MGP MINI-GRIDS PARTNERSHIP

Bringing together partners for a stronger clean energy mini-grids sector

Working Group on Growing the Load

DISCUSSION DOCUMENT ON RECOMMENDATIONS FOR THE SECTOR

Version: 28 April 2021

Background and context

For a significant portion of the estimated 789 million people who currently lack access to electricity, mini-grids can present a viable option to close the access gap as a least-cost solution providing higher energy services tiers. Despite this potential and advances in renewable clean energy technologies, the mini-grid market lacks scale today. One of the main challenges the mini-grid sector is facing is limited power demand and limited ability to pay of rural residential customers.

Mini-grid operators in rural areas sell electricity to customers, who often rely on agriculture as their primary source of livelihood. Demand from these customers tend to be low and often unpredictable, which poses revenue collection risks to mini-grid operators and their financiers. In order to make the mini-grid business models economically robust, developers are increasingly looking at different ways to stimulate demand for electricity. Such initiatives include promoting productive use of energy, providing or facilitating end-user electric appliance financing, community engagements and providing trainings across the entire mini-grid sector. However, to reach the needed scale, three key challenges need to be addressed:

- Bankable business models and supply chains for PU appliances need to be identified and promoted;
- Rural SMEs need to be trained to gain technical, managerial skills and market knowledge;
- Possible partnerships between mini-grid companies and companies specializing in productive use need to be identified.

Narrative

Up to now, investors face difficulty in finding financially viable rural electrification projects. To stimulate demand and thus increase use of electricity generated by mini-grids, some mini-grid companies incorporated productive use into their business models – such as by offering on-bill appliance financing, customer trainings and awareness raising or even acting as the primary off-takers of the final product. As such, productive uses are necessary to make the business model work, however, they also add a layer of complexity.

Another important challenge is that there is currently no systemic support in place for productive uses. Government agencies in many countries do not have a clear mandate to partner with electric utilities (incl. mini-grids) to promote load growth. Similarly, donors and NGOs often support specific projects or markets only. Thus, the mini-grid companies will continue to take on this responsibility themselves. The mini-grid companies have the necessary infrastructure in place such as existing platforms for the payment collection, however, they often require additional expertise in local agricultural markets.

Establishing specialized core business teams for productive use promotion within the mini-grid companies and entering into partnerships across the sector can help mitigate risks and in turn make business models more attractive to investors.

Recommendations and Next Steps

- **Highlight and promote work of other partners and companies focusing on productive use.** Productive use is recognized as one of the solutions to bankable business models, however, only few established companies and partner programs specializing on PUE exist to date. Thus, the members of the working group recommend supporting these companies to enable them to expand their operations at scale (beyond pilot projects) as well as supporting creation of new companies to cover for the needs of the sector. Having companies specializing on PUE will help mitigate risks related to increased complexity of mini-grid business models.

- **Support standardization of the PU appliances and highlight case studies.** It is important to support wider standardization of PU appliances to ensure safety, quality and energy efficiency as well as to make sure that appropriate technologies are being used to avoid compromising the reliability of electricity supply from mini-grids.

  Companies and partners engaging in productive use and providing PU appliances:

Organization/Initiative	Description	Market
Power for All	Campaign on promoting PUE in Ethiopia	Ethiopia
Crossboundary	Mini-grid Innovation Lab	West Africa, East Africa
A2EI	A2EI (Access to Energy Institute) is a collaborative and non for profit research & development Institute delivering solar powered solutions and appliances specifically for small businesses and smallholder farmers focusing on productive use appliances.	East Africa
RMI	Examined six agricultural production and processing opportunities for rural areas	Ethiopia, Nigeria
EnDEv	Multi-donor technical assistance programme providing PU and trainings.	Over 20 countries in Africa, Asia and Latin America
Energy 4 Impact	PU technical training and business mentorship to end users	Benin, Senegal, Kenya, Rwanda, Uganda
Practical Action	Helping increase adoption of sustainable energy solutions in rural areas for farmers and food processors by linking farmers and energy suppliers	West Africa
Efficiency for Access Coalition	Publication library of research and third party testing of variety of PUE including mills, electric pressure cookers, solar water pumps, refrigerators and cold storage Developing rapid testing protocols for PUE technologies	

Verasol	Product database of certified solar energy kits and off-grid appliances	Global
Private companies		
EnerGrow	Ugandan micro-finance company for the decentralized energy sector	Uganda
InspiraFarms	Manufacturer of modular cold rooms and packhouses	African countries
Agsol	Solar agro-processing machinery	East Africa
Asaga Technologies	Manufacturer of portable dry food grinders for small business	Africa, Middle East, India
The Efficiency for Access Coalition and PowerGen	Testing adoption of electric pressure cookers in mini-grids through business and delivery models innovations; study can be accessed here	Piloted in Tanzania

- **Encourage further advancements in data-driven planning of mini-grids to help developers and financiers better understand the needs of potential customers and thus, help to de-risk mini-grid operations**. Recent innovations in the use of satellite imagery, remote sensing and data analytics are enabling better predictions of electricity consumption, customer affordability and agricultural productivity. Better understanding of potential customers can enable developers to right size solutions and scale their business operations to increase profitability of mini-grids.

  Initiatives and companies engaged in data analytics and mapping:

Organization	Description	Market
E-Guide	Electricity consumption prediction and electricity reliability service	Kenya; exp. to be available for Uganda and Rwanda in 2021
TFE Energy	Village Data Analytics Planning tool (VIDA) allows to assess energy demand and viability of sites on a village level	Kenya, Ethiopia, Sierra Leone, Nigeria, Myanmar
Fraym	Using machine learning models to produce hyper-local consumer data and analysis for emerging markets.	Nigeria, Kenya, Burkina Faso (other countries tbc)
Nithio	Proprietary modelling of customer creditworthiness and analytics	Nigeria (other countries tbc)
Atlas AI	Monitoring resource allocation in emerging markets on agricultural ecology and economic development (available datasets e.g. on crop area, yield, total production)	Ethiopia, Malawi, Mali, Uganda, Cambodia
Energy 4 Impact	Mapping of Cereals, Fisheries and other Productive Use Businesses for Village Mini-grids Study	15 African Countries

Proposed Next Steps by the Working Group Members[1]:

- Create a **Productive Use Alliance** as an idea-sharing platform. This platform will host thematic webinars and events dedicated to productive use.
- Prepare a **Guidebook for Productive Use Standard Practices** to present practices of key players on what has worked/ is consistently proven to work for mini-grids and productive use appliance companies.
- Create an **online Product Catalogue**. The catalogue will be regularly updated and will include appliances taken through rapid assessment testing.

[1] Not endorsed by the Steering Committee members