Sustainability, Inclusiveness and Governance of Mini-Grids in Africa (SIGMA) Project

Retooling the KeyMaker business model for productive uses at the agriculture-energy nexus: Insights from Nigeria

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1. Introduction

The idea of stimulating productive uses has come to the fore as a way of expanding rural electricity demand beyond niche applications and consequently increasing the commercial viability of mini-grid projects. Notwithstanding the optimism surrounding this idea, the evidence is unclear as to whether increasing productive uses actually boosts the viability of mini grids or increase demand. This is especially true at the agriculture-energy nexus, where mini-grid developers have traditionally provided energy inputs to mid-stream and upstream segments of the agricultural value chain. The KeyMaker model (see Figure 1) has the potential to enhance the utility of productive-use approaches at the nexus. Nonetheless, questions remain as to how the model can best enable rural productivity and developer profitability in different contexts, and what prospects there may be for scaling up promising outcomes. We present an in-depth case study of a mini-grid developer in Nigeria that illustrates how the KeyMaker model can enhance productivity and profitability in traditionally low-yield rural value chains.

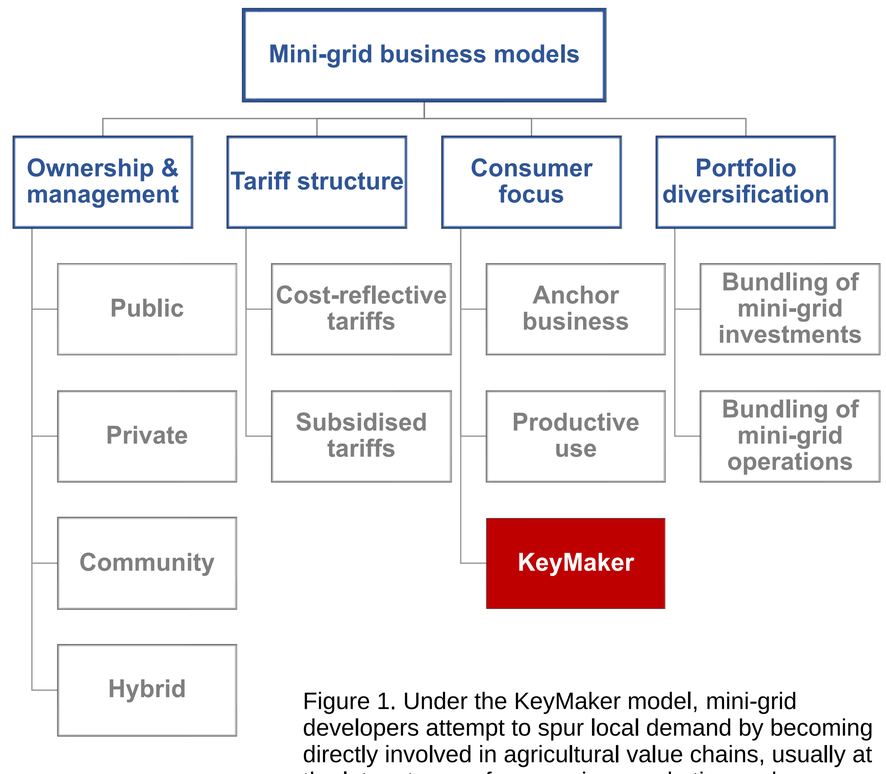

Figure 1. Under the KeyMaker model, mini-grid developers attempt to spur local demand by becoming directly involved in agricultural value chains, usually at the later stages of processing, marketing and transportation. Adapted from Fajardo et al. (2023).

2. Case study: Mini-grid developer experiences growing smallholder-farmer yields

"So, we start by saying, 'how can we help?' Because the starting point is to help the farmers increase their output."

Smallholder farmer A

- One planting season (July to December)
- Grew yield fourfold, from 3 to 13 hectares
- Loan fully repaid at 15% interest rate

- The REA's recent strategic interventions focusing on improving yields through solar-powered irrigation are a step in the right direction
- However, more policy and financial support is required for all actors at the nexus

3. Lessons learned and policy implications

The outputs from the early stages of agricultural value chains – in particular, planting and harvesting – often do not constitute sufficient inputs for electricity use at later stages.

Developers adopting the KeyMaker model need to engage downstream as well as upstream of value chains; however, this comes with challenges of resources, expertise and coordination.

Substantial policy and financial support is required to institutionalise promising approaches (e.g., portfolio diversification, cross-subsidisation) being tested by developers.

"[Donors] wanted all developers to have milling machines in their mini grids. How are they going to be sustainable? But we just felt that at the end of the day if we are in this business, we understand it better, we are the ones who go to these communities. We should be able to do better…"

Reference: Fajardo, A., Baker, L., Bhattacharyya, S., Sesan, T., Katyega, M., Kerr, D. & Barnett, A. (2023). Understanding business models and access to finance for mini grid development in sub-Saharan Africa. Sustainability, Inclusiveness and Governance of Mini-Grids in Africa (SIGMA) Project, Working Paper 3.

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