Economic Consulting Associates

Viewpoint

Mini-grids: Are cost-reflective tariffs necessary?

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An acceptable tariff policy for consumers and investors alike is a fundamental requirement for the viability of mini-grids in developing countries. Decisions are driven as much by social and political considerations as by economics.

What are the options?

Policymakers and regulators face a choice not just over the level of mini-grid tariffs (cost recovery or a national tariff made possible through some form of subsidy mechanism), but also the degree to which the tariff is subject to regulatory review.

Under a **'light-handed' framework** operators do not require approval of their tariff, and may therefore set the tariff level on a 'willing buyer – willing seller' basis. This allows the operator to set the financial return and repayment period for its investors.

At the other end of the regulatory scale, operators may have to charge **national utility tariff,** with financial returns and repayment periods set by the regulator.

A third option is a mid-way approach where operators of systems may charge a **cost-reflective tariff, but with explicit regulatory approval**. The operator must agree financial returns and repayment periods with the regulator.

The required tariff level does not change the costs of a mini-grid, but rather how these costs are to be recovered from the mini-grid customers or subsidy providers (who may be main grid customers, tax payers or development partners).

Economic drivers of tariff policy

A mini-grid will typically cost significantly more per kWh supplied than the national grid. Therefore applying the national tariff will require **subsidies** to meet the shortfall. These are likely to be high per kWh, and could also be high in aggregate, if there are many sites.

The subsidies must be **funded** from a financial source that can be **applied reliably** for the life of the mini-grid through a **transparent and efficient** mechanism. These requirements may be difficult to meet, and the subsidy route will often be seen as risky by developers, limiting and slowing the uptake of mini-grid investment opportunities.

By contrast, developers of sites with a cost-reflective tariff should be able to **develop and deliver an electricity supply faster** than those with 'heavier' regulation. There is an adage in rural electrification that, "People want electricity more than they want low tariffs", supporting the rationale for light-handed regulation of tariffs to supply communities faster.

Cost-reflective tariffs follow an approach that **allocates costs of power supply to those who incur them**, which, in theory, is more efficient in sourcing investment and dictating the efficient use of that power.

Social drivers of tariff policy

Social drivers both reinforce and counter the economics of tariff policy.

In some countries, electricity is seen largely as a **public good.** Allowing high cost-reflective tariffs is considered to be in violation of this perception.

In similar vein, unconnected (rural) households tend to be poorer than connected (urban) households, so **equity** is also used as an argument in favour of uniform national tariffs.

Even when operators can charge cost-reflective tariffs, their customers may complain when they make comparisons with the national tariff. With the preponderance of mobile phones**, rural customers are much more aware of the prices charged for electricity** in urban centres than they used to be in the past.

Main grid interconnection

The situation is further complicated by the potential future arrival of the main grid, which in some countries has become a pressing issue for mini-grid developers. Should operators wish to sell their assets to the national utility (or another party) when the main grid arrives, they would prefer a clear methodology specified in advance for the valuation of assets.

Under a light-handed tariff-setting framework, there is little interaction with the regulator, and it will be difficult to follow an unbiased valuation methodology (such as approved asset values, which would be available if tariffs had previously been set by the regulator). This would put at risk any investment not yet recovered through customer charges.

Finding the right solution

Several countries are defining capacity bands to effectively balance the tariff options. The need to **reduce transaction costs** leads to a light-handed approach for small systems, such as <100 kW of installed capacity. Systems between say 100 kW and 10 MW use a hybrid approach, while systems of over 10 MW have to adopt the national utility tariff (limits quoted are from Tanzania).

The threat for mini-grid operators of the arrival of the main grid is related to the level of **energy access**. Countries with low energy access, and where grid arrival is not expected for a few years, will suit the cost-reflective tariff model, without review. Operators can set their own returns, and are less likely to be affected by insufficient compensation on grid arrival.

Where there is **higher grid access**, mini-grids are likely to play more of a 'pre-electrification' role before the main grid arrives. Investors will want greater certainty over compensation if they intend to sell their assets when there is main grid interconnection. The regulatory choice is then between a reviewed cost-reflective tariff or the national tariff. This will come down to balancing the social benefits of the national tariff on one hand, and the costs of providing and administering subsidies and likely speed of delivery on the other. For investors to develop mini-grid projects, their **returns need to be guaranteed** either way.

Economic Consulting Associates was established in 1997 to provide economic and regulatory consulting services to industry and government. Our senior staff have many years' experience of carrying out economic, market and policy analyses in the electricity, natural gas and water sectors.

Economic Consulting Associates

41 Lonsdale Road
London, NW6 6RA
Tel: +44 (0) 20 7604 4546

www.eca-uk.com