Project Opportunities in Off-Grid Renewable Energy

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About REA

- The Rural Electrification Agency (REA) is semi-autonomous agency of Government setup by the Ministry of Energy and Mineral Development through Statutory Instrument No 75 of 2001 as a secretariat of the Rural Electrification Board.

- REA is responsible for promoting and facilitating rural electrification projects. In addition, REA supports connection of renewable energy plants below 20MW to the national electricity grid.
Country Background

- **Uganda** is a landlocked located in East Africa with an area of 241,000 sq km
- Uganda’s population is estimated at 37 million (8 million households) of which 80% reside in rural areas. Projected to be 56 million in 2030 (11,956,636 households)
Electricity Access

• The national grid electricity access rate stood at 16% (20.4% if solar is included electricity).
• In the rural areas 5.1% of households are connected to the national grid (Another 5.2% use off-grid solutions)

Sources: National Population and Housing Census 2014
Rural Electrification

• Implementation of Electrification is guided by the Rural Electrification Strategy and Plan (RESP) for period 2013-2022.
  – The target is rural electrification access of 26% by 2022, translates to 1,415,000 new connections on grid and off-grid.

• The Strategy is implemented thru a combination of approached:
  – Grid extension
  – Mini-grids for concentrated settlements
  – PV standalone systems for dispersed and isolated
Implementation of Grid Project

- The Rural Grid infrastructure is financed by Government through REA
- 13 rural concessions & UMEME
- Operation and management by private sector
Potential for Off-Grid

- The scattered nature of settlements in Uganda, limit the population that will be reached by the grid
- Off-grid will play a major role in increasing electricity access.
- SE4All estimate that to achieve universal access by 2030, 33% of the connections (3.3 million) will be off-grid.
Islands on Lake Victoria
Stand alone Solar Home Systems

• Solar home systems are implemented through commercial approaches
  – Cash sales
  – Pay as you
  – Credit

• Government Programmes
  – Testing facility and Standard development
  – Credit for users through participation financial institutions.
  – Grant financing for solar systems for post-primary institutions, health centres and water supply
Mini-grids

• **Private Sector initiated**: mainly on the islands
  – REA Finance the distribution grid and connection cost

• Apply for a license exemption for off-grid <2MW
  – For identified sites
  – Letter of support from REA for site and distribution grid
  – Business plan with proposed end-tariff
  – Environmental Assessment (Project Brief)
Implementation of Mini-grids.....

- Government initiated projects:
  - As a result of the master planning process areas suitable for mini-grids are identified
  - Undertake pre-feasibility study
  - Tendered to private sector for development
  - For the selected company invests in generation and undertakes operation and maintenance:
    - REA provides the distribution grid and connections,
    - Subsidy on generation.

- Two pilot projects with 30 mini-grids to start implementation this year.
Benefits of Government initiated Projects

• Consolidates projects in a geographical area thus benefit from economics of scale and reduced operational cost.
• Addressed high end-user tariff through provision of subsidies.
• Streamline and shorten the licensing process
• Provide predictability of when the grid is likely to be extended to the area.
Examples of the mini-grid Projects Implemented
Pamoja Energy Ltd

- Pamoja Energy Ltd set-up two biomass gasification projects each with a capacity of 32kW.
- REA Uganda financed the distribution network and consumer connect.
22.5kW PV System Installed by Krichner Solar in Uganda
1.6MW PV diesel hybrid mini-grid set-up on Bugala Island by Kalangala Infrastructure services commissioned in Jan 2015
5kW PV mini-grid in Kasese set-up by Remergy Energy A/S that supply electricity to 97 households
Two 13.5 kW PV mini-grids in Kyenjojo District

• Developed thru a partnership between the University of Southampton, E4D and REA

• E4D provided the generation equipment and REA the civil works and distribution grid

• Managed by a local Cooperative
Absolute Energy Africa Ltd has set up a 230kW PV mini-grid at Kitobo Island on Lake Victoria to supply over 600 households and businesses.

REA provided a distribution network and subsidies on the generation
THANK YOU

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