Energy and Electricity Policy

Summary of the presentation:

1. National Electricity and Electrification Policy
2. Rural Electrification Strategy and Plan
3. When the big brother meets the small brother
Energy Sector Governance

A  
Energy Policy

C  
Customer and Environmental Regulation

D  
Licences and Contract Regulation

Fiscal Policy and Regulation

B  
Economic Policy and Regulation

Support Instruments

E  
Financial Support

F  
Technical Assistance
| Energy and electricity policy | • Defines objectives, identifies priorities, outlines broad guidelines for sector development → groundwork for detailed regulation “downstream”  
• Should be based on sound information, and explore all relevant and beneficial options in the country context |
| National Electricity Policy | • Provides guidelines for accelerated development of the power sector  
• Defines supply of Reliable and Quality Power  
• Stipulates the provision of electricity to all areas of the country in an efficient manner and at reasonable rates  
• Defines electricity access objectives  
• Protects interests of consumers and other stakeholders  
• Devises the optimal use of country’s available energy resources and technologies  
• Addresses energy security issues |
National electricity plan includes:

- Short-term and long-term demand forecast for different regions
- Suggested areas/locations for capacity additions in generation and transmission keeping in view the economics of generation and transmission, losses in the system, load centre requirements, grid stability, security of supply, quality of power including voltage profile etc. and environmental considerations including rehabilitation and resettlement
- Integration of such possible locations with transmission system and development of national grid including type of transmission systems and requirement of redundancies
- Different technologies available for efficient generation, transmission and distribution
- Fuel choices based on economy, energy security and environmental considerations
- Should explicitly integrate mini-grids in the rural electrification approach
Rural Electrification policy is usually described in the National Electrification Plan or in a separate Rural Electrification Strategy and Plan where:

- The political aim for universal national electricity access is described
- Long-term objectives and strategic goals
- Balance the interests of market players (supply and demand) between themselves and with the public interest
- Orient the market in the desired direction by defining clear "rules of the game", and by introducing incentives (or deterrents!)
- Describe the necessary framework and resources
- Explicit decision to integrate mini-grids into the rural electrification approach
Rural Electrification Plan should include:

- Review of energy access in the country (i.e. detailed electrification rates in different areas)
- Resource mapping for target areas/communities (i.e. water course, biomass, wind, sunshine)
- Data collection on location, socio-economic conditions, electricity demand, etc. for the targeted villages
- Criteria for the selection of target areas/communities
- Action plans including prioritisation of areas/communities to be electrified
- For the next 5 / 10 / etc. years which areas will be connected to the grid

The Rural Electrification policy / strategy / plan should identify appropriate operator models in the respective country context for mini-grids as each of the four basic operator models requires specific policy support. But, if possible do not narrow choices.
Types of Regulatory Decisions Affecting SPPs: technical, commercial and economic, and process (1/2 slides)

Examples of Technical (Engineering) Decisions

- Voltage, frequency, and power quality standards for mini-grid or grid-connected small power producers (SPPs)
- Regulations to provide safe and robust electrical connections between the national utility and a grid-connected SPP
- Distribution-system safety standards for both grid-connected and isolated SPPs

Examples of Commercial and Economic Decisions

- Price that the SPP is allowed to charge its retail customers
- Determination of who pays the cost of the interconnection between an SPP and the national grid operator so that the SPP can sell to the national grid or to an existing mini-grid (cont...)
Price that a grid-connected SPP receives for the power that it sells to the national or regional utility (the so-called feed-in tariff, FiT)

Whether power-purchase agreements (PPAs) should be standardised for main-grid-connected SPPs and provisions that should be included in PPAs

Price charged to the mini-grid for backup power because of planned or unplanned maintenance on its system

Examples of Process Decisions

- Whether the regulator consults with some or all stakeholders before making a technical or economic decision
- What information and approvals must be provided to obtain a license or permit
- Whether the consultation is conducted publicly or privately
- The time the utility has to respond to a request for interconnection by an SPP
Regulating SPPs and mini-grids that sell to retail customers

Two key regulatory concerns:
1. Setting maximum tariffs
2. Establishing minimum quality-of-service standards

When in doubt, regulators will regulate. But this may not be a good decision.

**Note:** Both aspects are being detailed in subsequent presentations.

**Obs.:**
- Ideally, tariffs should be cost-reflective, but this means tariffs above the uniform national tariff.
- Allow SPPs to **cross-subsidise** different customer groups.
- If cost-reflective tariffs are not allowed, then it should be regulated how the **financially gap** will be filled.
Big brother meets small brother. What happens when the main grid arrives?

- Connecting to the main grid is both a risk and an opportunity for all stakeholders.
- Mini-grids integration into the national grid can be very beneficial, e.g. by integrating an existing distribution network, or decentralised production which can provide some stabilisation for weak “end-of-the-line” grid supply.
- It should be made clear that and how investors are "compensated", if the area covered by the mini-grid is "swallowed" by the national grid - otherwise the investment is at risk, and investors are discouraged!

**Key factor for success:** the policy of connection to the main grid must be defined in advance, and not be modified to the detriment of the investor ex-post, otherwise will have negative repercussions on the investment climate!
Basically there are five options:

- The SPP stops generating and becomes a pure distributor
- The SPP stops distributing and sells the power it generates to the main grid
- The SPP operates as a combined SPP-SPD
- The utility buys the SPP
- Abandonment

Regulations and policies should pre-specify the commercial options available to the SPP when the national grid arrives in the SPP’s service area. Otherwise, entrepreneurs and investors will not invest in SPP projects in the first place.
The SPP stops generating and becomes a pure distributor (SPD)

Source:
Diagram by Richard Engel and Chris Greacen, 2013
The SPP stops distributing and sells the power it generates to the main grid

Source:
Diagram by Richard Engel and Chris Greacen, 2013
The SPP operates as a combined SPP-SPD

Source:
Diagram by Richard Engel and Chris Greacen, 2013
The utility buys the SPP

Source:
Diagram by Richard Engel and Chris Greacen, 2013

Abuja, 18 July 2017
Abandonment

Source:
Diagram by Richard Engel and Chris Greacen, 2013

Big brother meets small brother
Big brother meets small brother. What can be regulated:

- Guaranteed interconnection to the grid with pre-specified rules for assigning responsibility for the costs of the interconnection
- Standardised interconnection and operation procedures
- Guaranteed purchase of power whenever it is produced by the SPP (usually referred to as a “must-take” or “priority dispatch” requirement)
- Physical capability of the purchasing entity to receive (that is, “evacuate”) the power
- A fixed, pre-specified pricing formula for the purchase of the SPP’s power with a clearly defined adjustment mechanism for the life of the contract
- Guaranteed sale of backup power by the utility to the SPP when needed because of planned or unplanned outages
South-South Knowledge Exchange

ECREEE Database on ECOWAS countries mini-grid legislation?

Other websites:

**EWURA**: Energy and Water Utilities Regulatory Authority of Tanzania
http://www.ewura.go.tz/?p=1429

- Standardised Small Power Purchase Agreement (SPPA) for Mini-grids
- Standardised Tariff Calculation Methodology (STM) for Mini-grids
- Detailed Tariff Calculations under the SPPA
- Electricity (Small Power Development) Rules
- Electricity (Small Power Development) Guidelines
- Guidelines for Grid Interconnection
- STM for Mini Grid under Standardised PPA

**RURA**: Rwanda Utilities Regulatory Authority  http://www.rura.rw
Comments and suggestions?

What are your experiences with:

- Define policies and regulatory frameworks?
- Challenges (drafting and monitoring) of Rural Electrification Plans?
- Are you aware of the costs of generation, transmission and distribution in your country?
- The perception of mini-grids?
- Operator models?
- Do you know the target group (GIS mapping)?
- How to reach the target group?
- What is missing for mini-grids to blossom?

Thank you for your attention!

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