respect to the latter, current regulatory environment for mini grid developments in terms of obtaining Ministry of Environment clearance may present a challenge due to lengthy processes that may not be efficient vis-à-vis the risk profile of mini grids which is oftentimes moderate to low. Engagement with relevant government agencies as part of the strategic discussion on E&S standards and processes will be an important contribution to project's success.

Capacity Building

For effective implementation of the ESMF, there will be a need for technical E&S capacity in REA, the implementing institution, as well as key private sector entities responsible for implementation of activities under project components. Implementers need to identify and understand the social and environmental issues. Appropriate understanding of the mechanisms for implementing the ESMF will need to be provided to the various stakeholders implementing REA projects. It will also be important to ensure that REA has sufficient capacity and systems for effective oversight of the fairly complex processes for E&S risk management with multiple parties involved.

To enhance the respective roles and collaboration of the relevant stakeholders, the following broad areas for (but not limited to) capacity building have been identified as deserving of attention for effective implementation of the ESMF.

- E&S management planning and monitoring systems. impact assessment tools, monitoring tools and activities;
- Preparation and verification of reporting;
- Public participation techniques and citizen engagement, including public awareness creation / educational techniques (on environmental, social and health issues);
- Addressing systemic E&S risks in in the Nigerian off-grid solar market through developing targeted strategic solutions.

Table 3 presents specific priority activities and budgets.

Table 3. E&S Capacity Building Activities

Activity	Description	Estimated Budget
1. Strengthening REA's E&S capacity	This will support developing REA's capacity to implement robust E&S risk management approach in	$600,000

	its activities, as well as enhance E&S benefits and opportunities (such as gender-related activities, green initiatives etc.). REA should be able to provide adequate training for its E&S staff, as well as other staff to whom this aspect is relevant. This support will also include budget for: (a) training of REA E&S staff (b) hiring an E&S firm to assist in building E&S systems for the project (c) conducting regular E&S monitoring activities (both directly by REA and third-party monitoring by a specialized NGO or other similar entity) (d) commissioning independent E&S audits.	
2. Design and implementation of a GRM	Design and implementation of a Grievance Redress Mechanism at REA level and integrating it at various levels of the project.	$400,000
3. Training and support to mini grid developers for ESMS development and implementation	This activity will build E&S capacity, as part of overall capacity strengthening, of existing mini grid developers and other private companies interested in entering the mini grid market to identify sites viable for mini grid development. They will be provided with training and support to develop and enhance their ESMS to be able to comply with the applicable E&S requirements, monitor and report.	$200,000
4. Developing strategic solutions for E&S risk management for the off-grid solar market	This will support developing programmatic approaches to address key strategic challenges identified, which are (i) land issues and competing land use challenges for mini grids; (ii) waste management, and more specifically, battery storage and recycling; (iii) need for harmonization of E&S standards among private mini grid developers and their financiers	$700,000
4a. Battery recycling	*Waste management, and more specifically, battery storage and recycling; and need for harmonization of E&S standards among private mini grid developers and their financiers*	*$300,000*
4b. Land acquisition and resettlement	*Land issues would be addressed through building strategic engagements with relevant regulatory agencies and bringing them together with private sector mini grid developers to develop sustainable models for land acquisition, including stakeholder engagement with communities*	*$250,000*
4c. Policy/ standards	*Multi-stakeholder dialogue on harmonization of E&S standards and regulatory environment for mini grid*	*$150,0000*

harmonization	*developers*	
5. Community engagement and sensitization campaigns	This will support the education and awareness under the project's key delivery areas namely households, small businesses, universities. The initiative will address the following: (i) initial reservation in the adoption of a new technology for communities and households (for both solar mini-girds and SHS); (ii) buyer inability to make informed purchasing decisions and decipher quality in the market; (iii) importance and advantages of conserving energy; and (iv) environmental and social awareness for solar technologies, such as recycling/ proper disposal of batteries. The initiative will equally prioritize men and women as a prime target audience. It is in project's interest to reach women who will be the end users of the proposed solar solutions. This will also include citizen engagement surveys.	$400,000
6. **Gender actions implementation**	Implementing gender strategy for the project, with the following core gender actions: - For mini grid development, exploring entry points to enhance women's participation in mini- grid operations in order to increase sustainability of operations - For SHS component, taking action for women to be seen and engaged as valuable partners along the entire value chain—in the design, marketing, sales, and after-sale services	$200,000
7. Contingency		$200,000
Total		**$2,500,000**

CHAPTER ONE: INTRODUCTION

1.1. Background and Context of the Nigeria Electrification Project

Nigeria faces significant challenges in energy access. At present, 80 million people lack access to grid electricity, with the national electrification rate at 58 percent and only 41 percent in rural areas. The majority of the unserved people live in rural areas, and rely on candles and flashlights for lighting. To achieve universal access to electricity by 2030, Nigeria would need to connect between 500,000 to 800,000 households per year, and add around 25 GW to its actual operating capacity.

Due to lack of access to power, enterprises and public institutions are constrained. The productive uses of labor and development of economic activity are hindered, including in manufacturing, light industry, and agriculture, by lack of electricity access. Rural commercial and industrial enterprises rely on diesel generation sets that produce expensive electricity. Further, public institutions, such as educational institutions, health centers, and offices cannot provide adequate service without power.

The FGN aims to make reliable electricity available to 75 percent of the population by 2020, and 90 percent by 2030, with at least a 10 percent share of renewable energy by 2025.5 Under the PSRP, the FGN intends to take a comprehensive approach to extending access through grid extension and off-grid expansion. It addresses the weak financial, technical, and operational position of the Discos, and also provides for expansion of off-grid supply of power.

The proposed Nigeria Electrification Project (NEP) is co-financed by the World Bank (WB) through a loan of US$350 million, and implemented by Nigeria Rural Electrification Agency. Its objective is to increase access to electricity services for households, universities, and small business . The project aims to accelerate electricity access in rural areas through mini grids and stand-along off-gird solutions. In addition, the project will provide electricity supply to selected universities that do not have adequate power supply from the Discos. It is expected to increase access to 500,000 households (2.5 million people).

The expected results of this project are increased number of people, enterprises, and public institutions with new or improved electricity services. Intermediate indicators include (1) number of households, enterprises, and institutions electrified through mini grid; (2) number of households electrified through stand-along solar home system (SHS); and (3) number of universities and hospitals provide with new or improved electricity service through off-gird solutions.

This project is implemented by the Rural Electrification Agency (REA). A Project Management Unit (PMU) for the project has been established within REA. Key members of the PMU have been hired. They include: (i) financial management specialist, (ii) procurement specialist, (iii) environmental specialist; and (iv) social specialist. An international consultant with experience in setting-up and supporting effective and efficient rural electrification agencies will assist with building REA’s organizational structure, business planning, and operational manuals.

1.2. Overview of Project Components

This project has four components. The first and second components are privately developed mini grids (Component 1) and stand-alone solar systems (Component 2). They are two different ways to promote rural electrification using renewable energy, with each appropriate under different circumstance. Component 3 is electrification of federal universities and teaching hospitals, with public ownership. Component 4 is technical assistance. All components will be implemented by the Rural Electrification Agency (REA).

Table 1.1: Project scale and components

Component	IDA Allocation (US$ million)
Solar Hybrid Mini grids for Rural Economic Development	150
Standalone solar systems	75
Power systems for public universities and teaching hospitals	105
Technical Assistance	20
Total	**350**

Component 1. Solar Hybrid Mini Grids for Rural Economic Development (US$150 million)

Under this component, the project will support the development of private sector mini grids in unserved and underserved areas that have high economic growth potential. The target is to serve 300,000 households, and 30,000 local enterprises, with 15 mini grid operators. Early activities are expected in Niger, Sokoto, Ogun, Plateau, and Cross River states. The component will be implemented under a market-based approach, under which the private sector will provide electricity on a commercial basis, with subsidies. There are two sub-components:

(a) **Minimum Subsidy Tender:** To kick start implementation, REA will select 200 sites in areas where there is private sector interest. REA will invite private developers to bid for minimum subsidies required to provide electricity these sites. Given the large number of sites, this tender is expected to attract some international private developers to enter this market in Nigeria. For another 70 mini grids in high risk environments in the Northeast of Nigeria (excluding Borno), full public funding is proposed, with the tendering process to be management by the implementing partner for this activity, UNOPS.

(b) **Performance Based Grant**. These are part of the ongoing support. REA will use a market-based approach to support eligible companies. REA will provide performance based grants to mini grid operators on the basis of new customer connections ($/end user). It is expected that the performance-based grants will benefit an estimated 585 mini grid sites, at least 8 companies, and 230,000 end users.

Component 2. Standalone Solar Systems (US$75 million)

The goal of this component is to help 1.5 million Nigerian households and micro, small and medium enterprises (MSMEs) access better energy services at lower cost than their current

service, via stand-alone solar home systems provided by the private sector. A market-based approach has been elected based on the conditions in Nigeria as well as experience in other countries.

The project will support solar home systems of various sizes, and around 1 million single solar lanterns. The proposed IDA allocation for the component is US$80 million, while the total amount leveraged from the private sector is estimated at US$230 million[7].

Component 3. Reliable power for federal universities and teaching hospitals, or "Energizing Education"[8] (US$105 million)

The overall objective of FGN's Energizing Education Program (EEP) is to provide reliable, affordable, and sustainable power to universities and associated teaching hospitals. This program's scope is 37 federal universities and 7 associated university teaching hospitals across the country. They will be powered by off-grid systems of 1 MW to 11 MW.

The proposed project would support power systems for federal universities and hospitals. Sites will be selected to represent each of the six geopolitical zones. The program is expected to have a broad positive impact on the universities and hospitals served. This includes academics and research as well as ancillary university functions and overall campus quality of life.

REA will lead the design, installation, operation, and maintenance of the systems. REA will contract with competitively selected EPC contractors to build, operate and maintain the power plants at each site, and also build and equip the training center. The procurement will allow for bidders to bid on several sites. Each bidder will also be considered for a ten-year O&M contract for the power station (see below). On behalf of FGN, REA will own the installed equipment and oversee construction and O&M. REA will also arrange for fuel supply. Both the O&M and fuel expenses of the power stations will be financed by the project. Arrangements for post-project finance of these expenses will be confirmed during project implementation.

Component 4: Technical Assistance (US$20 million)

This component will finance project implementation as well as help build the framework for rural electrification.

This component will be used to fund activities including but not limited to the following:

- Funding of the PIU
- Energy demand studies, surveys and community identification for developing solar mini grids and individual solar systems
- Support for safeguard instruments
- Support for engineering design and project management for Energizing Education and Economic Clusters
- Support for preparation of PPSD
- Preparation of operational guidelines for REF and other implementation support

[7] Considering that the objective of the component is to support market growth that would continue beyond the life of the project, the amount leveraged from the private sector would be even higher. E.g. by 2028 it is estimated that the amount leveraged will reach over $400 million.

[8] "Power systems for public universities and teaching hospitals" and "Energizing Education" are used interchangeably to refer to Component 3 of the project.

1.3 Objectives of the Environmental and Social Management Framework

This Environmental and Social Management Framework (ESMF) is an environmental and social assessment and management tool for all four NEP components. This document shall act as guidance for satisfactory assessment and management of environmental and social impacts at sub-project level through appropriate measures during the planning, design, construction and operation phases of various investments.

The framework provides a process to identify the adverse environment and social impacts and specific guidance on the policies and procedures to be followed for environmental and social assessment along with roles and responsibilities of the implementing agencies.

The overall goal of the ESMF is to ensure that decision making in subsequent stages of the project is informed and influenced by environmental and social considerations for each of the subprojects, many of which are still to be identified. It aims to integrate environmental and social concerns into the project's design and implementation and to exclude certain high-risk project investment activities under this program.

In order to achieve this, main objectives of the ESMF are:

- To ensure that the implementation of the project, for which the exact locations of the subproject sites are not definitively identified at this stage, will be carried out in an environmentally and socially sustainable manner.
- To provide information about scope of adverse E&S risks and impacts expected during subproject planning, construction and operation; describe the approach to mitigation and monitoring actions to be taken; and cost implications.
- To clarify the roles and responsibilities of REA, private sector mini grid developers and operators for components 1 and 3, SHS distributors for component 2, and other stakeholders with regard to E&S due diligence, management of risks and impacts, and monitoring.
- To provide the project implementers with an E&S screening process and risk management procedures that will enable them to identify, assess and mitigate potential E&S impacts of subproject activities, including through the preparation of a site-specific Environmental and Social Impact Assessments (ESIA) and/ or Environmental and Social Management Plans (ESMP) where applicable.[9]

1.4. Institutional Arrangements

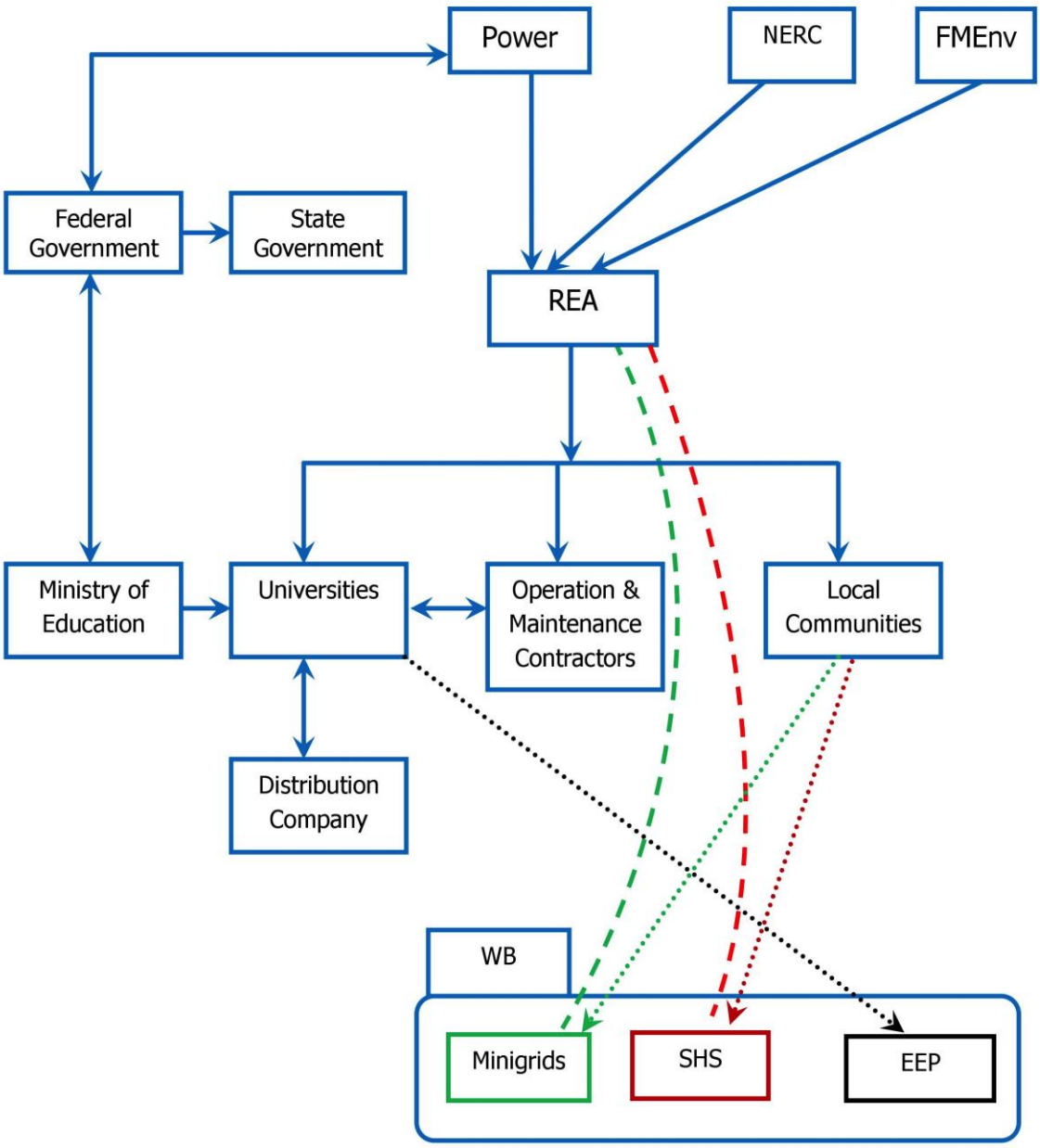
The implementation of this project and its subproject requires the collaboration of several institutions. Below is a non-exhaustive list for organizations that are involved.

The Rural Electricity Agency will be the main responsible institution for implementing the Project. REA will also facilitate liaisons with all key private sector entities that are to be involved in preparing and implementing the actual subprojects and ensure that every effort is made to enhance the positive impacts of the project and reduce/mitigate negative impacts.

[9] This will be necessary for components 1 and 3, but not component 2.

Additionally, a range of public and private sector entities will play a role in Project implementation. The overall structure is presented in Figure 1.1.

Figure 1.1. Project Structure and Implementation Arrangements



Collaborative Institutions with REA.

The following private and public sector entities will play a key and direct role in implementing the Project by leading development of physical elements and infrastructure for each of the components.

1. **Mini grid developers** will play a central role with regard to E&S due diligence, management of risks and impacts, and monitoring for component 1. It is expected that about 850 mini grids will be built by private firms. At least eight companies are already developing mini grids in Nigeria. Large multinational companies that develop mini grid technologies are interested in the minimum subsidy tender. Local Nigerian companies are also expected to participate provided they can meet the technical, financial, E&S, and other criteria. It is expected that most mini grids will use solar generation with battery storage, and diesel back-up generation; however, other technologies may be proposed by bidders depending on site-specific circumstances. Solar hybrid mini grids can be rolled out quickly because the physical generation and distribution infrastructure components, as well as the skills to install them, are readily available in Nigeria.

2. **Solar Home System (SHS companies**): It is expected that most of the SHS users will be in the underserved and unserved areas and so will be satisfied with functional SHS provider. To achieve such, it is expected providers will back their market with technical expertise and good after-sales service. The Nigerian SHS sales are currently about 13,000 units per month and has 14 active SHS distributors of the Lighting Global quality verified solar products in Nigeria. Though the market is dominated by four firms, there are new entrants, prospective entrants and start-ups with the capability and ambition to increase the market size by orders of magnitude.

3. **Contractors for universities (Energizing Education, component 3)**: REA will conduct procurement of a contractor – or several contractors – who will design and install power systems for the universities. They will work with the PMUs and other stakeholders in prompt and effective projects delivery.

4. **Federal universities and teaching hospitals** will get significantly improved (higher reliability and quality) electricity supply. Universities will be responsible for operating and maintaining solar systems that will be provided to them by REA. It is also expected the universities will cooperate with the PMU for E&S monitoring

CHAPTER TWO: APPLICABLE ENVIRONMENTAL AND SOCIAL REQUIREMENTS

2.1. Summary of Applicable E&S Requirements

Applicable E&S requirements for the Project will comprise:

1. Regulatory, Administrative and Legal Framework of Nigeria, including federal, state, and local legislation as well as international treaties, acts and conventions
2. Environmental and Social Exclusion Criteria:
   - For mini grid sites (applicable to component 1 and 3)
   - For private sector mini grid developers, SHS companies, and contractors (applicable to all components)
3. World Banks Safeguard policies, including World Bank Group Environmental, Health, and Safety Guidelines

An overview of each type of the applicable E&S requirements is presented in the sections below.

2.2. Relevant Regulatory Policies of Nigeria

Several laws and regulations apply to the energy sector in Nigeria. Thus, some number of laws, policies and instruments are available to support environmental management and the Environmental Impact Assessment process in Nigeria. The EIA Act of Nigeria is a key instrument covering environmental management in all development sectors. The Federal Ministry of Environment is responsible for final reviews of all Environmental & Social Impact Assessment reports. This is done by the Environmental Impact Assessment Department.

Several laws and regulations apply to Nigeria's energy sector. These include local laws as well as international treaties, acts and conventions. The Federal Ministry of Environment is responsible for final reviews of all Environmental & Social Impact Assessment reports. This is done by the Environmental Impact Assessment Department. All ESIA reports are displayed at selected locations and at the project site to enable stakeholders to comment and make input. Due consultation with the stakeholders is done while the ESIA is being reviewed. This division is also responsible for setting environmental standards and monitoring on behalf of government to ensure compliance.

In this section, an overview of the laws that relate to NEP is given. Moreover, the subproject will need be implemented in line with other Statutory Regulations, Legislations and Guidelines related to infrastructural Development activities in Nigeria some of which include:

- Nigerian Urban and Regional Planning Law No 88 of 1992
- National Guidelines for Environmental Audit in Nigeria, 2011
- Guidelines and Standards for Environmental Pollution Control 1991.

The National Policy on the Environment (NPE) of 1989

The National Policy on Environment, 1989 (revised 1999), provides for "a viable national mechanism for cooperation, coordination and regular consultation, as well as harmonious management of the policy formulation and implementation process which requires the establishment of effective institutions and linkages within and among the various tiers of government – federal, state and local government."

The objective of the policy is to achieve sustainable development in Nigeria and in particular to:

- Secure a quality environment adequate for good health and well being
- Conserve the environment and natural resources for the benefit of present and future generations.
- Raise public awareness and promote understanding of the essential linkages between the environment resources and development and encourages individual and community participation in environmental improvement efforts
- Maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity;
- Co-operate with other countries, international organizations and agencies to achieve optimal use and effective prevention or abatement of trans-boundary environmental degradation.

Environmental Impact Assessment Act No. 86, 1992 (FMEnv)

This Act provides guidelines for activities of development projects for which EIA is mandatory in Nigeria. The Act also stipulates the minimum content of an EIA as well as a schedule of projects, which require mandatory EIAs.

The National Guidelines and Standards for Environmental Pollution Control in Nigeria

This was launched on March 12th, 1991 and represents the basic instrument for monitoring and controlling industrial and urban pollution.

The National Effluents Limitations Regulation

This instrument makes it mandatory that industrial facilities install anti-pollution equipment, make provision for further effluent treatment, prescribe maximum limit of effluent parameters allowed for discharge, and spell out penalties for contravention. It also provides that all industries in Nigeria should be operated on the basis of Best Available Technology (BAT).

The NEP (Pollution Abatement in Industries and Facilities Generating Waste) Regulations

Restrictions are imposed hereunder on the release of toxic substances and requirement of Stipulated Monitoring of pollution to ensure permissible limits are not exceeded; Unusual and accidental discharges; Contingency plans; Generator's liabilities; Strategies of waste reduction and safety for workers.

The Management of Solid and Hazardous Wastes Regulations

These regulate the collection, treatment and disposal of solid and hazardous waste for municipal and industrial sources and give the comprehensive list of chemicals and chemical waste by toxicity categories.

National Guidelines on Environmental Management Systems (1999)

The guidelines establish the requirement for an Environmental Management System (EMS) in 'all organisations /facilities in Nigeria'. They also state that this EMS should be audited annually or as deemed necessary.

National Guidelines for Environmental Audit

These are designed to serve as a reference for compliance with the Environmental Audit requirements of the FMEnv. It states that it is mandatory for a company to carry out an audit every 3 years or at the discretion of the Hon. Minister of the FMEnv.

National Policy on Flood and Erosion Control 2006 (FMEnv)

This policy addresses the need to combat erosion in the country utilizing the procedures outlined in the National Action Plan for Flood and Erosion Control and Technical Guidelines, developed by the WIC Environmental Committee which was set up to plan an operational platform for these issues.

National Air Quality Standard Decree No. 59 of 1991

The FMEH is the regulatory agency charged with enforcing ambient air quality standards in Nigeria. The World Health Organization (WHO) air quality standards were adopted in 1991 as the national standards by the FMEH. These standards define the levels of air pollutants that should not be exceeded in order to protect public health (see table 3.1.10 below).

The National Environmental Standards and Regulations Enforcement Agency Act 2007 (NESREA Act)

After the repealing of the Federal Environmental Protection Act of 1988, the NESREA Act, 2007 became the major statutory regulation or instrument guiding environmental matters in Nigeria. It specially makes provision for solid waste management and its administration and prescribes sanction for offences or acts, which run contrary to proper and adequate waste disposal procedures and practices.

The National Oil Spill Detection and Response Agency Act 2005 (NOSDRA ACT)

This statutory regulation makes adequate regulations on waste emanating from oil production and exploration and its potential consequences to the environment.

2.3. Environmental and Social Exclusion Criteria

2.3.1. Exclusion criteria for mini grid and power generation sites

The exclusion criteria for mini grid sites (component 1) and power generation sites (component 3) will apply as follows:

1. Sites that do not comply with relevant environmental and social national or state regulations of Nigeria[1]
2. Sites located in legally protected areas (e.g. national parks, conservation areas, forests)[2]
3. Sites located in internationally recognized areas[3]
4. Sites located in critical natural habitats[4]
5. Sites where mini grid construction and operation will cause significant degradation of natural habitats (e.g. mangroves)[5]
6. Sites in flood-prone zones
7. Sites located on land from which government agencies or builders have removed / involuntarily resettled local communities, including squatters or encroachers, without proper compensation[6]
8. Sites located on land associated with illegal forced evictions of previous owners or occupants[7]
9. Sites in locations and / or developed in a manner that involves significant adverse impacts on physical cultural property[8]

Footnotes

1. Relevant environmental and social include those that prohibit development of mini grids and associated infrastructure in certain designated locations.

2. Legally protected areas are those that meet the IUCN definition: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." This includes areas proposed by governments for such designation.

3. These are defined as UNESCO Natural World Heritage Sites, UNESCO Man and the Biosphere Reserves, Key Biodiversity Areas, and wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention).

4. Critical habitat is a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value that meet the criteria of the World Conservation Union (IUCN) classification, including habitats of significant importance for required for critically endangered or endangered species as defined by the IUCN Red List of Threatened Species; habitats of significant importance for endemic or restricted-range species; habitats supporting globally significant concentrations of migratory species and /or congregatory species; areas with unique assemblages of species or which are associated with key evolutionary processes. Primary Forests or forests of High Conservation Value shall be considered Critical Habitats.

5. Natural habitats are land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions. All natural habitats have important biological, social, economic, and existence value. Important natural habitats may occur in tropical humid, dry, and cloud forests; temperate and boreal forests; mediterranean-type shrub lands; natural arid and semi-arid lands; mangrove swamps, coastal marshes,

and other wetlands; estuaries; sea grass beds; coral reefs; freshwater lakes and rivers; alpine and sub alpine environments, including herb fields, grasslands, and paramos; and tropical and temperate grasslands. Biodiversity outside of natural habitats (such as within agricultural landscapes) is not covered under this policy. It is good practice to take such biodiversity into consideration in project design and implementation.

6. Resettlement activities should follow the process through which adverse social and economic impacts are minimized through (i) providing compensation for loss of assets at replacement cost defined as the market value of the assets plus transaction costs and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. These criteria will only apply to such resettlement / displacement that took place specifically in anticipation or preparation for the construction of mini grids.

7. Permanent or temporary removal against their will of individuals, families and/or communities from the homes and/or land which they occupy, without the provision of, and access to, appropriate forms of legal or other protection. Prohibition on forced evictions does not, however, apply to evictions carried out by force in accordance with national law and is conducted in a manner consistent with basic principles of due process, including provision of adequate advance notice, meaningful opportunities to lodge grievances and appeals, and avoidance of the use of unnecessary, disproportionate or excessive force. These criteria will only apply to such resettlement / displacement that took place specifically in anticipation or preparation for the construction of mini grids.

8. Also known as 'cultural heritage', 'cultural patrimony', 'cultural assets' or 'cultural property'. Physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other culture l significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.

2.3.2. Exclusion criteria for mini grid developers, SHS companies, and contractors

Mini grid developers under component 1, SHS companies under component 2, and contractors involved in construction and operation of university mini grids under component 3 will not be supported if they are involved in the following:

- Production or activities involving forced labor[1]
- Production or activities involving child labor[2]
- Cross-border trade in waste and waste products, unless compliant to the Basel Convention and the underlying regulations[3]

Footnotes

1. Forced labor means all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

2. Employees may only be taken if they are at least 15 years old, as defined in the ILO Minimum Age Convention (C138, Art. 2), and ratified by Nigeria in 2002. Children under the age of 18 will not be employed in hazardous work. Children will not be employed in any manner that is economically exploitive, or is likely to be hazardous to, 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.

3. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, usually known as the Basel Convention, is an international treaty that was designed to reduce the movements of hazardous waste between nations. Hazardous waste, as defined under the convention, will not be traded cross-border. Under Basel Convention, "hazardous wastes" are defined as (a) Wastes that belong to any category contained in Annex I, unless they do not possess any of the characteristics contained in Annex III; and
(b) Wastes that are not covered under paragraph (a) but are defined as, or are considered to be, hazardous wastes by the domestic legislation of the Party of export, import or transit. National definition of hazardous wastes for Nigeria under Basel Convention can be found here:
http://www.basel.int/Countries/NationalDefinitions/NationalDefinitionsofHazardousWastes/tabid/1480/Default.aspx

2.4. Applicable World Bank Safeguard Policies

The World Bank has given increasing attention to the assessment of environmental impact of investment projects and requires environmental assessments for all projects it is to finance. Its ten safeguards policies, aimed at preventing and mitigating undue harm to people and their environment in the development process, also provide a platform for the participation of stakeholders in project design and implementation. The WB policies expected to be triggered by the REA project are as shown in the Table 2.1 below.

Table 2.1. Applicable Safeguards Policies

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	X	
Natural Habitats OP/BP 4.04		X
Forests OP/BP 4.36		X
Pest Management OP 4.09		X
Physical Cultural Resources OP/BP 4.11		X
Indigenous Peoples OP/BP 4.10		X
Involuntary Resettlement OP/BP 4.12	X	
Safety of Dams OP/BP 4.37		X
Projects on International Waterways OP/BP 7.50		X
Projects in Disputed Areas OP/BP 7.60		X

Environmental Assessment (OP 4.01)

Environmental assessment is required, but WB OP 4.01 states that the scope of EA for a Category B project may vary from project to project, but it is narrower than for Category A projects and full ESIAs are normally not required. However, because the specific REA investments are not known at this time, the OP/BP 4.01 requirement is initially met through the preparation of this ESMF.

Because the activities in the REA projects need to meet WB requirements as well as those of Nigeria, immediate considerations are given to below issues (this is in relation to environmental guideline and contractors):

- Acceptance of Environmental and Social management plans based on adequately competed Environmental and Social screening / studies
- Must have all relevant and up-to-date permits from the Government of Nigeria
- Demonstrated no significant adverse impacts on ecologically sensitive areas, large-scale resettlement, adverse impacts on cultural heritage, or activities in disputed areas.
- Approach, capacity and commitment for carrying out environmental and social risk management measures/ plans
- Clean track record in terms of compliance with any relevant environmental and social regulations of the country

OP/BP 4.12: Involuntary Resettlement

The WB policy on involuntary resettlement takes care of situations where people will lose property, means of livelihood or experience a change in their standard of living as a result of the implementation of a Bank financed project. This policy provides the guidance for the mode and schedule for payment of all compensations and recommends that due consultations be made with all stake holders of the project before, during and after project implementation with special attention to disadvantaged groups (women, children and the disabled) within the population.

The Project may require the acquisition of small amounts of land to install solar panels and associated equipment and, in case of component 3, could also involve moving encroachers or compensating for loss of access to assets. Since the specific investment locations and land acquisition needs are not known, the framework approach is also used to establish the procedures for compliance with OP/BP 4.12. The Resettlement Policy Framework (RPF) for this project has been prepared and is disclosed as a separate document.

Other World Bank Safeguards including Health Safety & Environment

The World Bank Group's Environmental, Health and Safety Guidelines are applicable to this project They include general guidelines that are applicable to all projects as well as sector-specific guidelines for electricity. The relevant guidelines are: General EHS Guidelines and EHS Guidelines for Electric Power Transmission and Distribution.

These guidelines are available at:
http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines.

World Bank Disclosure of Information

Copies of this ESMF, like other Safeguard Instruments (such as EA/ESMP/RAP/ARAP) that would be prepared for NEP and its subprojects shall be made available to the public by PMUs at their offices in across Nigeria, and in the various relevant local government councils and project affected communities, State Ministries of Environment and other stakeholders and at the Federal Ministry of Environment.

At the subproject level, all reasonable efforts must also be made to expose subproject E&S instruments at strategic points within the subproject's area of influence so as to allow all stakeholders to read and understand how they stand to be affected by the project.

The REA PMUs also disclose this ESMF and other safeguards instruments electronically on its website and they will also be disclosed on the World Bank's external website.

2.5. Alignment of WB and Federal Policies relevant to this ESMF

The following are the environmental and regulatory laws in Nigeria relevant for this ESMF develop for the purpose of the subproject:

- The National Environmental Standards and Regulations Enforcement Agency (NESREA) Act No 25 of 2007

- The National Guidelines and Standards for Environmental Pollution control in Nigeria (March, 1991)
- The National Environmental Protection (Effluent Limitation) Regulations S.I.8 of 1991
- The National Environmental Protection (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations S.I.9 of 1991
- The National Environmental Protection (Waste Management) Regulations S.I.15 of 1991
- Statutory Limits for Effluents and Gaseous Emissions FEPA, 1991
- Noise Limitations NESREA REGULATION 2009
- Harmful Waste (Special Criminal Provisions etc.) Act. Cap 165, LFN 1990
- Land Use Act, 1978
- States and Local Government Environmental Laws

The subproject will need be implemented in line with other Statutory Regulations, Legislations and Guidelines related to infrastructural Development activities in Nigeria some of which include:

- Nigerian Urban and Regional Planning Law No 88 of 1992
- National Guidelines for Environmental Audit in Nigeria, 2011
- Guidelines and Standards for Environmental Pollution Control 1991.

These Guidelines provide specific guidance on how to achieve sustainable development. The subproject shall work within this framework and in line with the World Bank Safeguard Policies. However, in the case of any conflict between the laws of Nigeria and the World Bank safeguard policies, the World Bank Safeguard policies will take precedence.

Finally, the World Bank provides a number of operational and safe guard policies, which aim to prevent and mitigate undue harm to people and their environment in any development initiative involving the Bank. The Nigerian EIA Act and the World Bank safeguard policies are similar. OP.4.01 and Nigerian EIA Act are also similar. World Bank EA Screening Category A is similar to Nigerian EIA Act category I, World Bank EA Category B is equivalent to Nigeria EIA Act Category II, World Bank EA Category C is equivalent Nigeria EIA Act Category III. However, in the event of divergence between World Bank safeguard policies and the Existing Environmental laws in Nigeria the more stringent requirement will take precedence.

CHAPTER THREE: KEY RISKS AND IMPACT MITIGATION

3.1. Introduction

Key E&S risks identified as cross-cutting for the project include land acquisition challenges, land use changes, alteration of drainage channels, increased soil erosion, labor / OHS risks during construction (which may include exposure to physical hazards from use of construction equipment; exposure to dust and noise, falling objects, hazardous materials, exposure to HIV and other STI due to influx of migrant workers), and potential involuntary resettlement.

Where project sites would be located in agricultural areas, there is little opportunity for solar projects to share land with agricultural uses. This presents a problem as land to be designated for solar panels is often used by local communities for farming, cropping, cocoa trees etc., even where they do not have formal land ownership. Additionally, especially in rural areas, some subproject may be located in the protected areas or other sensitive natural habitats.

Table 3.1. Key E&S Challenges and Mitigation

S/N	Challenges	Approach to Mitigation
1	Decentralized project design with a large number of small subprojects prepared by private sector implementing entities	Environmental and Social Management Systems (ESMS) requirements for mini grid developers and SHS companies; differentiate ESIA and ESMP requirements based on E&S risk categorization; detailed and step by step E&S responsibilities for key players for each project component
2	Land acquisition, resettlement, livelihood restoration	A stand-alone Resettlement Policy Framework (RPF) has been prepared in accordance with the Bank Safeguard policy on Involuntary Resettlement (OP/BP 4.12). The RPF outlines the resettlement process in terms of procedures for preparing and approving Resettlement Action Plans (RAPs), institutional arrangements, likely categories of affected people, eligibility criteria and categories, compensation rates, methods of valuing affected assets, community participation and information dissemination, Grievance Redress Mechanism and effective monitoring and evaluation. Mini grid developers will prepare RAPs in line with the ESMS for mini-grid developers (Annex IV of this ESMF and the project's RPF) for component 1 of the project; REA will prepare a RAP for component 3 of the project in line with the RPF. No land acquisition and resettlement are envisioned under component 2.
3	Lack of awareness on E&S risks and impacts (communities, SHS customers, universities)	Sensitization and dialogue via various methods of stakeholder engagement

4	Lack of capacity among private sector implementing entities	Training for mini grid developers, SHS companies
5	Battery disposal and recycling (lead-acid and lithium ion)	Development of a strategic approach to engage mini grid developers, SHS companies, and universities in putting in place coherent battery storage, recycling, and disposal practices (See annex VIII)

The project's three investments will be considered in the environmental and social assessments. Specific E&S risks for each project component are mainly linked to processes and capacity of key stakeholders for E&S risk management.

Component 1. Mini grid developers are at varying levels of capacity and E&S standards that they are applying to preparing their projects. International companies, especially those that receive funding from development institutions (e.g., GIZ) and foundations are at a higher level and more advanced and proactive in their approach as a result of the E&S requirements that come with the funding. However, domestic mini grid developers are relatively unaware of such requirements, and will need major effort in building their capacity to comply with the World Bank conditions that REA will need to implement as part of the program.

Major differences have been identified in how developers approach site selection and interactions with communities to ensure that communities can consistently benefit from electricity provision in an inclusive and sustainable manner. These range from full engagement, securing broad community support, reaching agreements with communities on how land would be acquired for the mini grids, and proactively conducting ESIAs and/ or ESMPs as part of project design to full reliance on the government processes for land expropriation and no E&S studies or exploring alternative site locations to reduce potential E&S risks and impacts.

Voluntary Land Donation (VLD): Experience from other projects suggest that is open to abuse and coercion, as such, it should not be encouraged on this project except in instances where the donation meets the requirements set out in the VLD guidelines (in annex XIII) of this ESMF. VLD carried out by local communities do not trigger the Bank's policy on Involuntary Resettlement, however, they may be based upon administrative or social coercion and may lead to unanticipated social impacts, particularly when they are not properly documented, or when they involve vulnerable or disadvantaged community groups.

Consequently, VLD should only be authorized if they can (a) clearly document Informed Consent; (b) clearly document Power of Choice; and (c) meet the VLD guidelines of the project. The guidelines have been put into place to ensure that donations are indeed voluntary, that the donor is the legitimate owner of such lands, and that the donor is fully informed of the purpose of the donation and of the implications of donating the property.[10] If the land is

[10] Voluntary land donation is strictly defined in international practice as the ceding of a property by an owner who is: a) fully informed; and b) can exercise free will, i.e., can refuse to sell or to donate. "Fully informed" means that the owner has complete information regarding the proposed activity and its impacts, its land requirements and its alternate activity sites, as well as his or her rights to compensation. The owner has also been provided with sufficient time to consider his or her disposition of the property, and the owner has knowingly rejected the right to renege on his or her initial decision. "Free will" means that the owner can reject the possibility of giving up his or her land.

donated on a conditional basis, the terms and conditions for the temporary use of the property must be clearly documented.
Each instance of VLD in a sub-project must be documented. This requires written notification indicating the location and amount of land that is donated and its intended use and a formal statement of donation, establishing informed consent and signed by each owner or user involved. Taxes to be paid by the land donor for registration of the land transfer, if applicable, should be covered in full by the project proponent.

Mini grid will in all instance of VLD compile a report of the of the process as well as associated records and documents and submit to the PMU who shall certify and forward a copy to the World Bank prior to commencement of civil works.

Component 2: The core issue with the SHS component is the potential long-term implications of the increased number of the energy storage units (containing batteries) that need to be recycled. Additionally, labor and OHS practices of SHS companies would need to be compliance with the Nigerian regulations and World Bank EHS guidelines and good practice.

Component 3: For this component, E&S risk management would be focused on water availability, storm water run-off, OHS issues, as well as land acquisition and resettlement among others (as in some cases land allocated to the universities may be traditionally used by communities). Regarding the approach of the universities to e-waste management strategies, these include auctioning used equipment to private bidders in lots. It is unclear how these private bidders approach disposal of the equipment that can no longer be used and forms part of the lots.

3.2. Potential Adverse E&S Risks and Impacts

The potential negative E&S impacts associated with the sub projects are summarized in Table 3.2. Beyond the mitigation measures discussed below it will be important to adopt waste management principles (Source reduction, reuse and recycling) at all time.

Table 3.2. Potential E&S Risks and Impacts

Environmental Receptor/Medium	Comment	Impact Indicators	Project components impacts are relevant for	Impact
Physical				
Air	Ambient air quality within the Project site and the surrounding environment	Increase in concentration of gaseous and particulate pollutants	1 and 3	Moderate to low
Noise	Ambient noise level within the Project site and its surrounding environment	Increase in ambient noise level; day and night-time disturbance; communication impairment, etc.	1, 2 and 3	Moderate to low
Soil	Soil environment within the Project site and its Area of Influence (AoI)	Changes in physical, chemical and biological properties of the soil; loss of soil ecology and fertility; soil erosion, etc.	1 and 3	Moderate to low
Groundwater/aquifers	Underground water resources in the Project's AoI	Decrease in underground water/aquifer reservoir level; groundwater contamination	1 and 3	Moderate to low
Landscape/topography	The geomorphological land forms and terrain of the Project site and its surrounding environment	Alteration in drainage pattern; changes in landscape	1 and 3	Moderate to low
Biological				
Terrestrial flora and habitats	Plant species (vegetation) within the Project site and its AoI	Loss of terrestrial flora; introduction of new species	1 and 3	Moderate
Terrestrial fauna	Terrestrial fauna within the Project site and its surrounding environment	Loss of terrestrial fauna; involuntary migration	1 and 3	Moderate
Waste				
Battery disposal	End of life battery disposal remains the major risk	OHS impacts on workers handing battery recycling, uncertified facilities, inadequate waste disposal practices	1, 2, and 3	High
Socio-economic Environment				
Land use	Existing land use within the Project site and its AoI	Loss of existing land use	1 and 3	Moderate
Land acquisitions/use resulting in involuntary resettlement and/or loss of livelihoods or access to economic	Land acquisition resettlement	Loss of asset; Loss of Access to assets; and loss of livelihood	1 and 3	High

resources.				
Visual impacts	The aesthetic quality of the Power Plant on the surrounding visual catchment	The compatibility of the Power Plant with the character of the locality; visual nuisance through reflection of panels	1 and 3	Moderate
Demography	Demography of community in the Project's AoI	Changes in demography, gender ratio, age distribution, socio-economic structure, etc. of the local community	1	Low
Utilities	The existing utilities (e.g. power supply, water, sewer services, etc.) in the Project's AoI	Changes in existing utilities; potential damage to public utilities	1 and 3	Moderate
Infrastructure	The existing infrastructure such as road, waste handling facilities, etc. within the Project's AoI	Potential damage to road infrastructure; road traffic and accidents; increased pressure on waste management facilities	1 and 3	Moderate
Employment/income	The employment situation in the Project's AoI	Opportunities for local employment; changes in income level	1,2, and 3	Moderate
General public/ project communities	Labor influx and GBV	Increase in the demand for basic services due to temporary influx of workers. Increased crime (including prostitution, theft and substance abuse) to increase in proposed sub project areas as influx of people increases Increased risk of communicable diseases (including STI/ HIV/AIDs)	1,2 and 3	Moderate
Other (Health and Safety)				
Construction workers	Health and safety of construction workers.	Accident, injury, fatality, exposure to nuisance (dust, noise), fire, etc.	1 and 3	Moderate
Workplace health and safety	Health and safety of employees involved in the Power Plant operation.	Accident, injury, fire, explosion, etc.	1 and 3	Moderate
General public / communities	Health and safety of the general public	Accident, fire, explosion, (construction camps) etc.	1 and 3	Moderate

3.3. Positive E&S Impacts

The project is envisaged to have a range of positive environmental and social impacts. Some of these are a function of the objectives of the project, while others are a function of the way in which the project is designed to meet its objectives. The improvements through REA projects will allow economies of scale and specialization, widen opportunities, expand trade, integrate markets, strengthen effective competition, enhance social interaction, and eventually increase real income and welfare of the university communities. These effects will, in general, provide real benefits to most, if not all, socioeconomic groups, including the poor, covering both genders.

Some of the benefits impacts associated with the project include:

- Increased financial and technical collaboration between projects affected states and the PMU.
- Improved livelihood enhancing activities
- Improvement in the eco-balance.
- Increase in urbanization

Reduced lightening costs to project beneficiaries. Electricity access will replace kerosene lamps which are expensive to operate. Kerosene is costly both for low income households that buy it, and for governments that subsidize it. In parts of Africa, for instance, kerosene costs make up 10-25% of household monthly budgets according to a report by Lighting Africa market trends report 2013. Comparing to these costs, the consumption electricity bills seem to be cheaper than using kerosene for lighting significantly. Therefore, this project means greater savings on the part of the households.

Positive expected impact on poverty alleviation. With more affordable and stable electricity in the otherwise off-grid areas, the beneficiaries will be engaging in income generating activities hence improving their economic status.

Provision of employment. This project will have a positive impact on both direct and indirect employment levels in the country although the bulk of them will be on temporary basis during construction of the infrastructure. These job opportunities will be made available to the locals thereby easing unemployment in and around the construction areas. In addition, this will translate into incomes at the household levels which will trigger other spending and demand in the local economy.

Increase in business/commerce during and after the construction work. Another positive impact of the project involves local material sourcing mainly sale of materials for use in the project. Some of these can be expected to be sourced locally and the rest through importation. Therefore, the project will generate new income revenues for the local population in harvesting and transportation of sands, ballast and gravel. The new income revenues received will create demand for other goods and services causing a trickledown effect to the entire economy.

Upscaling electricity access to the poor. A World Bank poverty assessment found that the national poverty rate in Nigeria declined from 46 percent in 2004 to about 36 percent in 2013. However, due to population growth between 2004 and 2011, the total number of poor, estimated at about 64 million people in 2013, did not decline. The off-grid areas are disadvantaged due to lack of national grid. Hence the need for this project, which targets unserved or underserved rural areas and poor households.

Community development programs and social inclusion. This project aims at increasing access of electricity to off grid communities. This is in line with the tenets of social inclusion, which the World Bank defines as the process of improving the terms for individuals and groups to take part in society. Further, Social inclusion aims to empower poor and marginalized people to take advantage of burgeoning global opportunities. It ensures that people have a voice in decisions that affect their lives, and that they enjoy equal access to markets, services and political, social and physical spaces.

Improved health statistics with increase in the life span. According to the 2009 population census, access to electricity stood at 23%, while 31% used lantern lamps and 39% were using tin lamps for lighting. This indicates that 70% of the population was using kerosene for lighting. This poses health problems as reported by World Bank report 2008 on the Welfare of Rural Electrification. The report notes that kerosene lamps emit particles that cause air pollution; these are measured by the concentration of the smallest particles per cubic meter (PM10). But these particles do not disperse, so burning a lamp for four hours can result in concentrations several times the World Health Organization standard. The health risks posed by this indoor air pollution mainly include acute lower respiratory infections, but also low birth weight, infant mortality, and pulmonary tuberculosis.

Additionally, available data suggest that insufficient illumination (low light) conditions can cause some degree of eye strain, and reading in these conditions over long periods of time may have the potential to increase the development of nearsightedness (myopia) in children and adults. This project will result in many families replacing kerosene lamps for lighting with electricity there-by reducing disease burden at the family level and on the government.

Improved education and certification in solar engineering & benefits to education. Access to electricity at the household level and schools will create opportunities for children to study. For example, children from households with electricity have an advantage because they have more time for study and doing homework in the evening as opposed to children from households without electricity. This benefit will in the end translate to better results. Additionally, children in households with electricity can also access T.V. which gives them an advantage of benefiting from education programs being aired through such communication channels. Appropriate lighting through electricity will provide school going children in homes an opportunity to study after household chores especially girls who have to assist their mothers in preparing dinner. The benefit is amplified in Component 3, which targets public universities and teaching hospitals**.** This would enhance learning in renewable energy leading to certification.

Improved standard of living. The implementation of this project will result in connecting about 2.5 million beneficiaries to the off grid electricity. Access to electricity will change the standard of living of the people as they can use domestic appliances like iron boxes, fridges, television sets, washing machines to mention but a few. Use of electricity for lighting implies that the people will not be exposed to smoke arising from use of kerosene lamps which predisposes people to respiratory diseases.

Increase in social interactions within the campuses. There will be enhanced security in the targeted counties arising from well-lit social, commercial and individual premises. With the implementation of the project, the level of security will improve across the county. This is as a result of more security flood lights which helps keep off opportunistic crimes and gender based violence.

Communications. Access to electricity will lead to improved communication for the beneficiaries. This will be enabled by the fact that charging of mobile phones will be easier

and cheaper. Access also to mass media like radio and T.V will provide opportunity for the households to access a wide range of information which is useful for decision making. Some of information beneficiaries receive include: information on markets, farm inputs, livestock & crop management and local affairs, nutrition, diseases, investments and entertainment among others.

Gender Considerations. Electricity is a basic service especially for lighting but is still a luxury for many rural women and men. Access to modern electricity will go a long way towards alleviating the daily household burdens of women, giving them more time, improving their health and enhancing their livelihoods. Available literature on gender and energy suggests that providing electricity to communities and homes will promote gender equality, women's empowerment, and women's and girls' access to education, health care, and employment. Indeed, most gender benefits of the project will occur because women tend to spend more time at home, are responsible for household chores that can be carried out more productively with electricity, and because certain tasks are culturally defined as women's work.

The first and strongest impacts of the project shall occur via lighting and TV. Electricity will definitely displace more expensive candles and kerosene lamps, thereby reducing indoor air pollution, fire, burn risk and providing higher quality light. Women and girls will benefit more from air pollution of kerosene lamps because they spend more time in the kitchen. Lighting and television will improve access to information, the ability to study, and extend the effective working day. This is more so because children can have extended time of study.

The women will also benefit more due to access of information, especially on health and nutrition since they also spend more time at home. The project will also enhance security in the rural areas as most homes will be lit up, a benefit that is more appreciated by women.

3.4. Other E&S Issues

Health & Safety. REA shall engage dedicated personnel competent on the basis of appropriate education, training, and experience to manage and oversee the Health, Safety and Environment (HSE) aspects of the Project. The HSE personnel shall ensure that the project and subcontractors operate in accordance with the applicable regulatory HSE requirements and plans; and also monitor implementation of environmental and social protection measures, and assist with technical input into spill response requirements.

Gender. Women and children play a very active role in farming activities generating income and that's in addition to women performing household duties. Women in these underserved and unserved rural areas are often left alone for long periods while their husbands, brothers and adult sons move away for jobs. Hence, it is important women in affected should receive special attention and support to maintain their sources of livelihood and production patterns.

Firewood remains, the most often used means for domestic cooking in Nigeria leading to high level decimation of our women due to firewood smoke which is more dangerous than cigarette smoke. Women and other people with heart or lung diseases, children and older adults are the most likely to be affected by particle pollution exposure. However, even healthy people may experience temporary symptoms from exposure to elevated levels of particle pollution as a result of firewood smoke inhalation leading to:

- Aggravated asthma
- Premature death especially those that are highly exposed to this fume
- Greenhouse Emission leading to climate change

Thus, there should be planed Gender Assessment and Development under the subprojects, which will help analyze gender issues during the preparation stage of sub project and design interventions. At the sub project level, gender analysis should be part of the social assessment and the analysis will be based on findings from gender specific queries during primary data collection process and available secondary data. The quantitative and qualitative analysis will bring out sex disaggregated data and issues related to gender disparity, needs, constraints, and priorities; as well as understanding whether there is a potential for gender based inequitable risks, benefits and opportunities. Based on the specifics, interventions could be designed, and if required, gender action plans can be prepared.

Climate Change & Green House Gas Emissions. Nigeria submitted its Intended Nationally Determined Contributions to the United Nations Framework Convention on Climate Change (UNFCC) in November 2015. It is pertinent we realize that women and household is central to any national plan to mitigate carbon emissions and deforestation. Therefore, there is a need for holistic and well thought out plan, which NEP represents, aiming to provide clean, efficient electricity thereby contributing to eradicating energy poverty, whilst bringing considerable health, developmental and environmental benefits.

The NEP would facilitate moving to low carbon energy sources and move to non-fossil energy usage that will enhance a reduction in CO_2 emissions.

The NEP, when fully implemented, can mitigate deforestation, one of the major causes of global warming. Moreover, it can help reduce indoor and outdoor air pollution with its attendant health consequences. The NEP is majorly of renewable sources with no soot and low NO_2 a principal ozone depletion gas.

Moreover, recycling of Lithium Ion Batteries (LIBs) and other batteries reduces greenhouse gas emissions (GHG). Thus, for effective and best environmental practices it will be essential

that end of life batteries from the subprojects are recycled within Nigeria instead of being shipped elsewhere, as this would save on carbon dioxide (CO_2) emission, which is a major GHG.

With the rollout of NEP, the disposal of end of life batteries is a concern shared equally across the subprojects 1-3. For instance, for component 2 (SHS), millions of LIBs) are likely to be used in the SHS rollout plan. Thus, in the absence of sound environmentally friendly recycling activities; end of life batteries may pose major problems. The active constituent of LIBs and similar batteries pose a major health and environmental challenges leading to ozone depletion following that;

- The choice of active material: For example Li-NCM chemistry relies on rare metals, e.g., cobalt and nickel, which are likely to be carcinogenic. For lower toxicity metals such as manganese, iron or aluminum (especially, lithium manganese dioxide ($LiMnO_2$) lithium ferric tetra phosphate ($LiFePO_4$), they have higher potential for ozone depletion impacts than for battery chemistry that does not involve such chemistry.
- Aluminum used in manufacture of the cathode and passive cooling system comes up as a driver in a number of environmental impacts already assessed, especially in their potential for ozone depletion.
- The steel, which is used in the battery pack housing, is a metal that shows up in a number of different impact categories as a driver, for global warming potential and ecological toxicity potential, due to its emission of cyanide.

3.5. Approach to E&S Risk and Impact Mitigation

Mitigation measures involve avoiding of impact altogether, minimizing the impact, rectifying the impact and gradual elimination of impact over time. Mitigation measures are three: physical, socio-cultural and socio-economic.

Physical measures relate to issues of project sitting, re-vegetation and preventive measures like bush clearing, erosion, sedimentation and pollution control and good construction/farming practices, waste management, and application of Environmental Guidelines for Contractors.

Socio-economic measures will include education and awareness, hygiene and sanitation training, rules and regulations, institutional support (including skills training), and recruitment of qualified personnel while socio-cultural measures could include allowing limited and monitored access to restricted areas for cultural reasons where applicable. The mitigation measures for the public health issues; explore options to accommodate crew off site and avoid camps and in absence of that, educate the crew about preserving vegetation, provide decent temporary sanitation facilities like toilets. Use local and regional labor as much as possible and provide HIV/AIDS awareness training to the workers and the community, provide guidelines on local culture, behavior and social life to the workers and create walk ways and plant grass where necessary.

The mitigation measures for use of hazardous waste include: use off-site treatment methods and only deliver poles ready for fixing, proper burning or disposal of any hazardous materials found on site; use protective gear during work; remove or bury all abandoned construction materials and rubbles; and fill in and close all latrines and septic systems. The mitigation measures for use of heavy plant and equipment. e.g., tippers for material delivery, include: minimize the use of heavy trucks; provision of drainage channels to guide surface run offs;

introduction of mulching to minimize effects on soil erosion; set protocols for vehicle maintenance on site and not dump any oil around the site.

Upon identification of key risks, appropriate mitigation measures should be applied based on the specific situation of each project sites. Below is a list of E&S impact mitigation measurements.

Flora and Fauna

The project proponent will ensure proper demarcation of the project area to be affected by the subproject construction civil works. This will be aimed at ensuring that any disturbance to flora is restricted to the actual subproject area and avoid spillover effects to the neighboring areas. In the same vein, there will be strict control of construction vehicles to ensure that they operate only within the area to be disturbed. The proponent shall put in place a program to plant trees as a way of replacement of the cleared vegetation/trees within the area probably in a public institution like schools.

Impacts on air quality from vehicle exhaust emissions

- Drivers of construction vehicles must be sensitized so that they do not leave vehicles idling, 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.

Dust emissions

- The construction area should be fenced off to reduce dust to the public
- Proper scarf folding should be done to minimize dust emissions 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.

Solid waste

- Ensure spoil from excavations is arranged according to the various soil layers. This soil can then be returned during landscaping and the rehabilitation, in the correct order which they were removed that is top soil last.
- Contractor to put in place and comply with a site waste management plan.
- Provide litter collection facilities such as bins.
- The contractor should comply with the national requirements 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.

Land acquisition and resettlement

No construction should be undertaken until PAPs are compensated for their losses, and have received their resettlement entitlements. That is, before any project activity is implemented, PAPs will need to be compensated in accordance with the project's resettlement policy framework. In cases where a dispute or absence makes it impossible to compensate the affected party(ies) promptly, payments may be held in escrow by the court or other responsible party on condition that the affected party does not lose the right of grievance and appeal.

For activities involving land acquisition or loss, denial or restriction to access, it is further required that these measures include provision of compensation and of other assistance required for relocation prior to displacement and preparation of resettlement sites with adequate facilities, where required.

Taking of land and related assets may take place only after compensation has been paid and where applicable, resettlement sites and moving allowances have been provided to displaced persons. Escrow accounts are allowable as provided above. For project activities requiring relocation or loss of shelter, the policy further requires that measures to assist the displaced persons are implemented in accordance with the individual RAPs. The measures to ensure compliance with the project's RPF will be included in the RAPs that will be prepared for each land involving resettlement or compensation.

Occupation safety and health hazards

- The project shall ensure that contractors provide OHS training that may include hazard awareness, safe work practices and emergency preparedness to their workers to ensure they are appraised to project sites rules of work, personal protection and preventing injury to fellow workers.
- The Project will require all contractors to implement an Environmental, Health and Safety (EHS) plans which will outline procedures for avoiding health and safety incidents and for emergency medical treatment. This will be achieved by making it a component of contractual agreement.
- The project will require all contractors provide appropriate Personal Protective Equipment (PPEs) at the work sites to prevent and minimize exposure to injury.
- Contractors will be required to carry our regular safety inspections to ensure measures to manage potential OHS hazards.

Public health risk

- Awareness creation by the ESIA team to the public/locals prior to construction.
- The contractor is impressed upon not to set a construction camp on site.

Increased Demand for Material Consumption

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

Oil Spill Hazards

- In the event of accidental leaks, contaminated top soil should be scooped and disposed of appropriately.
- It is proposed that the refueling and maintenance of large vehicles will not take place at the construction site.
- Contractor to create awareness for the employees on site on company procedures of dealing with spills and leaks from oil storage tanks for the construction machinery through induction and safety training.
- 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.
- The contractor should also provide security to guard against vandalism when the site is unattended.
- Proper training for the handling and use of fuels and hazardous material for construction workers.
- All chemicals should be stored within the budded areas and clearly labeled detailing the nature and quantity of chemicals within individual containers.

Storm water and Wastewater

- Drainage system should be constructed to ensure surface run off does not affect/spill to the neighbor land.
- Construct the drainage system in a way to run along the road and follow natural drain way.
- Concrete only the required area for the facility and leave the rest of the land with vegetation like grass.
- Construct rain harvesting system on the control buildings and harness into storage tanks for use in irrigation or household activities

Noise and vibration during construction

These proposed mitigation measures aim to ensure that noise generated by construction and operation activities 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.
- e Co-ordinate with relevant agencies regarding all construction.
- Control the project area to avoid unnecessary access by idlers
- 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 Friday, or as required in terms of legislation.

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, cables and transformers by the project proponent.

Soil Erosion

- The contractor shall avoid ground breaking during the seasons of high rainfall to avoid erosion.
- Monitoring of areas of exposed soil during rainy seasons during construction phase of the project to ensure that any incidents of erosion are quickly controlled.
- The contractor should ensure recovery of exposed soils with grass and other ground cover as soon as possible.
- 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
- Direct the drainage to follow the natural course way e.g. along the road to avoid draining water into someone land especially once construction is finished.
- Proper drainage channels and leveling especially of the access road to reduce run-off velocity and increase infiltration of rain water into the soil.
- Proper compaction will also be done along the access road.

Social Risks Related to Labor Influx and GBV

- Provision of cultural sensitization training for workers regarding engagement with local community.
- Sourcing of local workforce;
- Introduction of sanctions (e.g., dismissal) for workers involved in criminal activities;
- Provision of substance abuse prevention and management programs;
- Worker Code of Conduct acknowledging zero tolerance for GBV;
- Implementation of HIV/AIDS education program;
- Information campaigns on STDs among the workers and local community;
- Education about the transmission of diseases;
- Mandatory and regular training for workers on required lawful conduct in host community and legal consequences for failure to comply with laws;
- Ensuring that children and minors are not employed directly or indirectly on the project;
- Provision of casual employment to both male and female throughout the implementation cycle;
- All gender based violence to be reported and dealt with as per the law;
- Any child dropout should be reported to the relevant government agency.

Hazardous Waste Mitigation Measure and Management/Disposal Plan

- Procurement of Electronic Equipment from Credible Manufacturers
- Proper disposal and recycling whenever feasible.
- the corresponding mitigation measures to successfully manage negative E&S impacts based on project stage.

CHAPTER FOUR: ENVIRONMENTAL AND SOCIAL RISK MANAGEMENT PROCESS

4.1. Introduction

Environmental performance, sustainability, and social responsibility are critical to the success of an investment. Thus, well-designed environmental and social plans can help to manage potential reputation risks for investors, reduce social conflicts within communities, protect the environment and help reduce political risks.

This chapter aims to identify the party responsible for each specific steps and tasks in all aspects of the E&S management throughout the project cycle.

4.2. E&S Management Process for Component 1: Solar Hybrid Mini grids for Rural Economic Development

The objective of this component is to electrify unserved and underserved areas that have high economic growth potential, aiming to serve households, local enterprises and public institutions with mini grids developed by the private sector. The tentative target/indicators are to serve 300,000 households, and 30,000 local enterprises, with approximately 15 mini grid operators. As the mini grids will be developed by the private sector, operating guidelines for this component will guide the overall process, of which E&S process will be an integral part as described in this section. This process will be integrated into the operating guidelines, developer application process and forms, and reporting and monitoring processes.

The component will be implemented by REA under a market-based approach whereby the private sector develops the delivery of electricity services with subsidies on a quasi-commercial basis. There are two sub-components that will require designing an E&S risk assessment and management process:

a) **Minimum Subsidy Tender:** For areas of the country where private sector interest exists, REA will select appropriately 200 sites to kick start project implementation. REA will invite private developers to bid for minimum subsidies required to deliver electricity services at these sites. This tender will increase the deal size, and so is expected to attract some international private developers to enter this market in Nigeria. For another 70 mini grids in high risk environments in the Northeast of Nigeria (excluding Borno), full public funding is proposed, with the tendering process to be managed by the implementing partner for this activity, UNOPS.

b) **Performance Based Grant**, under which REA will develop a market-based approach to support eligible companies to expand their electrification business/projects in rural areas. This track will provide performance based grants to mini grid operators on the basis of new customer connections ($/end user). It is expected that the performance-based grants will benefit an estimated 585 mini grids/load centers, at least 8 companies, and 230,000 end users.

4.2.1 Minimum Subsidy Tender

Under this program, REA identifies the mini-grid sites and group them in to lots, for which qualified mini-grid developers will submit proposals. REA will review all bids and determine the winning bid based on technical, financial and E&S aspects. The winning developer will then prepare all necessary documents for construction and operation of the mini-grids, including getting any permit required and preparing ESIA, ESMP, and Resettlement Action Plan (RAP) if applicable. Once the documents have been reviewed and verified by REA, the winning bid is awarded, and the winning developer will start construction while REA continues to monitor its performance.
In sum, the Competitive Tendering Program has 3 main stages: (1) Site Identification stage; (2) Tendering Process stage; and (3) Construction and Operation stage. Table 4.1 shows the workflow of this component and the general E&S responsibilities of each key party. For more technical details, please refer to the Section "Competitive Tendering Program" in the Mini grid Component Operating Guideline.

Stage 1: Site Selection

During mini-grid site identification stage, REA creates a list of potential sites, designs site surveys and collects basic site information, including key E&S factors, and estimates land use based on the expected generation capacity of the mini-grid. After completion of the survey, REA analyzes and verifies the survey results on a sample basis, and then selects sites based on its pre-established Exclusion List and E&S Screening Criteria.
REA's E&S roles and responsibilities at this stage include:

- Ensure that electricity demand surveys include questions on E&S to inform early E&S screening;
- Analyze and verify survey information, mostly desk review, with 1-2 site visits as feasible;
- Apply Exclusion Criteria for Mini-Gird and Power Generation Sites;
- Prepare clear E&S screening criteria for site selection;
- Estimate land requirement for each site based on expected generation capacity; and
- Identify sites with potential resettlement or economic displacement.

Specifically, estimated land requirement will be established using the following formula:

Ha (*generation capacity/ panel capacity x panel surface area*).

When actual sites for solar panel installation are confirmed by developers, they must report the area of land acquired for the project and provide justification, as applicable, for taking more land than required based on REA's estimate.

The results of the first round of survey conducted by the REA shows that among 97 potential mini grid sites that: 18 of them are in protected areas, 76 has experienced natural disaster, 61 have water shortage, 50 have high poverty rate, 56 have high unemployment rate, and 26 have high social disparity (Annex XII).

Under the Land Use Act 1978, all land in Nigeria is vested in the government. In addition to the statutory land tenure, Nigeria also operate a customary system of land tenure. Broadly, land ownership in Nigeria can be classified under the following: (1) Community land (Ancestral Land): owned by all the people; (2) Communal land: consists mostly of under-developed forests and owned by nobody. Those who clear it first claim ownership; (3) Clan or family land: owned by clans and families ; (4) Institutional land: land allocated to traditional institutions such as traditional authorities and chiefs; and (5) Individual land: land acquired by an individual, which may be inherited by the immediate family, depending on customary practices or purchased or allocated by the government. A more detailed analysis of land ownership in Nigeria is in the project RPF.

Stage 2: Competitive Tendering

REA continues to play the leading role during this stage, but mini-grid developers' E&S responsibilities also have started.

Before the tendering process starts, REA needs to:

- Prepare the Lot Package, which contain all relevant information of each mini-grid site lots, including all E&S information obtained during site surveys;
- Conduct a public advertising campaign for the Call for Expressions of Interest. The information made public during the campaigns should include: (i) E&S eligibility criteria as part of the overall criteria for developer selection, including ESMS and a clean track record, such as no environmental fines in the past 3 years, etc.; and (2) site selection criteria, including E&S criteria & exclusion list; and
- Host bidders' workshop, which integrates E&S elements.

It is a mandatory requirement that developers should establish and maintain an internal institutional Environmental and Social Management System (ESMS) appropriate to the nature of their business and commensurate with the level of its environmental and social risks and impacts. The ESMS will incorporate the following elements: (i) policy; (ii) process for identification of risks and impacts; (iii) risk management plans/ programs; (iv) organizational capacity and competency; (v) emergency preparedness and response; (vi) stakeholder engagement (including grievance mechanism); and (vii) monitoring and review.

During the tendering process, when developers submit their proposals/bids, their E&S responsibilities at this step include:

- Prepare and submit documents meeting selection criteria, including ESMS as part of Business Plan for REA to review and verify; and
- Proven clean track record on no environmental violation or fines in past 3 years.

After the proposal submission period, REA's Technical Review Committee would review bids to ensure all E&S criteria are met. The Grant Agreement with winning developer(s) should include an E&S clause, and REA should also liaise with the winning developer(s) to improve their ESMS if needed, until REA is satisfied that a robust system exists.

Stage 3: Construction and Operation

As part of preparation for mini-grid construction, the winning developer(s) will:

- Conduct E&S screening and classify sites into E&S risk category (I, II);

- Inform REA of outcomes of screening (consolidated report);
- Prepare ESIA, ESMP, Resettlement Action Plan, as applicable;
- Obtain any E&S permits required by law;
- Conduct stakeholder engagement; and
- Submit relevant documents to REA.

For E&S risk categorization, category I will be assigned to sites with higher E&S risks as compared to category II sites. The decision will be made by developers based on the outcomes of E&S screening done by them and verified by REA. Developers will classify sites as part of their ESMS. Guidance on classification will be provided by REA as part of the ESMF. REA has the ultimate authority to decide whether a construction site should be categorized as I or II.

For example, sites requiring resettlement should always be classified as category I and will require a RAP. Category I sites will require an ESIA and category II sites will require a simple ESMP. In both cases, developer will be required to conduct community engagement and establish a grievance redress mechanism. ESMPs will be kept by developers on file for verification by REA during sample checks/ audits; ESIAs and RAPs are sent to REA for review and verification before construction can start (as these are higher risk).

After the developer has submitted all required documents, and REA has completed verification,
the developer can start mini-grid construction. During mini-grid construction and throughout its operating life, the developer needs to:

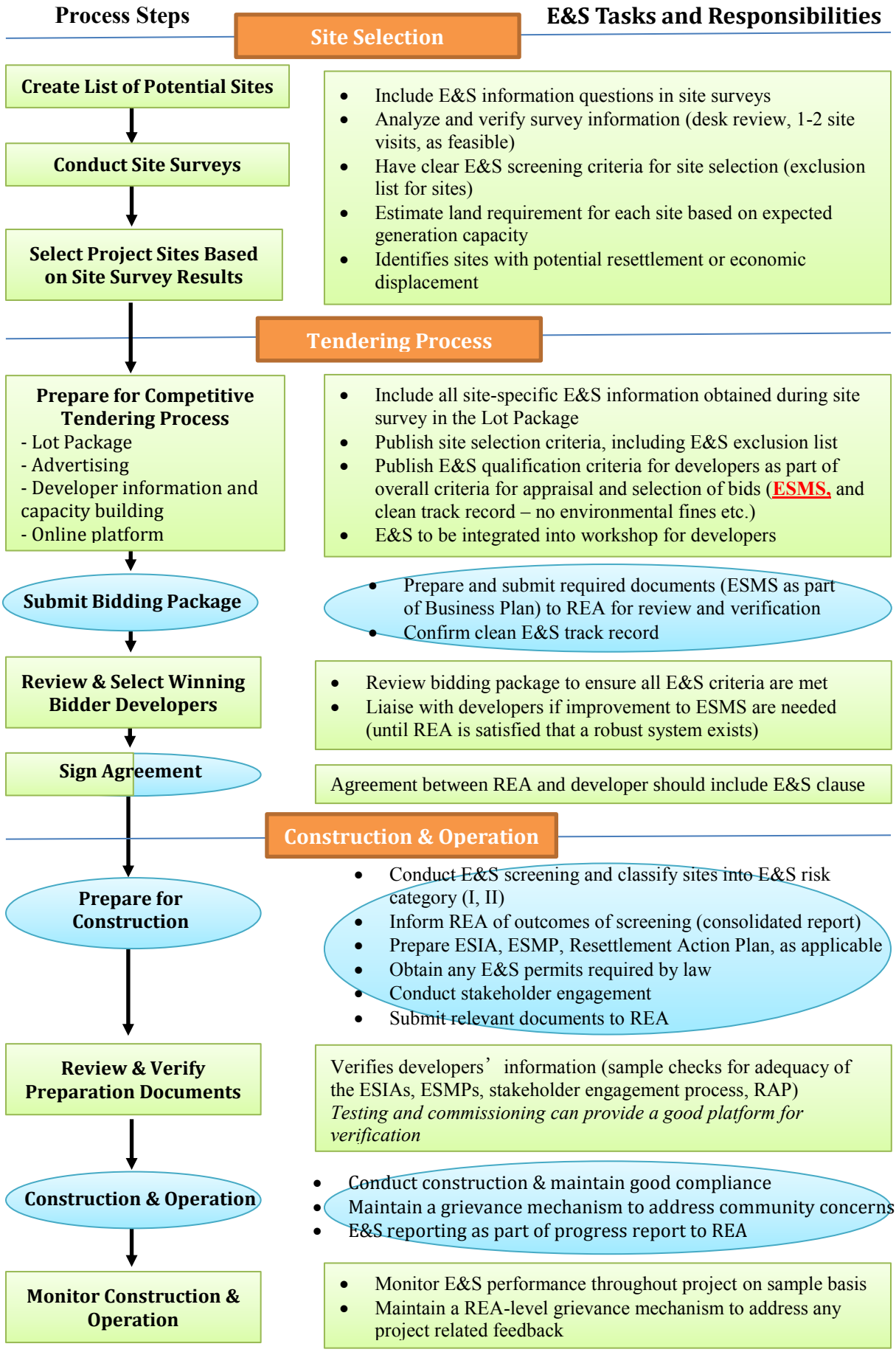
- Maintain compliance with E&S requirements;
- Maintain a grievance redress mechanism to address community concerns; and
- Submit E&S reporting as part of progress report to REA.

Meanwhile, REA will:

- Monitor E&S performance through project cycle on sample basis; and

Maintain a REA-level grievance redress mechanism to address any project related feedback in a timely and meaningful manner.

Figure 4.1. E&S Workflow for Minimum Subsidy Tender for Mini grid Development
(Green: REA; Blue: Mini grid Developer)



4.2.2. Performance Based Grants for Mini grid Development

Under this program, developers screen and propose mini-grid projects, and conduct E&S due diligence before submitting their proposals. REA reviews and evaluates each proposal and approves, returns for adjustment, or rejects the proposal. For approved proposals, a Grant Agreement will be signed between REA and the mini-grid developer, who will then prepare site specific E&S documents, which must be verified by REA before construction can commence. During construction and operation, the developer must maintain E&S compliance while REA continues to monitor its performance.

In sum, program has 3 major stages: (1) Proposal–Acceptance into the Program; (2) Design Verification for Sites; and (3) Construction & Operation. Figure 2 shows the workflow of this component and the general E&S responsibilities of each key party. For further details, please refer to the Section "Performance Based Grant Program" in the Mini grid Component Operating Guideline.

Stage 1: Proposal–Acceptance into the Program

At the beginning of the implementation period, REA will publish a program announcement, which will include: i) E&S eligibility criteria as part of the overall criteria for developer selection, including ESMS requirement and clean track record, such as no environmental violation or fine in the past 3 years; and ii) site selection criteria, including the Exclusion List for sites. It will also establish a REA-level GRM to address any project related issues.

Mini-grid developers who meet all of REA's eligibility criteria and thus qualify for entry into the performance based grant program must prepare and submit an application package that includes the following:

- Documents establishing eligibility, including ESMS as part of a Business Plan for REA to review and verify; and
- Proven clean track record on E& S compliance (no environmental violation or fines in past 3 years).

REA would approve the developer for admission into the program after:

- Reviewing the proposal to ensure all E&S criteria are met; and
- Liaising with developers if improvement to ESMS are needed, until the developer has a robust system that REA is satisfied with.

Once REA is satisfied with the proposal, it would sign a Grant Agreement with the developer, which shall include E&S clauses.

Stage 2: Design Verification for Sites

Once the Agreement has been signed, the developer should start preparing site specific documents, include E&S documentation, and take the following steps:

- Conduct E&S screening and classify sites into E&S risk category (I, II);
- Inform REA of outcomes of screening;
- Prepare ESIA, ESMP, RAP, as applicable;

- Obtain any E&S permits required by law;
- Conduct stakeholder engagement; and
- Submit relevant documents to REA (for category I) and keep documents for category II on file for verification by REA during monitoring.

REA will review and verify the site preparation documents through desk review of ESIA, ESMP, and RAS, with sample site visits when feasible during design verification with aim to minizine negative E&S impacts.

Stage 3: Construction and Operation

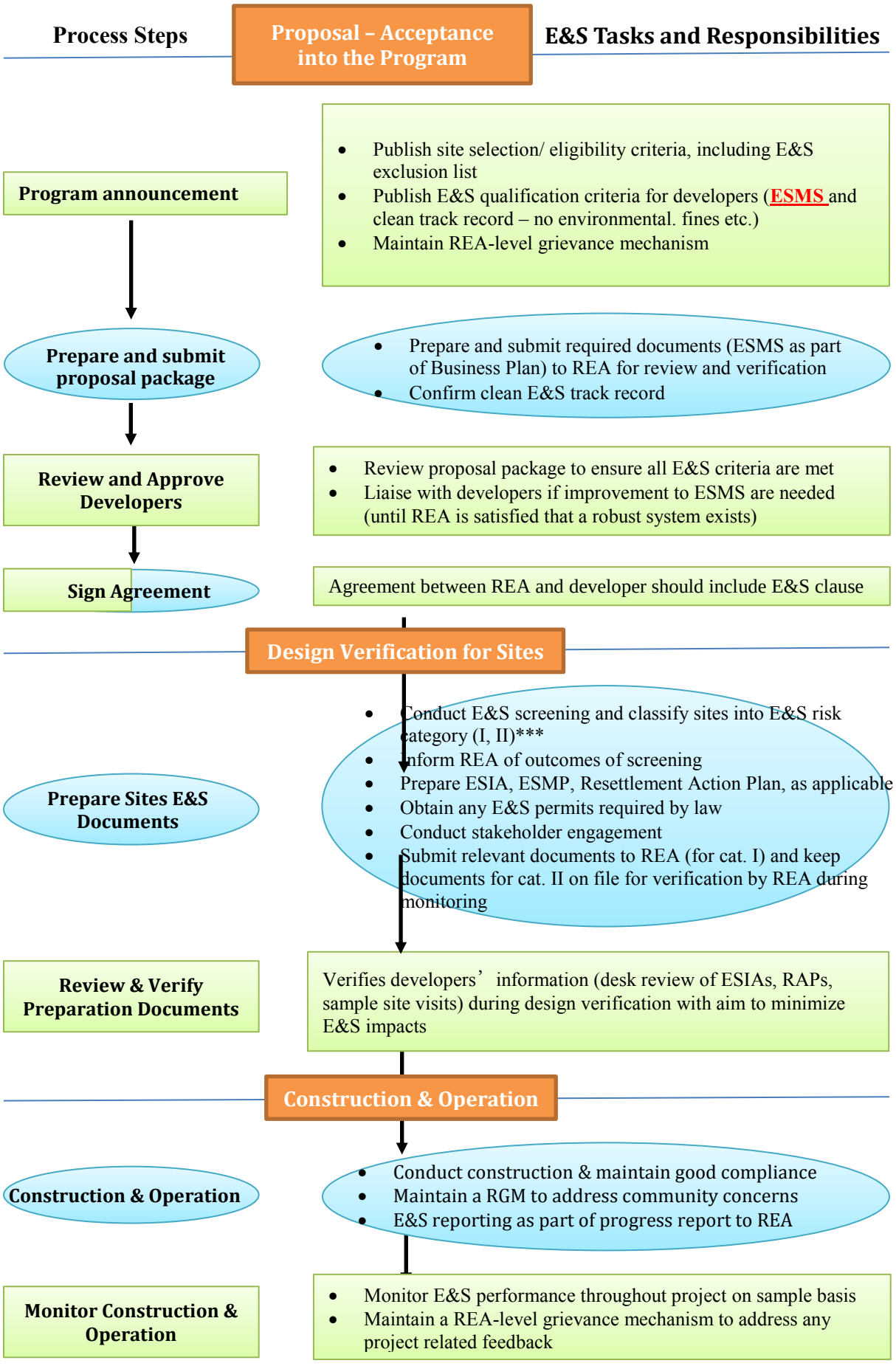
Once verification is completed, the developer can start mini-grid construction. During construction and operation of the mini-grid, the developer needs to:

- Maintain compliance with E&S requirements;
- Maintain a grievance redress mechanism to address community concerns; and
- Submit E&S reporting as part of progress report to REA.

Meanwhile, REA will:

- Monitor E&S performance through project cycle on sample basis; and
- Maintain a REA-level grievance redress mechanism to address any project related feedback in a timely and meaningful manner.

Figure 4.2. E&S Workflow for Performance Based Grants for Mini grid Development
(Green: REA; Blue: Mini grid Developer)



4.3. E&S Management Process for Component 2: Standalone Solar Systems for Homes, Enterprises and Farms

The goal of this component is to help 1.5 million underserved Nigerian households and micro, small and medium enterprises (MSMEs) access better energy services at lower cost than their current service, via stand-alone solar home systems provided by the private sector. This component will support the deployment of stand-alone solar systems ranging in different sizes and levels of service. SHS standards are described in the SHS Operations Manual in detail.

Based on the qualification criterial established by REA, which include E&S requirements, SHS distributors will need to be qualified before they can submit application for grants under this component. Once a SHS distributor becomes a qualified distributor, it can then submit grant application, which once approved, will cover a certain amount of SHS installation. Once the grant agreement has been signed, the distributor will start the installation and receive the grant based on the number of units of SHS install, per the grant agreement. The distributor also needs to maintain good compliance and good customer service after installation. REA is responsible for verifying distributors' qualification, installation performance, overall compliance and maintaining a GRM for both the public and the distributors for project related feedback.

In sum, the process has three main stages: (1) Distributor Qualification Process; (2) SHS Installation Stage; and (3) Post Installation Stage. Table 4.3. shows the workflow of this component and the general E&S responsibilities of each key party. "*" indicates a template is available for such document. For more details, please refer to the Section "Competitive Tendering Process" in the Mini grid Component Operating Guideline.

Stage 1: Qualification Process

First, REA will establish and publish the qualification criteria for SHS distributors to apply to become "Qualified Distributor" under this project component. Specific E&S requirements are:

- have a good E&S track record, meaning no E&S related fines, violation record, litigation, or pending litigations in the past three years;
- have an institutional ESMS that meets REA's requirements – ESMS here is defined as a number of key policies and procedures prepared and implemented by an SHS company (see annex IX);
- have the intuitional capacity to implement such ESMS; and
- be willing to participate in E&S capacity building activates hosted by REA should REA deems necessary.

Interested distributors can submit its completed Qualification Application Form and supply all required documentation for application, including E&S documents, as part of application.

REA will review and verify the application before making the decision.

- verify the adequacy of information submitted; and
- maintain REA-level GRM to address project related issues (this is a common requirement for all three components).

After verification, REA and the SHS distributer would sign the Grant Agreement, which should include clear E&S requirements, such as

- distributor's responsibility to maintain required policies in good standing; and
- distributor will notify REA of any E&S issues are affecting its compliance.

Stage 2: SHS Distributor Operation

With the signed agreement, distributor will start install SHS per its terms and submit clam for grants, as long as its operation remains in good compliance with laws and all other E&S requirements.

REA will pay for qualified clams and maintain a REA-level GRM for any project related issues.

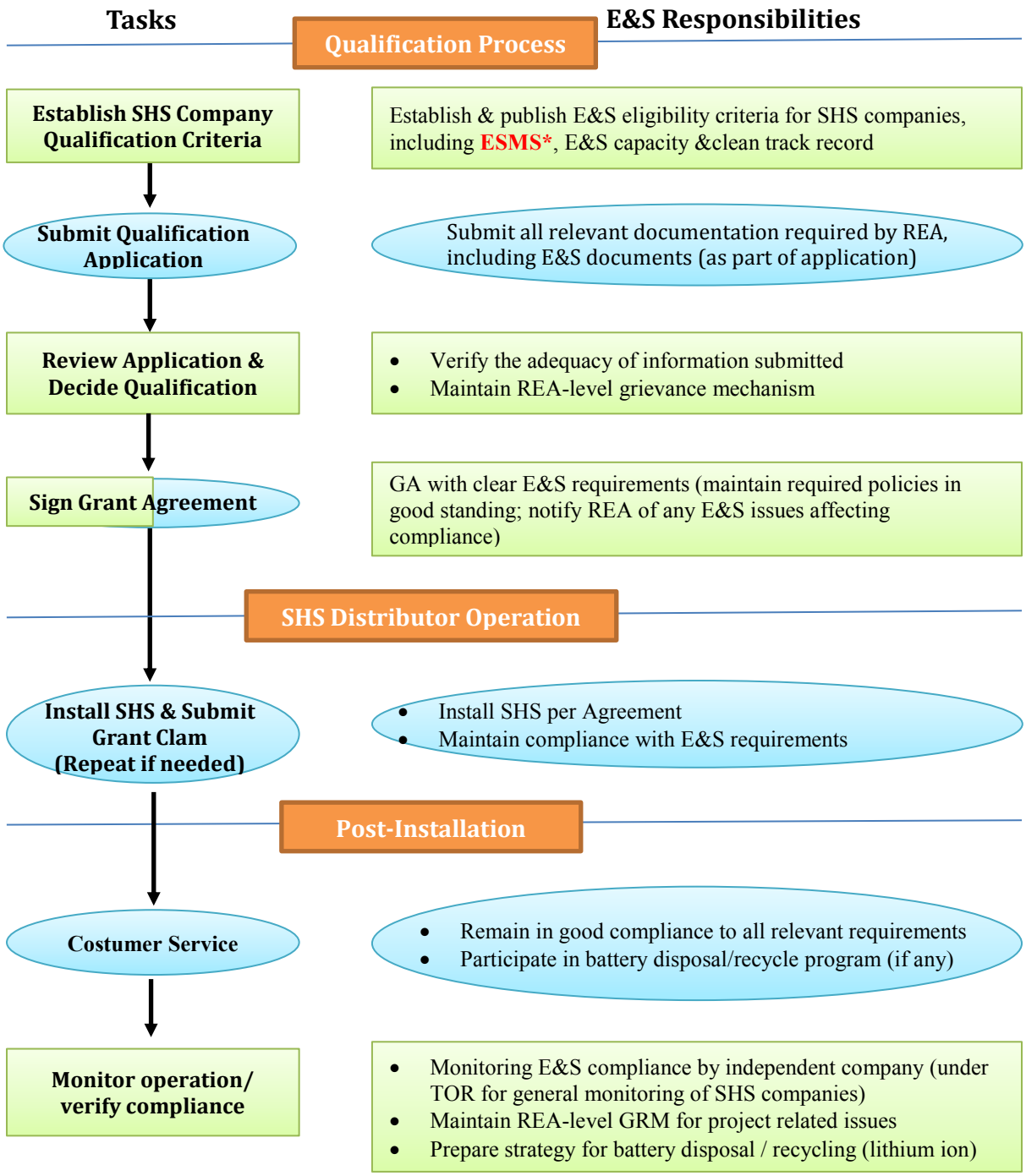
Stage 3: Post-Installation

After the SHS has been installed and is in use, the distributor is still responsible to maintain in good compliance to overall requirements, provide good customer service, participate in battery disposal/recycle program.

REA's duty to monitor operation and verify compliance include:

- monitoring E&S compliance by independent company (under TOR for general monitoring of SHS companies);
- maintain REA-level GRM for project related issues; and
- prepare strategy for battery disposal / recycling (lithium ion).

Figure 4.3. E&S Workflow for Component 2: Standalone Solar Systems for Homes, Enterprises and Farms
(Green: REA; Blue: SHS Distributor)
* "ESMS" is defined as a number of key polices (see annex XI)



4.4. E&S Management Process for Component 3: Power Systems for Public Universities and Teaching Hospitals

The overall objective of FGN's Energizing Education Program (EEP) is to provide reliable, affordable, and sustainable power to the second phase of the EEP. This component covers seven pre-identified federal universities (beneficiary universities or BUs) and one teaching hospital.

The component will be implemented by REA, which will lead the design, installation, operation, and maintenance of the systems. REA will competitively select Engineer, Procure, Construct (EPC) contractors for the power stations and training centers. These suppliers will also enter a ten-year operations and maintenance contract. The contractors will be selected based on a competitive tendering process. But REA is accountable for all E&S due diligence, compliance and performance. The BUs are responsible for acquiring land needed for such construction, complying with REA's E&S requirements.

There are three main stage of this component: (1) Identification and Tender; (2) Construction; and (3) Operation. There are three key parties under this component: REA, the beneficiary universities (BUs), and EPC contractors. In addition, WB has clearance role for propose ESIA. Workflow is presented in Figure 4.4.

Stage 1: Identification & Tender Stage

All BUs have already been identified. They are responsible for acquiring the land needed for the construction of power station and training facility, in compliance with national/local laws, REA's requirement, and WB OP4.12.

- Identifying sufficient and suitable land for power station construction and the training center based on the guidance provided by REA.
- Conduct assessment of affected persons & stakeholder engagement.
- Prepare RAP if needed, with assistance from REA.

REA will prepare TOR to hire E&S Specialists and commission such specialists to conduct the ESIAs and prepare ESMPs, jointly with each BU. These specialists also have consultant roles in other E&S related issues throughout the process.

Once the ESIAs & ESMPs are completed, REA would send them to WB for clearance.

Once cleared, REA will prepare tender documents to hire engineering, procurement, and construction contractors (EPC contractors) for pre-construction and construction, incorporating the ESMPs in tender documents.

Stage 2: Construction

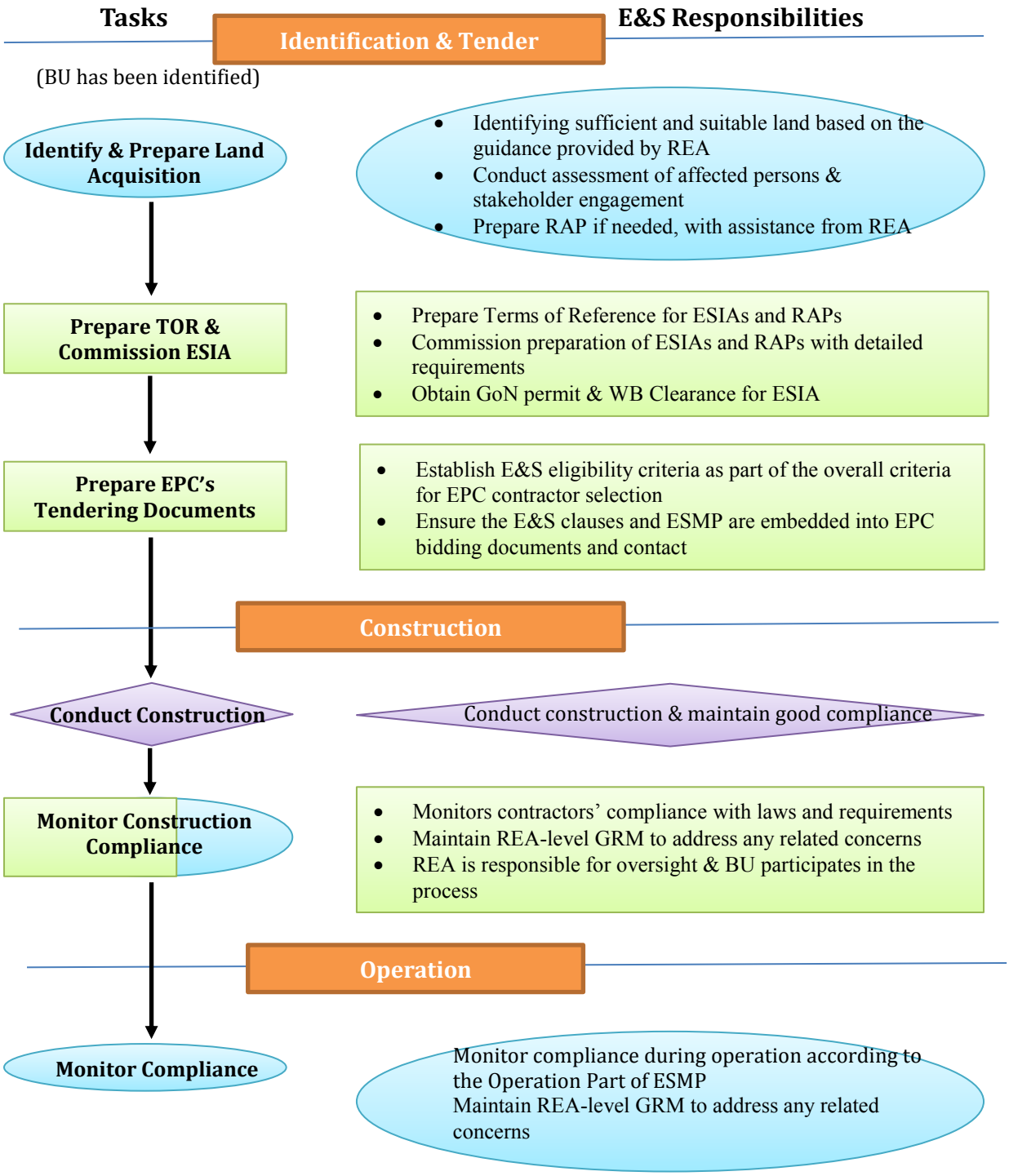
EPC contractors would construct the construction of power station and training facility in compliance with contract and relevant laws/regulations.
REA is responsible to monitor the construction to ensure good compliance, with the assistance from BUs. In addition, it would maintain a REA-level GRM to address any project related concerns.

Stage 3: Operation

BUs are responsible for operations and ensure good compliance during operations, according to the Operations Part of the ESMPs. REA provides any support needed and monitors each BU's compliance.

Figure 4.4. E&S Workflow for Component 3: Power Systems for Public Universities and Teaching Hospitals

(Green: REA; Blue: Beneficiary University (BU); Purple: Contractor)



4.5. Roles and Responsibilities of Implementing Entities

The successful implementation of the ESMF depends on the commitment of REA, the private sector and related institutions, and the capacity within the institutions to apply or use the ESMF effectively, and the appropriate and functional institutional arrangements, among others.

Below describes the detailed roles and responsibilities of the key institutions involved in the implementation of the ESMF by project components.

4.5.1. Main Implementing Agency

REA will provide overall coordination of the Project and lead in the implementation of the different Components (1-3), which will include overall responsibility for safeguards due diligence, and compliance monitoring. Further, REA will be responsible for the overall coordination of the project implementation and oversight. Specifically, in terms of E&S risk management across project components, PMU for the project will be responsible for:

1. Overall oversight of the E&S risk assessment, management, and monitoring processes in line with this ESMF, for each component of the Project;
2. Putting in place and implementing a reporting system from private sector entities to REA on implementation of E&S requirements;
3. Engaging an independent E&S auditor to ensure that private sector entities are implementing E&S requirements set out in the ESMF consistently;
4. Assuming responsibility for citizen engagement, maintaining adequate stakeholder engagement and grievance redress mechanism and ensuring that private sector entities maintain the same at their level. REA-PMU will establish a communication line between the REA zonal offices and ensure project success on this aspect. It will also facilitate liaise with MDAs, CBOs, NGOs and project affected communities;
5. Designing, organizing and implementing capacity building programs for mini grid developers and other key stakeholders;
6. Defining, jointly with the respective states and local governments, the project priorities based on technical and policy development priorities;
7. Resolving in consultation with the States/local governments challenges requiring high level intervention facing the project; and
8. Monitoring the implementation of the project in consultation with the states and local governments.

4.5.2. Roles and Responsibilities by Project Component

Component 1

Under this component, the key players are REA, the private mini grid developers, FMoE, the affected communities, and the independent auditor hired by the mini grid developers to conduct annual E&S review. They each have different roles and responsibilities:

1. Setting applicable E&S requirements (E&S requirement setting)
2. Screening for E&S risk and impacts (E&S screening)
3. E&S due diligence and risk management (E&S due diligence)
4. E&S monitoring

5. E&S reporting
6. Independent E&S audit

REA plays an essential role in setting the overall E&S standards and ensuring the requirements are met thorough the process. Its responsibilities include:

1. E&S requirement setting, REA will

    a. Set applicable E&S requirements and includes them in the grand application process for mini grid developers. Such as the exclusion list and requirements for ESIS, SEMP, RAP/LRP, consultation, clean E&S track records, etc.

    b. Require mini grid developers to prepare ESMS. A sample mini grid developer ESMS is available in Annex X, and capacity building will be provided to help developers to design and implement a suitable ESMS.

    c. Integrate E&S requirements in legal agreements with mini grid developments.

2. E&S screening: REA will validate developer process and risk categorization. Desk-based sample validation will be conducted by REA to ensure the developer's E&S screening process meets the requirement and the project risk categorization is reasonable.

3. E&S due diligence: REA will conduct sample site visits for category I and selected category II mini grids to validate the risk categorization and risk management design/implementation is sufficient.

4. E&S monitoring: REA will conduct monitoring activities during mini grid construction and operation, such as sample, risk-based checks and site visits.

5. E&S reporting: REA will

    a. Review annual E&S reports submitted by the developers and conduct follow-ups based on desk-top reviews and site visits.

    b. Maintain records of developer screening, ESIAs, ESMPs, RAPs and/ or LRPs, and other relevant documents.

6. E&S auditing: REA will hire an independent E&S auditor.

Mini grid Developers plan and conduct the construction and is responsible for complying with all relevant E&S requirements. Its responsibilities include:

1. E&S requirement setting: mini grid developers will incorporate application E&S requirements in their institutional ESMS, that include national and regional laws/policies and any requirement set by REA and other investors (if any).

2. E&S screening: mini grid developers will

    a. Conduct the actual E&S screening based on all relevant requirements, employing or hiring qualified E&S specialists, and provide sufficient resources for such activities.

b. Determine key E&S risk and impacts of individual mini0grids and assign E&S category (I or II), corresponding to high or medium/low risk.

c. Submit a list of category I sites to REA before begin construction.

3. E&S due diligence: mini grid developers will prepare and integrate into project design that: (1) for Category I projects, ESIA and RAPs and/or LRP as needed; (2) for Category II projects, SEMP; and (3) for all projects: the Stakeholder Engagement Plan (SEP) and grievance mechanism.

4. E&S monitoring: mini grid developers will conduct self-monitoring activities in line with their ESMS and main all monitoring records properly.

5. E&S reporting: mini grid developers will

   a. Prepare annual E&S reports to REA based on REA's reporting requirements;

   b. Report any incident or accidents within several days of occurrence, including any E&S fines, litigation, or other administrative/legal issues.

6. E&S audit: mini grid developers will provide all relevant reports and documents to the independent E&S auditors in a timely manner upon request.

In addition to REA and the mini grid developers, the following key stakeholders also have specific responsibilities under this component:

FMoE will provide environmental clearance as required by laws and regulations, when the mini grid developer submits sufficient information and evidence of compliance.

Affected communities will participate in monitoring, based on the arraignment agreed with the mini grid developer and outlined in the SEP.

Independent E&S auditor hired by REA will conduct annual review of developers' E&S performance.

Component 2

Under this component, the key players are REA and the standalone solar system (solar home system, or SHS) companies. They each have different roles and responsibilities in the 3 core stages as set up by the flowchart above:

1. SHS company grant application stage
2. SHS company operations stage
3. Monitoring stage

REA sets the E&S standards and ensures the requirements are met thorough the process. Its responsibilities include:

1. SHS company grant application stage: REA will

   a. Incorporate E&S requirements (ESMS, clean E&S track records, exclusion criteria) into application and grant agreements.

b. Conduct review of SHS companies' ESMS.A sample mini grid developer ESMS is available in Annex X, and capacity building will be provided to help SHS companies to design and implement a suitable ESMS.

2. SHS company operations stage: REA will conduct sample performance check as needed.

3. Monitoring stage: REA will oversee monitoring E&S compliance by independent companies (under TOR for general monitoring of HS companies).

SHS companies plan and conduct the construction and is responsible for complying with all relevant E&S requirements. Its responsibilities include:

1. SHS company grant application stage: SHS companies will

   a. Prepare elements required for an ESMS in line with REA's requirement.

   b. Submit statement of current practice of battery disposal/recycling.

2. SHS company operations stage: SHS companies will

   a. Remain in good compliance to all relevant requirements.

   b. Participate in battery disposal/recycle program (if any).

3. Monitoring stage: SHS companies will

   a. Conduct self-monitoring to ensure compliance.
   b. Provide relevant documents to REA in a timely manner when request.

Component 3

Under this component, the key players are REA, contractors hired by REA, MFoE, and the beneficiary universities. They each have different roles and responsibilities in the 4 core stages as set up by the flowchart above:

1. E&S impact assessment
2. Resettlement planning
3. E&S monitoring
4. Independent E&S audit

REA sets the overall E&S standards, prepares actual E&S documents, designed related processes, and ensures the E&S compliance thorough the construction and operation. Its responsibilities include:

1. E&S impact assessment: REA will

   a. Prepare ESIAs and ESMPs for university mini grid subprojects based on its requirements for private mini grid developers.

   b. Integrates E&S clauses in bidding documents and legal agreements to contractors.

2. Resettlement planning: REA will

    a. Prepare RAPs and LAPs, as needed, based on its requirements for private min-grid developers.

    b. Maintain targeted grievance mechanism for all land related issues in this component, in addition to the overall grievance mechanism that it has for this project in general.

3. E&S monitoring: REA will monitor contracts' E&S performance before and during construction.

4. Independent E&S audit: REA will engage independent E&S auditor as needed.

The contractors are hired by REA to conduct the actual construction of the university mini grid sub-projects and other relevant construction. Their responsibilities include:

1. E&S impact assessment: the contractor will integrate ESMP requirements to their activities and comply with all national/regional laws and regulations, as well as REA requirements.

2. Resettlement planning: the contractors will play no role in resettlement planning.

3. E&S monitoring: the contractors will conduct self-monitoring again the ESMPs.

4. Independent E&S audit: the contractors will provide all relevant reports and documents to the independent E&S auditor in a timely manner upon request.

In addition to REA and its hired contractors, the following key stakeholders also have specific responsibilities under this component:

FMoE will provide environmental clearance as required by laws and regulations, when the mini grid developer submits sufficient information and evidence of compliance.

Beneficiary Universities will: (1) manage compensation and livelihood restoration activities based on the RAPs and /or LRPs prepared by the REA; and (2) support REA in monitoring the hired contractors' E&S performance during construction.

The mitigation principles are considered broadly as they capture all levels of impacts that each sub-project could present in the project sites and the communities. These mitigation principles will also be useful and fundamental in the preparation of mitigation strategies which will be developed and implemented in the ESMPs prepared for sub-projects. The Environmental Management Framework institutionalizes the measures through assigning implementation responsibilities and formulation of contract clauses for incorporation into contract documents

4.5.3. Role of the World Bank

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

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

4.5.4. Relevant National Institutions and Organizations

(i) Federal Level Institutions

These are ministries, departments, agencies, civil societies etc. that are directly or indirectly involved with the implementation of the REA projects. Implementation of the REA projects will involve multi-sectoral participation. These institutions will aid in broader activities under the project.

The institutions at the federal level are responsible for the establishment of national policy goals and objectives and the appropriate provision of technical and financial assistance to State and local governments. For this ESMF specifically, the Federal Ministry of Environment and its relevant agencies like National Environmental Regulatory Standards and Enforcement Agency (NESREA) shall play the role of lead environmental regulator, overseeing compliance requirements, granting consent and also monitoring or providing supervisory oversight for the REA projects. It also shall receive comments from stakeholders, public hearing of project proposals, and convening technical decision-making panel as well as provide approval and needed clearance for EIA/EMP or other environmental clearance.

Table 4.1. Overview of Relevant Federal Institutions

Institution	Role
Federal Ministry of Finance	The Ministry of Finance will function in the capacity of the Federal Republic of Nigeria (the borrower)
Federal Ministry of Justice	The Federal Ministry of Justice shall sign on behalf of FGN as the borrower.
Federal Ministry of Environment (FMEnv)	Federal Ministry of Environment (FME) is mandated by the Federal Republic of Nigeria to ensure environmental protection and natural resources conservation for a sustainable development in the country. They promote cooperation in environmental science and conservation technology with similar bodies in other countries and with international bodies connected with the protection of the environment and the conservation of natural resources. The Ministry also cooperates with Federal and State Ministries, Local Government, statutory bodies and research agencies on matters and facilities relating to the protection of the environment and the conservation of natural resources. The Environmental Assessment Department of the Federal Ministry of Environment will ensure that all project/sub-project ESIAs meet international “best practices” and the NESREA will regulate and enforce the implementation of all EMPs developed for the REA projects.

Department of Rural Electrification of the Federal Ministry of Power, Works and Housing (FPW&H)	This is the designated department of the FMPW&H to handle all, policy issues pertaining to rural electrification. It will be the FMPW&Hs primary representative in the execution of the project particularly in component 1 subproject.

(ii) State Level Institutions

The State level institutions include other relevant Ministries, Departments and Agencies (MDAs), State Environmental Protections Agencies/Authorities (SEPAs). Most states have set up Environmental Protection agencies as the regulatory body to protect and manage the environmental issues in their domain. The functions of the SEPAs include:

- Enforcement of all environmental legislations in the states
- Minimization of impacts of physical development on the ecosystem
- Preservation, conservation and restoration to pre-impact status of all ecological process essential for the preservation of biological diversity.
- Protection of air, water, land, forest and wildlife within the state.
- Pollution control and environmental health in the state.

(iii) Local Government Level Institutions

The Local Government (LG) has become accepted as the government nearest to the people or the masses. For any meaningful development to take place, this level of government needs to be galvanized to execute people oriented programs to lower poverty level. The LG governs the affairs in the various communities. It is expected that it serves as an interphase between the community members and REA coordinating centers located in the six geopolitical zones. The LG can assist in the implementation of stakeholder engagement mechanisms. Members of the local government are mostly people from the community and can easily win the trust of the people. Their staff can work together with the other MDAs.

The Local Government Council has to be fully briefed in the process and steps to be taken in the ESMF/EA/ESMP and the overall project execution. The Council should in turn engage and should be encouraged to support the awareness campaign for the proposed project to be designed by REA, amongst the various relevant grass roots interest groups.

(iv) Community Level

This includes direct and other concerned stakeholders/groups. This may have complaints/views that need to be resolved in the choosing and execution of the various sub-projects. It is obvious that villages and youth leaders shall ensure that social values are not interfered with. Community Based Organizations (CBO) based in the communities can serve as an interphase and can speak for the people.

4.6. Environmental and Social Auditing

Environmental and social audit will be use a management tool to enhance all the safeguards tools as captured in this ESMF. REA through its PMU shall commit to a systematic, documented, periodic and objective evaluation of how well contractors handling the projects

meet the safeguards. REA will facilitate periodic meetings with contractors and universities/communities with the aim of having a discussion surrounding best environmental practices and assessing compliance with FGN EIA and WB policies, which includes meeting regulatory requirements and applicable standards.

There will be a cycle of audits built into specific areas of the Project such as waste management. The frequency of audits will be risk based and will vary with the stage of the Projects, and will depend on the results of previous audits.

In addition, periodic auditing of the different plant and operations shall be embarked on every three years as required by the FMEnv, NESREA etc.

Further, audit results will be used to improve the screening procedure. Environmental and social auditing will be used towards the preparation of environmental and social screening, as well as in many circumstances in which the project activities carry a risk of harmful effects on the natural environment. All auditing strategies and programmes for the projects shall have reasons and justifications which will be designed to establish the current status of an environment or to establish trends in environmental parameters where the projects shall be implemented. In all cases the results of auditing will be reviewed, analyzed and published by REA for the purpose of improving project implementation.

An independent consultant will be hired to evaluate the project implementation arrangements for REA, in line with the ToR template (Annex X). The audit shall be performed by qualified staff and the results shall be reported to REA to be addressed.

CHAPTER FIVE: STAKEHOLDER ENGAGEMENT AND GRIEVANCE MECHANISM

5.1. Introduction

Early and continuous stakeholder engagement is very important because it will give the communities and the potentially Project Affected Person(s) the opportunity to contribute input and feedback information, aimed at strengthening the development project and avoiding negative impacts, or mitigating them where they cannot be avoided. It also reduces the possibilities of conflicts between and among the project and adjacent communities. Therefore, effective and close consultation with them is a pre-requisite for the successful running and execution of the NEP.

As such, there is the need to utilize social development approaches (such as inclusive and continuous stakeholder participation in project implementation) as key accelerators to achieving results. Social sustainability program will support but also test what citizens can do to keep the government's investments through the project operating properly and yielding benefits to the citizenry as intended.

Citizen engagement will be built by:

- setting up effective grievance redress and beneficiary feedback mechanism;
- ensuring an intensive program of engagement with project stakeholders;
- deploying of effective strategic communications and public education;
- deepening the consultation process which began during project preparation; and
- monitoring social impact through annual stakeholder surveys.

A project implementer will engage with stakeholders, including communities, groups, or individuals affected by the proposed projects, and with other interested parties, though information disclosure, consultation and informed participation in a manner proportionate to the risk to and impacts on affected communities. Stakeholder's engagement should take place at the inception of the planning stages, for example, when the potential mini grid project sites are being investigated, and as soon as the universities are identified. Public consultation will be made when potential resettlement and compensation concerns are involved.

A grievance mechanism, a tool to address affected communities' concerns and complaints, is an important pillar of the stakeholder engagement process, since it creates opportunities for the project implementers and affected communities to identify problems and discover solutions together. Grievance mechanism will be available both at REA level and private sector entities level (mini grid developers, SHS companies, and contractors).

5.2 Stakeholder Consultation and Engagement

Stakeholder engagement and public consultation for the REA projects entails the process of informing the Universities/communities on the need to carry out the sub-projects in (a) their environment, (b) the scope and the (c) need for the university/community to own and safeguard the project as beneficiaries and stakeholders. Such engagement is important because it will give the universities/communities and the potentially Project Affected Person(s) the opportunity to contribute input and feedback information, aimed at strengthening the development process and avoiding negative impacts or mitigating them where they cannot be avoided. Effective and close consultation with them is a pre-requisite for the successful running and execution of the REA projects.

In recognition of this, efforts will be made to carry out the public consultation with potentially affected individuals/households when resettlement and compensation concerns are involved. The PMU will establish a grievance redress mechanisms (GRM) that will allow general public in the project area, affected communities or individuals, and PAPs to file complaints and to receive responses in a timely manner. The system will also record and consolidate complaints and their follow-up. This system will, be designed for handling complaints perceived to be generated by the project or its personnel. It may also include disagreements about compensation and other related matters.

Stakeholder's engagement and public consultation would be an on-going activity taking place throughout the entire project process. Public participation and consultation would take place through meetings, radio programs, requests for written proposals/comments, filling in of questionnaires, explanations of project to the locals, making public documents available at the federal, state and local levels.

At the local level, suitable locations will include the Village squares, churches halls, residences of traditional or recognized leaders. These measures would take into account the low literacy levels prevalent in these rural communities by allowing enough time for responses and feedback. Notwithstanding, the best guarantors for public interest are the chiefs and other religious leaders who are responsible members of their local communities and can inadvertently be part of the potentially displaced (economically or physically) individuals/households either in part or in whole.

The objectives of stakeholder engagement are:

- To keep stakeholders informed about the project components at different stages of implementation.
- To address the environmental and social concerns/ impacts, and device mitigation measures taking into account the opinion/ suggestions of the stakeholder.
- To generate and document broad community support for the sub-projects.
- To improve communications among interested parties.
- To establish formal complaint submittal / resolution mechanisms.
- To discuss about subproject and document its issues, concerns and mitigation measures.

The key issues and concerns identified during the consultations included, but not limited to:

- Are these projects going to provide any benefits for the local people?
- Whether local people will get better access to electricity?
- Whether solar panels will have any impact on the health of the people and the crops being grown in the area?
- What will be the rate for land payable to the land owners?
- What will be the fate of agricultural labor that do not own land and are dependent on land owners for labor work on agricultural land owned by big farmers?
- How would the developer/constructor ensure that the noise / dust / labor camps setup during the construction phase of the project does not impact the local village community?
- Will the construction activity have any adverse impacts on our existing surface water resources?

Special Requirements for Subprojects with Potential Resettlement

Whenever a physical and/or economic displacement might occur due to the project/subproject construction, special requirements apply during the stakeholder engagement process.

REA has established a Resettlement Policy Framework (RPF). The Resettlement Consultant, the Social Officer of the PMU and nominated leaders from the community, will facilitate the monitoring of the public consultation process.

When a developer/contractor is interested in or will be conducting construction on a site that might require resettlement, it needs to prepare a Resettlement Action Plan (RAP). The RAP should be publicly disclosed and consulted with affected communities before finalization. No grant will be awarded until the RAP is approved by REA. If resettlement becomes necessary on a selected site which was originally considered to not require any resettlement, no construction or preparation work will be conducted until the consultation is completed and the RAP has been prepared and approved by REA.

Stakeholder Engagement for Mini grid Construction

1. As part of the minimum subsidy tender process, early stakeholder engagement for this component will be conducted at the site investigation stage by REA. REA shall take into account the comments from such consultation in deciding whether a potential mini grid construction site should be selected for the lots, put into the exclusion list, or neither. A summary finding of the consultation will be included in the log information package. Subsequently, mini grid developers will continue to conduct stakeholder engagement as part of their ESMS. Any mini grid developer who wishes to bid on lots containing sites with potential resettlement must include a RAP in its bidding package.

2. The stakeholder engagement as part of the performance based grants process will be conducted by the mini grid developer as part of their ESMS. Stakeholder engagement would start before they submit their proposals. A summary of findings, detailed description of the process and engagement log should be included in the Proposal Package. Stakeholder engagement should continue throughout subproject construction and operation. The grant will not be awarded unless the Review Committee deems the RAP and the public consultation is sufficient. 2. If REA deems the initial stakeholder engagement is not sufficient, it can ask the developer to conduct a further consultation before the construction or any preparation work begins.

Stakeholder Engagement for Component 3

Focus Group Discussions (FGDs) should be conducted to obtain information from the Project Affected Persons (PAPs) for each University. Consultations and interactions should be held with the University representatives and State Ministry of Environment and/or Community Heads depending on the location of the project site. Such consultations will provide an opportunity to discuss the perceptions, concerns and expectations of the stakeholders about the project. Below is a list of key questions:

Knowledge about the project (EPC Contractors, PVs, monitoring team, etc.)

- Who operates and owns the existing sub-station and transmission lines?
- The University source of water supply
- Back-up sources of power in the university

- Solid and liquid waste management in the university
- Guideline for contractors
- Sufficiency of the current sub-station

This should include the neighboring villages so as to get data relating to population, occupation and religion. Establish the number of Primary Health Care Centre, schools and source of Water in the village. Establish methods of waste management, e.g., pit latrines or septic tanks and also the relationship between the village(s) and the University. It is also important that interview session be held with a representative of the State Environmental Protection Agency (SEPA), to establish those licensed to manage solid waste.

A social-economic characteristic of the study area in each university will also be conducted, key aspects include: infrastructure, settlement plan, economy, occupation and livelihood, and water resources, sanitation and waste management.

5.3. Grievance Mechanism

The project will set up a project-specific Grievance Redress and Feedback Mechanism for people to report concerns or complaints, if they feel unfairly treated or are affected by any of the subprojects. The mechanism will amongst other things:

- provide information about project implementation;
- provide a forum for resolving grievances and disputes at the lowest level;
- resolve disputes relatively quickly before they escalate to an unmanageable level;
- facilitate effective communication between the project and affected persons;
- win the trust and confidence of project beneficiaries and stakeholders and create productive relationships between the parties.

The mechanism is envisaged to operate at multiple levels and will address such complaints, including logging, tracking, and resolving grievances promptly during and after the implementation of the Project.

The PMU is responsible for setting up and maintaining the GRM that allows general public in the project area and affected communities or individuals to file complaints and to receive responses in a timely manner. The system will also record and consolidate complaints and their follow-up. This system will be designed for handling complaints perceived to be generated by the project or its personnel. It may also include disagreements about compensation and other related matters.

The GRM will be communicated to all stakeholders in the course of its community engagement activities, and will make public available a record documenting the responses to all grievances received. The GRM will remain available throughout the project cycle. It is expected to address concerns promptly an effectively, in a transparent manner that is culturally appropriate and readily accessible to all project affected parties, at no cost and without retribution. It also allows for anonymous complains to be raise and addressed.

The PMU will assign a specific staff member to oversee that this is functioning properly. The consultants should review any existing GRM systems (government/traditional) that are operative in the area and propose ways that the GRM may fit within these systems. Ideally, the GRM should have second and third levels of appeal (including the court system, if appropriate, for legitimate claims that cannot be resolved at lower levels). The functioning of the GRM system, how to register complaints (written, by phone, or in person), where to go and hours of service, all should be clearly explained in local language during initial public

consultations on the project. For the purpose of clear procedure below table present a typical grievance redress process and modality.

The GRM should include the following elements. More details see Table 5.1 Grievance Management Process.

- Different ways in which users can submit their grievances, which may include submission in person, by phone, text message, mail, email or via a website;
- A lot where grievances are registered in writing and maintained as a database;
- Publicly advertised procedures, setting out the length of time users can expect to wait for acknowledgement, response, and resolution of their grievances;
- Transparency about the grievance procedure, governing structure and decision makers; and
- An appeals process (including the national judiciary) to which unsatisfied grievances may be referred when resolution of grievance has not been achieved.

Table 5.1. Grievance Management Process

Process	Description	Time Frame	Other Information
Identification of grievance	Face to face; phone; letter; mail; e-mail; website; recorded during public/ community interaction; others The responsible party to receive the grievances will be REA and the subproject implementers The grievance can also be passed through other parties, such as the chief office because the public are more conversant with this office. The grievance receiver would then pass the complaint to REA contact person	1 Day[11]	Email address; hotline number
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e., in a log book) It will be prudent to have a grievance record book where the grievances are recorded for follow up	3-6 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law/ policy or this ESMF provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	3 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from	4-8 Days	

[11] Day means working day

	management/ relevant stakeholders		
Response signed off	Redress action approved at appropriate	8-15 Days	
Implementation /communication of response	Redress action implemented and update of progress on resolution communicated to complainant	5-9 Days	

If complainants are not satisfied with the grievance process, even after arbitration, the affected persons will still have the right to present their complaint through the court system.

CHAPTER SIX: CAPACITY BUILDING

REA is committed to providing resources essential to the implementation and control of the ESMS. REA shall ensure the availability of resources essential to establish, implement, maintain and improve ESMS. Resources include human resources and specialized skills, organizational infrastructure, technology and financial resources.

REA establish and maintain documentations as necessary to demonstrate conformity to its requirements of its ESMS and the results achieved, with a sound procedure to identify, store, protect, retrieve, retain, and dispose of such documentations. The ESMS documentation shall include:

- the organization's environmental policy, objectives, and targets;
- description of the scope of ESMS;
- description of the main elements of the ESMS and their interaction, and reference to related documents;
- documents, including records, required by national or international laws;
- document, including records, determined by the organization to be necessary to ensure the effective planning, operation and control of processes that related to its significant E&S aspects.

Consistent with its commitment to compliance, the organization shall establish, implement and maintain a procedure(s) for periodically evaluating compliance with applicable legal requirements. The organization shall keep records of the results of the periodic evaluations.

Top management shall review the organization's ESMS, at planned intervals, to ensure its continuing suitability, adequacy and effectiveness. Reviews shall include assessing opportunities for improvement and the need for changes of the environmental management system, including the environmental policy and environmental objectives and targets. Records of the management reviews shall be retained.

For effective implementation of the ESMF, there will be need for technical E&S capacity in the human resource base of REA as the implementing institution, as well as key private sector entities responsible for implementation of activities under project components. Implementers need to identify and understand the social and environmental issues. Appropriate understanding of the mechanisms for implementing the ESMF will need to be provided to the various stakeholders implementing REA projects. It will also be important to ensure that REA has sufficient capacity and systems for effective oversight of the fairly complex processes for E&S risk management with multiple parties involved.

Table 6.1 summarizes the potential challenges faced by components 1 and 2, and 3 and capacity building can help address them effectively.

Table 6.1. Off-grid components 1&2 challenges and mitigation measures

Challenges	**Mitigation**
1. Lack of awareness	Promotional program ▪ Training programs
2. Lack of access to financing	Select and strengthen capacity of participating credit institution and MFIs ▪ Capitalize a credit line ▪ On-lend to: solar home system companies for working capital, mini grids for investment, or

	MFIs for on-lending to SHS customers
3. Untested business models	Public-private partnership enterprise model with the ultimate goal of commercialization ▪ Presence of multiple program partners ensures healthy competition ▪ Phased reduction of grants ▪ Training for program partners in enterprise and financial management
4. Lack of institutional capacity	Institutional development grant ▪ Long-term concessionary credit ▪ Staff training program
5. High cost of quality SHS equipment and mini grids	Capital buy-down grant ▪ Concessionary credit facility ▪ Consumer in-kind or cash equity ▪ Increased volume of business
6. Lack of quality assurance	Technical Standards ▪ Design assistance services ▪ Quality control by the Program Manager ▪ Training to Participant Organizations in good practices in design, installation and service

In general, to enhance the respective roles and collaboration of the relevant stakeholders, the following broad areas (not limited to) for capacity building have been identified as deserving of attention for effective implementation of the ESMF:

- E&S management planning and monitoring systems. impact assessment tools, monitoring tools and activities;
- Preparation and verification of reporting;
- Public participation techniques and citizen engagement, including public awareness creation / educational techniques (on environmental, social and health issues); and
- Addressing systemic E&S risks in in the Nigerian off-grid solar market through developing targeted strategic solutions.

Capacity building efforts are needed at different levels. It has to be ensured that all authorities, institutions and organizations involved integrate their activities within appropriate co-coordinating mechanisms in order to give consistent signals for the management of REA projects. The four E&S capacity building activities categories are:

- E&S capacity building for REA
- E&S training and support to mini grid developers
- Training that empowers citizen engagement
- Capacity building that strengthens the developing strategic solutions for E&S risk management for the off-grid solar market

E&S Capacity Building for REA

This will support developing REA's capacity to implement robust E&S risk management approach in its activities, as well as enhance E&S benefits and opportunities, such as gender-related activities, green initiatives etc.

REA should be able to provide adequate training for its E&S staff, as well as all other staff to whom this aspect is relevant. This support will also include budget for conducting regular monitoring activities, as well as independent E&S audits.

Sample capacity building options for REA to enhance its management capacity by allowing real application of the best practices such as the following:

- E&S screening: screening of investments for potential environmental and social impacts, scoping assessments, planning mitigation options, public consultation to assess feasibility and acceptability options; step by step implement the environmental and social screening process for projects;

- Environment: site selection to minimize environmental impacts and social disruption; restoration of drainage patterns including mitigation matters in contracts; management of impacts during construction; monitoring of effectiveness of measures;

- Monitoring and grievance redress: transparency and supervision responsibilities.

ES& Training and Support to Mini grid Developers

This activity will build E&S capacity, as part of overall capacity strengthening, of existing mini grid developers and other private companies interested in entering the mini grid market to identify sites viable for mini grid development. They will be provided with training and support to develop and enhance their ESMS to be able to comply with the applicable E&S requirements, monitor and report.

The mini grid developers should be trained in different aspects of the implementation of the ESMF and the proposed Project, including interpretation and implementation of environmental impact management guidelines. The three major areas for anticipated trainings are:

- Awareness raising to fully appreciate the significance or relevance of environmental issues, as well as sensitivity of certain issues, such as land use.

- Detailed technical training on analyzing potentially adverse environmental impacts, to prescribe mitigation approaches and measures, and to prepare and supervise the implementation of environmental and social management plans. This training will address such matters as environmental assessment; using the ESMF; and project supervision and monitoring;

- Capacity building on how to interact with host communities, such as community participation methods, both for conducting stakeholder engagement and for address conflicts/grievance caused by the proposed project.

- Monitoring & reporting: how to fulfill REA's requirement on monitoring and reporting.

- Other training that will strengthen mini grid developers' ability to improve overall project quality, such as project management, occupational health and safety, monitoring and evaluation, waste management, etc.

Trainings That Empowers Citizen Engagement

This will support the education and awareness under the project's key delivery areas namely households, small businesses, universities. Different stakeholders affected by the propose projects implementation have different training needs.

The target audience of such training activities include, but not limited to: people live in and around the affected areas, people whose land and/or livelihood might be affected by the projects, people who benefit from the newly build mini solar grids, buyers/potential buyers of the standalone solar system, students and faculties in the beneficiary universities and teaching hospitals, etc.

The activities here are proposed to address the following:

- Initial reservation in the adoption of a new technology for communities and households (for both solar mini-girds and SHS);
- Buyer inability to make informed purchasing decisions and decipher quality in the market;
- Importance and advantages of conserving energy;
- Environmental and social awareness for solar technologies, such as recycling/ proper disposal of batteries.

The capacity building activities will equally prioritize men and women as a prime target audience. It is in project's interest to reach women who will be the end users of the proposed solar solutions.

Capacity development for community facilitators and field-level staff will also be implemented because they are the organs that will reach out to the communities, and it becomes necessary for these staff and representatives to be well grounded with adequate information on the project. They will be able to communicate effectively in the local languages, understanding community dynamics and processes, negotiation and conflict resolution, and empathizing with communities and their needs. Building trust and maintaining good rapport with the people in the Project areas by providing relevant information on the project and responding effectively to their needs and concerns will help solve issues before they even become grievances. It is also important that the community facilitators and field-level staff provide feedback to the REA.

Capacity Building that Strengthens the Developing Strategic Solution for E&S Risk Management for the Off-Grid Solar Market

This category of activities will support developing programmatic approaches to address key strategic challenges faced by players beyond the direct stakeholders of this project.

Beyond the specific E&S due diligence at the level of mini grid sites and developers, SHS distributors, and private sector contractors for the three program components, some of the identified E&S risks require strategic solutions at the market/ sector level. Therefore, capacity training targeting a boarder scope of audience, including policy makers, industry practitioners, domestic and international financiers, and other key players in Nigeria's solar energy sector.

- Land issues and competing land use challenges for mini grids;
- Waste management, and more specifically, battery storage and recycling; and
- Need for harmonization of E&S standards among private mini grid developers and their financiers.

In sum, capacity building should be viewed as more than training. It is human resource development and includes the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively.

In order to achieve the goal of the ESMF, there is an urgent need for capacity building and strengthening of relevant competencies on environmental and social management at the PMU, Federal, States, LGAs and community levels including contractors. To this end, capacity building should be viewed as more than training. It is human resource development and includes the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively. It also involves organizational development, the elaboration of management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community).

Given the nature of the environmental and social management requirements and provisions outlined in this ESMF, competencies and capacity building will be required in the following areas:

- Environmental Impact Assessment Process - Screening, scoping, impact analysis, mitigation measures and monitoring, reviewing EIA Reports'
- Environmental Due Diligence - Types of due diligence, screening projects for liabilities, scoping due diligence investigations and reviewing due diligence reports.
- Monitoring and Evaluation - Understanding the importance of M&E in project implementation, M&E requirements for environmental and social sustainability of projects'

The estimated budget for implementation of the ESMF Implementation is given below in table 6.2.

Table 6.2. E&S Capacity Building Activities

Activity	Description	Estimated Budget
8. Strengthening REA's E&S capacity	This will support developing REA's capacity to implement robust E&S risk management approach in its activities, as well as enhance E&S benefits and opportunities (such as gender-related activities, green initiatives etc.). REA should be able to provide adequate training for its E&S staff, as well as other staff to whom this aspect is relevant. This support will also include budget for: (e) training of REA E&S staff (f) hiring an E&S firm to assist in building E&S systems for the project	$600,000

	(g) conducting regular E&S monitoring activities (both directly by REA and third-party monitoring by a specialized NGO or other similar entity) (h) commissioning independent E&S audits.	
9. Design and implementation of a GRM	Design and implementation of a Grievance Redress Mechanism at REA level and integrating it at various levels of the project.	$400,000
10. Training and support to mini grid developers for ESMS development and implementation	This activity will build E&S capacity, as part of overall capacity strengthening, of existing mini grid developers and other private companies interested in entering the mini grid market to identify sites viable for mini grid development. They will be provided with training and support to develop and enhance their ESMS to be able to comply with the applicable E&S requirements, monitor and report.	$200,000
11. Developing strategic solutions for E&S risk management for the off-grid solar market	This will support developing programmatic approaches to address key strategic challenges identified, which are (i) land issues and competing land use challenges for mini grids; (ii) waste management, and more specifically, battery storage and recycling; (iii) need for harmonization of E&S standards among private mini grid developers and their financiers	$700,000
4a. Battery recycling	*Waste management, and more specifically, battery storage and recycling; and need for harmonization of E&S standards among private mini grid developers and their financiers*	*$300,000*
4b. Land acquisition and resettlement	*Land issues would be addressed through building strategic engagements with relevant regulatory agencies and bringing them together with private sector mini grid developers to develop sustainable models for land acquisition, including stakeholder engagement with communities*	*$250,000*
4c. Policy/ standards harmonization	*Multi-stakeholder dialogue on harmonization of E&S standards and regulatory environment for mini grid developers*	*$150,0000*
12. Community engagement and sensitization campaigns	This will support the education and awareness under the project's key delivery areas namely households, small businesses, universities. The initiative will address the following: (i) initial reservation in the adoption of a new technology for communities and households (for both solar mini-girds and SHS); (ii) buyer inability to make informed purchasing decisions and decipher quality in the market; (iii) importance and advantages of conserving energy; and (iv) environmental and social awareness for solar technologies, such as recycling/ proper disposal of batteries. The initiative will equally prioritize men and women as a prime target audience. It is in project's interest to reach	$400,000

	women who will be the end users of the proposed solar solutions. This will also include citizen engagement surveys.	
13. **Gender actions implementation**	Implementing gender strategy for the project, with the following core gender actions: - For mini grid development, exploring entry points to enhance women's participation in mini- grid operations in order to increase sustainability of operations - For SHS component, taking action for women to be seen and engaged as valuable partners along the entire value chain—in the design, marketing, sales, and after-sale services	$200,000
14. Contingency		$200,000
Total		**$2,500,000**

Annex I. References

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Annex II: Sample Grievance Form

Name (Filer of Complaint): _____
ID Number: _____ (PAPs ID number)
Contact Information: _____ (Village; mobile phone)

Nature of Grievance or Complaint:

_____

_____

Date	**Individuals Contacted**	**Summary of Discussion**
_____	_____	_____

Signature: _____ Date: _____

Signed (Filer of Complaint):_____
Name of Person Filing Complaint: _____ (if different from Filer)
Position or Relationship to Filer: _____

Review/Resolution

Date of Conciliation Session: _____

Was Filer Present?: Yes No

Was field verification of complaint conducted? Yes No

Findings of field investigation: _____
_____
_____

Summary of Conciliation Session Discussion: _____
_____
_____ Issues _____
_____

Was agreement reached on the issues? Yes No

If agreement was reached, detail the agreement below:
_____

If agreement was not reached, specify the points of disagreement below:
_____

Signed (Conciliator): _____ Signed (Filer): _____

Signed: _____
Independent Observer

Date:_____

Annex III: Environmental and Social Screening Checklist

The Environmental and Social Screening (ESSC) checklist has been designed using the World Bank Environmental and Social safeguards, and Nigerian EIA guidelines as checklist benchmarks to assist in the evaluation of proposed sub-projects under the REA. The checklist is designed to place information in the hands of reviewers so that mitigation measures, if any, can be identified and/or that requirements for further environmental analysis be determined. The ESSC also identifies potential socioeconomic impacts that will require mitigation measures.

Table III-1. Environmental and Social Screening Checklist

Issues		**Site Sensitivity**		**Responsibilities**
	Low	**Medium**	**High**	
Natural Habitats	No natural habitats present kind	No critical natural habitats; other natural habitats occur	Critical natural habitats present	**REA-PMU, REA regional offices, Independent Consultants**
Water quality and water resource availability and use	Water flows exceed any existing demand; low intensity of water use; potential water use conflicts expected to be low; no potential water quality issues	Intensity of water use; multiple water users; water quality issues are important	Intensive water use; multiple water users; potential for conflicts is high; water quality issues are important	**REA-PMU, REA regional Independent Consultants**
Natural hazards vulnerability, floods, soil stability/ erosion	Flat terrain; no potential stability/erosion problems; no known volcanic/seismic/ flood risks	Medium slopes; Some erosion potential; medium risks from volcanic/seismic/ flood/ hurricanes	Mountainous terrain; steep slopes; unstable soils; high erosion potential; volcanic, seismic, or flood risks	**REA-PMU Independent Consultants**

Cultural Property Involuntary resettlement	No known or suspected cultural heritage sites Low population density; dispersed population; legal tenure is well-defined water rights	Suspected cultural heritage sites; known heritage sites in broader area of influence tenure; well-defined water rights	Known heritage sites in project are Land issues, High population density; major towns and villages; low-income families and/or illegal ownership of land; communal properties; unclear water rights	**REA-PMU Independent Consultants**

1. Site Selection:

When considering the location of a sub-project, rate the sensitivity of the proposed site in the following table according to the given criteria. Higher ratings do not necessarily mean that a site is unsuitable. They do indicate a real risk of causing undesirable adverse environmental and social effects, and that more substantial environmental and/or social planning may be required to adequately avoid, mitigate, or manage potential effects

2. Checklist questions:

Physical data: *Yes/No answers and bullet lists preferred except where descriptive detail is essential.*

Site area in ha
Extension of or changes to existing alignment

Any existing property to transfer to sub-project
Any plans for new construction

Preliminary Environmental Information:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
State the source of information available at this stage (i.e., proponent's report, EIA, or other environmental study)	
Has there been litigation or complaints of any environmental nature directed against the proponent or sub-project?	

Identify type of activities and likely environmental impacts:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
What are the likely environmental impacts, opportunities, risks, and liabilities associated with the sub-project?	

Determine environmental screening category:	*Bullet lists preferred except where descriptive detail is essential.*
After compiling the above, determine which category the subproject falls under based on the World Bank environmental categories A, B, and C and the Nigerian categories 1, 2 and 3.	

Mitigation of Potential Pollution:	*Yes*	*No*
Does the sub-project have the potential to pollute the environment or contravene any environmental laws and regulations?		
Will the sub-project require pesticide use?		
If so, then the proposal must detail the methodology and equipment incorporated in the design to constrain pollution within the laws and regulations and address pesticide use, storage, and handling		
Does the design adequately detail mitigating measures?		

Environmental Assessment Report or environmental studies required:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
If screening identifies environmental issues that require an EIA or a study, does the proposal include the EIA or study?	
Indicate the scope and time frame of any outstanding environmental study.	
Required Environmental Monitoring Plan:	
If the screening identifies environmental issues that require long term or intermittent monitoring (e.g., effluent, gaseous discharges, water quality, soil quality, air quality, noise), does the proposal detail adequate monitoring requirements?	
Public participation/information requirements:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*

Does the proposal require, under national or local laws, the public to be informed, consulted, or involved?	
Has consultation been completed?	
Indicate the time frame of any outstanding consultation process	

Land and resettlement:	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
What is the likelihood of land purchase for the sub-project?	
How will the proponent go about land purchase?	
What level or type of compensation is planned?	
Who will monitor actual payments?	
Actions:	
List outstanding actions to be cleared before sub-project appraisal	
Approval/rejection	*Yes/No answers and bullet lists preferred except where descriptive detail is essential.*
If proposal is rejected for environmental reasons, should the subproject be reconsidered? What additional data would be required for re-consideration?	

Annex IV: Environmental and Social Management System Template for Mini Grid Developers

Mini grid Developer Logo	Issue Number	Issue Date
	Document Number	Document Pages

Environmental and Social Management System Manual

Approved by:		
Name	Title	Date

Abbreviation

CBO	Community-Based Organization
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
GRM	Grievance Redress Mechanism
LRP	Livelihood Restoration Plan
NGO	Non-Government Organization
RAP	Resettlement Action Plan
REA	Rural Electrification Agency (Nigeria)
SIA	Social Impact Assessment

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Introduction

The Environmental & Social Management System (ESMS) is a set of principles, requirements, processes, and tools that help integrate environmental and social risk management into a mini grid developer's core business processes. It is a set of actions and procedures that are implemented with the developer's existing risk management procedures.

The ESMS ensures that the mini grid developer's activities are in compliance with its own environmental and social commitments, national regulations of the country(ies) where they operate and environmental and social standards of international lenders and investors. It helps the developer to avoid and manage projects with potential environmental and social risks by conducting due diligence during design, construction, and operation of mini grids and adequate monitoring of projects during construction and operation.

Activity 1: *In the section below draft the environmental and social policy for your company.*

I. Institutional Environmental & Social Policy Statement

Please make sure to include your institution's commitment to the following:

- ✓ *Full compliance to applicable E&S requirements:*
  - *Laws & Regulations of Nigeria & areas of construction/operation*
  - *Exclusion List (See Annex A);*
  - *E&S standards of lenders, investors and shareholders*

- ✓ *Commitment to dedicate capacity and resources to implement and maintain the ESMS, including:*
  - *Establish dedicated environmental department/ unit/ E&S Manager or Coordinator within the institution*
  - *Senior management involvement and commitment to E&S compliance*
  - *Provide internal training/capacity building on E&S issues to relevant staff (such as engineers, site managers, construction managers, contractors etc.), including on:*
    - *Screening of investments for potential environmental and social impacts, scoping assessments, planning mitigation options, public consultation to assess feasibility and acceptability options; steps 1-7 to implement the environmental and social screening process for projects;*
    - *Environment: site selection to minimize environmental impacts and social disruption; mitigation measures for contractors and subcontractors (through adequate language in contracts); management of impacts during construction; monitoring of effectiveness of measures;*
    - *Monitoring and grievance redress: transparency and supervision responsibilities.*

- ✓ *Commitment to maintain good track record on E&S compliance, including:*
  - *Establish and maintain a Grievance Redress Mechanism & keep proper records of complaints received and resolution of each one*
  - *Good record keeping for any incidents of legal E&S non-compliance, fines, or complains*
  - *Reporting to relevant government agencies (such as Rural Electrification Agency), lenders, investors, including prompt reporting of any incidents or accidents*

ACTIVITY 2: *In the following sections please draft the E&S procedures for your company: transaction screening, risk categorization, and E&S due diligence.*

II. Environmental &Social Procedures

2.1 Overall Work Flow

The work flow chart below demonstrates the steps and E&S roles during the mini grid design, development, construction, and operation cycle.

Overall Workflow for Mini grid Development

Tasks	E&S Responsibilities
Initial E&S Screening	• Initial site survey for overall basic information • Check against Exclusion List (Annex A) • Fill out initial E&S Screen Checklist (Annex B)
Categorize E&S Risk	Based on the results from initial E&S Screening Checklist: • Category I: High risk sites such as those in sensitive habitats, with potential physical and/or economic displacement, substantive number of migrant workers stationed in communities • Category II: No high risk activities expected
Conduct E&S Study Based on Category	• Category I: ESIA (Annex C), ESMP (Annex D), RAP (Annex E) and / or LRP (Annex F), as appropriate • Category II: only ESMP (Annex D) • Both: Stakeholder Engagement Plan (Annex G) and Grievance Redress Mechanism (Annex H)
Acquire Necessary Clearance &Permit	• All clearance/permit(s) must be acquired properly before start of construction
Self- Monitoring During Construction and Operation	• Continuous compliance with applicable policies • Compliance check regularly trough Self-Mentoring Checklist (Annex I) • Maintain a GRM to address construction/operation related issues
Reporting During Construction and Operation	• Reporting to REA (Annex J) • Reporting to lenders and investors, as needed

2.2 Initial E&S Screening

Before any construction or preparation of construction can start, the institution should conduct an initial E&S screening before or during project design stage, to (1) ensure the proposed construction site is not under any situation in the Exclusion List (Annex A); and (2) identify any E&S issues and mitigation opportunities. See Annex B for a Sample Checklist for the Initial E&S Screening.

1. Purpose and applicability:
- ✓ *What are the E&S procedures expected to achieve?*
- ✓ *What activities of the company do they cover?*

2. Definitions: *(terms and descriptions)*

3. Procedure:
- ✓ *What course of action is taken if a proposed construction is under the Exclusion List?*
- ✓ *How will E&S risks and impacts be assessed?*
- ✓ *How will projects be categorized based on E&S risks (see 2.3 below)*
- ✓ *What is the process for further assessment of category I projects?*
- ✓ *What is the process for preparing and implementing E&S management plans?*
- ✓ *What course of action should be taken if other significant E&S issue is identified or maybe a potential?*
- ✓ *How will compliance with E&S management plans be monitored?*

4. Responsibilities:
- ✓ *Who is responsible for carrying out each of the activities described under this procedure?*

5. Reference documents:
- ✓ *What reference documents do you use (internal policies, national laws and regulations, lender/investor requirements, international good practice guidelines)?*

6. Records:
- ✓ *What records on E&S compliance do you keep?*

2.3 E&S Impacts Categorization

Based on the results of the initial E&S Screening, all mini grid projects should be divided into two E&S Impacts Categories:

- Category I: with significant E&S impacts. High risk sites such as those in sensitive habitats, with potential physical and/or economic displacement, substantive number of migrant workers stationed in communities
- Category II: No high risk activities expected, overall medium or low E&S impacts.

1. Procedure:
- ✓ *What course of action is taken if a category II is later considered to have significant E&S impacts during the E&S planning stage or construction stage?*

2.4 E&S Risk Management Instruments for Category I Mini grids

Projects under this category are expected to have significant E&S impacts, such as (this list is not exhaustive and a combination of all project impacts should be considered based on their likelihood and magnitude):

- Any physical and/or economic displacement
- Significant adverse impacts on ecologically sensitive areas
- Significant adverse impacts on cultural heritage
- Significant number of migrant workers/ labor camps within host communities (may be especially an issue for larger mini grids or clusters of mini grids)

Due to the potential significant adverse E&S impacts, construction under this category will have to complete the following E&S studies during the preparation stage:

- ESIA (Annex C)
- ESMP (Annex D)
- Resettlement Action Plan (RAP) (Annex E) and / or Livelihood Restoration Plan(LRP) (Annex F), where physical and/ or economic displacement may be involved
- Stakeholder Engagement Plan (Annex G)

The ESIA describes possible adverse effects that the proposed subproject may pose to the environment. It recommends mitigation measures and how will they be implemented. The ESMP – either as an accompanying chapter of the ESIA, or as a stand-alone document, provides detail on how the recommended mitigation measures will be implemented and outlines requirements, institutional arrangements/responsibilities, timelines, estimated costs and sources of funds for management and monitoring of both positive and negative effects of the project.

The key environmental and social concerns related to mini grid construction and operation include the following and special care needs to be taken for preparing an ESIA and ESMP:

- Ambient Air Pollution
- Surface and groundwater water quality
- Noise pollution
- Traffic management
- Labor management (labor camps, worker accommodation, community impacts of migrant workforce)
- Occupational health and safety issues for workers
- Interactions between workers and communities (e.g. HIV/AIDS issues)
- Community engagement, benefits sharing
- Drainage
- River bank erosion
- Wetland or other sensitive habitats deterioration
- Land degradation
- Loss of land/ structures/assets/crops
- Displacement of people or economic / livelihood activities

In case the project requires involves land acquisition, restriction of access to assets or loss of livelihood or shelter, the company shall ensure that a satisfactory RAP and/or LRP has been prepared consulted upon with the affected persons / local community, approved and disclosed a required. The institution shall not start the works until compensation and resettlement assistance has been made available in accordance with RAP and/ or LRP.

RAP/LRP document provides a link between the impacts identified and proposed mitigation measures to realize the objectives of involuntary resettlement. The RAP/LRP will take into account magnitude of impacts and accordingly prepare a resettlement plan that is consistent with national and local standards and requirements.

The RAP/LRP also needs to be disclosed and consulted during timely stakeholder engagement. Stakeholder engagement is about building and maintaining constructive relationships over time. It is an ongoing process between a company and its project stakeholders that extends throughout the life of the project and encompasses a range of activities and approaches, from information sharing and consultation, to participation, negotiation, and partnerships. The goal is to ensure the timely provision of relevant and understandable information. It is also to create a process that provides opportunities for stakeholders to express their views and concerns, and allows the company to consider and respond to them.

Before any actual construction can begin, all necessary government and non-governmental clearance and permit(s) must be acquired properly and timely.

1. Purpose and applicability:

2. Definitions: *(terms and descriptions)*

3. Procedure:

- ✓ *What course of action is taken if a category II is later considered to have significant E&S impacts during the E&S planning stage or construction stage?*
- ✓ *What course of action is taken if there is material disagreement between the company's proposal and the feedback from the stakeholder engagement?*

4. Responsibilities:

- ✓ *Who is responsible for carrying out each of the activities described under this procedure?*

5. Reference documents:

- *What reference documents do you use (see Annexes for templates/samples)?*

6. Records:

- *What records do you keep?*

2.5 E&S Risk Management Instruments for Category II Mini grids

For constructions with perceived medium or low E&S adverse impacts, only the ESMP is needed.

Before any actual construction can begin, all necessary government and non-governmental clearance and permit(s) must be acquired properly and timely.

1. Purpose and applicability:

2. Definitions: *(terms and descriptions)*

3. Procedure:

- ✓ *What course of action is taken if a category II is later considered to have significant E&S impacts during the E&S planning stage or construction stage?*
- ✓ *What course of action is taken if there is material disagreement between the company's proposal and the feedback from the stakeholder engagement?*

4. Responsibilities:
- ✓ *Who is responsible for carrying out each of the activities described under this procedure?*

5. Reference documents:
- ✓ *What reference documents do you use (see Annexes for templates/samples)?*

6. Records:
- ✓ *What records do you keep?*

2.6 Self-Monitoring Activities

Once the construction has started, and throughout construction and operation, the institution is committed to continuous compliance to its ESMP and all applicable E&S policies and requirement. To achieve that, the institution is committed to conduct regular self-monitoring activates. See Annex G for sample self-monitor checklist.

1. Purpose and applicability:

2. Definitions: *(terms and descriptions)*

3. Procedure:
- ✓ *What course of action is taken if there is a potential violation?*
- ✓ *What course of action is taken if there is an actual violation?*

4. Responsibilities:
- ✓ *Who is responsible for carrying out each of the activities described under this procedure?*

5. Reference documents:
- ✓ *What reference documents do you use (see Annexes for templates/samples)?*

6. Records:
- ✓ *What records do you keep?*

2.7 Grievance Redress Mechanism

The institution will set up a project -specific Grievance Redress Mechanism for people to report concerns or complaints, if they feel unfairly treated or are affected by any of the subprojects.

The mechanism will amongst other things: (a)provide information about project implementation; (b) provide a forum for resolving grievances and disputes at the lowest level;(c) resolve disputes relatively quickly before they escalate to an unmanageable level;(d) facilitate effective communication between the project and affected persons; (e) win the trust and confidence of project beneficiaries and stakeholders and create productive relationships between the parties. The mechanism is envisaged to be at multiple levels and will address

such complaints, including logging, tracking, and resolving grievances promptly during and after the implementation of the Project.

The institution will have dedicated person or unit to be responsible for setting up and maintaining the GRM that allows general public in the project area and affected communities or individuals to file complaints and to receive responses in a timely manner. The system will also record and consolidate complaints and their follow-up. This system will be designed for handling complaints perceived to be generated by the project or its personnel. It may also include disagreements about compensation and other related matters.

1. Purpose and applicability:

2. Definitions: *(terms and descriptions)*

3. Procedure:
- ✓ *What is the workflow for receiving, recording, reviewing, and responding to complaints?*
- ✓ *How will the log of grievances be maintained?*
- ✓ *How will complaints and concerns be taken into account in company's operations?*

4. Responsibilities:
- ✓ *Who is responsible for carrying out each of the activities described under this procedure?*

5. Reference documents:
- *What reference documents do you use (see Annexes for templates/samples)?*

6. Records:
- *What records do you keep?*

2.8 Reporting to REA during Construction and Implementation

It is the mini-gird developer's responsibility to submit timely and factual reports to the Rural Electrification Agency (REA) based on the mandatory and/or agreed-upon reporting requirements. Its reporting duties include (see Annex J for Sample Regular E&S Report to REA):

- ✓ Progress on implementation of the ESMS, including categorization of all projects and any ESIAs, ESMP and RAP and/or LRP prepared over the reporting period (where required);
- ✓ Regular periodic E&S reports as specified in the Operating Guidelines;
- ✓ Prompt reporting – within three days if occurrence, of any social, labor, health and safety, security or environmental incident, accident or circumstance which may have any material impact on the compliance of the applicable E&S requirements.

In addition, developers may be requested to:

- ✓ Provide feedback when requested by REA through questionnaires, evaluation workshops, etc.;
- ✓ Participate, if needed, in discussions with the PMU, REA and any investor (if applicable) throughout the project.

Annex A: Exclusion List for Mini grid Site Selection

This Mini grid Site Selection Exclusion List defines the types of situations in which mini grid construction shall not be undertaken. If any of these issues arises after the site has been identified or is somehow overlooked initially, the construction shall stop immediately, pending either site change or until the issue has been resolved.

The company does not support mini grid construction on sites that of any of the following:

1. Sites that do not comply with relevant environmental and social national or state regulations of Nigeria[1]
2. Sites located in legally protected areas (e.g. national parks, conservation areas, forests)[2]
3. Sites located in internationally recognized areas[3]
4. Sites located in critical natural habitats[4]
5. Sites where mini grid construction and operation will cause significant degradation of natural habitats (e.g. mangroves)[5]
6. Sites in flood-prone zones
7. Sites located on land from which government agencies or builders have removed / involuntarily resettled local communities, including squatters or encroachers, without proper compensation[6]
8. Sites located on land associated with illegal forced evictions of previous owners or occupants[7]
9. Sites in locations and / or developed in a manner that involves significant adverse impacts on physical cultural property[8]

Footnotes

1. Relevant environmental and social include those that prohibit development of mini grids and associated infrastructure in certain designated locations.

2. Legally protected areas are those that meet the IUCN definition: "A clearly defined geographical space, recognized, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values." This includes areas proposed by governments for such designation.

3. These are defined as UNESCO Natural World Heritage Sites, UNESCO Man and the Biosphere Reserves, Key Biodiversity Areas, and wetlands designated under the Convention on Wetlands of International Importance (the Ramsar Convention).

4. Critical habitat is a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value that meet the criteria of the World Conservation Union (IUCN) classification, including habitats of significant importance for required for critically endangered or endangered species as defined by the IUCN Red List of Threatened Species; habitats of significant importance for endemic or restricted-range species; habitats supporting globally significant concentrations of migratory species and /or congregatory species; areas with unique assemblages of species or which are associated with key evolutionary processes. Primary Forests or forests of High Conservation Value shall be considered Critical Habitats.

5. Natural habitats are land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions. All natural habitats have important biological, social, economic, and existence value. Important natural habitats may occur in tropical humid, dry, and cloud forests; temperate and boreal forests; mediterranean-type shrub lands; natural arid and semi-arid lands; mangrove swamps, coastal marshes, and other wetlands; estuaries; sea grass beds; coral reefs; freshwater lakes and rivers; alpine and sub alpine environments, including herb fields, grasslands, and paramos; and tropical and temperate grasslands.

Biodiversity outside of natural habitats (such as within agricultural landscapes) is not covered under this policy. It is good practice to take such biodiversity into consideration in project design and implementation.

6. Resettlement activities should follow the process through which adverse social and economic impacts are minimized through (i) providing compensation for loss of assets at replacement cost defined as the market value of the assets plus transaction costs and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. These criteria will only apply to such resettlement / displacement that took place specifically in anticipation or preparation for the construction of mini grids.

7. Permanent or temporary removal against their will of individuals, families and/or communities from the homes and/or land which they occupy, without the provision of, and access to, appropriate forms of legal or other protection. Prohibition on forced evictions does not, however, apply to evictions carried out by force in accordance with national law and is conducted in a manner consistent with basic principles of due process, including provision of adequate advance notice, meaningful opportunities to lodge grievances and appeals, and avoidance of the use of unnecessary, disproportionate or excessive force. These criteria will only apply to such resettlement / displacement that took place specifically in anticipation or preparation for the construction of mini grids.

8. Also known as ‘cultural heritage’, ‘cultural patrimony’, ‘cultural assets’ or ‘cultural property’. Physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other culture l significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.

Annex B: Sample Checklist for Initial **Environmental and Social Screening**

The purpose of this checklist is to identify potential environment and social issues related to project development, construction and operation.

(A) Project Background

1.	Name of Proposed Project	
2.	Location	
3.	Project objectives	
4.	Brief description of the project	
5.	Capacity or size of the project	
6.	Number of Solar Panels	
7.	Capacity per solar panel	
8.	Powerhouse area, m^2	
9.	Distribution length, m	

(B) Project selection criteria

Sl. No	Screening Question	Yes	No	Comments (In the case select "yes", provide detailed information)
1.	Are there any activities on the REA **Exclusion Criteria for Mini-Gird and Power Generation Sites**?			
2.	Is there indication of: a. Significant adverse impacts on ecologically sensitive areas[12] b. Involuntary resettlement or economic displacement c. Significant adverse impacts on cultural heritage			
3.	If yes, can these impacts be eliminated or reduced to acceptable levels through adequate application of mitigation measures?			

(C) Environmental and Social Screening

Sl. No	Screening Questions	Yes	No	Comments (In the case select "yes", provide detailed information)
	Project's siting			
1.	Define project's boundaries and area of influence			

[12]Significant adverse impacts on ecologically sensitive areas will be determined using international best practice and tools, as well as based on the outcomes of relevant studies within the ESIA.

Sl. No	Screening Questions	Yes	No	Comments (In the case select "yes", provide detailed information)
2.	Is the project site adjacent to or within any of the following sensitive receptors?			
	i. Natural habitats and/ or legally protected areas (wetlands, forests, estuary, buffer zones, nature reserves); if yes, is there possibility of a critical habitat present[13]?			
	ii. Cultural heritage site			
	iii. Fragmentation of habitat of flora and fauna (Avifauna and mammalian fauna)?			
	iv. Is the proposed site located on agricultural land?			
	v. Is the proposed site located on area used by vulnerable groups			
	vi. Unique or aesthetically valuable land			
	vii. Is the proposed site located nearby airport			
	viii. Is the proposed site located in migratory route of birds			
	Potential Environmental Impacts			
1.	Impacts on natural resources that constitute livelihoods of community (e.g. grazing or hunting grounds)?			
2.	Disfiguration of landscape?			
3.	Is there potential for landslide and soil erosion impacts?			
4.	Increase in waste generation?			
5.	Waste water from camping sites to be directly discharged to the surface water resources or not?			
6.	Construction waste directly discharged to the surface water?			
7.	Other potential biodiversity impacts			

[13] Critical habitat is defined based on global good practice as a subset of both natural and modified habitat that deserves particular attention. Critical habitat includes areas with high biodiversity value that meet the criteria of the World Conservation Union (IUCN) classification, including habitats of significant importance for required for critically endangered or endangered species as defined by the IUCN Red List of Threatened Species; habitats of significant importance for endemic or restricted-range species; habitats supporting globally significant concentrations of migratory species and /or congregatory species; areas with unique assemblages of species or which are associated with key evolutionary processes. Primary Forests or forests of High Conservation Value shall be considered Critical Habitats. This includes HCV forests. HCV areas do not directly correspond with definitions for modified, natural, and critical habitat. The HCV Resource Network, an internationally recognized group, provides information and support on the evolving usage of HCV to ensure a consistent approach. https://www.hcvnetwork.org/.

Sl. No	Screening Questions	Yes	No	Comments (In the case select "yes", provide detailed information)
	(specify)?			
8.	Loss or destruction of unique or aesthetically valuable land			
9.	Disturbance of large areas due to material quarrying			
10.	Disposal of large quantities of construction spoils			
	Potential Community and Occupational Health and Safety Impacts			
1.	Will the construction works disturb other commercial/community/residential activities?			
2.	Will the project create major noise/vibration?			
3.	Closest residence to the solar panel			
4.	Will it create dust problem around the sites?			
5.	Will project's construction cause disturbance to the transportation in the project's site?			
6.	Will batteries be removed/disposed (lead-acid or nickel-cadmium batteries) from battery-powered or battery-backup items?			
7.	Will there be social conflict in case of workers hired from other region?			
	Potential Social Impacts			
8.	Permanent land acquisition			
9.	Temporary land acquisition			
10.	Type of land Private land Public land Government land Leasehold land			
11.	Type of land procurement Voluntary land donation (VLD)[14] Involuntary acquisition			

[14] Voluntary land donation is strictly defined in international practice as the ceding of a property by an owner who is: a) fully informed; and b) can exercise free will, i.e., can refuse to sell or to donate. "Fully informed" means that the owner has complete information regarding the proposed activity and its impacts, its land requirements and its alternate activity sites, as well as his or her rights to compensation. The owner has also been provided with sufficient time to consider his or her disposition of the property, and the owner has knowingly rejected the right to renege on his or her initial decision. "Free will" means that the owner can reject the possibility of giving up his or her land.

Sl. No	Screening Questions	Yes	No	Comments (In the case select "yes", provide detailed information)
	Negotiation			
12.	Loss of productive land			
13.	Impacts on livelihoods/ economic displacement?			
14.	Is there any household need to be relocated?			
15.	Is the resettlement site environmentally and/or culturally sensitive?			
16.	Project's construction will cause any damage to the existing local roads system?			
17.	Will soil excavation during project's construction cause soil erosion?			
18.	Will project need to open new access roads?			
19.	Will project cause encroachment on historical/cultural/religious areas?			
20.	Acquisition of private land leading to loss of shelter and livelihood			
21.	Involuntary land taking resulting in loss of income, livelihood, sources of livelihood, loss of access to common property resources and/or private residential and/or property resources			
22.	Adverse impact to women including economic and safety concerns			
23.	Possible conflicts with and/or disruption to local communities			
24.	Significant issues raised by the stakeholders during consultation			
25.	Uncontrolled human migration into the area, made possibly by the subproject activities			
26.	Disproportionate impacts on the poor, children and other vulnerable groups			
27.	Community health and safety risks due to the transport, storage, and use and/or disposal of materials likely to create physical, chemical and biological hazards			
28.	Risks to community safety due to both accidental and natural hazards during project construction and operation			

Annex C: Sample Environmental and Social Impact Assessment (ESIA)

Executive Summary
This section shall describe the project activities, critical environmental and social issues, significant findings and recommended actions.

1. Introduction

i. Background of the project
ii. Scope and objectives of the ESIA study
iii. Study methodology in details
iv. Limitations of the study
v. Composition of study team

2. Policy, Legal and Administrative Framework

i. National and local requirements and relevant legislation
ii. REA's requirements and guidelines
iii. Investors requirements and guidelines (if applicable)

3. Description of the project

i. Background and Rational of the Project
ii. Project Site and Location
- Description of the location of the proposed project with maps
- Project area of influence
- Nearby communities, environmentally sensitive areas, and heritage sites (For solar mini grid buffer zone should be 1 km)

iv. Technical Aspects
- Description of the project components, permanent and temporary facilities
- Project equipment and civil works
- Project ownership
- Summary of project structures and operating regime
- Construction activities
- Operation and maintenance
- Manpower requirements (including local and migrant workforce)
- Construction machinery, materials and other supplies (including estimated numbers/quantities)
- Land filling activities (if any)
- Power supply arrangements
- Waste generation and disposal (including estimated quantities)

4. Baseline Environmental Conditions

4.1 Physical Environment

i. Topography
ii. Geological Condition
iii. Meteorological Condition (Rainfall, Temperature, Humidity, Wind speed)
iv. Air Quality
v. Noise Quality
vi. Surface and Ground water quality
    - Surface:(testing of: pH, TDS, DO, COD, BOD)
    - Ground:(testing of: pH, Arsenic, TDS, alkalinity, Cl, Fe)
vii. Project location from flood level
viii. Soil Quality
ix. Water resources

x. Agroecological zones within project area of influence
xi. Seismicity
xii. Climate change and natural disasters
xiii. Land use

4.2 Biological Environment

i. Bio-ecological environment
ii. Flora and Fauna
iii. Protected areas
iv. Terrestrial Ecosystem, Protected areas and red book species
v. Vulnerability to Climate Change and Natural hazard
   - Explain in detail about how the project will be affected by the climate change impact
   - Explain how the project is vulnerable to various natural calamities including flood, earthquake, drought, cyclone and so on

5. Social Impact Assessment

5.1 Baseline Socio-economic Conditions

i. Distribution of population in the project area in terms of religion, age, sex, ethnicity, income, household size, occupational patterns and their relevance with the project, poverty
ii. Project land
iii. Land use and ownership (including traditional use and ownership)
iv. Cropping and/or grazing patterns
v. Vulnerability of the Affected Peoples (APs)
vi. Employment
vii. Livelihood
viii. Physical and cultural resources (school, health post/ hospital, college, temple, monasteries etc.) in the project area
ix. Communication facility
x. Local amenities

5.2 Potential Social Impacts[15]

i. Overview of stakeholder and institutional analyses and a description of the data and information gathered
ii. Description of potential adverse impacts on communities
iii. Description of the legal and institutional context pertaining to vulnerable groups in the country
iv. Description of potential benefits for communities, especially vulnerable groups
v. Recommendations for project design and implementation, including recommendations to ensure that project benefits are culturally appropriate and sustainable, and recommendation for appropriate mitigation measures for any adverse impacts.
vi. Recommendation for capacity building and institutional strengthening of local communities

6. Analysis of Project Alternatives

i. Reason to choose the technology
ii. Without project alternative
iii. Site Alternative

[15] May include annexes on specific issues, such as: outline of the social assessment process, relevant maps, minutes of meetings and consultation with affected communities and other key stakeholders, etc.

iv. Distribution line routes
v. Other temporary and permanent facilities

7. Stakeholder engagement including Grievance Redress Mechanism

Stakeholder engagement process shall be conducted with the community and other stakeholders, and especially take into account modalities where vulnerable groups may be involved. The consultation shall include prior disclosure of information in a manner accessible and understandable to communities, key informant interviews, focus group discussion (male& female, youth) and public consultation. The consultation shall be documented with required facts, figures and evidence including participant list with contact details, photographs. Information shall be disclosed as per the requirement of National Regulations and relevant requirements of REA. This section shall describe the grievance redress mechanism.

8. Anticipated Environmental and Social Impacts and Mitigation Measures

i. General
ii. Area of Influence (AoI)
iii. Pre-construction Phase
- Land taking/Land use / land filling
- Flood Hazards

iv. Construction Phase, Operational Phase and Decommissioning Phase
- Visual Amenity
- Birds and Bats Mortality
- Air Quality
- Noise
- Soil
- Water Resources
- Terrestrial Ecology
- Waste Generation
- Occupational Health and Safety
- Community Health and Safety
- Vulnerable Community
- Employment Opportunities
- Traffic Management
- Archaeology and Cultural Resources
- Cumulative and induced impacts

v. Summary of Anticipated Impacts

9. Environmental and Social Management Plan (ESMP)

This section deals with the set of mitigation management measures to be taken to avoid, reduce, mitigate or compensate for adverse environmental, occupational and social impacts with the institutional arrangement, monitoring schedule, parameters to be monitored and soon including tentative monitoring budget. It would include the following aspects:

- Types of impacts and their mitigations
- Mitigation measures
- Environmental Code of Practices (to be attached to bidding documents and/ or contracts)
- Monitoring Plan
- Communication and documentation
- Cost of ESMP
- Integration with Project (contract clauses, others)
- Grievance resolution process
- Plan for stakeholder/ community engagement during pre-construction, construction,

and operation phases; the plan should include community mobilization approach from both social and commercial perspectives.

10. Resettlement Action Plan (RAP) and Livelihood Restoration Plan (LRP) (if applicable)

This section deals with potential project activities involving land acquisition and/or restrictions on land use resulting in involuntary resettlement or economic displacement. A detailed RAP and/or LRP will be required in case of any displacement.

11. Environmental and Social Benefits

This section will summarize how the project will provide benefits in environmental sector and social life, directly and/or indirectly.

12. Conclusion

This section shall provide the conclusion drawn from the assessment and provides recommendation.

Annex D: Sample Environmental and Social Management Plans (ESMP)

The Environmental and Social Management Plan (ESMP) clearly laid out: (a) the measures to be taken during both construction and operation phases of the project to eliminate or offset adverse environmental impacts, or reduce them to acceptable levels; (b) the actions needed to implement these measures; and (c) a monitoring plan to assess the effectiveness of the mitigation measures employed.

The following table provides generic examples of common mitigation measures for various identified impacts which would be found in a typical ESMP. The table should be considered as generic guidance only; actual mitigations and management measures will need to be confirmed on a subproject basis as part of the ESIA process.

Generic Examples of Environmental Mitigation Measures in ESMP

Issue	Key Principle/Mitigation Standard	Mitigation Measures
General Issues:		
Water supply affecting ecology or neighboring community water supply.	Camp to provide its own water supply that does not affect village water supply.	Any water supply sources should be located so that it does not adversely affect the villages supply. The intake of water from streams for water supplies should leave residual flows in the watercourses. Storage tanks should be used to buffer water supplies.
Wastewater discharges affecting water quality	Wastewater to be treated prior to discharge.	Sewerage disposal methods should be designed to the standards outlined by the government
Solid waste polluting the environment and causing health hazards	No waste to be burnt or buried on site.	All solid wastes shall be removed from site and disposed of at a landfill.
Affected community health & safety	Avoid adverse impacts from both routine and non-routine circumstances	Evaluate the risks and impacts during project life-cycle; establish preventive and control measures; prepare emergency preparedness and response.
Labor Issues:		
Fairness of employment	Promote the fair treatment, non-discrimination, and equal opportunity	It will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements. The same employment treatment and career opportunities will be offered to both male and female employees non-discriminatingly.
Terms of employment	Establish, maintain, and improve the worker-management relationship	Adopt proper HR policies and procedures; provide workers with documented information that is clear and understandable, regarding their rights under national law. Provide and inform workers of an internal grievance process for workplace concerns.
Force labor and/or child labor	Not employ forced labor or child labor.	All work of persons under the age of 18 will be subject to an appropriate risk assessment and regular monitoring on health, working conditions and hours.
Employment of migrant vs. local labor	Compliance & fair treatment	Comply with national and local migrant worker regulation; employ only legal migrant workers; fair treatment to all workers.
Management of migrant labor	Ensure safety and fair treatment	Prevent labor camps, provide decent workers accommodation, and prepare measures to gender-based violence and HIV/AIDS issues
Occupational health & safety	Promote safe and health working conditions, and the health of workers	Provide a safe and healthy work environment, consider inherent risks, hazards, and specific threats to women. Take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work.

Issue	Key Principle/Mitigation Standard	Mitigation Measures
General Construction Issues:		
Noise of machinery associated with construction activities	Noise shall not unreasonably intrude on traditional village life.	Keep a current list of all noise producing machinery and noisy activities; Operate machinery only during designated hours in agreement with local communities; Adopt a grievance mechanism that will enable capturing and addressing issues upfront Work to be carried out in daylight, in typical working hours. Concrete batching plants and other noisy equipment to be located as far as practical from settlements
Dust generation from construction activities	Dust shall not cause a hazard or nuisance to village life.	Dusty operations to occur only during designated hours. Adopt a grievance mechanism. Concrete batching plants and other dusty equipment to be located as far as practical from settlements.
Vibration disturbance from construction activities	Vibration shall not unreasonably intrude on traditional village life.	Keeps a list of all vibration producing machinery and activities causing vibration. This machinery operation to occur only during designated hours (to be confirmed by contractor in agreement with villages). Use of complaints register and procedures to address issues as they arise.
Increased utilization of roads by traffic associated with construction activities	There should be no significant increased risk to local populations from traffic associated with the development.	Road upgrades, including signage, speed humps, re-grading. Training of locals regarding the hazards of traffic. Training of vehicle drivers regarding the driving risks through villages and along remote roads. Use of complaints register and procedures to address issues as they arise.
Pollution risk activities occurring on site	Develop appropriate storage, transport and use practices for storage and handling of mixed classes of dangerous goods in packages and intermediate bulk containers. There shall be no solid or liquid waste disposal directly or indirectly to any water course (whether flowing or not).	Keeps a current list of all potentially contaminating materials used on site. Develop and implement appropriate storage, transport and use practices to recognized standards. Solid waste disposal shall be taken off site.
Excavation and Blasting:		
Noise disturbance of local populations	Noise shall not unreasonably intrude on traditional village life.	Keep lists of all noise producing equipment. This machinery operation to occur only during designated hours (to be confirmed by contractor in agreement with villages). Blasting to occur at the same time each day, and / or a warning siren should sound prior to blasting.
Vibration disturbance of local populations	Vibration shall not unreasonably intrude on traditional village life.	Keep current lists of all vibration producing machinery This machinery operation to occur only during designated hours (to be confirmed by contractor in agreement with villages). Blasting to occur at the same time each day, and / or a warning siren should sound prior to blasting
Material Stockpiling:		
Runoff of suspended sediments from stockpiles	Stockpiling activities should not give rise to storm water containing elevated suspended solids. Provide treatment to	No direct discharge of sediment laden water without treatment. Stockpiles should be compacted as much as practical and not be exposed for extended periods. Storm water should be diverted around stockpiles.

Issue	Key Principle/Mitigation Standard	Mitigation Measures
	achieve 75% reduction in suspended solids.	
Dust generation from stockpiles	Dust shall not cause a hazard or nuisance to village life.	Stockpiles should be compacted and not exposed for extended periods. Stockpiles should be reused as soon as practicable.
Soil / Overburden Removal and Placement:		
Generation of suspended solids from bare ground and runoff into watercourses	Development activities should not give rise to storm water containing elevated suspended solids. Provide treatment to achieve 75% reduction in suspended solids.	No direct discharge of sediment laden water without treatment. Earthworks and land clearance should be minimized and phased. Any discharges to watercourses should occur during high flow and / or discharged as close to the outfall as possible to maximize mixing. Stockpiling should occur at least 10m from a water course. Re-vegetation of exposed areas as soon as practicable. Timing of works around the drier seasons where possible. Provision of storm water cut off drains wherever possible.
Introduction of invasive species	Fill material should not contain invasive species.	The use of imported fill shall be minimized. Machinery should be cleaned prior to working on site to reduce the opportunity of the spread of weed seeds.
Disturbance of natural habitats for spoil / alluvial material.	Soils should be reused where possible in the development – to reduce the need for spoil sites and the need to import fill.	Stockpile and reuse soils before excavating new soils / alluvium.
Efficiency of control measures over time	Control measures should continue to work appropriately throughout the construction period.	Earthworks control measures should be inspected and maintained in efficient operating condition over the construction period.
Community nuisances.	Noise and dust shall not unreasonably intrude on traditional village life.	Concrete batching plants and other noisy / dusty equipment to be located as far as practical from villages.
Works in and near Rivers:		
Sediment discharges arising from working in and near the river. For blasting in or near the river, refer to the blasting issues, above.	Work in the wetted area of the riverbed should be minimized, and only in relation to the construction of the power house, weir and intake structure or to insert culverts for stream crossings.	Stabilize works at the end of each working day and prior to storm events. Do the work during low flow periods. Works shall be minimized. Diversion of the river around the work area where possible.
Community impacts:		
Key Considerations for a Communication Strategy to avoid deterioration of current quality of life and traditional livelihoods	Communication channels are established between Villagers, Construction Supervisors, and state PCUs to facilitate information flow and easier process for lodging complaints	Set up a communication network for discussing issues between contractors and the villagers and the state PCUs built on recognized negotiation structures Contractors will have an Environmental Specialist, OHS Specialist, and Social Specialist on site to ensure conformance with environmental health and safety guidelines and to respond to complaints A Health Program - as well as measures for prevention of gender-based violence, sexual exploitation, and HIV/AIDS - to be included in the Contractor's Construction and Workers Camp Management Plan. This will be made available to

Issue	Key Principle/Mitigation Standard	Mitigation Measures
		the communities Education and orientation of outside workers to local culture and social norms before the start of work. Camps to be self-sufficient in resources and services. (refer to the workers camp table below) Villagers shall be adequately informed of all potential hazards to health and safety with regards to increased traffic, blasting, machinery operation
Labor influx and gender-based violence, sexual exploitation	Specific measures in place for migrant workers	Sensitization campaigns for workers and communities, with special emphasis on vulnerable groups (such of women) Code of conduct and training for workers and managers on the construction sites Locations of labor camps away from sensitive receptors in communities (e.g. schools)
Traffic causing safety risks to road users	Construction traffic will be managed to minimize the impact on existing road users.	Signage to be used to identify current risks to road users. Construction Supervision consultancy and Contractors to discuss major traffic issues with village representatives prior to the event to discuss course of action. Heavy traffic to avoid the hours when school children walk to and from school.
Sediment affecting river water uses.	Sediment discharges to the river shall be minimized.	Refer to the sections above discussing erosion and sediment control.

The table below provides another example of how an ESMP typically would present the association between project activities, their impacts, the specified mitigation measures, institutional arrangements and costs for their implementation.

Sample ESMP Responsibilities and Costs

Project Activity	Potential Impacts	Proposed Mitigation Measures	Institutional Responsibility	Estimated Costs
Use of land within mini grid construction area and along the transmission line route	Damage to vegetation	Appropriate clearing techniques (hand clearing, not mechanized clearing) will be utilized. Any trees of protected species will be relocated. In case relocation is not possible, the project developer will pay a special fee to the local environmental fund.	Contractor/ Operating Company	
Use of land within mini grid construction area and along the transmission line route	Loss of fertile topsoil and soil erosion	Fertile topsoil will be removed, stored in an isolated area away from construction activities, and covered with plastic to prevent runoff/erosion. Upon construction completion, topsoil will be returned and the area revegetated with plants similar to the original vegetation/native to the area.	Contractor/ Operating Company	
Construction works	Air pollution by dust	When necessary, construction site will be sprayed with water, particularly during hot, dry, windy conditions.	Contractor/ Operating Company	

Project Activity	Potential Impacts	Proposed Mitigation Measures	Institutional Responsibility	Estimated Costs
Construction works	Noise from construction works	Construction will be confined to normal work-hours (8AM to 6PM). If construction needs to be conducted before/after these hours, local public will be notified at least one week in advance.	Contractor/ Operating Company	—

ANNEX E: Sample of Outline of a Resettlement Action Plan (RAP)

1. *Description of the project*: General description of the project and identification of the project area.
2. *Potential impacts*: Identification of
    (a) the project component or activities that give rise to resettlement;
    (b) the zone of impact of such component or activities;
    (c) the alternatives considered to avoid or minimize resettlement; and
    (d) the mechanisms established to minimize resettlement, to the extent possible, during project implementation.
3. *Objectives and studies undertaken:* The main objectives of the resettlement program and a summary of studies undertaken in support of resettlement planning / implementation, e.g., census surveys, socio-economic studies, meetings, site selection studies etc.
4. *Regulatory framework:* Relevant laws of the country, policies and procedures, performance standards.
5. *Institutional framework:* Political structure, NGOs.
6. *Stakeholder engagement:* Summary of public consultation and disclosure associated with resettlement planning, including engagement with affected households, local and/or national authorities, relevant CBOs and NGOs and other identified stakeholders, including host communities.
7. *Socioeconomic characteristics*: The findings of socioeconomic studies to be conducted in the early stages of project preparation and with the involvement of potentially displaced people.
8. *Eligibility*: Definition of displaced persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.
9. *Valuation of and compensation for losses*: The methodology used in valuing losses to determine their replacement cost[16]; and a description of the proposed types and levels of compensation under local law and such supplementary measures as are necessary to achieve replacement cost for lost assets.
10. *Magnitude of displacement:* Summary of the numbers of persons, households, structures, public buildings, businesses, croplands, churches, etc., to be affected.
11. *Entitlement framework:* Showing all categories of affected persons and what options they were/are being offered, preferably summarized in tabular form.
12. *Livelihood restoration measures:* The various measures to be used to improve or restore livelihoods of displaced people.
13. *Resettlement sites:* Including site selection, site preparation, and relocation, alternative relocation sites considered and explanation of those selected, impacts on host communities.
14. *Housing, infrastructure, and social services*: Detailed plans to provide or to finance housing, infrastructure, and social services to resettlers and comparable services to host population.
15. *Grievance procedures:* A description of the project's grievance mechanism, including an affordable and accessible third-party settlement procedure for resettlement related disputes.
16. *Organizational responsibilities*: The organizational framework for implementing

[16] Replacement cost defined as the market value of the assets plus transaction costs.

resettlement.

17. *Implementation schedule and budget*: A detailed implementation schedule and budget.

    Monitoring, evaluation and reporting: A description of plans for resettlement monitoring and evaluation.

Annex F: Sample of an Outline of a Livelihood Restoration Plan (LRP)

1. *Description of the project*: A brief description of the project components for which land acquisition and resettlement are required.

2. *Legal and Institutional Framework:* A description of the legal context within which the displacement operation will take place, including an analysis of local legislation, international standards requirements, the gaps between the two and how the project should fill such gaps.

3. *Socio-Economic Environment & Baseline Survey Findings of the affected area*: A socio-economic baseline of the affected communities, drawing from the census, the asset inventory and the socio-economic survey. An assessment of the various relocation sites considered and the justifications for the final site/s selected.

4. Identification of Project Impacts: An outline of the project's economic displacement impacts and how the project's design plans are being influenced by the important need to avoid / minimize such resettlement impacts;

5. Eligibility: A definition of the criteria to be used to determine eligibility for compensation and other resettlement assistance.

6. *Entitlement:* A tentative entitlements matrix, a summary of which will be disclosed to the affected communities.

7. Valuation and Compensation: Methodology in evaluating level economic displacement and a description of the compensation package options and the livelihood restoration options that affected people will be asked to choose between.

8. Livelihood Restoration and Enhancement: The various measures to be used to restore, and improve whenever is feasible, the livelihoods of economically displaced people.

9. Vulnerable Assessment and Assistance: A description of dedicated assistance to vulnerable groups, such as women, elderly population etc.

10. Stakeholder Engagement: A description of the consultation and engagement strategy that is, and will be, used in the design and implementation of the livelihood restoration activities. A summary of the local views thus far expressed in the consultation and engagement process, and how these views have been taken into account in LRP development.

11. Institutional Arrangements: An analysis of the project's existing institutional framework, including the identification of responsible agencies, an assessment of institutional capacity and proposed capacity enhancement measures to be carried out to enable the institutional framework to implement the resettlement operation effectively.

12. Grievance Mechanism: A description of the project's grievance mechanism and its relevance to livelihood restoration.

13. Monitoring and Evaluation: A description of plans for livelihood monitoring and evaluation.

14. Implementation Schedule and Compensation Budget: A detailed implementation schedule and budget.

Annex G: Sample Stakeholder Engagement Plan

A good Stakeholder Engagement Plan should:

- Describe regulatory, lender, company, and/or other requirements for consultation and disclosure.
- Identify and prioritize key stakeholder groups, focusing on Affected Communities.
- Provide a strategy and timetable for sharing information and consulting with each of these groups.
- Describe resources and responsibilities for implementing stakeholder engagement activities.
- Describe how stakeholder engagement activities will be incorporated into a company's management system.

The scope and level of detail of the plan should be scaled to fit the needs of the project.

1. Introduction

Briefly describe the project, including design elements and potential social and environmental issues. Where possible, include maps of the project site and surrounding area.

2. Regulations and Requirements

Summarize any legal, regulatory, lender, or company requirements pertaining to stakeholder engagement applicable to the project operations. This may involve public consultation and disclosure requirements related to the social and environmental assessment process.

3. Summary of any Previous Stakeholder Engagement Activities

If the company has undertaken any activities to date, including information disclosure and/or consultation, provide the following details:

• Type of information disclosed, in what forms, and how it was disseminated
• The locations and dates of any meetings undertaken to date
• Individuals, groups, and/or organizations that have been consulted
• Key issues discussed and key concerns raised
• Company response to issues raised, including any commitments or follow-up actions
• Process undertaken for documenting these activities and reporting back to stakeholders

4. Project Stakeholders

List the key stakeholder groups who will be informed and consulted about the project. These should include persons or groups who:

• are directly and/or indirectly affected by the project
• have "interests" in the project that determine them as stakeholders
• have the potential to influence project outcomes or company operations

5. Stakeholder Engagement Program

- Summarize the purpose and goals of the program
- Briefly describe what information will be disclosed, in what formats, and the types of methods that will be used to communicate this information to each of group
- Briefly describe the methods that will be used to consult with each of group
- Describe how the views of women and other relevant sub-groups will be taken into account during the process
- Describe any other engagement activities that will be undertaken

6. Timetable

Provide a schedule outlining dates and locations when various stakeholder engagement activities, including consultation, disclosure, and partnerships will take place and the date by which such activities will be incorporated into the company's management system.

7. Resources and Responsibilities

Who within the company will be responsible for carrying out these activities? What budget has been allocated toward these activities? Indicate what staff and resources will be devoted to managing and implementing the Stakeholder Engagement Program. Integration of the community liaison function with other core business functions is also important, as is management involvement and oversight.

8. Grievance Mechanism

Describe the process by which people affected by the project can bring their grievances to the company for consideration and redress. Who will receive public grievances, how and by whom will they be resolved, and how will the response be communicated back to the complainant?

9. Monitoring and Reporting

Describe any plans to involve project stakeholders (including affected communities) or third-party monitors in the monitoring of project impacts and mitigation programs. Describe how and when the results of stakeholder engagement activities will be reported back to affected stakeholders as well as broader stakeholder groups?

10. Management Functions

How will stakeholder engagement activities be integrated into the company's environmental and social management system and with other core business functions?

- Who will have management oversight for the program?
- What are the plans for hiring, training, and deploying staff to undertake stakeholder engagement work?
- What will be the reporting lines between community liaison staff and senior management?
- How will the company's stakeholder engagement strategy be communicated internally?
- What management tools will be used to document, track, and manage the process?
- For projects or company operations involving contractors, how will the interaction between contractors and local stakeholders be managed to ensure good relations?

Annex H: Sample Grievance Redress Mechanism

The institution will set up a project-specific Grievance Redress Mechanism (GRM) for people to report concerns or complaints, if they feel unfairly treated or are affected by any of the subprojects.

The mechanism will amongst other things: (a)provide information about project implementation; (b) provide a forum for resolving grievances and disputes at the lowest level;(c) resolve disputes relatively quickly before they escalate to an unmanageable level;(d) facilitate effective communication between the project and affected persons; (e) win the trust and confidence of project beneficiaries and stakeholders and create productive relationships between the parties. The mechanism is envisaged to be at multiple levels and will address such complaints, including logging, tracking, and resolving grievances promptly during and after the implementation of the Project.

The institution will have dedicated person or unit to be responsible for setting up and maintaining the GRM that allows general public in the project area and affected communities or individuals to file complaints and to receive responses in a timely manner. The system will also record and consolidate complaints and their follow-up. This system will be designed for handling complaints perceived to be generated by the project or its personnel. It may also include disagreements about compensation and other related matters.

The GRM will be communicated to all stakeholders in the course of its community engagement activities, and will make public available a record documenting the responses to all grievances received. The GRM will remain available throughout the project cycle. It is expected to address concerns promptly an effectively, in a transparent manner that is culturally appropriate and readily accessible to all project affected parties, at no cost and without retribution. It also allows for anonymous complains to be raise and addressed.

The GRM should include the following elements. More details see Table below.

- Different ways in which users can submit their grievances, which may include submission in person, by phone, text message, mail, email or via a website;
- A lot where grievances are registered in writing and maintained as a database;
- Publicly advertised procedures, setting out the length of time users can expect to wait for acknowledgement, response, and resolution of their grievances;
- Transparency about the grievance procedure, governing structure and decision makers; and
- An appeals process (including the national judiciary) to which unsatisfied grievances may be referred when resolution of grievance has not been achieved.

Grievance Management Process

Process	Description	Time Frame	Other Information
Identification of grievance	Face to face; phone; letter; mail; e-mail; website; recorded during public/ community interaction; others The responsible party to receive the grievances will be REA and the subproject implementers	1 Day	Email address; hotline number

	The grievance can also be passed through other parties, such as the chief office because the public are more conversant with this office. The grievance receiver would then pass the complaint to REA contact person		
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book) It will be prudent to have a grievance record book where the grievances are recorded for follow up	3-6 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law/ policy or this ESMF provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	3 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-8 Days	
Response signed off	Redress action approved at appropriate	8-15 Days	
Implementation /communication of response	Redress action implemented and update of progress on resolution communicated to complainant	5-9 Days	

If complainants are not satisfied with the grievance process, even after arbitration, the affected persons will still have the right to present their complaint through the court system.

Annex I: Sample Self-Monitor Checklist

Issues/aspects	Location	Mitigation measure	Key verifiable indicator	Person responsible	Remarks	Cost (Nigerian naira)
Construction						
1.						
2.						
Etc.						
Operation						
1.						
2.						
Etc.						

Annex J: Sample Regular E&S Report to REA

Name & Address of Mini grid Developer (the Company)			
Completed by (staff name, E&S manager/ coordinator):			
Contact Person Phone #:		Email:	
Position in Company:		Date:	
Reporting Covering From:		**To:**	

1. Portfolio & Pipeline Operations: Please provide details on each mini grid that is in any phase: planning, construction, operation, or decommission (add rows if needed)

Mini grid Location & Phase	**E&S Category (I or II)**	**Category justfication**	**E&S Instruments Prepared**	**Key Risks**	**Compliance with Laws & Regulations (list clearances obtaoned and dates)**	**Activities on Eclusion list (Y/N?)** *If yes, provide details*	**Is involuntary resettlment or economic displacement needed? (Y/N)**	**Has community donated land to the project? (Y/N)**

2. Progress on ESMS Implementation

Compliance	***Yes/No***	**If yes, please provide details**
Has the developer encounter any difficulties and/or constraints related to the implementation of the ESMS?		
Has there been any incident or accident related to resettlement (physical and/or economic)?		
Has the company got warning and/or fines?		

Compliance	*Yes/No*	If yes, please provide details
Has there been any complains from affected person and communities? If yes, describe nature of complains and proposed or agreed resolution?		
Has the budget/resources to implement the proposed E&S change(s) been commited?		
Has the company conducted E&S monitoring for projects? Please describe process and outcomes.		
Have there been any updates to the company's E&S Policy?		
Is there any E&S personnel (staff or consultant) change?		
Is there any E&S staff training?		
Is there an internal process to report on E&S issues to senior management?		
Is there any new public communication and/or stakeholder engagement on E&S issues?*Describe specific activities during reporting period*		
Other E&S issues/concerns		

Signature _____

Date _____

Annex K: Voluntary Land Donation Guidelines

Voluntary land donation is strictly defined in international practice as the ceding of a property by an owner who is: a) fully informed; and b) can exercise free will, i.e., can refuse to sell or to donate. "Fully informed" means that the owner has complete information regarding the proposed activity and its impacts, its land requirements and its alternate activity sites, as well as his or her rights to compensation. The owner has also been provided with sufficient time to consider his or her disposition of the property, and the owner has knowingly rejected the right to renege on his or her initial decision. "Free will" means that the owner can reject the possibility of giving up his or her land.

VLD should only be authorized if they can (a) clearly document Informed Consent; (b) clearly document Power of Choice; and (c) meet the VLD guidelines of the project. The guidelines have been put into place to ensure that donations are indeed voluntary, that the donor is the legitimate owner of such lands, and that the donor is fully informed of the purpose of the donation and of the implications of donating the property.[17] If the land is donated on a conditional basis, the terms and conditions for the temporary use of the property must be clearly documented.

The following principles should be complied with when VLD is carried out:

Core principles:

- The land required to meet technical project criteria must be identified by the affected community through a participatory approach and not by the developer, line agencies or project authorities (nonetheless, technical authorities can help ensure that the land is appropriate for project purposes and that the project will produce no health or environmental safety hazards)
- The proportion of land that may be donated cannot exceed 15 m2 per kW of the proposed generation capacity plus an additional 7.5m2 per kW for future generation capacity expansion
- Land donation for a single mini-grid or power generation system shall not exceed 10% of the land donor's holdings in cases where land ownership is individual or family
- Land required above 1,500 m2, whether for initial construction or future generation capacity expansion, can be bought on wiling-buyer-willing-seller basis at current local market price in the community
- Donated land can only be used for power plant construction and future expansion and be fenced off accordingly
- Shall the donated land not be used for power plant construction within five years, the unused land shall be returned to communities

[17] Voluntary land donation is strictly defined in international practice as the ceding of a property by an owner who is: a) fully informed; and b) can exercise free will, i.e., can refuse to sell or to donate. "Fully informed" means that the owner has complete information regarding the proposed activity and its impacts, its land requirements and its alternate activity sites, as well as his or her rights to compensation. The owner has also been provided with sufficient time to consider his or her disposition of the property, and the owner has knowingly rejected the right to renege on his or her initial decision. "Free will" means that the owner can reject the possibility of giving up his or her land.

Additional requirements:

- Impacts of proposed activities on donated land must be fully explained to the donor
- The potential donor is aware that refusal is an option, and that right of refusal is specified in the donation document the donor will sign
- The act of donation is undertaken without coercion, manipulation, or any form of pressure on the part of the developer, the public or traditional authorities
- The donor may request monetary or non-monetary benefits or incentives as a condition for donation
- Donation of land cannot occur if it requires any household relocation
- For community or collective land, donation can only occur with the consent of individuals using or occupying the land
- Verification must be obtained from each person/ family donating land (either through proper documentation or through confirmation by at least two witnesses)
- The implementing agency or mini grid developers establish that the land to be donated is free of encumbrances or encroachment and registers the donated land in an official land registry
- Any portion of donated land that is not used for its agreed purpose is returned to the donor
- The land in question must be free of squatters, encroachers, or other claims or encumbrances.

VOLUNTARY LAND DONATION (OR LAND LEASE) FORM

This form or an equivalent document is to be used to record the consent of land owners who offer private land for a community good activity. The essentials of voluntary donation are that the donors have been freely consulted prior to the donation, were not pressured or coerced, that the donation will not affect a significant proportion (more than 10%) of their productive assets, and that they have the right to refuse and to lodge a complaint if they have a grievance about the process.

Consent Form for Voluntary Donation

I/We: _____ male household head _____female household head, and/or person(s) exercising customary rights over land described as (legal description, GPS coordinates if available) in
Village_____
Island_____
Province _____
Hereby declare that I/we/the group are the owners/users of the land required for (description):
_____
I/we are voluntarily donating the use of land and or/ land-based assets (land area, type of assets /trees/crops etc) _____
_____
for the purpose of: (specify activity)
_____
_____
We agree to this purpose from (date)_____ for as long as the purpose is served *or* until (specify end date, typically the life expectancy of the facility)_____
I/we make this donation of My/Our own free will. I/We are waiving My/Our right to compensation of any kind for the specified duration of the activity.
I/We affirm that we have been fully and freely consulted and informed about the activity prior to agreement, have not been subject to any form of coercion, understand that I/we have the right to refuse, and to seek redress for any grievance concerning this transaction.

Signed:
Male household head _____ /Female household head_____
Chief or Local Custom Authority_____

Annex V. Methodology for ESMF

The methods used for the ESMF are enumerated below, and the preparation was for a short period. The indicative work plan, desktop study, scoping activities to understand the projects field of influence, onsite visit to the different states, mapping, review of the existing laws and polices currently in place at each level of government as well as relevant World Bank policies and processes constituted activities for successful project output.

A step-wise process of ground investigations and community involvement mechanisms was utilized. The technical approach was targeted towards obtaining visual information as well as information based on oral interviews and focused group discussions (FGDs). Below is a brief description of activities performed in the implementation process of the methodology.

Literature Review

The methodology adopted for the ESMF studies involved an intensive application of desk reviews and collection of all relevant information in order to achieve successful outputs. Information was garnered from the Federal Ministry of Environment, State Ministries of Environment, the different Universities for the EEP, Geological Surveys, World Bank, International documents for similar executed projects, etc.

Field Visits

This activity involved:

- Visits to all the universities and some possible Mini grids and SHS sites for Assessments. The universities have been identified, the mini grid and SHS sites have not. Specific site assessment requirement will be laid out by this document.
- Impacts Identification and Assessments
- Potential Impacts Assessment and Definitions
- Oral interviews, use of questionnaires and focused group discussions.

Project Affected Persons (PAPs) Community Consultations

This step involved intensive discussion at a sample of potentially-affected communities. The sampling of community opinions and comments formed the basis for information gathered under this activity. The universities have been identified, the mini grid and SHS sites have not. Specific site assessment requirement will be laid out by this document. The main issues discussed with focus groups included:

- Land usage & acquisition
- Water pollution
- Afforestation and Deforestation
- Over-exploitation of wetlands
- Anthropogenic activities
- Labour issues and Socio-economics
- Public Health (Especially HIV/AIDs; Water-borne diseases & Choleras; STIs; Malaria; etc.

Field/On-site Focused Group Methodologies used

a) Independent investigation
   - Principal data source (Federal and state ministries, and MDAs concerned with electrification such as the Federal Ministry of Power, NERC and REA

b) Questionnaire Alternatives

- In-person, directive, structured (Used at the- National, State and Community Leadership level)
- non-directive, unstructured (To be used at the- Community household level)

c) Identification of potential impacts and Mitigation Measures

Although all specific projects to be implemented under the programme (except the EEP), are not known at this stage, potential impacts were identified through initial generic screening of the anticipated projects in the light of the socio-environmental conditions; field visits and consultations with focus groups.

To ensure all projects are appropriately screened for environmental and social issues at their conception stage, a simple screening tool [See Annex 2] was developed to screen each project in terms of:

(i) Appropriate EIA category;
(ii) Applicable local and international regulations and standards (e.g., labour, pollution, occupational health and other standards);
(iii) Applicable World Bank safeguards;
(iv) Level of stakeholder engagement (both sectoral and project level);
(v) Existing environmental and other (e.g. compensation) liabilities; and
(vi) Location sensitivities (e.g., sensitive environments and culture)

The screening tool provides necessary information to appropriately scope ESIA studies. These will include: environmental, social and other due diligence investigations.

Annex VI: Sample Terms of Reference for ESIA Preparation for Component 3

1. INTODUCTION/BACKGROUND

The Federal Executive Council approved the Power Sector Reform Program (PSRP) on the 22 March 2017. The Federal Government of Nigeria (FGN), seeks to increase electricity access in remote, low density and traditionally underserved areas of the country through the Rural Electrification Agency (REA). The Nigeria Electrification Project (NEP) directly promotes these objectives, and will provide electricity access to serve households, enterprises, community facilities, and small businesses. While the project is technology neutral, it is expected that most of the power under the project will be generated by solar power.

The NEP is nationwide in scope. The project aims to provide electricity to households, firms and public institutions in a least-cost and timely manner. One of the key components of the project is building Power System for Public Universities and Teaching Hospitals (also refers to as "Energizing Education" or EE), which will support the construction and operations of solar mini-gird for beneficiary universities and teaching hospitals. This component will be implemented by REA in collaboration with universities. A contractor(s) will be engaged in construction of mini grids under this component, and it is likely that owner's engineer to ensure the satisfactory execution of the project.

The scope of the EE component shall include the provision of streetlights within the university campuses, a renewable training program for electrical students as well as provide power to the rural communities surrounding the universities in the long run. It will use off-grid system ranging from 1 MW to 10 MW and shall be implemented in phases.

Under the EE component, the Nigeria Rural Electrification Agency (REA) will lead by coordinating the design of each system and hiring qualified contractors to conduct the construction. The contractors will need comply with government and REA's requirements, including World Bank E&S requirements. Contractor bidding documents will be reviewed by the World Bank to ensure all required E&S clauses are incorporated. The beneficiary universities will provide land and all other support needed to enable construction and then operate the system once built. As the universities are expected to provide land for the project (however, REA will be responsible for compensation costs, where compensation and livelihood restoration are needed), and conduct stakeholder engagement.

A major risk expected under the EE component is the encroachment on land that may be used for mini grids that is allocated to universities and traditionally used by communities, so an appropriate mechanism to ensure this approach is used judiciously needs to be set up and implementation closely monitor. In the medium term, risks associated with disposal of lead-acid batteries and lithium batteries used in mini grids will present a challenge for the project's sustainability. Additional risks include stress on local water use and supply, construction impacts (including community and occupational health and safety), waste management (in addition to batteries) and bird mortality. All of these can become systemic risks if not managed well.

This TOR covers the scope of work for the E&S assessment specialist, who is expected to prepare the Environmental and Social Impact Assessment (ESIA) report. Towards ensuring best practice and compliance with the Environmental Impact Assessment (EIA) Act, this ToR specifically focuses on the acquisition of the necessary Ministry of Environment approvals, through developing and furnishing the Ministry with Environmental and Social Impact

Assessment (ESIA) and Resettlement Action Plan (RAP) where required for the implementation of the EE projects under the Rural Electrification for both on-grid and off-grid and in particular the PV solar systems.

2. OBJECTIVES/ACTIVITIES OF THE ASSIGNMENT

The objective of this consultancy is to prepare an Environmental and Social Impact Assessment (ESIA) for power systems constructed under the EE component, in line with the requirements of the Federal Government of Nigeria and The World Bank's OP/BP 4.01 and 4.12 to ensure that any adverse effects on the environment and project affected persons (PAPs) are properly mitigated and compensated. The selected consultant shall work closely and report to the Managing Director Rural Electrification Agency (MD-REA) through the E&S unit of the PMU.

Specific tasks expected in this assignment include:

i. Draft project-specific ESIA (see Annex VII: ESIA Sample Table of Contents for Component 3 (Energizing Education)) and Resettlement Action Plan (RAP) (where required), covering project design, construction, and operation of the university mini grids and associated infrastructure;

ii. Obtain all E&S related government required approvals and licenses and ensure full compliance of the project to relevant legal, regulatory, and other E&S requirements;

iii. Consider project induced environmental and social impacts, whether they be adverse of positive impacts, and identify means to either eliminate or minimize the adverse impacts whilst at the same time seeking to enhance the positives;

iv. Document the ecological and socioeconomic baseline conditions of the study area and the affected communities;

v. Determine the number of persons affected directly by the project (persons whose property, shelter or means of livelihood will be destroyed, relocated or restricted by the implementation of the rehabilitation project);

vi. Enumerate and classify the number and type of properties on the land (crops, farm-land, structures, traditional sites (graveyards, shrines, etc.);

vii. Conduct a Social Survey of the respective project location/Sites and adjoining surroundings

viii. Design and conduct stakeholder engagement, draft Stake holder Engagement Plan and engagement reports

ix. Meet the requirements or recommendations of the applicable national and international regulations and standards;

x. Design and establish project-level grievance redress mechanism;

xi. Be guided by the policies, guidelines, and procedures of the relevant international treaties and agreements; and

xii. Consultation and communication with relevant Regulatory Agencies/Stakeholders at the Federal, State and Local Government levels on the proposed Project, including:

- Federal Ministry of Environment,
- Federal Ministry of Youth and Social Development
- State Ministries of Environment
- State Ministries of Youth and Social Development
- Respective Local Government Councils
- State environmental agencies
- Community Based Organizations, (Civil Society, NGOs) in the affected States.

xiii. Liaise with the E&S unit of the PMU to obtain final ESIA approval from the Federal Ministry of Environment for the NEP

3. DELIVERABLES (OUTPUTS) AND PAYMENT SCHEDULE

The Consultant is expected to work closely and report to the E&S unit of the PMU and, members of the Advisory Power Team towards successfully executing the assignment. The following reports shall be submitted by the Consultant to the Rural Electrification Agency:

s/n	Deliverables	Timeline *(After contract signing in weeks)*	*Payment (% of Total Remuneration)*
1.	**Inception Report: -** This should include methodology and work plan with clearly defined strategy for carrying out the assignment with timelines for the various outputs. The report should include: • Detailed Project including plan for the on-site activities • Complete Work plan document • Draft Survey Tools The Consultant must submit (3) hard copies and a soft copy of the inception report. **Progress Report:** An update on the progress of the Baseline survey and plans for completion of the survey and next activities.	2- 8	30
2.	**2nd Progress Report:** - Presentation of the result of consultations, questionnaires and other information collected from the field to include. – Land Surveys – Certified Survey Plans for each of the Phase 2 Projects – Draft E(S)MP Report for each of the Phase 2 Projects **Draft ESIA Report: -** A draft report containing detailed compilations of the Inception to the 2nd Progress report and containing all the various sections of a good ESIA.	8 - 16	30
3.	Final ESIA Report for each of the phase 2 project **Panel Review: -** Presentation of the ESIA at a Panel to be held by the Federal ministry of Environment.	16-24	40

	ESIA certification and approval letters from the FMEnv for each of the phase 2 project Final ESIA report as approved by the FMEnv will be produce for each of the institutions as covered in this TOR.		

4. QUALIFICATION OF THE APPLICANT

The Consultant will have the following qualifications, expertise & experience, with not less than four supporting staffs, and 15 years of graduation with minimum of 10 years working experience in related field for the team leader:

- In-depth understanding of, and experience with, the existing regulatory regime and personnel associated with review and approval of environmental projects in Nigeria;
- Extensive experience in supporting and undertaking the production of reports and related documents that are comprehensive, understandable and address the needs of the regulatory and review processes;
- In-depth understanding of key issues that are of importance to all stakeholders and regulators and a proven track record in effectively engaging these groups in the project processes through consultation;
- A proven record and experience of several successfully completed environmental projects in Nigeria;
- Extensive experience working with industry as well as State and Federal Government MDAs and stakeholders on environmental matters in Nigeria;
- In-depth understanding of, and experience with, the existing regulatory regime and personnel associated with surveying projects and practices in Nigeria;
- A proven record and experience of several successfully completed surveying projects in Nigeria;
- With respect to Land Surveys, the consultant who shall be a qualified surveyor;
- Experience working with industry as well as State and Federal Government MDAs and stakeholders in Nigeria;
- Excellent written and verbal communication skills;
- Efficient and effective time management;
- Evidence of having carried out similar assignments with the World Bank or any International Donor will be an added advantage.

5. SCOPE OF THE ASSIGNMENT AND GENERAL APPROACHS

The Consultant, who shall be duly registered with the Federal Ministry of Environment, towards achieving the objectives noted under section 4 above, shall carry out the following activities:

1) **Desktop review and Mapping**:

- Issuance of Information Request Sheet
- Gathering of relevant project and environmental documents

- Desktop review of relevant documents
- Initial Identification of Stakeholders (including Project Affected Persons, PAPs)
- Preparation of survey maps
- Preparation of detailed work plan
- Preparation of draft survey tool

2) Field Data Gathering and Laboratory Analysis

- Stakeholder meetings
- Baseline environmental data gathering
- Land-use mapping
- Biophysical surveys (ecology, air quality, soil/water quality, etc.)
- Community based meetings of PAPs
- In-depth interview sessions, focus group discussions and questionnaire administration to all PAPs
- Transportation and traffic surveys
- Identification of specific PAP vulnerable groups/persons/households
- Laboratory analysis in a laboratory, which should be fully accredited by the FMEnv.
- Undertake field visits to ascertain if subprojects are implemented in an environmentally and socially sustainable manner
- Contribute to project progress report pertaining to overall implementation of environmental and social requirement of the projects.

3) **ESIA Draft Report Writing**

- Detailed baseline descriptions
- Preparation of additional maps
- Identification of environmental and social aspects and impacts
- Draft ESIA
- Report to the Advisory Power Team (APT)

4) Final ESIA Report Writing and Regulatory Activities

- Submission of Draft ESIA Reports to the FMEnv
- Draft ESIA Reports to be reviewed by the FMEnv
- Preparation of Final ESIA Reports to APT via the E&S unit of REA-PMU
- E&S unit of PMU reviews Final ESIA Reports
- Submission of Final ESIA Reports to the FMEnv
- Payment of final regulatory fees
- Issuance of ESIA Approval Letters by the FMEnv

6. STATUTORY LEGAL AND ADMINISTRATIVE FRAMEWORK

The statutory (legal and administrative) frameworks within which the consultancy activities shall be executed are provided in the following regulations, guidelines and standards (Note: these regulations are not exhaustive):

i. The World Bank Safeguard Policies and Environmental Health and Safety Guidelines.

ii. The regulations, guidelines and standards of the Federal Ministry of Power as it concerns high voltage power transmission in Nigeria.

iii. The regulations, guidelines and standards of the Federal Ministry of Environment concerning power generation and transmission activities in Nigeria.

iv. The regulations, guidelines and standards of the various State Ministries of Environment and Social Welfare.

v. All International Conventions/Treaties on Environmental Protection/Social Welfare to which Nigeria is a party.

vi. The Corporate and Operational Policies of the Transmission Company of Nigeria.

7. TIME AND EFFORT LEVEL

The Consultant shall prepare time schedules to be submitted to the E&S unit of the PMU in accordance to this TOR. And shall report to the E&S unit of the PMU. The time frame for the entire consultancy services is within six (6) months of contract signing.

8. TERMS OF PAYMENT

Payments to the Consultant shall be made in equal end-of-month payments of agreed amount subject to completion of core reporting responsibilities as laid out in the Assignment Work plan.

9. TRANSFER OF KNOWLEDGE

The Consultant shall closely work with E&S unit of the PMU and members of the APT to transfer all relevant knowledge required.

10. SELECTION METHOD

Consultant shall be selected through the Individual Consultant Selection Method in accordance with the procedures set out in the World Bank guidelines: Selection and employment of Consultants by bank borrowers, January 2011 revised July, 2014.

11. COPYWRIGHT AND OWNERSHIP

All materials, finished and unfinished, including the ESIA, RAP and certified Land Surveys, would be owned by the Rural Electrification Agency. The Consultant shall maintain confidentiality of all information received from the Rural Electrification Agency concerning all data and insights obtained during the project.

Annex VII: ESIA Sample Table of Contents for Component 3

Executive Summary
This section shall describe the subproject activities, critical environmental and social issues, significant findings and recommended actions.

1. Introduction
i. Background of the subproject
ii. Scope and objectives of the ESIA study
iii. Study methodology in details
iv. Limitations of the study
v. Composition of study team

2. Policy, Legal and Administrative Framework
i. FGN requirements and relevant legislation
ii. WB requirements and guidelines
iii. International agreements

3. Description of the Subprojects
i. Background and Rational of the Project
ii. Project Site and Location
- Description of the location of the proposed subproject with maps
- Project area of influence
- Nearby communities, environmentally sensitive areas, and heritage sites (For solar mini grid buffer zone should be 1 km)

iii. Technical Aspects
- Description of the subproject components, permanent and temporary facilities
- Project equipment and civil works
- Project ownership
- Summary of project structures and operating regime
- Construction activities
- Operation and maintenance
- Manpower requirements (including local and migrant workforce)
- Construction machinery, materials and other supplies (including estimated numbers/quantities)
- Land filling activities (if any)
- Power supply arrangements
- Waste generation and disposal (including estimated quantities)

4. Baseline Environmental Conditions

4.1 Physical Environment
i. Topography
ii. Geological Condition
iii. Meteorological Condition (Rainfall, Temperature, Humidity, Wind speed)
iv. Air Quality
v. Noise Quality
vi. Surface and Ground water quality
- Surface:(testing of: pH, TDS, DO, COD, BOD)
- Ground:(testing of: pH, Arsenic, TDS, alkalinity, Cl, Fe)

vii. Project location from flood level
viii. Soil Quality

ix. Water resources
x. Agro-ecological zones within project area of influence
xi. Seismicity
xii. Climate change and natural disasters
xiii. Land use

4.2 Biological Environment

i. Bio-ecological environment
ii. Flora and Fauna
iii. Protected areas
iv. Terrestrial Ecosystem, Protected areas and red book species
v. Vulnerability to Climate Change and Natural hazard
- Explain in detail about how the project will be affected by the climate change impact
- Explain how the project is vulnerable to various natural calamities including flood, earthquake, drought, cyclone and so on

4.3 Baseline Socio-economic Conditions

i. Distribution of population in the project area in terms of religion, age, sex, ethnicity, income, household size, occupational patterns and their relevance with the project, poverty
ii. Project land
iii. Land use and ownership (including traditional use and ownership)
iv. Cropping and/or grazing patterns
v. Vulnerability of the Affected Peoples (APs)
vi. Employment
vii. Livelihood
viii. Physical and cultural resources (school, health post/ hospital, college, temple, monasteries etc.) in the project area
ix. Availability of Indigenous settlement
x. Communication facility
xi. Local amenities

5. Analysis of Project Alternatives

i. Reason to choose the technology
ii. Without project alternative
iii. Site Alternative
iv. Distribution line routes
v. Other temporary and permanent facilities

6. Stakeholder engagement including Grievance Redress Mechanism

Stakeholder engagement process focusing on free, prior and informed consultation (FPIC) shall be conducted with the community and other stakeholders, and take into account modalities where Indigenous Peoples or other types of vulnerable and marginalized communities may be involved. The consultation shall include prior disclosure of information in a manner accessible and understandable to communities, key informant interviews, focus group discussion (male& female, youth) and public consultation. The consultation shall be documented with required facts, figures and evidence including participant list with contact details, photographs. Information shall be disclosed as per the requirement of National Regulations and relevant OPs of the World Bank. This section shall describe the grievance redress mechanism. The standard GRM of AEPC will support but not replace grievance mechanisms established at subproject level.

7. Anticipated Environmental and Social Impacts and Mitigation Measures

i. General
ii. Area of Influence (AoI)
iii. Pre-construction Phase
- Land use / land filling
- Flood Hazards

iv. Construction Phase, Operational Phase and Decommissioning Phase
- Visual Amenity
- Birds and Bats Mortality
- Air Quality
- Noise
- Soil
- Water Resources
- Terrestrial Ecology
- Waste Generation
- Occupational Health and Safety
- Community Health and Safety
- Vulnerable Community
- Employment Opportunities
- Traffic Management
- Archaeology and Cultural Resources
- Cumulative and induced impacts

v. Summary of Anticipated Impacts

8. Environmental and Social Management Plan (ESMP)

This section deals with the set of mitigation management measures to be taken to avoid, reduce, mitigate or compensate for adverse environmental, occupational and social impacts with the institutional arrangement, monitoring schedule, parameters to be monitored and soon including tentative monitoring budget. It would include the following aspects:

- Types of impacts and their mitigations
- Mitigation measures
- Environmental Code of Practices (to be attached to bidding documents and/ or contracts)
- Monitoring Plan
- Communication and documentation
- Cost of ESMP
- Integration with Project (contract clauses, others)
- Grievance resolution process
- Plan for stakeholder/ community engagement during pre-construction, construction, and operation phases; the plan should include community mobilization approach from both social and commercial perspectives.

9. Environmental and Social Benefits

This section will discuss how the project will provide benefits in environmental sector and social life, directly and/or indirectly.

10. Conclusion

This section shall provide the conclusion drawn from the study

Annex VIII: Waste and Batteries Disposal Management Approach

In Africa, many countries and communities are already struggling with contaminated sites and soil pollution from unregulated car battery recovery and recycling. Unsound end-of-life management and recycling can cause severe and even fatal lead poisoning of people working in the battery recycling sector. The health of people living around small and industrial-scale lead smelters, in particular children, are severely impacted for life. A recent report by the Lead Recycling Africa Project and Oeko-Institute revealed that already every year more than 1.2 million tons of used lead-acid batteries and 800,000 tons of lead require sound management in Africa.

Environmentally, when disposed alongside household trash, batteries end up in landfills/waste dumps. As the battery casing corrodes, chemicals leach into the ground water from where they contaminate the water bodies. Acid and lead particulates also contaminate the soil and become airborne when dry. Health-wise, cadmium and nickel are known human carcinogens, lead has been linked to birth defects and to neurological and developmental damage, and mercury is also highly toxic, especially in vapor form. Excessive levels of lead can affect a child's growth, cause brain damage, harm kidneys, impair hearing and induce behavioral problems, and in adults, lead can cause memory loss and lower the ability to concentrate as well as harm the reproductive system.

In Nigeria, there are lead-acid recycling plants, but most of these operate under conditions which are hazardous to human health and the environment. Once the used lead-acid batteries are broken open, acids are drained into the soil and the lead plates are removed, some of the lead are recycled (melted into other forms) while others are shipped abroad.

Recycling facilities in Nigeria are all informal and unregulated. A lot of batteries are imported into Nigeria on a daily basis and some of them are substandard and get to their end of life in no time. Many companies in Lagos, Ogun, Kano and Anambra States are recycling used lead acid batteries. This has created employment opportunities for many Nigerians, but the economic and social benefit has not translated to environmental and health wellbeing. Some factories even extract lead from use batteries and export to India and China.

To regulate waste management of such toxic substance, on the international level the Basel Convention18 is very important for both used lead acid batteries. Furthermore, the Secretariat of the Basel Convention has set up guidelines for a safe treatment of used lead acid batteries. In March 1989, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, was adopted. The treaty entered into force in 1992. Drawing on the principles of environmentally sound management, the convention seeks to protect human health and the environment from the risk posed by hazardous wastes. This will require changing the economic equation for wastes in order to motivate the producers of hazardous wastes and people who benefit from the associated goods to take action. To do this, the convention sets out a three-steps strategy (UNEP 2002):
1. Minimizing the generation of wastes.
2. Treating wastes as near as possible to where they were generated.
3. Minimizing international movements of hazardous wastes.

The Technical Guidelines for the Environmentally Sound Management of Waste Lead-acid Batteries (source: www.basel.int) offer managers a set of best practices and principles for setting up effective systems for recycling batteries. They describe how to collect, transport and store used batteries; give specifications for the storage chambers and transport facilities;

[18] http://www.worldwidehelpers.org/wwhweb/uploads/files/KnO-100398_Recycling%20batteries.pdf

describe how batteries delivered to the recycling plant should be drained of their electrolytes, identified, segregated, and stored; explain how the recovered lead must be refined in order to remove unwanted contaminants; and address medical issues and public awareness. The Guidelines conclude that the most effective approach to collection is to rely on manufacturers, retailers, wholesalers and service stations to retain old batteries at the time new ones are provided to the customer.

Generally speaking, good practice of lead-acid battery recycling includes:[19]

- Segregated work areas, so that process areas do not contaminate non-process or eating areas
- Comprehensive Health and Safety Polices
- Medical surveillance for all operating personnel exposed to lead operations.
- Waste water treatment facilities
- Emission control procedures
- Solid Waste Management of all smelting by-products and residues.
- A community outreach program that keeps the surrounding population aware of the secondary lead operations through effective two-way communications.

World Bank provides general guidance on waste recycling and reuse in its Environmental, Health, and Safety Guidelines. The following elements should be considered during battery recycling:

- Evaluation of waste production processes and identification of potentially recyclable materials
- Identification and recycling of products that can be reintroduced into the manufacturing process or industry activity at the site
- Investigation of external markets for recycling by other industrial processing operations located in the neighborhood or region of the facility (e.g., waste exchange)
- Establishing recycling objectives and formal tracking of waste generation and recycling rates
- Providing training and incentives to employees in order to meet objectives

In Nigeria, National Environmental Standards and Regulations Enforcement Agency (NESREA) is responsible for developing related guidelines.

Currently, the leading regulation is the National Environmental (Sanitation and Waste Control) Regulations S. I 28 of 2009 and the National Environmental (Motor Vehicle & Miscellaneous Assembly sector) Regulations. These regulations and others have specific provisions for Extended Producer Responsibility Programme. Regulation 6 section (2) requires that all damaged and disused components including wires, electronic devices, oil filters, batteries, types, airbags, etc., shall be amenable to recovery under the Extended Producer Responsibility (EPR) programme.

EPR is an environmental policy approach in which a producer's responsibility, physical and/or financial, for a product is extended to the post-consumer stage of a product's life. It includes the take-back, recycling and final disposal of the product including its packaging. EPR shifts the responsibility for waste management from government to private industry, obliging producers, importers and/or sellers to internalize waste management costs in their product prices and ensuring the safe handling of their products. It also offers a framework for a partnership approach between Government, business, and the community to work towards zero waste.

[19] http://www.ilmc.org/Presentations/ABC/Recycling%20Used%20Lead%20Acid%20Batteries%3B%20A%20Model%20Life%20Cycle%20Approach.pdf

In Nigeria, EPR programs are still at its infancy stage even though the ERP regulations was introduced by the National Environmental Standards and regulations Enforcement Agency (NESREA) in 2014.

As the next step, NESREA should formally certified battery recyclers, so the developers can bring used batteries to more regulated places. It should also provide a platform to connect the recyclers and the developers. Other suggested regulatory policies include:

- enforce a ban on export of battery plates and crude lead ingots (scrap metals);
- control indiscriminate processing of used batteries; and
- control dumping of substandard batteries, especially Chinese ones

Some developed countries and areas have comprehensive battery recycle regulations that can be learned form, such as:

- Channel Islands: In early 2009 Guernsey took the initiative by setting up the Longue Hougue recycling facility which among other functions offers a drop-off point for used batteries so they can be recycled off island.
- United Kingdom: An EU directive on batteries that came into force in 2009 - Requires Producers to pay for the collection, treatment and recycling of batteries.
- North America: The rechargeable battery industry has formed the Rechargeable Battery Corporation (RBRC), which operates a free battery recycling.
- European Union: In 2006 the EU passed the Battery Directive - one of the aims is a higher rate of battery recycling. The EU directive gave targets of 25% for 1st year , 45% after another 4 years.

Private sector also plays an important role in managing lead-acid battery recycling. Good and profitable private sector involvement in battery recycling can also help improve the standards and practice of the informal recyclers in Nigeria. Local battery manufacturer should also be encouraged, since they will avoid the global loops of toxic materials

Active companies with good battery recycling plans/potentials in Nigeria include, but are not limited to:

- Ibeto – Lagos: leading company in Nigeria with proper battery recycle practice
- Union Autoparts: a major battery manufacturing company in Nigeria;
- The Recycling and Economic Development Initiative of Nigeria (REDIN): a Non-Governmental Organisation involved in recycling advocacy, policy research & consultancy, etc.
- REDIN Global Resources Ltd.: subsidiary of REDIN, also engaged directly or indirectly and gradually building capacity in the waste management areas;
- Mobisol: large SHS distributor in Africa region.
- Metal Recycling Industries Ltd. that recycles the batteries for the lead and converts them to ingots for export.

For REA to better assist its NEP participating mini grid developers and SHS distributors to recycle used solar panel batteries, it should:

- conduct a research by administering questionnaire on the issue of solar panel lead-acid battery usage and recycling in Nigeria;
- actively engage with NESREA on the regulatory side to improve national level regulations/policies, more specifically, to establish safe/ certified recycling facilities, regulations for recyclers (in 2-3 years when first wave of batteries come)
- establish REA's own standard / guideline for led acid battery recycling, including articulated standard for what is "safe recycling" based on international guidelines;

- develop a list of approved recyclers and request mini grid developers that are part of WB-supported program to use only those; and
- articulate and support steps for capacity building of recyclers.
- REA must see that SHS batteries must be ISO certified by the Standard Organization of Nigeria (SON)
- Ensure SHS contractors must have ability to protect their worker hence, made to show proper storage facilities for batteries and other solar components

Annex IX: Sample Questionnaire for Lithium Ion Batteries Management

Name of Respondent:
Location:
Phone Number:

1. **QUANTITIES AND COSTS OF LIBs:**

A. How many LI Batteries do you need to power a solar panel?
B. How do you intend to process used LI batteries?
C. How much do you buy?
D. Do you supply to others in the sector?
E. How do you sell and to whom?
F. How are LI batteries delivered to you?
G. How are they Transported and what is your storage capacity
H. How much does it costs to store LIB?

2. **END PRODUCT OF LIB RECYCLING:**

A. What products do you intend to extract from the LI battery?
B. Do you have already established process that could be applied?
C. Do you intend to sell the end product locally or internationally?
D. To whom do you intend to sell these end products?

3. **HEALTH, SAFETY AND POLLUTION CONTROL**

A. Would you consider this business dangerous to your health and environment?
B. How long have you been in this business?
C. Have you observed any health challenges?
D. What other waste does the business produce?
E. How do you intend to dispose or manage the(se) other waste(s)?

4. **WILLINGNESS TO INNOVATE AND MODERNIZE**

A. Do you think your current practice meet international best practice?

B. Are you in discussion with your supplier for a buy back mechanism?

B. What aspects of your business particularly the end of life battery management do you think can be developed further to assist you?

C. In your estimation, how big do you think LIB recycling would become?

D. How many persons do you employ currently?

E. What are your major challenges?

Annex X: Terms of Reference (TOR) for Consultancy Services for an Environmental and Social Compliance Audit for the Nigeria Electrification Project (NEP)

1. INTODUCTION/BACKGROUND

The Nigeria Federal Executive Council approved the Power Sector Reform Program (PSRP) on the 22 March 2017. The Federal Government of Nigeria (FGN), seeks to increase electricity access in remote, low density and traditionally underserved areas of the country through the Rural Electrification Agency (REA). The Nigeria Electrification Project (NEP) directly promotes these objectives, and will provide electricity access to serve households, enterprises, community facilities, and small businesses. While the project is technology neutral, it is expected that most of the power under the project will be generated by solar power.

The NEP is nationwide in scope. The project aims to provide electricity to households, firms and public institutions in a least-cost and timely manner. One of the investment components of the project is building Power System for Public Universities and Teaching Hospitals (also refers to as "Energizing Education" or EE), which will support the construction and operations of solar mini-gird for beneficiary universities and teaching hospitals. This component will be implemented by REA in collaboration with universities. A contractor(s) will be engaged in construction of mini grids under this component, and it is likely that owner's engineer to ensure the satisfactory execution of the project.

The scope of the EE component shall include the provision of streetlights within the university campuses, a renewable training program for electrical students as well as provide power to the rural communities surrounding the universities in the long run. It will use off-grid system ranging from 1 MW to 10 MW and shall be implemented in phases.

Under the EE component, the Nigeria Rural Electrification Agency (REA) will lead by coordinating the design of each system and hiring qualified contractors to conduct the construction. The contractors will need comply with government and REA's requirements, including World Bank E&S requirements. Contractor bidding documents will be reviewed by the World Bank to ensure all required E&S clauses are incorporated. The beneficiary universities will provide land and all other support needed to enable construction and then operate the system once built. As the universities are expected to provide land for the project (however, REA will be responsible for compensation costs, where compensation and livelihood restoration are needed), and conduct stakeholder engagement.

A major risk expected under the EE component is the encroachment on land that may be used for mini grids that is allocated to universities and traditionally used by communities, so an appropriate mechanism to ensure this approach is used judiciously needs to be set up and implementation closely monitor. In the medium term, risks associated with disposal of lead-acid batteries and lithium batteries used in mini grids will present a challenge for the project's sustainability. Additional risks include stress on local water use and supply, construction impacts (including community and occupational health and safety), waste management (in addition to batteries) and bird mortality. All of these can become systemic risks, if not managed well.

2. ENVIRONMENTAL AND SOCIAL COMPLIANCE AUDIT

Periodic audits of compliance with ESMPs and national law by REA geopolitical offices and project contractors are needed to ensure adequate implementation of the mitigation measures for the E&S risks described above. The exact criteria used for the audit will be based on the content of the ESMPs that will be prepared by REA as a result of E&S impact assessment process.

An E&S compliance audit shall be done through an external independent agency in accordance with these terms of reference. The audit shall be conducted by a qualified E&S auditor/ inspector/ firm with in-depth technical knowledge of the electricity transmission sector.

See Annex I for the detailed scope of compliance audit.

The objectives of E&S compliance audit will be to evaluate project activities, specially taking into account E&S regulatory frameworks, World Bank operational policies for safeguards, and environmental health and safety measures. Specifically, the objectives of the audit are:

i. To ensure compliance with the Nigeria national and local laws/regulations, World Bank E&S requirements, and other requirements (if any) as set out in the ESMF;
ii. To assess progress by Contractors in implementing the ESMF and RAPs (if any);
iii. Provide expert opinion supported by field observations on the effectiveness of the measures that have been implemented;
iv. Identify mitigation or monitoring measures that don't achieve desired results and need to be modified or replaced;
v. To advise on the financial implications related to implementation of E&S mitigation measures in terms of additional capacity strengthening that may be needed to facilitate necessary improvements;
vi. Recommend changes or additions to the ESMF, if needed;
vii. Recommend measures that will ensure compliance with best practices required for ISO 14001, ISO18001 and ISO 9001 certification; and
viii. Monitor the implementation of the measures/actions above.

Based on the findings of the audit, REA will commit to systematic incorporation of suggested improvement into its E&S risk management model.

3. CONSULTANT'S QUALIFICATIONS

The prospective Consultant should demonstrate the ability to carry out this audit with proven capability of studying and producing consistent high-quality reports and also ensure that all specific task in this TOR are adequately addressed in the report, with a minimum of 15 years on the job experience in the field of the assignment. The Consultant will be responsible for the overall process and also ensure that all specific tasks of the ToR are addressed satisfactorily in the report.

The eligible Consultant(s) must have the following qualification of the personnel within the consulting team:

i. Master Degree in Environmental Sciences or any relevant science degree (PhD will be an added advantage).

ii. 10 years' experience in carrying out similar assignments with another World Bank financed project.

iii. Certified Environmental Auditor

iv. Certified OHS Auditor

v. Experience in Health, Safety and Environmental Auditing of Electric Utility.

vi. Good knowledge of International and Local Environmental, Health and Social legislation for the Power Sector;

vii. Certification with reputable international Environmental, Health/Safety and Social institutions e.g. (NEBOSH, IEMA, etc.)

4. DURATION OF WORK AND REPORTING

Duration: This assignment shall be completed within a period of 4 years commencing immediately after contract signing. The Consultant is expected to conduct semi-annual audits over the 4 years and each time spend at least three weeks in the project sites and in consultations with all relevant stakeholders to gather all necessary primary information.

Reporting: The Consultant shall report and work in close contact with E&S unit of the PMU and report to the Senior Environmental Specialist.

5. DELIVERABLES/PAYMENT PLAN

A comprehensive and fully referenced Report including detailed recommended actions for implementation must be submitted at the end of the assignment. The Report must contain an in-depth analysis of the issues described in the objectives and should propose clear, implementable measures towards achieving the set goals of the assignment.

s/n	**Activity.**	**Timeline *(After contract signing)***	***Payment (%age of Total Remuneration)***
1.	**Acceptable Inception Report: -** This should include methodology and work plan with clearly defined strategy for carrying out the assignment with timelines for the various outputs. The report should: a. indicate the objective, scope and criteria of the audit; b. contain an audit plan for the on-site activities; c. contain the audit questionnaires; d. contain Audit Plan and logistics: - Audit scope; - Audit schedule; - Audit protocols; - Allocated resources. This should be presented in person by the Consultant at the REA-PMU office. Consultant must submit (3) hard copies and a soft copy of the inception report.	Week 4	10

2.	**Institutional Framework Analysis Report: -** An update on the current status of the assignment. This should be presented in person by the Consultant at the REA-PMU office. These reports should contain the Consultant's expert analysis of the following documents and outline the areas of conflict/lapses, while proffering the best options for compliance to achieve the objectives of the assignment: • REA's internal environmental policies, procedures and guidelines; • REA's quarterly monitoring reports; • Site layout plans for Subprojects and Transmission Lines; • Site history, usage and activities; • Organizational structure; • NEP ESMF • NEP RPF • ESMPs for subprojects/transmission line project • Resettlement Action Plans (RAPs) for Transmission line Review of Operational information: • Operational activities and process description; • Management system policies, procedure and program documentation; • Relevant records (compliance, monitoring, training etc.); • Other relevant information pertaining to environmental and social risk management practices.	Week 10	10
3.	**On-site Audit Activities** The on-site audit objectives should reflect those of the environmental and social compliance audit, and include: ***In-depth document review*** • Management policy; • Management system documentation; • Operational procedures; • Records (utility, inventory, monitoring, calibration, transportation, training etc.); • Previous audit reports. ***Conduct on-site meetings:*** • Present audit scope and objectives; • Outline the audit approach and methodology; • Address questions or concerns of site personnel; • Rally Staff support and assistance. ***Conduct detailed site inspections with the aid of on-site audit protocols to look for evidence of:*** • Legislative and regulatory compliance; • Internal policy and procedural conformance; • Establishment of current practice status; • Identification of improvement opportunities; • Status of operational practice; • Staff participation in management system. ***Conduct staff interview at REA geopolitical zone offices to obtain information on*** • Actual E&S practices (current and past); • Compliance with/or deviation from statutory and departmental requirements;	As determined by the Audit Plan (at least three weeks during each 6-month audit period)	10

	• Awareness of requirements and expectations. ***Review audit evidence to ensure its adequacy at the conclusion of on-site audits by:*** • Reviewing information gathered; • Collecting additional information as needed; • Substantiating audit findings; • Summarizing and documenting all findings and observations; • Identifying issues requiring immediate attention/mitigation • Noting outstanding issues requiring follow-up. ***Conduct closing meetings: The closing meetings provide an opportunity at the conclusion of on-site audit to:*** • Debrief relevant REA management; • Summarize the audit activities and findings; • Highlight system strengths and weaknesses; • Discuss preliminary findings and recommended corrective actions; • Bring up findings requiring immediate attention; • Clarify any outstanding issues.		
4.	**Annual Audit Report:** The post audit activities aim to produce an audit report, according to the sample outline presented in section 10.2, with audit findings and recommendations and to contribute towards formulation of a corrective action plan for continual performance improvement. The activities will focus on collating the information and follow-up on outstanding issues, as follows: • Completed pre-audit questionnaire, operational document checklists; • Completed on-site survey questionnaires, on-site audit protocols; • All relevant correspondence, memoranda, reports, diagrams and drawings; • Copies of records, photographs, and other information collected during the site visits; • Detailed inspection and interview notes and summaries. • Detailed list of findings and recommendations for improvement.	**Every 12 months**	**10x4**
5.	Update on the status of the establishment of an EMS in the REA's Management structure and Roadmap towards ISO 14001, 9001 and 18001 certification for REA Subprojects under NEP.	**Year 2 (TBC)**	10
6.	**Final Audit Report**: Final audit report will be produced at the end of the assignment and include a detailed summary of all findings, recommendations, and improvements achieved over the 4-year assignment.	**Year 4**	20

Payment Plan

Remuneration*:* The Contract shall be a Lump-Sum contract. Payments to the Consultant shall be percentages of the total contract sum based on specific deliverables as described in the table above.

Reimbursable: All other payments besides the professional fees shall be made only after submission of evidence of approval by the client for the Consultant to incur such costs and receipts to support the claims.

All items/equipment purchased for use by the Consultant under this contract MUST be returned to the client on completion of the assignment.

6. SCOPE OF THE AUDIT

The audit must be carried out on the ESMPs and RAPs (where they were prepared, as needed) for the existing facilities and will focus broadly on two elements:

- Compliance of existing facilities and operations with relevant environmental (including ESMS, occupational health and safety) and social laws, regulations, and applicable World Bank E&S requirements and
- The nature and extent of environmental and/or social impacts as a result of past/on-going activities under the project.
- Result of consultation with stakeholders.

The scope and depth of the audit or review should be commensurate to the E&S risks impacts. A corrective action plan will be developed if the E&S compliance audit finds that negative but manageable impacts may occur as a result of continuing implementation of on-going activities or implementation of new proposed investments. The action plan may call for improvements of existing ESMPs, as relevant, to address the impacts that are identified based on the audit.

The action plan should also include measures to inform potentially affected people of the nature of transactions, potential impacts, mitigations measures and Grievance Redress Mechanisms (GRM) as necessary. The action plan should be subsequently incorporated in the investment agreement with Contractors and made a condition of the investment.

The statutory (legal and administrative) frameworks within which the consultancy activities shall be executed are provided in the following regulations, guidelines and standards (Note: these regulations are not exhaustive):

- The World Bank Safeguard Policies and Environmental Health and Safety Guidelines.
- The regulations, guidelines and standards of the Federal Ministry of Power as it concerns high voltage power transmission in Nigeria.
- The regulations, guidelines and standards of the Federal Ministry of Environment concerning power generation and transmission activities in Nigeria.
- The regulations, guidelines and standards of the various State Ministries of Environment and Social Welfare.
- All International Conventions/Treaties on Environmental Protection/Social Welfare to which Nigeria is a party.
- The Corporate and Operational Policies of the Transmission Company of Nigeria

Throughout the duration of the Assignment, the Consultant shall maintain effective communication with relevant Regulatory Agencies/Stakeholders at the Federal, State and Local Government levels on the proposed Project. The Stakeholders shall include the following:

- Federal Ministry of Environment,
- Federal Ministry of Land
- Federal Ministry of Youth and Social Development
- State Ministries of Environment
- Respective Local Government Councils
- State Environmental Agencies

- Community Based Organizations, (Civil Society, NGOs) in the affected States
- Project Affected Persons (PAPs)

The audit shall be divided into three phases: (i) pre-audit activities; (ii) on-site audit activities; and (iii) post-audit activities.

1. Pre-audit activities

The pre-audit activities aim to develop an audit plan for the on-site activities and make the necessary preparation and arrangements for the on-site audit. The tasks at this stage are to:

i. indicate the objective, scope and criteria of the audit;

ii. develop an audit plan for the on-site activities;

iii. prepare audit questionnaires;

iv. review background information:
   - REA's internal environmental policies, procedures and guidelines;
   - REA's quarterly monitoring reports;
   - Site history, usage and activities;
   - Organizational structure;
   - NEP ESMF
   - NEP RPF
   - ESMP for Subprojects
   - Resettlement Action Plan (RAP) for Subprojects

v. Review operational information:
   - Operational activities and process description;
   - Management system policies, procedure and program documentation;
   - Relevant records (compliance, monitoring, training etc.);
   - Other relevant information pertaining to environmental and social risk management practices.

vi. In close collaboration with the REA-PMU team, conduct initial site visits to a sample of Subprojects as part of determining the scope of the audit:
   - Meet with Officers-in-charge to explain purpose of audit;
   - Assess whether background information gathered is up to date and accurate;
   - Follow-up on the list of preliminary audit impressions;
   - Identify and request additional site information as necessary;
   - Confirm adequacy and appropriateness of audit scope;
   - Establish adequacy of resources for audit.

vii. Develop on-site questionnaires and audit protocols

viii. Review Audit Plan and arrange logistics:
   - Audit scope;

- Audit schedule;
- Audit protocols;
- Allocated resources.

2. On-site Audit Activities

The on-site audit objectives should reflect those of the environmental and social compliance audit, and include:

a) In-depth document review

- Management policy;
- Management system documentation;
- Operational procedures;
- Records (utility, inventory, monitoring, calibration, transportation, training etc.);
- Previous audit reports.

b) Conduct on-site meetings:

- Present audit scope and objectives;
- Outline the audit approach and methodology;
- Address questions or concerns of site personnel;
- Rally staff support and assistance.

c) Conduct detailed site inspections with the aid of on-site audit protocols to look for evidence of:

- Legislative and regulatory compliance;
- Internal policy and procedural conformance;
- Establishment of current practice status;
- Progress and quality of ESMP and RAP implementation;
- Identification of improvement opportunities;
- Status of operational practice;
- Staff participation in management system.

d) Conduct staff interview at REA regional offices to obtain information on

- Actual E&S practices (current and past);
- Compliance with/or deviation from statutory and departmental requirements;
- Awareness of requirements and expectations.

e) Review audit evidence to ensure its adequacy at the conclusion of on-site audits by:

- Reviewing information gathered;
- Collecting additional information as needed;
- Substantiating audit findings;
- Summarizing and documenting all findings and observations;
- Identifying issues requiring immediate attention/mitigation
- Noting outstanding issues requiring follow-up.

f) Conduct closing meetings: The closing meetings provide an opportunity at the conclusion of on-site audit to:

- Debrief relevant REA management;
- Summarize the audit activities and findings;
- Highlight system strengths and weaknesses;
- Discuss preliminary findings and recommended corrective actions;
- Bring up findings requiring immediate attention;
- Clarify any outstanding issues.

3. Post-audit activities

The post audit activities aim to produce an audit report with audit findings and recommendations and to contribute towards formulation of a corrective action plan for continual performance improvement. The activities will focus on collating the information and follow-up on outstanding issues, as follows:

- Completed pre-audit questionnaires, operational document checklists;
- Completed on-site survey questionnaires, on-site audit protocols;
- All relevant correspondence, memoranda, reports, diagrams and drawings;
- Copies of records, photographs, and other information collected during the site visit;
- Detailed inspection and interview notes and summaries.

7. SAMPLE OUTLINE OF THE ANNUAL AUDIT REPORT

An audit report shall include but shall not be limited to the following information:

a) An Executive Summary

b) Introduction and Background of the Audit

c) Audit Scope and Objective

d) Description of Audit Approach and Methodology

e) Summary of Audit Findings:

- the past and present impacts of the project;
- the responsibility and proficiency of the operators of the project;
- existing internal control mechanisms to identify and mitigate activities with a negative environmental impact;
- existing internal control mechanisms to ensure the workers' health and safety; and
- the existence of environmental and social awareness and sensitization measures, including environmental and social standards, and regulations, law and policy, for the managerial and operational personnel.

f) Recommendations and Conclusions

Annex XI: SHS Distributor Environmental and Social Management System: Basic Requirements

This document provides basic requirements for the institution's Environmental and Social Management System (ESMS) for SHS distributors who are interested in being qualified for the NEP Component 2. There are three basic requirements for the institutional management of E&S issues, which also requires the SHS Company to commit sufficient resources and capacity to implementation.

1. Human Resources Policy

SHS company will have in place an HR policy that expresses its commitments, at a minimum to: (1) comply with all relevant national labor laws and regulations; (2) promote the fair treatment, non-discrimination, and equal opportunity for workers; (3) establish, maintain, and improve the worker-management relationship; (4) allow workers' organizations and collective bargaining; (5) have in place a grievance mechanism for workers; (6) not to employ forced labor or child labor, including not hiring workers below minimum age, as defined by national law and not employ children in hazardous work.[20]

SHS company will adopt and implement human resources policies and procedures appropriate to its size and workforce that set out its approach to managing workers consistent with the requirements of national law. It will provide workers with documented information that is clear and understandable, regarding their rights under national labor and employment law and any applicable collective agreements, including their rights related to hours of work, wages, overtime, compensation, and benefits upon beginning the working relationship and when any material changes occur. It will provide and inform workers of an internal grievance process to raise their workplace concerns.

2. Occupational Safety & Health Policy/ Guideline

SHS company will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. It will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as far as reasonably practicable, the causes of hazards. OHS Guideline will also include steps, as relevant, for HIV/AIDS prevention. It will also include concrete plan for monitoring compliance with the Guideline in the SHS company operations.

3. Battery Collection/Recycling Policy

If SHS company has an existing battery collection and/or recycling policy, this should be submitted with the application.

It is preferred that batteries are recycled to potentially reuse some of its components, where economically and technically feasible. This would be equally applicable for expired batteries and the batteries that will be replaced within the warranty period due to manufacturing fault or reasons outlined in warranty conditions.

[20] Employees may only be taken if they are at least 15 years old, as defined in the ILO Minimum Age Convention (C138, Art. 2), and ratified by Nigeria in 2002. Children under the age of 18 will not be employed in hazardous work. Children will not be employed in any manner that is economically exploitive, or is likely to be hazardous to, 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

The company shall systematically collect used battery units and engage with communities on the importance of recycling, if such program is in place. The suggested options that can be considered are:

A. **Collection of Batteries by SHS Companies:** SHS company representatives will make arrangement to collect the battery units from the consumer and store it in the local offices. SHS company will take necessary measures to ensure safe storage of the batteries. It may be feasible for SHS company to send the warranty expired batteries to a central location.

B. **Potential battery disposal / recycling options can be as follows:**

- **Buy-back arrangements with manufacturers**: SHS company can put in place buy-back arrangements with the battery manufacturers and ensure safe transportation of the batteries to the manufacturer. SHS company and manufacturers can mutually decide on cost sharing of collection and transportation of expired batteries, for example sign a Memorandum of Understanding signed between them;
- **Recycling at own facilities:** SHS companies may consider establishing their own recycling facilities. Recycling of lithium ion batteries is possible but, according to research and practice, makes little economic sense. Lithium ion batteries can be recycled, but only at specified locations. Projects are currently underway in Europe, the United States and Japan to develop effective and feasible recycling technologies with a complete life cycle analysis of recycling;
- **Recycling at centralized locations in the country:** If recycling facilities for lithium ion batteries exist, SHS companies must use those that are inspected by REA and Ministry of Environment and are considered safe and complainant with national regulations and World Bank standards;
- **Disposal:** Lithium ion batteries may qualify as household hazardous waste.[21] SHS company will ensure that the batteries are disposed in a particular designated area ensuring environmental and occupational health and safety in line with World Bank E&S standards and Environmental, health, and Safety Guidelines of the World Bank Group. SHS company will also comply with the government regulations, if any, regarding disposal of any of the components used in the battery units.

[21] In some countries, they are classified as non-hazardous waste.

Annex XII: E&S Parameters in Electricity Demand Surveys

	Number of communities		Comments
Yes, protected area	**18**		
No protected area	**78**	96	
No Disaster	**20**		
Disaster	**76**	96	
Water shortage	**61**		
No shortage	**19**	80	** No information for 16 communities
High poverty rate	**50**		
Not high poverty rate	**30**	80	** No information for 16 communities
High Unemployment rate	**56**		
Not high unemployment rate	**24**	80	** No information for 16 communities
High Social disparity	**26**		
Not high social disparity	**54**	80	** No information for 16 communities

Land ownership (Multiple responses possible)	
Community land ownership	44 Communities
Customary land ownership	26 Communities
Family land ownership	57 Communities
Individual land ownership	51 Communities
Traditional land ownership	50 Communities

Annex XIII: Voluntary Land Donation Guidelines

Voluntary land donation is strictly defined in international practice as the ceding of a property by an owner who is: a) fully informed; and b) can exercise free will, i.e., can refuse to sell or to donate. "Fully informed" means that the owner has complete information regarding the proposed activity and its impacts, its land requirements and its alternate activity sites, as well as his or her rights to compensation. The owner has also been provided with sufficient time to consider his or her disposition of the property, and the owner has knowingly rejected the right to renege on his or her initial decision. "Free will" means that the owner can reject the possibility of giving up his or her land.

VLD should only be authorized if they can (a) clearly document Informed Consent; (b) clearly document Power of Choice; and (c) meet the VLD guidelines of the project. The guidelines have been put into place to ensure that donations are indeed voluntary, that the donor is the legitimate owner of such lands, and that the donor is fully informed of the purpose of the donation and of the implications of donating the property.[22] If the land is donated on a conditional basis, the terms and conditions for the temporary use of the property must be clearly documented.

The following principles should be complied with when VLD is carried out:

Core principles:

- The land required to meet technical project criteria must be identified by the affected community through a participatory approach and not by the developer, line agencies or project authorities (nonetheless, technical authorities can help ensure that the land is appropriate for project purposes and that the project will produce no health or environmental safety hazards)
- The proportion of land that may be donated cannot exceed 15 m2 per kW of the proposed generation capacity plus an additional 7.5m2 per kW for future generation capacity expansion
- Land donation for a single mini-grid or power generation system shall not exceed 10% of the land donor's holdings in cases where land ownership is individual or family
- Land required above 1,500 m2, whether for initial construction or future generation capacity expansion, can be bought on wiling-buyer-willing-seller basis at current local market price in the community
- Donated land can only be used for power plant construction and future expansion and be fenced off accordingly
- Shall the donated land not be used for power plant construction within five years, the unused land shall be returned to communities

[22] Voluntary land donation is strictly defined in international practice as the ceding of a property by an owner who is: a) fully informed; and b) can exercise free will, i.e., can refuse to sell or to donate. "Fully informed" means that the owner has complete information regarding the proposed activity and its impacts, its land requirements and its alternate activity sites, as well as his or her rights to compensation. The owner has also been provided with sufficient time to consider his or her disposition of the property, and the owner has knowingly rejected the right to renege on his or her initial decision. "Free will" means that the owner can reject the possibility of giving up his or her land.

Additional requirements:

- Impacts of proposed activities on donated land must be fully explained to the donor
- The potential donor is aware that refusal is an option, and that right of refusal is specified in the donation document the donor will sign
- The act of donation is undertaken without coercion, manipulation, or any form of pressure on the part of the developer, the public or traditional authorities
- The donor may request monetary or non-monetary benefits or incentives as a condition for donation
- Donation of land cannot occur if it requires any household relocation
- For community or collective land, donation can only occur with the consent of individuals using or occupying the land
- Verification must be obtained from each person/ family donating land (either through proper documentation or through confirmation by at least two witnesses)
- The implementing agency or mini grid developers establish that the land to be donated is free of encumbrances or encroachment and registers the donated land in an official land registry
- Any portion of donated land that is not used for its agreed purpose is returned to the donor
- The land in question must be free of squatters, encroachers, or other claims or encumbrances.

VOLUNTARY LAND DONATION (OR LAND LEASE) FORM

This form or an equivalent document is to be used to record the consent of land owners who offer private land for a community good activity. The essentials of voluntary donation are that the donors have been freely consulted prior to the donation, were not pressured or coerced, that the donation will not affect a significant proportion (more than 10%) of their productive assets, and that they have the right to refuse and to lodge a complaint if they have a grievance about the process.

Consent Form for Voluntary Donation

I/We: _____ male household head _____female household head, and/or person(s) exercising customary rights over land described as (legal description, GPS coordinates if available) in
Village_____
Island_____
Province _____
Hereby declare that I/we/the group are the owners/users of the land required for (description):
_____
I/we are voluntarily donating the use of land and or/ land-based assets (land area, type of assets /trees/crops etc) _____
_____
for the purpose of: (specify activity)
_____
_____
We agree to this purpose from (date)_____ for as long as the purpose is served *or* until (specify end date, typically the life expectancy of the facility)_____
I/we make this donation of My/Our own free will. I/We are waiving My/Our right to compensation of any kind for the specified duration of the activity.
I/We affirm that we have been fully and freely consulted and informed about the activity prior to agreement, have not been subject to any form of coercion, understand that I/we have the right to refuse, and to seek redress for any grievance concerning this transaction.

Signed:
Male household head _____ /Female household head_____
Chief or Local Custom Authority_____

Annex XIV: Summary of Stakeholder Consultation (to be prepared)