REA’S OFF-GRID INITIATIVES TO ACCELERATE RURAL ELECTRIFICATION IN ZAMBIA

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OUTLINE OF PRESENTATION

1. Introduction

2. Off-Grid Projects - Existing and Under Implementation

3. Initiatives to Accelerate Rural Electrification – Private Sector

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1. INTRODUCTION

i. Rural Electrification Authority (REA) is a statutory body created through an Act of Parliament- Rural Electrification Act No. 20 of 2003.

ii. Currently rural electricity access rate is 4.4% from grid power while 7.4% is from solar power (CSO 2015).

iii. REA promotes renewable energy resources such as solar, mini-hydro, wind and biomass.

iv. The **private sector participation** is considered to be key in the implementation of off grid technologies (e.g. mini-grids).
2. OFF-GRID PROJECTS - EXISTING AND UNDER IMPLEMENTATION

Existing: Mpanta Solar Mini-Grid

i. 60 Kilo-watt peak (kWp) isolated solar mini grid located in Samfya District of Luapula Province;

ii. Implemented as a pilot project and plant became operational in 2013;

iii. Connected 450 private households, business entities and 2 public institutions;

iv. The tariff charged is a fixed monthly fee which ranges from about US$4 to US$10.

v. The power plant is managed using a community-based model through Kafita Cooperative Society.
Under Development: Chunga Solar Mini-Grid Project (200kWp)

i. The estimated investment requirement is approximately **US$1.2 million**;

ii. Estimated Ability to Pay (ATP) is **US$13.80 per month**

iii. Cost Reflective Tariff is estimated at **US$0.68**

iv. **100% capital subsidy**, the estimated tariff for project reduces to **US$0.26/kWh**

v. Proposed Business Model for Management of Plant is a Public Private Partnership Model

vi. **Status:** First Phase (civil works) has been completed. Second phase which includes the distribution and MV network is underway

vii. The procurement of the developer is underway under the **Increased Access to Electricity and Renewable Energy Production (IAEREP)** Project
Under Development: Lunga Solar Mini-Grid Project (300kWp)

i. The estimated investment requirement is approximately **US$2.7 million**;

ii. Ability to Pay is **US$15.20** per month;

iii. Cost Reflective Tariff is estimated at **US$0.34**;

iv. 100% capital subsidy, the estimated tariff for project reduces to **US$0.18/kWh**;

v. Proposed Business Model for Management of Plant is a **Public Private Partnership Model**.

vi. Status: First Phase (civil works) are on-going

vii. The procurement of the developer is underway under the IAEREP Project
Lunga Wind Assessment Project

i. The results indicate a minimum of 5.5 m/s at 60 m when extrapolated at height of 117m .....6.8m/s

ii. 200kW Single unit turbine could be installed

iii. The study thus indicate that the wind resource may be adequate for the development and integration of the solar wind hybrid power plant
Kasanjiku Mini Hydropower Project (640kW)

i. Located in Mwinilunga District of North Western Province

ii. The estimated investment requirement is approximately **USD10 million**

iii. Targeted number of connections – **2,250**

iv. Estimated Ability to Pay (ATP) for households **US$15.00 per month**, for commercial **US$20.50**

v. Cost Reflective Tariff is estimated at **US$0.57**

vi. 100% capital subsidy, the estimated tariff for project reduces to **US$0.08/kWh**

vii. Proposed Business Model for Management of Plant – **PPP Model**

viii. Status: Awaiting technical commissioning
3. INITIATIVES TO ACCELERATE RURAL ELECTRIFICATION – PRIVATE SECTOR

i. Capital subsidies in line with the REA Act

ii. Project feasibility studies to identify sites which could be offloaded to the private developer

iii. Public Private Partnership Models
   a) IAEREP (Lunga, Chunga and Chishi)
   b) Kasanjiku

IV. Scaling-up Renewable Energy utilization
   a) Electricity Service Access Project – ESAP (Smart Subsidy and Off grid Loan facility)

V. GIS Least Cost Geo-spatial Electrification Plan Platform /National Electrification Strategy (ESAP)
4. LESSONS LEARNT

i. **High cost of developing mini-grids** – REA has to provide a capital subsidy.

ii. High cost for **undertaking feasibility studies**

iii. Due to the high cost and **specialised knowledge required** there is need to partner with institutions involved in RE technologies for purposes of building capacity in renewable energy.

iv. There is need to **have anchor loads** capable of paying a cost reflective tariffs to meet the costs of operation and maintenance of mini-grids.

v. Private sector is more interested in **on-grid renewable energy projects**.

vi. **High Population Density** is critical factor for Mini-grid development
5. CONCLUSION

i. The Rural Electrification Authority still has a huge task of electrifying all rural areas of Zambia and implementation of Renewable Energy technologies is key in accelerating rural electricity access rate.

ii. The Authority cannot undertake this mammoth tasks alone, there is need therefore to partner with the Cooperating Partners and the Private Sector.
60kW MPANTA SOLAR MINI GRID PLANT
MPANTA SOLAR MINI GRID BENEFICIARY