



Upscaling Mini-grids for Least Cost and Timely Access to Electricity Services

SREP round table

[ZAMBIA]

Myanmar, Feb 6, 2017



Country background

- ❑ Zambia is a landlocked country located in South Central Africa, bordered by 8 countries: Angola, Botswana, Democratic Republic of the Congo (DRC), Malawi, Mozambique, Namibia, Tanzania and Zimbabwe.
- ❑ Geographic area is 752,614 sq km.
- ❑ Zambia is subdivided into ten provinces, with a total population of 15.5 million.
- ❑ Energy sources include; electricity, petroleum, coal, biomass and renewable energy.
- ❑ The breakdown of the energy mix is: Hydropower generation 89% (2269MW) while the balance of 11% consist of Coal 6% (150MW), Diesel 3% (92MW), Heavy Fuel Oil (HFO) 2% (50MW) and Solar Photovoltaic (PV) generation plants 0.06MW.
- ❑ Electricity Access – 31.2% National: 67.7% Urban and 4.4% Rural



Brief About The Rural Electrification Authority

- ❑ **Rural Electrification Authority (REA) and the Rural Electrification Fund (REF) were established through the Rural Electrification Act No. 20 of 2003**
- ❑ **REA administers and manages the REF which it uses to implement the rural electrification program**
- ❑ **The overall mandate of REA is to provide electricity infrastructure to rural areas using appropriate technologies**
- ❑ **Rural Electrification Master Plan- Target 3.1% to 51% by the year 2030**



Project outline

Existing Mini-Grids

- ❑ **Mpanta Solar Mini- Grid – (60 Kilo-watt peak (kWp))**
 - **Location - Samfya District of Luapula Province of Zambia**
 - **Started its operations in 2013**
 - **Target population/connections – over 450 Households, 2 public institutions and business entities**
 - **Total cost - approximately USD1.2 million.**
 - **Tariff charge - fixed monthly fee of about USD 4 to 10.**
 - **The power plant is managed by the community through Kafita Cooperative Society.**



Status

Mini-Grids Under Development

❑ Lunga Solar Mini-Grid (300kWp)

- **Location - Kasomalunga island, Lunga District of Luapula Province**
- **Current Status - Civil works**
- **Estimated investment requirement- approximately USD2.7 million**
- **Population/connections – 1,600 Households, Public institutions and Business entities.**

❑ Chunga Solar Mini-Grid (200kWp)

- **Location - Kafue National Park, Mumbwa District of Central Province.**
- **Current Status -Civil works**
- **Estimated investment requirement - approximately USD1.2 million**
- **Population/connections - 65 Households, public institutions and business entities**

❑ Kasanjiku Mini Hydro Mini-Grid (640kW)

- **Location - Mwinilunga District of North Western Province**
- **Current Status -Civil works and construction of access road**
- **Estimated investment requirement - approximately USD10 million**
- **Population/connections - 2000 household, public institutions and business entities**



Issues

- ❑ Initial Investment costs are high. Smaller mini grids are relatively more expensive to construct
- ❑ Private sector are not keen in operating isolated grid mini-grids because of low income levels resulting in low levels of fees collected which can not allow them to operate sustainably
- ❑ Government should encourage local manufacturing of equipment for Mini grids, this impact positively on the cost of equipment
- ❑ Government should deliberately set up Research Development Centres in Mini-grids. This could also be done by partnering with established R&D institutes.



60kW MPANTA SOLAR MINI GRID PLANT





60kW MPANTA SOLAR MINI GRID PLANT





Questions on moving forward