Sustainable Rural Electrification Projects: Tariffs for Mini-Grids

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Background

- National electricity access is at 21.2% (16%- on-grid and 5.2% - Off-grid).
- Only 10.3% of the rural households have access to electricity (5.1%-on-grid while 5.2% - off-grid/solar) . **Source: Census 2014**
- The electricity sector was unbundled into generation, transmission and distribution following enactment of the Electricity Act 1999.
- The generation companies sell electricity in bulk to transmission company which in turn sells it to distribution companies
- The Electricity Act 1999 also provided for the establishment of a Sector Regulator and the Rural Electrification Agency (REA)
- The government intends to increase rural electricity access to 26% by 2022 by adding 1.28 million new grid connections and 140,000 off-grid connections. It also aims to achieve Universal access by 2040.

Role and Attributes of REA

- REA is responsible for building the evacuation power lines for generation stations below 20MW.
- It operationalizes the government's rural electrification function under a public-private partnership framework.
- It functions as the secretariat of the Rural Electrification Board, which carries out the rural electrification responsibilities, as per Electricity Act of 1999.

Legal Framework on Tariffs

- The Electricity Regulatory Authority (ERA) is responsible for setting and approving Electricity Tariffs in Uganda
- The ERA's functions are spelt out in the Electricity Act 1999 and include:
  - ✓ To issue Licenses for Generation, Transmission, Distribution or Sale of Electricity;
  - ✓ Establish a tariff structure and investigate charges, whether or not a specific complaint has been made for a tariff adjustment;
  - ✓ Approve the rates of charges and terms and conditions of electricity services provided by transmission and distribution companies.
  - ✓ To develop and enforce performance standards for the generation, transmission and distribution of electricity.

The Tariff Setting Process

- ERA regulates both the levels and structures of the electricity tariffs and is in the process of issuing guidelines for tariff setting that must be followed by all operators.
- Under the current price setting structure, ERA determines the revenue requirement for each Operator and applies a Rate of Return (ROR) regulation principles.
- Considerations are made on affordability & cost recovery for prudently incurred costs by the Operators.
- On a quarterly basis, the tariffs are adjusted to allow for a pass-through of the changes in fuel prices, inflation and exchange rates.

Tariff Structure

- For **grid connected consumers**, electricity prices are set at three points in the industry:
  - ✓ At the interface between generation and transmission;
  - ✓ At the interface between transmission and distribution;
  - ✓ At the interface between distribution and end-user consumers.
- **End-User customers categorized as**;
  - ✓ Domestic consumers- tariff -20 cents/kWh
  - ✓ Commercial consumers - Time of use tariffs.
  - ✓ Medium Scale Industries - Time of use tariffs.
  - ✓ Large Scale Industries - Time of use tariffs.
- **Note**: Time of Use Tariff: Peak, Shoulder and Off-peak

Off-Grid (Tariff Structure)

- Solar home systems and Mini-grids
- The private sector dominates the off-grid market in Uganda.
- Mini-grid operators are allowed to charge higher tariffs than on-grid operators but it is still regulated/set by ERA (to balance cost-reflectiveness and affordability).
- Mini-grids under 2 MW have license exemption from ERA
- Solar PV - Tariff is unregulated and set by the PV system distributor/seller
- There is no specific mini-grid regulation or policy hence a number of concerns around licensing, tariffs, and costs.
- ERA determines the mini-grids tariff but the project developers feel that in many instances the tariff set by the ERA is too low (on average 45 cents/kWh) to ensure project viability.

RE Feed-In-Tariff (REFIT)

- The REFIT is applicable to small-scale renewable energy systems, up to a Maximum Installed Project Capacity of 20MW, and greater than 0.5 MW, as defined by the Electricity Act 1999.
- Only applicable on grid connected projects (No support to Off-grids)
- The Priority renewable technologies for REFIT include:
    - Small hydro power plants up to 20MW;
    - Bagasse power generation;
    - Wind.
- ERA continually reviews and adjusts these tariffs at least every after two years,.

RE Feed-in- Tariff 2016

- The Revised FiT applicable 2016-2018

Technology	Tariff (US$)/kWh	O&M %age	Cumulative Capacity Limits (MW)			Payment Period (Yrs)
			2016	2017	2018	
Hydro (10 >< 20 MW)	0.094	10.96%	30	60	80	20
Hydro (5 >< 10 MW	Linear Tariff	10.49%	20	40	50	20
Hydro (500kW >< 5 MW)	0.107	10.49%	10	20	30	20
Bagasse	0.088	29.78%	30	50	60	20
Wind	0.122	10.71%	25	50	75	20

- *Source: ERA-Uganda*

Impact of REFIT in Rural Electrification

- Increased energy production
- Facilitated energy access to over 200,000 households
- Increases Private sector investments in RE projects.

Tariff Study

- **Study**: Cost of service and affordability of tariff studies (Funded by AfDB) – 10 months study
- **Status:** Consultant is on board (Contract -signed)- No deliverables yet
- **Objectives of the Study**:
  - To prepare an Economic Regulation Framework (ERF),
  - To develop and recommend an appropriate tariff setting/pricing methodology,
  - To develop and recommend an appropriate Tariff structure and tariff model tools,
  - To develop guidelines for determining capital expenditure allowance (Investments), operations and maintenance costs expenditure, treatment of Grants and Capital Contributions and valuation of assets added to the Regulatory Asset Base,
  - To develop a standardized/prototype new customer connection policy to be operationalized by distribution and supply companies,
  - To design appropriate tools for compliance monitoring of the financial and commercial performance of distribution and supply licensees;
  - To determine the affordability of tariff at national level and service territories; and
  - To build the capacity of selected ERA staff to operationalize the developed tariff model and compliance monitoring tools.

Other Mini-grids Activities-Tariff

- **Mini-Grids Financial Model (MEMD, REA, ERA & GIZ)**
  - ✓ Calculates Appx costs of Installation and Operation of Mini-grids
  - ✓ Mini-grids Tariff calculations from the predicted costs
  - ✓ To be piloted in Pro-Mini-grids projects financed by EU and GIZ

THANK YOU