Policies and regulations for private sector renewable energy mini-grids

Abu Dhabi, 3 November 2016
Off-grid renewable energy: Key to universal access to electricity

Nearly 60% of additional generation required to achieve universal electricity access by 2030 is estimated to come from off-grid installations (stand-alone and mini-grids)

Electricity access for all

<table>
<thead>
<tr>
<th>Region</th>
<th>On-grid</th>
<th>Stand-alone</th>
<th>Mini-grids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>42%</td>
<td>17%</td>
<td>40%</td>
</tr>
<tr>
<td>Developing Asia</td>
<td>37%</td>
<td>19%</td>
<td>44%</td>
</tr>
<tr>
<td>Latin America</td>
<td>60%</td>
<td>10%</td>
<td>30%</td>
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</tbody>
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Renewable energy mini-grids are expected to account for the majority share of off-grid generation

Source: IEA, UNDP, UNIDO (2010)
Renewable energy mini-grids: A proven track record

Traditional deployment models are being complemented by private sector models as interest in the sector grows
Renewable energy mini-grids: The strengthening business case

Technology advancements

Growing track record

Wider pools of financing

Cost reductions

How do we accelerate the pace of renewable energy mini-grid deployment?
Objective

- Identify key barriers and drivers for stand-alone and mini-grid RE system deployment
- Platform to share experiences, lessons learned and best practices

IOREC 2012
Accra, Ghana

IOREC 2014
Manila, Philippines

IOREC 2016
Nairobi, Kenya

Conference info available at: www.iorec.org
Key Elements of an Enabling Environment

- **Policy and Regulatory Frameworks**
  - Targeted
  - Dedicated
  - Commitment

- **Institutional Framework**
  - Clarity in roles
  - Streamlined
  - Capacities

- **Financing and Business Models**
  - Tailor-made
  - Productive uses
  - De-risk investments

- **Technology**
  - Reliability
  - Innovation
  - Customised

**Sustainability**
Policies and Regulations for Private Sector Renewable Energy Mini-grids

OBJECTIVES

- Maps out the role of renewable energy mini-grids in rural electrification strategies
- Analyses the current landscape of policy and regulations for the mini-grid sector
- Identifies key policy and regulatory conditions for attracting private sector
- Defines technology-specific policy and regulatory requirements

Download at www.irena.org
Key policy and regulatory conditions

- Legal and licensing provisions
- Access to finance
- Cost recovery and tariff regulation
- Risk of main-grid arrival
Key policy and regulatory conditions: Legal and licensing provisions

**Legal provisions**
- The generation, distribution, and sale of electricity by private firms must be legal.

**Clear processes and procedures**
- Single-window clearance facility hosted at a rural electrification agency or similar body.
- Information on processes and procedures.

**Streamlined regulatory requirements**
- Segmented approach to designing mini-grid regulatory requirements – limit licensing/permitting costs to 1-2% of project cost.
- Non-energy requirements (e.g., ESIAs) simplified and standardized.

**Provisional licenses and concessions**
- Avoid two or more developers carry out preparatory activities on the same site.
- Provisional licenses more suitable for bottom-up mini-grid development.
Key policy and regulatory conditions:
Cost recovery and tariff regulation

Regulations need to allow viability and sustainability

• Private operators should be allowed to recover costs within a reasonable time and at margins commensurate with risks.

Cost-covering tariffs

• Cost-covering tariffs an option – growing case for differentiated tariffs for mini-grids.
• Mini-grid tariffs need to be high enough to cover costs and structured to reflect current spending on energy.

Tailored approach to tariff regulation

• Exemptions from tariff regulation under specific threshold.
• Operators can test flexible tariff structures in a light-handed regulatory space.

Tariff caps and standardised calculation methodologies

• Tariff caps can be set for local conditions.
• Tariff determination through standardised methodologies (e.g., a costplus approach) allows for systematic assessment, and provides the basis for brief negotiations.
Key policy and regulatory conditions: Risk of main-grid arrival

Mitigating main grid arrival risk

- Regulations must address the risk to mini-grids created by the arrival of the main grid.

Rural electrification plans provide valuable guidance

- Information on location and timeframe for grid extension, as well as population density, productive loads and existence of other licensees.
- Benefits for developers (in a bottom-up, market-driven approach) and public authorities (in a top-down concession scheme).

Interconnection/compensation mechanisms allay risks

- Several interconnection options exist – transition to small power producer, distributor, tail-end support.
- Most suitable approach largely depends on generation costs.
- Interconnection or compensation: full information about tariffs and depreciation scenario should be available in early stage.
Private mini-grids pass through different phases with varying financing needs until they are finally installed and commissioned.
Key policy and regulatory conditions: Measures for access to finance

Source: ECA, TTA, Access Energy, 2014
Key policy and regulatory conditions: Measures for access to finance

Measures to facilitate access to finance
- Measures to facilitate access to finance should take into consideration the mini-grids specificities.

Address targeted financing gaps in mini-grid phases
- Cooperation with regional/global funding facilities to attract early-stage grants.
- Dedicated funds to bridge financing gaps. Local commercial banks can be engaged to make available low-cost, local-currency loans.

Efficient design and delivery of public financial support
- Ongoing support perceived as risky, CAPEX grants preferred without impacting sustainability. Delivery on step-by-step or integrated basis.
- Financial support should be designed to leverage capital from commercial sources.

Financing instruments to catalyse investments
- Instruments (e.g., publicly backed guarantees, subordinated debt) could make it easier to attract private investors.
- Innovative PPP models to de-risk investments (e.g. split of assets)
Policies for various mini-grid technology solutions

- Mini-grid configurations have different policy and regulatory needs.
  - Solar DC mini-grids are highly modular, low-capacity systems and are less susceptible to main-grid arrival. Small-hydro most vulnerable with immovable assets.
  - Solar resource is better understood compared to wind or biomass which require detailed and cost intensive assessments.
  - Additional permits and licenses are demanded for small-hydro and biomass (e.g., water rights, feedstock contracts).
  - Solar and biomass mini-grids provide the mini-grid sector a good point of access to local banks. Other technologies require greater support.
- Specificities should be considered to develop the right policy mix.
- Tailored mini-grid policies and regulations can allow investment streams to be directed into certain combinations of technology and tier
Final thoughts

• The renewable energy mini-grid sector is highly dynamic and policies evolve as they are introduced, applied and calibrated.

• To create enabling conditions, measures are needed in energy and non-energy sectors (e.g., financial, data and statistics, rural development).

• Potential for meeting both electrification and development goals.

• Critical importance of cooperation between public and private sectors as well as among institutions working in different sectors.
Thank you