Nigerian Energy Support Programme (NESP)

NIGERIAN ENERGY SUPPORT PROGRAMME, HOLISTIC APPROACH TOWARDS RURAL ELECTRIFICATION (FOCUS ON MINI-GRIDS)

Abijan, 21 September 2016
0. INTRODUCTION TO NESP
(with a focus on its mini-grid development activities)
NESP AT A GLANCE

• Technical cooperation programme
• Funded by European Union and Germany
• Implemented by federal partners (Federal Min. of Power, Works and Housing), 5 partner states (Niger, Ogun, Cross River, Plateau, Sokoto) and GIZ
• Duration: 5 years (03/2013 – 02/2018)
• Funding: 24.5M EUR – 15.5M EUR (EU) and 9M EUR (Germany)
**NESP OBJECTIVES ON RURAL ELECTRIFICATION**

**POLICY**
- Strategies
- Regulation
- Support mechanisms

**PLANNING**
- Data management system
- Electrification plans

**PROJECTS**
- 5 pilot projects
- Replication strategies

**Establishing an enabling framework for private investment**

**Advice to public sector Federal & States**

**Technical & financial advice to Developers & Investors**
1. FRAMEWORK FOR MINI-GRIDS IN NIGERIA

The strong political commitment on the federal and state levels to develop mini-grids has resulted in various interventions geared towards creating an enabling environment for private investment. In this context, NESP advises on strategy formulation and support mechanisms (incl. PPPs).
## INSTITUTIONAL STRUCTURE

<table>
<thead>
<tr>
<th>ENTITY</th>
<th>ROLE</th>
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<tbody>
<tr>
<td>FEDERAL MINISTRY OF POWER, WORKS AND HOUSING (FMPWH)</td>
<td>• Policy formulation, planning and coordination</td>
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<td></td>
<td>• Proactive involvement on PPPs agreements</td>
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<td></td>
<td>• Supervises NERC &amp; REA</td>
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<tr>
<td>NIGERIAN ELECTRICITY REGULATORY COMMISSION (NERC)</td>
<td>• Regulates the power sector (incl. rural electrification)</td>
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<tr>
<td>RURAL ELECTRIFICATION AGENCY (REA)</td>
<td>• Agency in charge of rural electrification planning and Rural Electrification Fund (REF)</td>
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<tr>
<td>STATE GOVERNMENTS</td>
<td>• Same mandate as federal level (e.g. coordination, policy formulation, planning, funding and regulation).</td>
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</table>
CONSTITUTION
• Gives federal govt mandate over power sector

ELECTRICITY POWER SECTOR REFORM ACT (EPSRA)
• Sets basis for the privatization of power sector

NATIONAL RE & EE POLICY (NREEEP)
• Sets targets for power sector (incl. mini-grids)

NATIONAL PLANS ON RE AND EE FOR SE4ALL
• Complementary to NREEEP and create link with SE4ALL

RURAL ELECTRIFICATION STRATEGY AND PLAN
• Sets foundations for the REA as administrator of REF

*NESP supported the preparation of the 3 last mentioned documents and is supporting REA to further strengthen its capacity in line with the EPSRA and RESP*
STATE POLICY FRAMEWORK

CONSTITUTION: Gives power to States to carry out electrification projects in off-grid areas

STATE STRATEGIES ON DECENTRALIZED RENEWABLE ENERGIES (Status: Drafted in 5 partner states)
- BACKGROUND: States requested for a framework on renewable energies
- AIM & SCOPE: Set principles for state frameworks for projects with the private sector

MINIGRID PPP GUIDELINES (Status: Drafted in 5 partner states)
- BACKGROUND: States requested for a project management cycle to develop PPP mini-grids
- STRUCTURE: Guidelines accompanied by a toolbox containing templates
- AIM & SCOPE: Establish a mini-grid PPP framework that helps state governments to
2. REGULATORY FRAMEWORK FOR MINI-GRIDS IN NIGERIA

The regulatory framework for mini-grids in Nigeria, although complex, has been streamlined with the support of NESP.
This programme is funded by the European Union and the German Government.

REGULATORY PROCESS FOR MINI-GRID PROJECTS

In case a company (incl. SPV) needs to be registered.

- Company & tax registration
- Land acquisition
- Env. & Social Impact Assessment
- Building permit
- Mini-grid regulations

RE mini-grids fall under category C (simplest ESIA type)

Govt. can acquire all necessary administrative approvals as part of its contribution to PPPs.

Federal competence
State competence

See slide 11
BACKGROUND: NERC requested NESP to advice on a regulation for rural electrification

STRUCTURE: Core text accompanied by annexes (tariff calculation tool, forms & legal agreements)

STATUS: Draft has received internal approval at NERC & been published ahead of public hearings

AIM & SCOPE: Contribute to an enabling framework for privately-led mini-grids

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PROTECTION OF OPERATOR
- Easy licensing
- Profitable tariffs
- Main-grid protection

PROTECTION OF CUSTOMER & ENV.
- Affordable tariffs
- Technical standards
- Customer mgmt

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ISOLATED MINI-GRIDS
- Permit for systems ranging from 100kW and up to 1MW
- Voluntary Permit/Registration for systems below 100kW

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2. ELECTRIFICATION PLANNING IN NIGERIA (INCL. MINI-GRIDS)

The federal entities and various states (including the Electricity Distribution Companies) are working on data collection, electrification modelling and planning. Once published, this information will provide a vital source of market intelligence to the private sector.
Where can Nigeria do mini grids (rural electrification)?
Light emission image of Nigeria
Clusters in Ogun State, Nigeria
MAIN SITE SELECTION CRITERIA FOR ISOLATED MINI-GRIDS

- Distance to the national electricity grid
- Population size
- Population density
- Reliable renewable energy sources
- Ability to pay for electricity
- Productive (particularly industrial) activities
- Accessibility
- Site located close to other villages viable for mini-grids
- A private operator is based in proximity
This programme is funded by the European Union and the German Government

APPROACH TO ELECTRIFICATION PLANNING

- **DATA COLLECTION**
  - Data needs
  - Collection methodology
  - Collect data

- **DATA MANAGEMENT**
  - Design database
  - Install soft/hardware
  - Train staff
  - Input data
  - Create GIS layers

- **ELECTRIFICATION PLANNING**
  - Selection criteria
  - Electrification plans
  - Priority list
  - Implementation

- **ELECTRIFICATION MODELLING**
  - Consumer analysis
  - Demand modelling
  - Supply modelling
RESULTS OF PRE-MODELLING FOR NIGERIA

RESULTS PREVIEW (CONSERVATIVE SCENARIO)

- Grid electrification: 34,446 cluster  57.1 million ppl
- Mini-Grid electrification: 3,800 cluster  12.8 million ppl
- SHS electrification: 7,210 cluster  2.8 million ppl

Source: NESP, “Preliminary analysis for off-grid PV capacities for the whole of Nigeria”, 2015
STATUS OF ELECTRIFICATION PLANNING IN PARTNER STATES

MODELLING RESULTS
• Being finalised
• To be uploaded on a web for easy access

ELECTRIFICATION PLANS
• To be drafted on the basis of the modelling results
• To cover long/short-term horizons

Example of electrification map for Niger State

Disclaimer: Preliminary results of an ongoing intervention which may not correspond completely to the current electrification status of Niger State
3. SUPPORT TO LOCAL PRIVATE MINI-GRID DEVELOPERS

Nigeria has got a good number of local companies with the necessary capacity to develop and operate PV mini-grids. In 2015, NESP launched a Guided Idea Competition and invited 100+ local RE companies to submit proposals for mini-grid projects. The 5 winners benefit from technical and financial assistance. They are now looking for debt and equity investors.
NESP GUIDED IDEA COMPETITION (GIC)

05/2015
- 100+ local RE companies invited to kick-off workshop
- 70 local RE companies attended the kick-off workshop

06/2015
- Call for Expressions of Interest launched
- 42 local RE companies submitted EOIs
- 30 companies qualified for 2nd round (Call for Proposal)

08/2015
- Call for proposals launched
- 15 companies submitted proposal

10/2015
- The 5 winners are entitled to technical assistance (during project development and operations) and financial (capital grant) assistance under a PPP agreement
SELECTION CRITERIA FOR Guided Idea Competition

**Applicant**
- Financial stability of applicant
- Staff resource of applicant
- Experience with rural customers
- Experience with mini-grids

**Commitment of applicant**
- Financial resources committed by sponsors
- Commitment of community confirmed
- Head of management support

**Focus of EOI call**

**Business Plan Proposal**
- Site selection
- Demand assessment
- Resource assessment
- Distribution network design
- Power station design
- O&M strategy
- Money collection strategy
- Customer Relation Mgmt
- Scaling approach
- Financial approach
- Permits of auth. collected
- Financing secured

This programme is funded by the European Union and the German Government
NESP supports partnerships with the highest possible involvement from the private sector.

However, since mini-grids are a nascent sector in Nigeria, NESP subsidizes part of their costs through the split of assets model in line with PPP principles.

In the mentioned model, movable assets are covered with private finance, while fixed assets with a capital grant.

- **MOVABLE ASSETS***
  - Owned/operated by developer
  - Financed with equity/debt (20% Equity / 40% Debt of project capital costs approx. 300,000EUR)
  - *Generation, Batteries, Charge controllers, Inverters*

- **FIXED ASSETS***
  - Owned by village or govt
  - Operated by developer
  - Financed with grant (40% of project capital costs approx. 200,000EUR)
  - *Distribution Grid, Power House and Metering*
**Grant buys down the tariff** to make it affordable for customers and covers for the costs of fixed assets that are less bankable.

- Fixed assets procured with grant can be used as **collateral to acquire private finance**
- Private partner, with the assistance of NESP, looks for **concessionary lending and impact finance** to cover for the costs of the mini-grid generation assets.
Once they have installed the mini-grid, project developers will also receive technical assistance during operations (e.g. promotion of productive loads).
### RESULTS OF GIC & STATUS OF EACH PROJECT AS OF SEPT16

<table>
<thead>
<tr>
<th>WINNERS</th>
<th>PROJECT LOCATION</th>
<th>STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gosolar Africa (SMEFUNDS)</td>
<td>Sokoto</td>
<td>Financial modelling</td>
</tr>
<tr>
<td>Nayo Tropical Technology Ltd.</td>
<td>Niger</td>
<td>Acquiring finance*</td>
</tr>
<tr>
<td>Rubitec Nigeria Ltd.</td>
<td>Ogun</td>
<td>Acquiring finance*</td>
</tr>
<tr>
<td>Income Electrix Ltd./ Port Harcourt Electricity Distribution Company</td>
<td>Cross River</td>
<td>On hold (no viable site found)</td>
</tr>
<tr>
<td>GVE Projects Ltd.</td>
<td>Plateau</td>
<td>Financial modelling</td>
</tr>
</tbody>
</table>

*Due to the current financial situation in Nigeria, local banks have put on hold the disbursement of loans. As a result, Nayo and Rubitec, which should have by now reached financial closure, are still waiting for the approval of their loan applications.*
4. SUPPORT TO MINI-GRID INVESTORS

*NESP supports corporate entities that want to invest in mini-grids* via the provision of *legal and financial advice*. *NESP can help the latter assess the risks* of financing mini-grid projects and *enter the Nigerian market*. 
PRIVATE COMPANIES IN MINI-GRID OPERATION

PUBLIC MODELS
  ▪ Fully subsidized and publicly managed mini-grids have proven widely unsuccessful

PRIVATE MODELS
  ▪ If the profit of the private company is linked to the operational success, of the mini-grid, the power supply becomes sustainable. Examples: Senegal, India, The Philippines, Bangladesh
  ▪ Nigeria has got capable mini-grid developers/operators that are running mini-grids on a commercial basis!!!!!!!!!!!

COMMUNITY MODELS
  ▪ Cooperative approaches have proven to work if the cooperative is structured like a private sector company including ownership models. Examples: The Philippines, Indonesia.
MINI-GRIDS WORK BEST IF THEY ARE ...

- Based on objective site selection criteria (non-political decision)
- Run by professionals who can take decisions locally
- Teams that can react to changes in customer demand quickly
- The management is motivated by the prospects of profits

Mini-grids require professional entrepreneurs to be successful!!!
LEGAL AND FINANCIAL ADVICE TO MINI-GRID INVESTORS

HELPING INVESTORS ASSESS REALISTICALLY RISKS INVOLVED
• Training on mini-grid model (focus on financial aspects) used by NESP
• In partnership with USAID, due diligence on selected mini-grid developers

CROWDFUNDS THE MOST INTERESTED INVESTORS
• NESP contacted 167 private investors (of very different nature)
• Crowdfunding platforms were the one that showed highest interest
• NESP to pilot crowdfunding for mini-grids in Nigeria in PPP with bettervest

CONTENT OF PPP – FOR PILOT INTERVENTION – BETTERVEST/NESSP
• NESP will provide advice
  ▪ legal (set up the contractual framework)
  ▪ technical (recommend projects certified by NESP engineering/financial experts)
  ▪ financial (adjust project financial models to crowdfunding conditions)
• bettervest commits to finance one pilot project during the first round
• If successful same cooperation model will be used for additional projects
BENEFITS FOR GOVERNMENTS IN MINI-GRIDS PPP APPROACH

RELIABLE POWER SUPPLY
- The government can **build grids where generation capacity is available** thereby avoiding situations of poorly electrified areas.

BETTER VALUE FOR MONEY
- No need for governments to build expensive medium voltage line. Thus, with the **same budget**, the government can actually **electrify more people**.
- The government can power already **existing underutilized grids** using interconnected mini-grids, thereby providing **reliable electricity to more people without** investing **more government money**.
- **Blending public-private funds** helps decrease pressure on government to use its own funds for electrification and **increases impact of its interventions**.

SOCIAL EQUALITY AND RURAL DEVELOPMENT
- Mini-grids allows to reach remote rural areas thereby allowing the government to support rural development and strike a **balance between urban and rural development**.
Thank you!

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