



# RURAL ELECTRIFICATION AGENCY

ENERGY = EMPOWERMENT = EFFICIENCY

## NIGERIA ELECTRIFICATION PROJECT (NEP) TECHNICAL WORKSHOP REPORT APRIL 2019



# Content Overview

## 01 Workshop Overview

- Workshop Overview
- Workshop Statistics
- Attendee Experience

## 03 Odyssey Trainings

- Mini Grids
- Solar Home Systems
- FAQs

## 02 Workshop Highlights

- Opening Session
- Morning Break-Out Session
- Afternoon Break-Out Session
- Closing Session/ E&S
- FAQs

## 04 Financiers Round Table

- Overview
- Topics of discussion

01

# Workshop Overview

# Workshop Overview

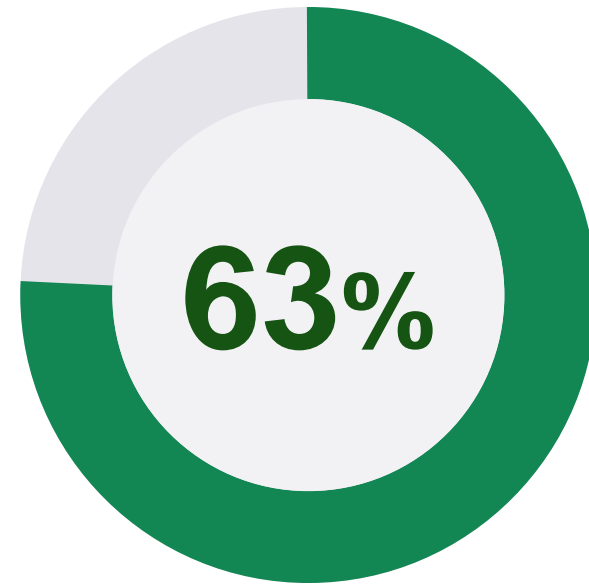


The Nigeria Electrification Project (NEP) technical workshop was a multi dimensional 2-day event focused on equipping potential stakeholders with the necessary information needed for participation in the NEP . Through a series of key note presentations, panel discussions and interactive sessions, the NEP technical workshop accelerated the general knowledge base of the project and addressed key technical concerns relating primarily to the Solar Hybrid Mini Grids and Solar Home Systems Components of the NEP.

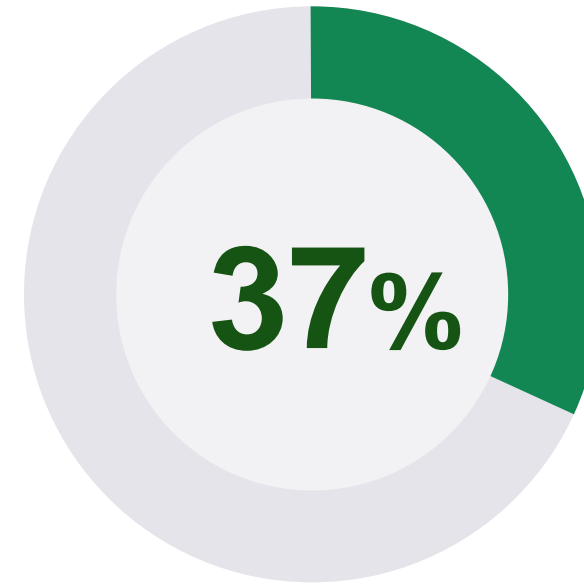
**Damilola Ogunbiyi**  
MD/CEO REA



Total Number of  
Attendees



Attendees for Mini  
Grids



Attendees for SHS



Financiers

## Workshop Statistics



Female Attendees



59%



Male Attendees

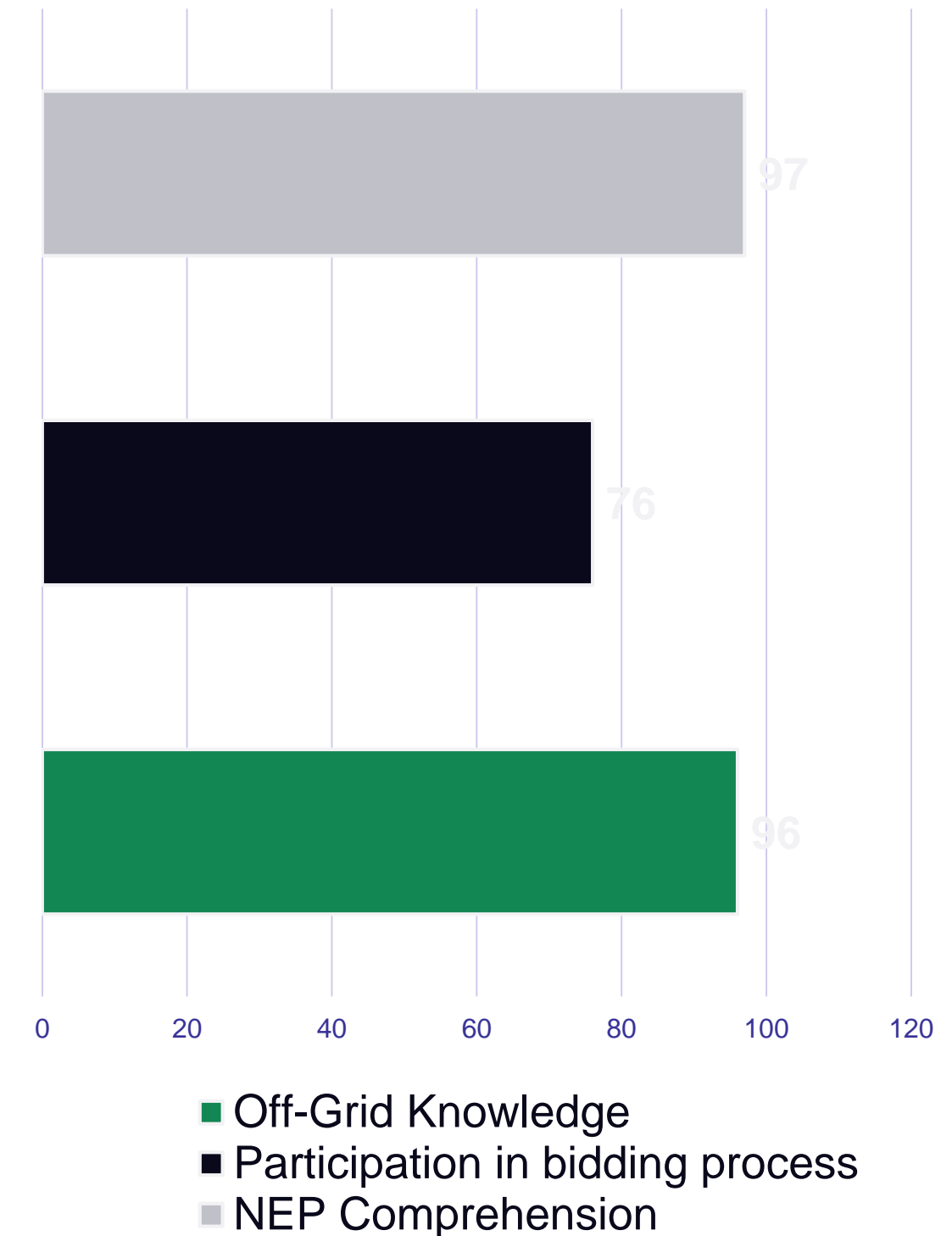


41%

# Attendee Experience

The General consensus on the attendee experience was positive. Most respondents expressed understanding of the projects objectives and excitement for participation in the upcoming bids. Feedback on the workshop presentations and agenda was also seen to be impactful. The following responses were collated from a total of 180 attendees.

- **96%** of participants expressed that the NEP Technical Workshop broadened their Off Grid Knowledge base.
- **76%** of participants will participate in the bidding process.
- **97%** of participants have a better understanding of the NEP and its components.



02

## Workshop Highlights



# Opening Session



## Opening Remarks

Executive Director (ED)  
Rural Electrification Fund (REF) – Sanusi Ohiare

The opening remarks were lead by the ED REF who represented the Managing Director REA for the workshop proceedings. The E.D gave an overview of the purpose of the workshop and thanked all attendees for their commitment. He ensured that all concerns will be addressed and promised an impactful event.



## Overview of the NEP

Task Team Lead World Bank – Jon Exel

A detailed overview of the NEP and its components was led by the Head, PMU in collaboration with the NEP task team lead from the World Bank . The duo gave a detailed overview of the projects components and its objectives in catalyzing the Nigerian Off Grid Sector.

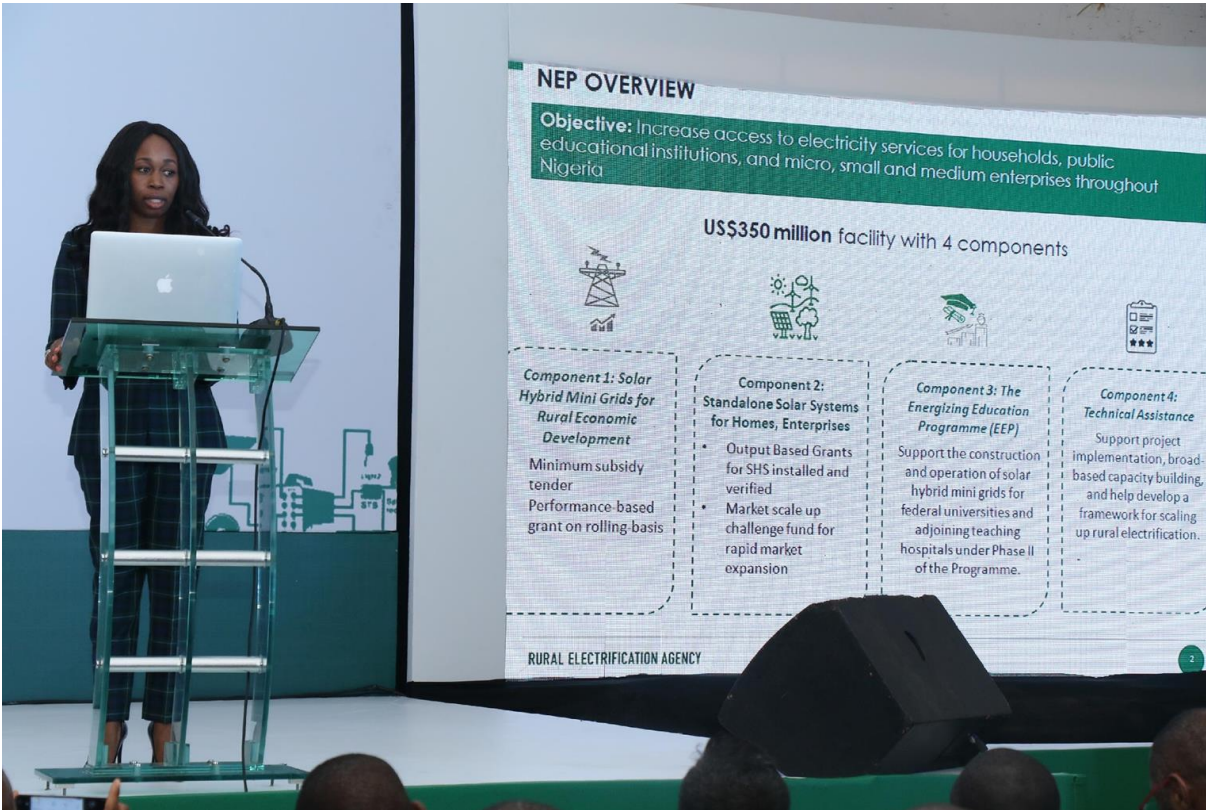


## Workshop Objectives

Head, Project Management Unit (NEP)  
Adejoke Odumosu

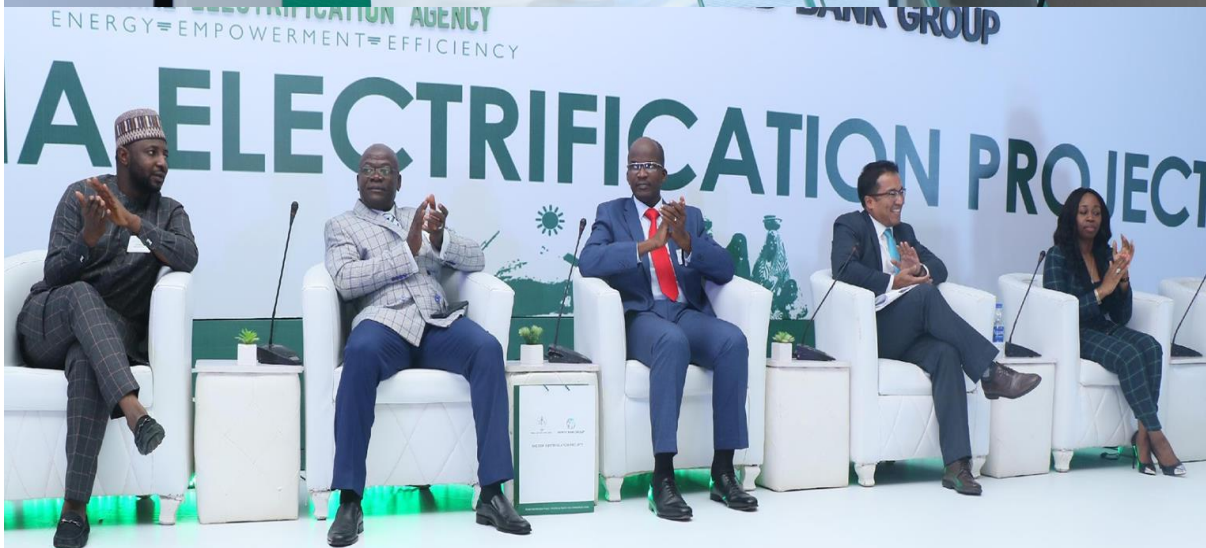
The Head, PMU in furtherance of the program highlighted the key objectives of the technical workshop and enlightened attendees on the workshop purpose, proceedings and agenda.





# Mini Grids

The Solar Hybrid Mini Grids Session Kicked off with a detailed overview of the component and its sub components by the Component Lead REA (Lolade Abiola) & World Bank (Ashish Shrestha). The leads enlightened the developers on the components structure, participatory framework and addressed all related questions on the components design. Dafe C. Akpeneye the Commissioner for Legal, Licensing and Compliance (NERC), gave a keynote speech on the commissions dedication to assisting and ensuring that the project is a success.



Following this, a dedicated session for the Mini Grid Tender Sub Component began. The session, which was a panel discussion, addressed the procurement process, initial selection requirements and market intelligence procedures. Presentations were led by the NEP/World Bank component leads, procurement specialist who gave a step by step run through on the sub components procurement criteria and the project technical specialists who addressed the sub components technical specifications. The session was highly interactive and all topics of concern were well addressed.

## Morning Breakout Session



# Mini Grids



The Mini Grid Afternoon breakout session was focused on educating developers on the Performance Based Grant (PBG). The session highlighted the sub components program design, application procedures and requirements/ criteria for participation. The session was structured as a panel discussion which featured the projects key technical specialist and components leads from the REA and World Bank.

## Afternoon Breakout Session

# Frequently Asked Questions - For The Mini Grid Tender And The Performance-Based Grants

- 1. Please give more clarification on the difference between the two Mini Grid components (Mini grid minimum subsidy tender and performance-based grants).**
  - Mini grid subsidy tender – REA provides market intelligence on the selected sites and applicants are expected to compete on a minimum subsidy per connection.
  - Performance-based grants– The developers are expected to carry out due diligence themselves on potential sites and submit for consideration in order to receive a grant of \$350 per new connection.
- 2. What is the grant for if it will be granted after the Mini Grid has been installed and connected? Shouldn't it be provided before construction to help fund the projects?**
  - These are output-based grants that aim to cover the viability gap between the cost of service and the ability to pay of rural customers. While developers are expected to secure financing for their upfront investment, grant agreements will be signed with successful applicants prior to construction, which developers can use to secure financing
- 3. Will the Mini Grid presentation slides be available for the developers after the workshop?**
  - Yes, they will be uploaded on the REA website
- 4. Has NERC set a tariff for the programme?**
  - NERC does not set tariffs for the programme. However, developers will be expected to set the tariffs, following the NERC regulations.

# Frequently Asked Questions - For The Mini Grid Tender And The Performance-Based Grants

- 5. Will the developers be expected to provide meters as part of the Mini grid programme?**
  - Yes, they will be expected to provide meters.
- 6. In the event when developers do not have the technical experience, but have the financial capability, will partnerships be allowed?**
  - Yes, partnerships are allowed and in fact encouraged in order to ensure the applicants can meet all requirements.
- 7. Will developers that have mini grid experience in other African countries other than Nigeria be eligible under requirement of experience?**
  - Yes, they will, provided they meet the technical capacity criteria.
- 8. Is the developer provided with 100% reimbursements, and are there any repayment obligations if a grant is accepted?**
  - To clarify, the grants are not reimbursements, they are a dollar value per connection given to successful applicants after the mini grid has been constructed and households have been receiving power for a period of 3 months. There are no repayment obligations related to the grant.
- 9. Can new companies that have no experience developing Mini Grids apply?**
  - REA wants to roll out the Mini Grids as fast as possible and will require developers to be experienced due to the targets set under the NEP. Developers that have no experience in mini grids but are strong in other fields may seek partnerships to get involved.



# Frequently Asked Questions - For The Mini Grid Tender And The Performance-Based Grants

## **10. How are the consumer rights protection and challenges addressed?**

- REA has a robust grievance redress mechanism to ensure the quality of service to the end users. The complaints will be reported to REA through toll free lines. The REA will take necessary steps to address the issues with the developers. If the developer fails to comply with remedial action, there will be penalties (termination of grant agreement and ban from the program).

## **11. It seems like the responsibility is being pushed to the developer to prepare the ESIA, but from my understanding of the World Bank projects, it is usually the government that carries out the ESIA first then ensures the developer follows the recommendations of the assessment.**

- The ESIA is to be carried out by the developer and not by the World Bank or the Government on behalf of the developer. However, a lot of concessions have been made by the Federal Ministry of Environment for the Mini Grid program to expedite the process for receiving the necessary clearances.

## **12. It seems that you are opening a window to apply for portfolios of sites. Yet it seems that the necessary approvals are to be given on a site by site basis. Can we get more clarification?**

- One of the concessions by the Federal Ministry of Environment is that the developers can make a batch submission for multiple sites within one state, if the same mini grid technology is used. Developers would pay a single fee for this batch application.

# Frequently Asked Questions - For The Mini Grid Tender And The Performance-Based Grants

## **13. How are exclusivity rights addressed?**

- Once an isolated mini grid to be developed has been identified, the developer can sign an exclusivity agreement with the community as stipulated by the NERC Mini Grid regulations.

## **14. Would the grant invoice be in dollars or in naira?**

- The CBN restricts disbursement of the grants in Naira for companies registered in Nigeria. This is applicable to both mini grid components (mini grid tender and performance-based grant programme).

## **15. Are the developers allowed to design DC coupled systems?**

- Yes, developers can design DC-coupled systems, as long as they meet the minimum technical requirements. This is applicable to both mini grid components (mini grid tender and performance-based grant programme).

## **16. Are state-owned enterprises eligible?**

- Yes. However, if they are domestic state-owned enterprises they should show that they are legally and financially autonomous, operate under commercial law and not under supervision of the REA.



# Frequently Asked Questions - Mini Grid Tender

## 1. How were the sites selected?

- The sites were selected after a process of geospatial analysis to screen and prioritize for high potential sites, validation to ensure they are fully off-grid, mapping of village infrastructure, and site surveys to collect data on customer segmentation and estimated consumption. Initially selected developers invited to submit proposals will be given the opportunity to carry out their own verification on the sites in coordination with REA.

## 2. Where are the sites located and how big are the lots?

- Details will be provided during the RFP stage.

## 3. How can a developer be sure that a community has not been selected by another company to develop a mini grid?

- As at January 2019, when the sites in the minimum subsidy tender were visited, no other developer were active in the communities selected. The REA carried out community engagement and obtained letters from the communities selected stating their interest to get electricity access from mini grids under the NEP. While REA has taken care to ensure that sites where developers are already active are not included in the tender, REA cannot sign exclusivity agreements with the communities. In the event that any of these communities are subsequently found to have entered into exclusivity arrangements with developers, those communities/sites will be removed from the tender.

## Frequently Asked Questions - Mini Grid Tender

- 4. Have the expansion plans of the Discos been taken into account to select the sites for the mini grid tender?**
  - The sites selected are far away from the main grid, and the REA does not expect that these would be electrified by Discos in the medium term.
- 5. Has the REA executed exclusivity agreement for the sites selected and has a tariff been agreed on?**
  - REA has not and cannot sign exclusivity agreements with the communities. The developers are expected to execute such agreements. The tariffs have not been agreed on. The developers are expected to set the tariffs

## Frequently Asked Questions - Performance-Based Grants

1. **There are some rural farms that are already connected to the grid and will welcome solar power plants as an alternative to get rid of generators--can they be part of the programme?**
  - At a later stage,, underserved communities may be considered in the performance-based grant programme. However, for now the performance-based grant programme will be focused on off grid communities.
2. **For developers with mini grid projects close to Discos, can they get permissions to continue working there with the Discos? And how will tariffs be agreed?**
  - Only mini grids in unserved areas are considered for now for the performance-based grant programme. In the future, mini grids in underserved areas may be considered for the performance-based grant programme. The tariff will be set by developers according to the NERC regulation for mini grids.
3. **The Discos are not paying Gencos in the electricity sector as expected, how are they expected to pay developers?**
  - At first, the programme will focus on mini grids in unserved areas, so mini grids will not have direct dealings with Discos and Gencos.
4. **In developing countries, a big portion of the profit typically comes from subsidy for the investors. For this project, the grant is \$350 per connection. What is the minimum capacity per connection?**
  - The amount of subsidy does not depend on the capacity of the mini grid. It is set a \$350 for the performance-based grant programme.

## Frequently Asked Questions - Performance-Based Grants

- 5. What if a community selects a mini grid operator and requests the operator to set up a mini grid in the place of a Disco in that community?**
  - For now, the performance-based grant program focuses only on isolated mini grids. Under the mini grid regulations, if a community already served by a Disco wants to get electricity from a mini grid, the community should sign a tripartite agreement with the Disco, and the mini grid developer.
- 6. Would a developer be required to submit the model or output for the tariff approval/evaluation?**
  - For the PBG site approval, the developer is only required to submit its generation and distribution design. The tariff approval process will be done in parallel.
- 7. What is the waiting time for the connections to be approved?**
  - The approval is done once a month.
- 8. Will NERC approve a tariff if the community agrees with the developer?**
  - If 60% of the potential customers in the community agree to a tariff proposed by the developer, NERC will approve this tariff.
- 9. If developers go to a community and customers don't pay, what can the developer do?**
  - Prior to the deployment of the mini grids, developers are expected to carry out community engagements to communicate the terms of the service. This is the responsibility of the developer and not the REA.

## Frequently Asked Questions - Performance-Based Grants

### **10. How is REA going to monitor connections for 3 months to meet the target?**

- For places with coverage, the connections would be managed through data from smart meters. For places with poor network coverage, the metering data would be uploaded and sent to the REA where network can be found. Independent verification agents will also go to selected sites and physically confirm the data is accurate.



# Solar Home Systems

The session was anchored by the Component Lead REA, Ifunanya Nwandu-Dozie and the World Bank Counterpart, Besnik Hyseni. The pair gave a detailed component overview, highlighting the grant process design and procedures for application.

The Component Lead REA worked participants through the application structure and process, highlighting key grant qualification requirements, verification processes and claim procedures.

The presentation also covered the key documentation needed to qualify for the grant and follow up market intelligence data that is to be provided to developers by the REA.

The session included a question and answer segment which has been included below.





## Frequently Asked Questions - Solar Home Systems

- 1. Load demand: there was an inquiry on whether there was a load demand ceiling for the grant**
  - There is no capacity ceiling as it is dependent on customer demand.
- 2. Existing SHS: Will already deployed systems be considered for the grant?**
  - Only systems deployed after signing the Agreement between REA and the grantee will be considered.
- 3. Amount threshold for companies: Inquiry on if a cap existed per company**
  - There is no cap per company, however grant % reduces over time and the range will be reviewed periodically and may change based on market conditions.
- 4. Minimum requirement of 150 systems: Concerns were raised on the minimum requirement of deploying 150 SHS to qualify positing that there are cheap sub-standard products in the market which are competitive. Hence, the cost of meeting the requirement is high. In light of this there were suggestions that the REA and the WB should reconsider the requirement; secondly the REA should spearhead the regulation of SHS systems in the market**
  - Standard Organisations of Nigeria (SON) is in the process of adopting a global standard on SHS. The 150 system monthly sales (on average) is the absolute minimum. The company can become eligible to apply for the OBF once they begin averaging 150 or more for at least 6 months.

## Frequently Asked Questions - Solar Home Systems

**5. Timelines for verification: What is the timeframe between installation and verification?**

- The maximum time is 4 weeks.

**6. Disbursement of Funds: What is the timeline for disbursement?**

- The timeline for MSCF is quarterly and for OBF it is based-on a verification timeline that will depend on the completeness of the customer data submitted.

**7. Qualification period: How long the qualification for the programme is valid for.**

- The qualification is valid for the 5-year period.

**8. New entrants/Start-ups: Will new entrants and start-ups qualify for the programme.**

- The programme was not designed for new entrants to the market and not the right tool for start-ups. However, there will be technical support for start-ups and company development down the road.

**9. Deployment of SHS under the MSCF: Is it a priority to deploy either in rural or urban areas under the MSCF.**

- Systems deployed in both rural and urban areas will be considered.

**10. Global technical partners: Will a Nigerian company with a global technical partner be considered for the grants.**

- To the extent that the company is the service provider then this company is eligible to apply to the program.

## Frequently Asked Questions - Solar Home Systems

### **11. Evaluation of the systems: How will the systems would be evaluated?**

- There is a Quality Assurance Framework and an IVA in place to carry out evaluations.

### **12. Currency for disbursement: Will the grant be disbursed in Naira or US Dollar?**

- The disbursement will be in Naira however, the devaluation of the naira will be considered as a case for revising the grant threshold amounts.

### **13. Qualification for the Market Scale Up Challenge Fund: How will companies be considered for the MSCF?**

- Companies will be considered for an invitation to apply for MSCF based on track record and relatively ambitious company profile/ business plans. Read more on the REA website SHS program.

### **14. Subsidy to End-users: Can the 20% grant be given as a subsidy on the cost of the system to end-users?**

- The grant will need to be tailored to improve efficiency and expand business operation of the company and not as a subsidy to the customers. Verification agency will also gather data on pricing and any companies found to be engaging in predatory pricing will be dismissed from the program.

### **15. How many times can a company apply for the OBF?**

- Registration is done once however disbursements will be on until the grant is phased out.

### **16. Can end users pay for the systems in kind as most of them don't have money but goods?**

- Technically the company can decide what payment method to accept but the sustainability of such a business strategy would be highly doubtful.



# Environmental & Social (E&S)

The E&S session began with a detailed presentation by the Environmental and Social Senior NEP Specialists (Micheal Okoh & Susan Igata) .

The duo gave an extended overview on the E&S requirements and spoke in depth on the concessions that are available to developers from the Federal Ministry of Environment through collaborative efforts from the NEP. The session was highly interactive and all expressed concerns, such as the certification approval timelines and associated costs were clarified. The grievance redress mechanism for the project was also addressed.

Following this, the specialist opened the floor to questions. These have been highlighted below:



## Frequently Asked Questions – Environmental and Social

- 1. In terms of promoting shared prosperity, does REA have plans of forming cooperatives in the communities or must a developer create a cooperative in a community.**
  - As part of REA's community engagement activities, communities were encouraged to form themselves into a cooperative known as the Electricity Users Cooperative Society (EUCS). Developers are expected to meet with the members of the cooperative upon arrival to the community.
- 2. Is the management of lead and lithium batteries in your plan?**
  - Yes, it is inbuilt in our plan.
- 3. Who pays for the disposal of the batteries?**
  - The issues related to recycling of batteries are built into the extended producer responsibility policy. It is also expected for the developers in their ESMP to provide how they intend to recycle/dispose waste.
- 4. Who monitors the developer's compliance in the communities?**
  - The grievance redress mechanism works with the states and NGOs that help the communities understand what these developers do. Stakeholder engagements session in the community with the developer is pertinent for the receipt of a due diligence report. The report of the session must be in a local dialect of the community.
- 5. What role does the National Environmental Standards and Regulations Enforcement Agency (NESREA) play in battery disposal?**
  - Once there is a policy direction in place for battery management, NESREA will be responsible for the implementation of the Extended Producers Responsibility (EPR).



# Closing Session



The Deputy Head PMU (Kenny Awnue) wrapped up the event with a vote of thanks and reiterated the projects commitment to ensuring a transparent and efficient application and bidding process.

Networking followed shortly after.



03

# Odyssey Training

# Odyssey Training – Solar Home Systems (SHS)

The Afternoon break-out (Day 1) session was focused on enlightening participants on the SHS application process using the Odyssey online platform. The session was anchored by the odyssey component counterpart and the component lead REA.

The Odyssey representative took participants through Odyssey's interface design and gave a detailed walkthrough on application procedures through the platform.

The session included an interactive question and answer segment.



# Odyssey Training – Mini Grids

The Mini Grids Odyssey training was held on day 2 of the NEP Technical Workshop. The training which was led by the Project Manager Odyssey, was focused on enlightening developers on the application procedures of the Mini Grid Performance Based Grant through the Odyssey Platform.

Participants were educated on the platforms interface design and procedures for application.





## Frequently Asked Questions – Odyssey Training

### 1. Clarify the difference between load creation for the PBG and minimum subsidy tender

- For the performance-based grant programme, the developer must develop the load profile for the sites.
- For the tender, the REA will provide Applicants with estimated load profiles for the tendered sites.

### 2. Do prospective organizations have to create the load for each customer type?

- Developers must create the load profile for each customer type. Load profiles can be saved in a customer library so that they can be used again in other projects.

### 3. Would the load profiles be computed or shown automatically?

- The load profiles can be uploaded from an MS excel based template as a load per customer or an 8760 file, or entered directly in the Odyssey platform.

### 4. Is there a limit to creating load profiles on the Odyssey platform?

- No, any number of load profiles can be created. Load profiles can be scaled and edited to model different scenarios.

### 5. Can created load profiles be shared across different organizations using the Odyssey platform?

- Load profiles created by one developer organization are not shared to other developers. However, REA will be able to review load profiles submitted as part of the site-specific technical assessment.

### 6. Is it possible that the generation simulation can be over 100%?

- The HOMER least-cost optimization will size the generation system to meet the load specified in the Load section. The user can enter in a “System Oversizing” to include reserve margin over the specified load or account for load growth.

## Frequently Asked Questions – Odyssey Training

### **7. Can I use another platform to create a system design and input it into Odyssey?**

- You can certainly use other platforms to design a system, but make sure to enter the size and percentage of load met from the simulation into the generation design section of a project in Odyssey.

### **8. What does unit cost consist of?**

- Unit cost pertains to components in the generation design. It is a cost per unit of capacity; for example, unit cost for solar PV is collected in cost per kW.

### **9. What happens if your connections are being rejected on the Odyssey platform?**

- There is a messaging system within each project where the developer can receive updates and messages from REA. The developer should contact REA to clarify why its connections have been rejected.

### **10. Who approves the connection, a person or a computer?**

- The connections will be approved by people (an Independent Verification Agency).

### **11. For existing mini grid developers, can they apply for new grants?**

- Yes, existing mini-grid developers can apply for grants for projects in their pipeline, but not for old projects that have already been completed. If the developer does not already have an account on Odyssey, they can sign up via the REA website and be logged into the platform in 24 hours.

### **12. What if you do not have up to 98% after simulation?**

- Either reduce your customer load profile to suit the generation design or size up the generation system.

04

## Financiers Round Table





# Financier Round - Table Overview

The financiers roundtable was highly interactive and comprised of over 40 potential financiers/lenders. Discussions were focused on how to de-risk investments in the off-grid space and how to ensure sustained interest from private sector investors.

During the interactive session, investors raised questions on tariff structure, regulatory framework, delivery timeline and adequacy of data. All concerns were adequately addressed by the project specialists.

# The Financiers Round- Table Outtakes



- The financiers round-table was aimed at enlightening potential financiers on the projects additional financing needs and highlight the benefits attached to financing projects under the NEP.
- The task team lead World Bank (Jon Exel) gave a detailed overview on the purpose of the round table. This included enlightening financiers on the private sector led project approach in the project design and the pertinent need for assisting developers achieve their capital requirements.
- Following this, a detailed presentation was made by the Deloitte/ Power Africa team led by MK Balaji to the financiers on the financing requirements, potential funding gap and envisaged financing structure.

# Photo Gallery

06



# Photo Gallery





# Photo Gallery

