Demonstrating the commercial viability of rural Clean Energy Mini-Grids (CEMG) in Mozambique

UNEP project in development by EDP, SAN-JFS, FUNAE, EDM

IRENA INNOVATION WEEK – BONN - 12 MAY 2016
There is a strong *rationale* and *opportunity* to implement CEMG in Mozambique

**Rationale for Access to Energy (A2E)**

- Human development
- Grid extension very expensive
- CEMG is faster, cleaner & viable business
- Proven technologies
- Lower cost than diesel
- Revenues to cover O&M&M
- Investment needs subsidy

**Opportunity in Mozambique**

- No electricity access for >70% (potential market of 17 million people)
- In target Niassa region, >85% of population with lack of electricity
- Jan 2014, EDP joined UNEP’s programme to create an international Case Study
Titimane village is located in Cuamba district, Niassa Province, crossed by a dirt road from Cuamba and a railway between Malawi and Nacala.
Titimane village is cartographed and socio-economic profiles of almost all families and businesses were identified.

- ~ 900 Households
- > 4000 Inhabitants
- 44 small businesses
- 500-700 cotton farmers
This project contributes to sustainable growth and benefits several key stakeholders.

**Social Dimension**
- 4000 people with A2E
- 500 to 700 farmers with new business
- 7 to 10 direct jobs created

**Mozambican Government**
- Supports the aim to increase rural electrification, and encourage replication
- Enables private investments through a relatively low public financial commitment
- FUNAE promotes development, production and use of different forms of low cost power
- Encourages global partnerships to care for the environment and reduce emissions
- Allows demonstration of CEMG as an investment opportunity in African countries
- Reinforces commitment to the CEMG High Impact Opportunity in the UN SE4All

**Environmental Dimension**
- Clean tech (Solar + Biomass)
- Avoided CO₂ emissions (5kt/20years)
- Demonstrating the commercial viability of rural CEMG

**Economic Dimension**
- A2E increases comfort and develops economic activities of low income people
- Modern, less polluting, energy sources for lighting, appliances, healthcare and education
- Farmers can sell cotton residues to be used to generate the electricity they will consume

**Population**
- Increased comfort, health, education, business opportunities
- Support for Min Energy, Min Environment goals
- Close link with government agency FUNAE
- Care for the environment, reduce emissions
- Reinforce CEMG High Impact Opportunity of SE4All
- Aligned agenda with UNEP through SE4All
- Supporting policy/regulation to enable investment
- Strategic local partnerships reinforce commitment
- New opportunities by testing new business models
- Enable increased farmers income from sale of cotton residues
- Avoids environmental impact from open cotton combustion

**SAN-JFS**
- Reinforces the commitment to the development and well being of the Mozambican population
- Allows for the increase of Titimane farmers’ income, by purchasing their cotton residues and providing electricity
- Converts cotton residues in raw materials for production, avoiding its combustion in open fields

**UNEP**
- UNEP and AfDB are aligning common agendas and exploring complementary activities to bring sustainable CEMG to Mozambique, supporting the necessary policy and regulatory development for these applications.

**AfDB**
- Promotes the strategic partnership with the Mozambican Government and EDM, reinforcing the commitment to invest in the country
- Develops new opportunities by testing new business and technological models
- Reinforces commitment to the CEMG High Impact Opportunity in the UN SE4All

**EDP**
The delivery model will be supported in the creation of a new SPV to own and manage all assets.
The ongoing operations are commercially viable but public entities plus donors subsidize the business by financing the upfront CapEx costs.

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<table>
<thead>
<tr>
<th>What costs are included?</th>
<th>Who contributes?</th>
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<tbody>
<tr>
<td>• Generation equipments</td>
<td>• Private entities: EDP 500 k€ + SAN-JFS 200 k€</td>
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<tr>
<td>• Network infrastructure</td>
<td>• Public Entities: MITADER 190 k€</td>
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<tr>
<td>• Customer meters</td>
<td>• Donors: EEP 660 k€ + OFID 200 k€</td>
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<tr>
<td>• Project management</td>
<td>• Customers</td>
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<td>Biomass supply</td>
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<td>Diesel supply (backup)</td>
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<td>Maintenance</td>
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<td>Management and staff</td>
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<td>Replacement CapEx</td>
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Total lifetime project costs

Upfront CapEx

20 year OpEx + replacement CapEx
The project is currently in its second year, with the aim of starting scale up and replication to new locations by the end of year 4.
CONTACTS FOR FURTHER DETAILS

Guilherme Collares Pereira
EDP - Energias de Portugal, S.A.
Access to Energy / International Relations
Director

Tlm: +351 938 911 100
Collares.Pereira@edp.pt

Av. 24 de Julho, 12, Torre Poente, Piso 3
1249 - 300 Lisboa, Portugal
Tel: +351 210021648
www.edp.pt