EnDev’s RBF Facility for mini-grids: Experience from Kenya and Rwanda
EnDev’s RBF Facility for mini-grids – Kenya Experiences

Mini-Grids Partnership Meeting - Accra, Ghana

Jackson Mutonga – 27.06.2019
Contents

1. RBF Facility Setup
2. RBF Project Approach
3. Implementation Structure
4. Incentive Structure
5. Implementation Process and Progress
6. Lessons Learnt
Mini-Grids Results-Based Financing (RBF) Facility Setup

### Project
- **Market creation for private sector owned and operated mini-grids**

### Technology
- Solar PV-hybrid mini-grids

### Volume (EUR)
- 2.1M (1.55M as incentives to RBF-PDs)

### Implemented by
- GIZ/EnDev Kenya

### Duration
- July 2014 – Dec 2019

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**Incentives**

**RBF Beneficiary (Private Sector)**
RBF Mini-Grids Approach in Kenya

• **Objective:** Market creation for private sector owned and operated mini-grids

• **Country Alignment:** contribute to affordable, clean and sustainable power supply in off-grid areas in line with Kenya’s target of universal electricity access by 2022 (KNES 2018).

• **Focus:** off-grid areas (Marsabit & Turkana Counties)

• **Business Model:** Pure ESCO

• **Partner institutions:** Ministry of Energy (MoE), Energy and Petroleum Regulatory Authority (EPRA), County Governments and the Private Sector.
Implementation Structure

Preparation phase:
- RBF Beneficiary (Project Developers)
  - Business Plan/Proposal
    - Submits to PI
    - No
      - Checks & Approves BP
      - RBF Contract/Grant Agreement
      - External Verifier
    - Yes
      - RBF Incentive Contract
      - Project Implementation
      - RESULTS
      - Disbursement
      - External Audit
      - Monitors Implementation
      - Verifies Results
      - GIZ/EnDev Kenya
        - Recommendation and Technical Assistance
        - Spot Checks
        - Monitor Implementation
        - Verifies Results
        - External Auditor
      - GIZ/EnDev Kenya
        - RBF Contract/Grant Agreement
        - Awareness Creation

Implementation phase:
- Fund Manager (BBK)
  - Checks & Approves BP
  - RBF Incentive Contract
  - Project Implementation
  - RESULTS
  - Disbursement
  - External Audit
  - GIZ/EnDev Kenya
    - Recommendation and Technical Assistance
    - Spot Checks
    - Monitors Implementation
    - Verifies Results
    - External Auditor
  - External Verifier
Incentive Structure

1. Power plant and distribution system commissioning incentive (premium paid on CAPEX) – 30% of total incentives

2. Connections made (premium paid per household connected and maintained for at least 3 months) – 70% of total incentives

3. Energy production incentive (premium paid per kWh supplied over a certain period of time) – for the first 2 mini-grid projects

- Incentives capped at 50% of project CAPEX; except for Kalobeyei Refugee Settlement and Host Community town MGs - @82% subsidy in order to achieve national utility tariff rates.
Implementation Process and Progress

 EXPECTED OUTCOMES:

- 14 MGs of total 464 kWp.
- 1,400 Connections (inc. 21 institutions) ~ 7,000 direct beneficiaries.
- 140 jobs created (inc. 50 women).

Selected Implementer:

- 4 private companies selected (4 rounds of CfPs) to develop 14 sites in Turkana & Marsabit
  - Nirav Agencies – 6
  - Strauss Energy – 3
  - Renewvia Energy Kenya Ltd – 4
  - SESMA Microgrids Kenya Ltd – 1

- 2 sites commissioned after 2 years of signing RBFIC!
- 8 under construction
- 3 under permitting and procurement
- 1 under controversy from another developer

- Disbursement of funds by BBK
- IVA and verification tools in place
Lessons Learnt

- TA is needed for RBF implementation – RBF Mini-grids was embedded in an established GIZ ProSolar (TA) project
  - substantial additional TA to FI and PDs (nascent and local)
  - Absorbing some soft costs – e.g. (pre)feasibility studies, government clearances/permits, community engagement/MoUs, etc
  - Stakeholder engagement (especially government entities)

- The project employed consultative and educational engagement approach

- Internal processes of the FI (division of tasks, bureaucratic structures, change of staff, buyout) and novelty of RBF (for Barclays, the market and GIZ) are the main reasons for delays in early stages
  - FI should not be responsible for technical implementation
Lessons Learnt

- Incorporate built-in flexibility in the RBFICs to accommodate
  - mini-grid market and site specific dynamics which call for adaptation of the RBF contracts especially on incentive structure/levels, delivery timelines, system capacity etc
  - key stakeholder expectations e.g. community CSR projects
  - Strategic partnerships for additional grants to lower tariffs

- Design comprehensive contracts for PDs to secure project finance. Include (if possible):
  - approved technical specifications of components
  - Financial performance data of operational mini-grids
  - Off-taker risk guarantee/insurance
Thank you for your attention.

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Coordinated by:

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Energising Development (EnDev)
Village Grid RBF Rwanda
Approach

Technology

• Village grids with own generation (hydro or solar/solar-diesel)
  - 5-50 kW generation with at least 40 customers
  - 51-100 kW generation (require license)

• Village grids with distribution only, purchasing power from
  - an existing isolated power plant (covered by license exemption < 50kW)
  - EUCL as a Small Power Distributors (SPD)

Technical requirements on safety and service quality

• Reliability of power supply within the village grid
• Quality of electricity to protect electrical appliances (electronic load control)
• Safety of the customers and staff (proper earthing, design, sizing & installation)
• EARP grid standard construction guidelines applied for the distribution network

EnDev Rwanda provides Guidelines (solar, hydro and distribution) for planning and design, as well as a detailed checklist used for project commissioning.
Approach

Financing

- Up to EUR 1.07 million in incentives
- A single company can receive max. EUR 250,000 (roughly 25% of total budget).
- Up to 70% of CAPEX investment

Results-based

- Subsidy is paid out after successful commissioning and in quarterly installments over the first year of operation

Partners

- Ministry of Infrastructure (MININFRA), Energy Development Corporation Limited (EDCL), Energy 4 Impact (E4I), Rwanda Utilities Regulatory Authority (RURA)
Company signs contract with UOB

Company applies: Application checked by UOB, EnDev and third party

Company secures financing

Renewable Energy Fund

Company constructs and operates a village grid

Mid-term visit during construction phase

Grant calculated according to business plan max. 70% of investment costs

Company receives a grant for construction and for each connection

Village grid is visited and verified by UOB and Technical Committee (MININFRA, REG, EnDev)
# Results achieved so far

<table>
<thead>
<tr>
<th>Company</th>
<th>Technology</th>
<th>Capacity (kW)</th>
<th>Customers</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>MESHPOWER</td>
<td>Solar DC</td>
<td>22 (1kW nano grids)</td>
<td>847 (594 HH, 253 PU)</td>
<td>Commissioned and operating</td>
</tr>
<tr>
<td>ECOS</td>
<td>Hydro</td>
<td>11</td>
<td>267 (224 HH, 36 PU, 7 SI)</td>
<td>Commissioned and operating</td>
</tr>
<tr>
<td>Absolute Energy</td>
<td>Solar AC</td>
<td>50</td>
<td>505 (448 HH, 57 PU)</td>
<td>Commissioned and operating</td>
</tr>
<tr>
<td>RENERG</td>
<td>Solar AC</td>
<td>35</td>
<td>120</td>
<td>Contracted</td>
</tr>
<tr>
<td>MESHPOWER extension</td>
<td>Solar DC</td>
<td>Extension to 75 1kW grids</td>
<td>2000</td>
<td>Contracted</td>
</tr>
</tbody>
</table>
Thank you for your attention

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