



Terms of Reference (ToR)

for

**Development of Sustainability Plan for Solar PV Hybrid/ Gas
Fired Power Plants, Existing Distribution Network Upgrade,
Streetlights and Training Centers under the Energizing Education
Programme (EEP).**

APRIL 2020

1 INTRODUCTION/ BACKGROUND

The Federal Government of Nigeria (FGN) has received financing from the African Development Bank for the Nigeria Electrification Project (NEP) and intends to apply part of the proceeds for Consultancy Services for the Development of a Sustainability Plan under the Energizing Education Programme (EEP) – Phase 3 Component under the Project.

2 DESCRIPTION OF THE PROJECT

The Nigeria Electrification Project (NEP) is focused on practical, medium-term opportunities to significantly upscale electricity access through off-grid with different components. i.e. **Component 1: Solar Hybrid Mini Grids for Rural Economic Development; Component 2: Productive Use Appliances and Equipment** and **Component 3: The Energizing Education Programme (EEP) Phase 3.**

Component 3: Energizing Education Programme (EEP)

This EEP initiative will provide off-grid captive power plants for the generation and provision of dedicated and uninterrupted power supply to thirty-seven (37) Federal Universities and seven (7) adjoining university teaching hospitals (“UTHs”) across the six Geopolitical zones in Nigeria. The project will be implemented in phases and this ToR is in relation to Phase III of the EEP which consists of eight (8) Federal universities. The scope of the EEP phase 3 projects shall also 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. The university mini grids will use solar off-grid system ranging from 1 MW to 10 MW and shall be implemented in phases

- 2.1. Access to uninterrupted power supply in Federal Universities and University Teaching hospitals in Nigeria has been cited as a major challenge and barrier to effective learning, institutional operations and student residency. Considering the role of education in economic growth and socio-economic development in Nigeria, the Ministry of Power, Works and Housing resolved to embark on viable projects that will ensure the availability of reliable, sustainable and affordable power to Nigeria's tertiary institutions. This led to the conception of the 'Energizing Education Programme' (the “EEP”).
- 2.2. The EEP seeks to provide adequate power supply (up to approximately 100MW in total) to Thirty-Seven (37) Federal Universities (“the Universities”) and seven (7) University Teaching Hospitals across the Federal Republic of Nigeria. It also aims to provide streetlights to promote and facilitate safe, secure and productive learning environments and develop and operate training centres to train university students in renewable energy technology innovations.

- 2.3. Phase I of the EEP (9 Federal Universities and 1 Teaching Hospital) is currently being implemented by REA exclusively with FGN's funds. Phase II (7 Federal Universities and 2 Teaching Hospitals), and Phase III of the EEP (8 Federal Universities) will also be implemented by the REA and funded by the World Bank and the African Development Bank respectively, under the Nigerian Electrification Project (NEP).
- 2.4. The construction for the sub-projects is expected to be carried out through a competitively sourced Engineering, Procurement and Construction (EPC) contract. Subsequent Operation & Maintenance (O&M) work is also expected to be contracted to a third party through a competitive selection, and initially financed under the NEP project for approximately one (1) year. It is therefore vital for the viability of the sub-projects to identify a sustainability plan that will encompass the ownership, tariff structure, metering, revenue collection, maintenance and other long-term management arrangements beyond the horizon of the NEP financing.
- 2.5. The EEP intends to hire the services of eligible consultants that are registered firms, to proffer solutions that will ensure the effectiveness and financial sustainability of the EEP beyond the conclusion of the construction phase (for a minimum post- construction period of 15 years).

3. THE ASSIGNMENT

3.1 Background of the Assignment

The consultancy is designed to support the overall sustainability of the EEP sub-projects based on three dimensions i.e. institutional, legal, and commercial/financial. The design is comprised of a number of predetermined indicators in each category; these are focused on optimizing the EEP after completing implementation, and providing recommendations for future improvements for maintaining long term benefits derived thereof.

3.1.1 The major areas under this study include physical coverage, technical solutions and approaches used, by the university's current operation and maintenance culture/policies followed, and the potential models for ownership and ongoing revenue collection for the proposed power solutions. The assignment is expected to also assess the capacities of the institutions and identify gaps and recommend relevant capacity enhancement program(s).

3.1.2 Various capacity building programmes and workshops will be held with the relevant stakeholder groups for institutional strengthening. Hence, apart from the functioning of the sub-projects on technical grounds, such as construction of

different structures to design and quality, the consultancy support will also focus on examining the strengths and limitations of the proposed stakeholder contributions to the overall sustainability of the sub-projects, and on proposing various capacity building measures, such as trainings and workshops, that would address the identified limitations.

3.2 Objective of the Assignment

The main activities under this assignment include:

- Development of a Sustainability Plan that will provide a set of recommendations covering well-considered solutions, processes, activities, and commercial models that will ensure the continuous and effective ownership, operation, revenue collection maintenance and overall financially sustainable management of the projects under the EEP for a minimum period of fifteen years post successful conclusion of the construction phase thereof.
- Identification of the appropriate business model to include only the Institutional, Legal and Commercial/Financial components.
- Support on the definition of the Legal Agreements: Definition of the roles and responsibilities of each stakeholder (REA, University, EPC/O&M Contractor, Distribution Company, on-campus commercial activities, students, etc.) and support on the drafting of the adequate agreements between them (MoU, PPA, O&M contracts, etc.).
- Support on the definition of the ownership structure: Support the definition of the best ownership structure regarding the scope of the project.
- Student engagement: Definition of the areas of potential involvement from the students.
- Preparation of a Financial Model for each university. This strategy should promote energy efficiency for those activities and should provide a financial contribution to the O&M costs of the future plants. The financial model should be run to ensure the financial sustainability of the plants, the renewable energy work training, centres and the installed street lighting. The scope of the Financial Model should include the following:
 - OPEX;
 - CAPEX (also considering where CAPEX may not be available);
 - Revenue sources for each university;
 - Output should be one average sustainable tariff;
 - Tariff blocks for the different identified tariff groups;
 - Design financial indices for the mini utility; and
 - Make provisions for required investments for the year.
- Design a Billing Strategy: Based on the financial model, a tariff structure, a billing process, and the infrastructure and resources needed for the

- customer interface need to be designed in order to implement a billing strategy for the on-campus commercial activities.
- In addition to the national allocations, one potential source of revenues can be the installation of meters on all on-campus commercial activities (Internally Generated Revenue).

3.3 Scope of the Assignment.

To meet the objective of the TOR, the scope of the assignment includes, inter alia, the following activities:

a) Financial & Commercial

Review and/or estimate existing energy expenditures as determined from the analysis of the energy audit conducted by the FEED consultant and determine the extent to which the proposed power solutions will require additional financing and/or revenue collection to support O&M requirements;

Design at least 4 potential publicly owned utility business models for the Energizing Education Programme (EEP) and produce financial models for each, providing a comprehensive assessment of their relative sustainability and applicability for the EEP and recommendations on the most appropriate one for the EEP sub-projects. The financial models should include (but should not be limited to) a billing strategy with a potential tariff structure, metering approach, a billing process, and the infrastructure and resources needed for the customer interface. The definitions of the models should include CAPEX, OPEX and revenue sources in each university. (In addition to the national allocations, one potential source of revenues can be the installation of meters on all on-campus commercial activities (Internally Generated Revenue)).

This business model should formulate a strategy that would promote energy efficiency for those activities, and at the same time would provide a financial contribution to the O&M costs of the future plants). The financial models should be run to ensure the financial sustainability of the plants;

Carry out an assessment of the financial viability of the beneficiary institutions, with respect to access to funds, financial health, capacity for sustainable independent financial management of the sub-projects (O&M), etc. (verification of willingness and ability to pay);

Recommend measures that can be incorporated to ensure that the beneficiary universities can fully discharge their responsibilities to make payments for the operation and maintenance (O&M) of the EEP projects which will be carried out by independent contractors; and

b) Technical

Conduct research on sustainability measures applied to similar existing projects (Sharing an idea seen in other projects through desktop case

studies), which are or were successful for a significant duration of time post conclusion of the construction phase of those similar projects;

Assess the status of the existing physical facilities and determine if they are being operated and maintained in a cost -effective, environmentally safe & sound manner and if so, assess whether those measures can be adopted globally across the EEP sustainably. Recommend corrective actions where required;

Propose templates for 3 of the most suitable O&M contracts for the EEP including the option of verifying where the O&M is outsourced with complete utility management, identify residual O&M risks which may impact the sustainable operation of EEP projects; recommend options for further risk mitigation where required.

Provide recommendations of the best practice maintenance culture to be adopted.

Recommend measures that can be incorporated to ensure that the DISCO interface/networks are still available to provide emergency supply in event of prolonged plant shutdown.

Specify compliance requirements for relevant standards and codes to claim feed-in tariffs in the event of supplying surplus energy to the DISCO

c) Legal & Regulatory

Review governing legislation, regulatory approvals and permits obtained for the EEP, towards advising on the sufficiency or need for further regulatory compliance, as well as outlining all activities captured in approval documents that need to be conducted throughout various phases of the EEP as another measure to ensure the sustainability of the EEP;

Review Legal Agreements between stakeholders under the EEP and recommend provisions to be incorporated to further ensure the sustainability of the EEP (*i.e. Review the regulatory environment governing the relationship of the parties to be involved/affected in the EEP, which include among others beneficiary universities, contractors, communities within the campuses, and the utility (in case the facilities are also grid-connected)*). Provide templates of key legal agreements;

Develop templates of the most suitable O&M contracts for the EEP, identify sustainability gaps and recommend provisions to be incorporated to ensure the operation and maintenance of the EEP projects are carried out in a sustainable manner;

Support on the definition of the Legal Agreements: Definition of the roles and responsibilities of each of the identified stakeholders (REA, University, EPC/O&M Contractor, Distribution Company, on-campus commercial activities, students, etc.) and support on the drafting of the adequate agreements between them (MoU, PPA, etc.); and

Support on the definition of the ownership structure: Support the definition of the best ownership structure regarding the scope of the project.

d) Social & Environmental

Conduct Stakeholder Engagement to obtain contributions on practical ideas concerning how they believe the EEP can be sustainable, some of whom will be the beneficiaries;

Assess the perceptions and willingness of stakeholders to substitute to a cleaner – more reliable energy alternative (evaluation of stakeholders' willingness to substitute);

Assess current energy use practice and the stakeholder's ability to adapt to energy saving culture post project implementation;

Conduct an assessment of the land to be utilized for the project and its ability to absorb scalability plans if the need arises; and

Design a social and environmental management plan to ensure the ongoing social and environmental sustainability of the proposed power solutions, including the development of a committee or working group having participation from the student body, university staff, O&M services provider, and other impacted stakeholders.

e) Institutional capacity

Conduct institutional capacity assessment for operational sustainability of the EEP projects (human resources, necessary facilities/equipment/tools, etc.) and propose several potential sustainable capacity building programs to be introduced within the institutions.

f) Gender mainstreaming

Design and recommend instituting gender mainstreaming aspects in the EEP.

The consultant may propose additional inputs to the methodology. The field teams will have to spend adequate time in each sample university to participate, observe and conduct studies on specified topics.

g) Student engagement

Design and recommend the definition of the areas of potential involvement from the students.

The consultant may propose additional inputs to the methodology. The field teams will have to spend adequate time in each sample university to participate, observe and conduct studies on specified topics.

4 CONSULTANT QUALIFICATIONS AND TEAM COMPOSITION

4.1 Qualification of the consulting Firm

The consulting firm undertaking this assignment shall have:

- i. Seven (7) years general experience in the preparation of Business Model Sustainability Plan in the power sector. Specific experience in captive power plant and mini grids will be an added advantage.
- ii. Documentary evidence of completing one (1) similar assignment within the last Five (5) years.
- iii. Must have carried out similar assignment in environment like Nigeria

4.2 Team composition: The required composition qualifications of the staff are as follows:

- I. **Team Leader:** At least a Master's Degree in Social Sciences, Engineering and/or Project Development having at least 7 years working experience in managing complex programs including a minimum of 3 years' experience in evaluation studies of demand driven infrastructure sub-projects with demand led participatory approach. S/he should also possess proven skills and experience in analyzing data and report writing for similar assignments with innovative – result oriented thinking and practice. S/he should have significant experience in the design, development, and operation of captive power projects, mini-grids, and or IPPs. Additional experience on utilities network management is an advantage
- II. **Technical Specialist:** At least a master's degree in engineering and over 5 years' experience in executing energy projects with vast experience in survey, design estimate/monitoring, systems maintenance, evaluation supervision and appraisal of rural community infrastructure sub-projects with demand led participatory approach. The Technical specialist will support the development of the Sustainability Plan and participate as appropriate in the analytical and advisory work.
- III. **Financial Specialist:** Financial specialist should have a minimum of 5 years' experience in energy finance and should possess strong country knowledge in energy and infrastructure finance. The specialist will provide key financial inputs to the sustainability plan.
- IV. **Legal & Regulatory expert:** Commercial lawyer should have at least 5 years' experience in the energy sector. The specialist will be responsible for the assessment of the enforceability of regulatory approvals, permits, contracts and advice on its effectiveness to deliver on sustainability measures. The specialist will also be responsible for providing advice on effective

- sustainability measures to ensure contractual arrangements are enforceable.
- V. **Social Development Expert:** Should have at least a bachelor's degree in Social Sciences or Management with a minimum 3 years general work experience in research – studies, social surveying, gender mainstreaming, monitoring and evaluation, supervision and appraisal of rural community infrastructure with a demand led participatory approach. Experience in environmental and social impact analysis and the development of environmental and social management plans are also required.
 - VI. **Environmental Monitoring Specialist:** Should have at least a bachelor's degree in environmental science/engineering and 5 years' experience in environmental science with 3 years relevant experience in environmental assessment, monitoring and evaluation. Experience in environmental and social impact analysis and the development of environmental and social management plans are also required.

5. CLIENT'S INPUT TO CONSULTANT

Orientation will be provided to consulting lead by the REA regarding the working approach for the EEP, comprising relevant information and official reports, including documents from Phases I&II of the EEP. REA will not provide office space and services expenses (office rent, Telephone, Fax copying etc.).

6. REPORTING AND DELIVERABLES

6.1 The consultant is required to submit their deliverables in the following four stages:

S/N	Description of Activities	Deliverables	Payment
1	Inception Report: <ul style="list-style-type: none"> • EEP sustainability work plan <p>A strategy to carry out the assessment /evaluation clearly specifying inputs of the key staff and how the field</p> <ul style="list-style-type: none"> • teams are planned to be trained and mobilized including the suggested field survey formats, questionnaires; analytical methods and reporting formats; • A work program with the list of selected sites and field visit schedules; and • Project initiation workshops and trainings with identified stakeholder groupings on sustainability plan. 	One (1) month after Contract Signature	10%
2	Evaluation Report <ul style="list-style-type: none"> • Assessment of the key requirements and strategy for achieving project viability; • Report on field assessment; • Analysis of the identified key gaps; and • Stakeholder presentation on findings. 	Two (2) months after Contract Signature	25%
3	Draft Sustainability Plan: <ul style="list-style-type: none"> • Desktop research and field findings; • Identification of risk and mitigation measures; • Recommended tools and techniques for long-term sustainable ownership, management and operation of the EEP sub-projects; and • Draft key templates of documents and agreements (legal, contractual, etc.) 	Four (4) months after contract signature	35%
3	Final Sustainability Plan: <ul style="list-style-type: none"> • Sustainability Plan and stakeholder instruction manual comprising robust recommendations and improvement procedures for the sustainable long-term management of the sub-projects; • Final key templates of documents and agreements; • Slide deck summarizing key findings and recommendations from the report; and • Stakeholder presentation on key recommendations and outlined next steps. <p>Note: In addition to the above deliverables, the Consultant shall submit monthly progress report until the completion of the assignment.</p>	Five and half (5 ½) months after Contract Signature	30%

7. TRANSFER OF KNOWLEDGE

The consultant shall ensure transfer of knowledge to the sub-projects by developing key strategies inclusive of those garnered from stakeholder engagement through workshops and interactive presentations to stakeholder groups. Various capacity building trainings and workshops will be held with the relevant stakeholder groups for institutional strengthening. Hence, apart from the functioning of the sub-projects on technical grounds, such as construction of different structures to design and quality, the consultancy support will also focus on examining the strengths and limitations of the proposed stakeholder contributions to the overall sustainability of the sub-projects, and on proposing various capacity building measures, such as trainings and workshops, that would address the identified limitations.

8. TIMEFRAME OF THE SERVICES

The duration of the assignment is 6 months. Time extension will be on the basis of mutually agreed terms and unavoidable circumstances.

9. FACILITIES TO BE PROVIDED BY CLIENT

The client will provide the following to the Consultant:

Past and existing relevant documents and material that will facilitate the performance of the assignment.

10. SELECTION METHOD

Consultant will be selected in accordance with the Consultants Qualification Selection (CQS) set out in the AFDB procurement framework for group funded operations, October 2015. www.afdb.org