Grid Integration: Preparing for future grid integration

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Presentation layout

- Mini power grids in Kenya
- Regulatory frameworks for mini-power grids in Kenya
- Mini-grids in the draft Energy Bill
- Concerns of mini-grid operators
- Integration of mini-grid with the national grid
- Reactions from the floor.
Existing mini power grids in Kenya (1)

**Public**- Mostly diesel powered and for the remote towns and their immediate environs (in total 17MW). Through GoK initiative to power administrative centres (19 in No.).

i. Mandera  
ii. Elwak  
iii. Moyale- Connected to Ethiopian grid through 33KV.  
iv. Lodwar  
v. Marsabit- with small wind turbine 200kW etc.  
vi. Garissa & Lamu were in this category before integration with national grid in early 2016
Existing mini power grids in Kenya (2)

Private- For own installations (generation and distribution) within their estates but interconnected to KPLC networks at 33KV metering substations. Driven by need for continuous supplies to their installations.

i. Unilever: Generation 4.7 MW (2.9MW hydro and 1.8MW diesel), 82 km of 11KV lines and 50 km of LV lines.

ii. James Finlay: Generation of 6.7MW(2.2MW hydro and 4.5MW diesel). Distribution is at 33KV, 3.3KV and LV lines.
Existing mini power grids in Kenya (3)

iii. Powerhive

iv. Talek Power Company

Note: The four companies have generation, distribution & Supply licences from ERC
Regulatory frameworks for power mini grids in Kenya (1)

- There are currently no specific regulations for the development of mini-grids.
- Existing regulations treat a mini-grid as an undertaking involving generation, distribution and supply of electricity (GDS licence) or distribution and supply of electricity (DS licence).
- ERC acknowledges need for mini-grid specific regulations. Draft regulations being worked on.
- Licence/permit required for a typical mini-grid is a generation, distribution and supply licence/permit.
Regulatory frameworks for power mini grids in Kenya (1)

The mini power grids must comply to the following legislation

- The Constitution of Kenya
- **The Energy Act, 2006**; in particular sections 6(a) and sections 27 – 31.
- **Energy(Electricity Licensing), Regulations, 2012**
- **The Kenya Electricity Grid Code (s)**
Summary of the regulatory Requirements (2)

- A licence or permit is required depending on the capacity.
- 15 days notice before making application through public advertisement, stating window for any objection.
- Serve in writing local authority/ies (county government(s)) where the mini grid is to supply.
- Impact of the undertaking on the social, cultural or recreational life of the community.
- Approval for change of land use
- Compliance with environmental laws (NEMA Licence)
- Proposed tariff. Tariffs for mini-grid are negotiated with ERC. No requirement for Uniform Tariff.
Mini grids in the draft Energy Bill

- Energy Bill provides framework for net metering. ERC to develop regulations on the same.
- National and County Governments to put in place measures for developing distribution networks and transferring them to licensed distribution operators for O & M. Only one distributor will operate in a given area at a given time.
- Facilitate open access to the grid.
- Facilitate standardization of the technical specifications so that a mini-grid can be easily integrated with the national grid in future.
- The government to develop and implement strategies for a national uniform tariff. Can be achieved through subsidies.
- Energy Policy promotes wheeling through existing grids. A mini grid operator can choose to sell the distribution assets and retain only the generation assets.
- The Kenya National Electricity Distribution Grid Code guides on the technical standards to be achieved by the grid operators. No special mention of mini-grid in the Grid Code.
The two major concerns for private mini-grids have been:

i. What happens when the national grid arrives?
ii. High tariff. ERC considers affordability of proposed tariff by customers yet there is no subsidy mechanisms for private mini-grids. Hence no level playground with public mini-grids.
Integration of mini-grid with the national grid

- ERC protects both the interest of consumers and investors. Consumers are protected through approval of fair tariffs, guaranteed quality of service etc... Investors are protected through assurance that they will recoup their capital investment etc..

- Possible scenarios when national grid arrives
  Interconnect with national grid and
  i. Operate as an IPP i.e. sell power to the national grid at an interconnection point either at FiT rate or sign a PPA with the off taker. Licence modified to a generation licence
  ii. Act as a regional distributor. Subsidize its power generation by purchasing power from the national grid and selling to customers. Retains the GDS licence.
  iii. Cease to operate. Its assets are acquired by the national grid operator

Opt not to interconnect with the national grid and
i. Relocate its generation and distribution assets to another location and operate a new mini-grid
ii. Operate mini-grid privately without connecting relocating or connecting to the mini-grid.

Mini-grid operators who are considering option the first option are advised to build their network to meet the KPLC standards. E.g Talek
Thank you for your Attention

Reactions from the Floor

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