



# ***The Market Landscape for Decentralized Renewables in Uganda***

***By Noah Asinge (Information and Partnerships Officer)***



# About us

UNREEEA is an umbrella body of the private sector players in the renewable energy and energy efficiency sub-sectors of Uganda.

Its primary role is to avail a platform for consolidating the private sector leadership towards improving the business environment renewable energy and energy efficiency in Uganda.



# About us Con't

We currently a network of six technology associations namely:

- Uganda Solar Energy Association (USEA)***
- Biomass Energy Efficient Technologies Association (BEETA)***
- Energy Efficiency Association of Uganda (EEAU)***
- Uganda National Biogas Alliance (UNBA)***
- Hydro Power Association Of Uganda (HPAU)***
- Wind Power Association of Uganda (WPAU)***

# About us Con't

UNREEEA operates through **four action areas:**

- 1. Market Development**
- 2. Capacity Building**
- 3. Advocacy and Lobbying**
- 4. Standards and Quality Assurance**

**NB:** We are also a member of the **East African Renewable Energy Federation (EAREF)** which is made up of TAREA, UNREEEA, KEREAA, BUREA & EPD



# Uganda's Renewable Energy Sector Resource Potential *(MEMD 2015)*

- Hydropower – **2000MW** , Mini-hydro - **200MW**
- Biomass (Co-generation) - **1650MW**
- Solar – **5-6kwh/m<sup>2</sup>day**
- Geothermal - **450MW**
- Wind – **average speed is 3m/s @ a height of 10m**

However there are some site the north-eastern part of Uganda with a higher speed with potential for big projects.

# Sector Status of Trends

| Resource Technology | Installed Generation capacity (MW)    |
|---------------------|---------------------------------------|
| Hydropower (large)  | 1413 (inclusive of Karuma and Isimba) |
| Hydropower (small)  | 96.6                                  |
| Solar               | 40                                    |
| Thermal power       | 100                                   |
| Cogeneration        | 119.6                                 |
| Total               | <b>1769.2</b>                         |

# Sector Status of Trends

| Sector Theme                       | Current Access Rate                           | Target                          |                              |
|------------------------------------|---|---------------------------------|------------------------------|
| <b>Electricity Access</b>          | <b>22%</b><br>(Urban – 51% and Rural – 10.5%) | 26% by 2022<br>(RESP 2013-2022) | 60% by 2040<br>(Vision 2040) |
| <b>Renewable in the Energy Mix</b> | <b>89%</b>                                    | >95% by 2030<br>(SE4ALL A.A)    |                              |



# Decentralized R.E Technology

## Options: Minigrids

### Hydropower based



### Biomass gasification





# Decentralized R.E Technology

## Options: Minigrids

### Solar



# Decentralized R.E Technology

## Options: Pico & Stand alone systems

### Solar for lighting and production



***NB: Solar as an R.E technology dorminates the off-grid market of Uganda applied mainly as **pico and stand alone systems and of late mini-grids*****

# Decentralized R.E Technology

**Options:** Pico & Stand alone systems

## Current operational business models

- ☐ Pay As You Go is the leading business model with over 60% of the market share in Uganda.
- ☐ Post Paid Metering model where a solar company installs the system with a meter for free and the client only pays for he/she has used.

(Being piloted by *Foundation for Rural Energy Services Ltd in Western Uganda.*)

- ☐ Cash/Credit Sale model.

# Policy and Regulatory Framework for Decentralized R.E (Mini-grids)

## Policy Framework:

- ❑ The Government of Uganda through the Rural Electrification Agency (REA) under its Rural Electrification Master Plan (2013-2022) in particular, explicitly encourages the private sector to play a key role in the rural electrification
- ❑ Vision 2040 and the SE4All Action Agenda also have ambitious national electricity access targets.

# Policy and Regulatory Framework for Decentralized R.E (Mini-grids)

## Licensing Regime Requirements (Electricity Act 1997)

| No. | Requirement  | Issuing Authority                         |
|-----|--|---|
| 1.  | Feasibility Study Permit ( <i>Hydropower projects</i> )                                | Electricity Regulatory Authority          |
| 2.  | Environmental Clearance Permit   | National Environment Management Authority |
| 3   | - Surface Water/Abstraction<br>- Construction Permit<br>( <i>Hydropower projects</i> ) | Directorate of Water Resources Management |

# Policy and Regulatory Framework for Decentralized R.E (Mini-grids)

|   |   |                                  |
|---|---|----------------------------------|
| 4 | Investment Licence (Foreign Companies)  | Uganda Investment Authority      |
| 5 | Licence(s) [Electricity Act 1999]<br><br>OR License Exemption for project below 2 MW. | Electricity Regulatory Authority |

# Policy and Regulatory Framework for Decentralized R.E (Mini-grids)

## Commonest Operator Models

| Model                | Description  |
|----------------------|--|
| Public utility model | The utility owns and manages all aspects of the mini-grid. It is financed by public funds and usually charges the uniform national tariff, which is cross subsidized by customers connected to the main grid.  |
| Community model      | The community or a local NGO owns and manages the mini-grid for the benefit of community members. These mini-grids are typically financed by grants and small in-kind contributions such as land, labour and materials. These mini-grids set tariffs to only cover operation and maintenance costs, retaining a small percentage to cover replacement parts. |



# Policy and Regulatory Framework for Decentralized R.E (Mini-grids)

## Commonest Operator Models

|               |  |
|---------------|--|
| Private model | A private investor builds, owns and operates the mini-grid. The funding usually comes from a mix of private sources and grants. The grants are important to cover the cost of the distribution network and a portion of the project development costs. They are also important to keep tariffs at an affordable level. |
| Hybrid (PPP)  | This model combines the features of the other models, with different parties building, owning, and operating the distribution and generation assets. PPPs are particularly well suited for larger mini-grids, although significant public funding is still likely to be required for smaller mini-grids                |

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# Sector Barriers

- Inadequate market data and linkages.
- Limited technical capacity.
- Limited access to cheap finance.
- Lack of proven business models.
- Gaps in the policy and regulatory framework, specifically issues related to tariffs, licensing and arrival of the national grid.
- Poor quality products on the market (Stand-alone & Pico).
- Low market awareness (Stand-alone & Pico).

# Opportunities

- ❑ Besides the majority (>78%) of the population lacking access to electricity, power for production (in agricultural value chain) is a virgin sector for application of decentralized renewable energy technologies.
- ❑ Rural Electrification Fund subsidies ***(distribution network and customer connections)*** to all rural electrification projects

# Opportunities

- ❑ Introduction of the Competitive Licensing Model for R.E Mini-grids with a de-risking element through a GLZ “**Pro Mini-Grids NU**” project.
- ❑ Fiscal incentives to foster uptake of clean energy
  - Investment capital allowances on machinery and plants
  - Exemption of importation duty on PV system components

# Opportunities

- ❑ There is a lot of still a lot of potential for Mini-grids in the Island communities of Uganda (Lake Victoria)



# Opportunities

**GIS map with all operational and planned sites  
as well as the grid infrastructure in Uganda**

<https://uetcl.maps.arcgis.com/apps/View/index.html?appid=42680a3d3e0f4ce3ab408adf1a2c5c57>



# Danke Dir Thank You



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