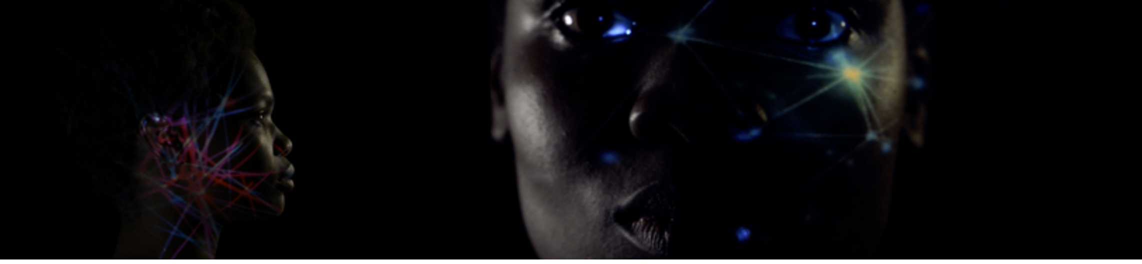


SEPTEMBER 2020

The Rural Futures Fund

Mini-grids for rural development

Energy is the foundation of development and human prosperity. Yet, across the world, approximately 760 million people live without access to electricity, most of them living in rural areas. About the same number receive unreliable electricity supply. These populations are forced to resort to expensive, hazardous and unsustainable sources of energy, threatening not only their prospect of livelihood improvement, but also their health and safety. Renewable energy mini-grids are regarded as the most cost-effective solution to bring modern, clean and affordable electricity to about 500 million people according to the World Bank. Mini-grids are decentralized energy systems that supply electricity generated from one or more energy sources to a variety of customers through a low voltage power grid.

Mini-grid household point of service

The Problem

Following the typical trends of emerging industries, mini-grid developers have been launched with funds from seed-stage venture capital investors. If successful, they have gone on to raise private equity investment from larger investors. Unlike technology-based startups, however, mini-grid developers are "asset heavy" businesses. Building a portfolio of mini-grids requires substantial upfront capital. It is not practical nor desirable to raise all this capital as equity. The return on equity requirements are incompatible with the business models of mini-grid developers, who need to ensure that the pricing of energy remains affordable to a customer base with extremely limited purchasing power and within permitted national tariffs. Yet, over time, the revenue stream from customer energy payments is significant and predictable, making them ideally suited for financing by borrowing.

Mini-grid developers own more physical assets than they should and they are failing to raise the required debt to change this status quo.

Despite mini-grids being most appropriately financed through debt, mini-grid developers in emerging markets/ Sub-Saharan Africa have had limited success in raising debt. The dearth in debt capital is often blamed on the high perceived risk of mini-grid investments, the lack of project evaluation technical capacity of the local financial institutions and the small project values of mini-grid investment opportunities. As a result, developers often have a high equity to debt ratio relative to IPPs, C&I projects and other similar scale (energy) infrastructure projects. As a result, the growth of the mini-grid sector is currently limited primarily by the ability of developers to raise equity. Not only do developers have challenges raising appropriate capital, these challenges are compounded by an inability to quickly recycle this capital. A capital cycle is the period that elapses between developing a project and recovering an investment. Mini-grid developers typically have a long 15+ year capital cycle, which means that their accounts receivables (future energy payments/revenues) become the company's most significant asset. As a consequence, the inability to refinance and monetize these is a serious inhibitor to growth.

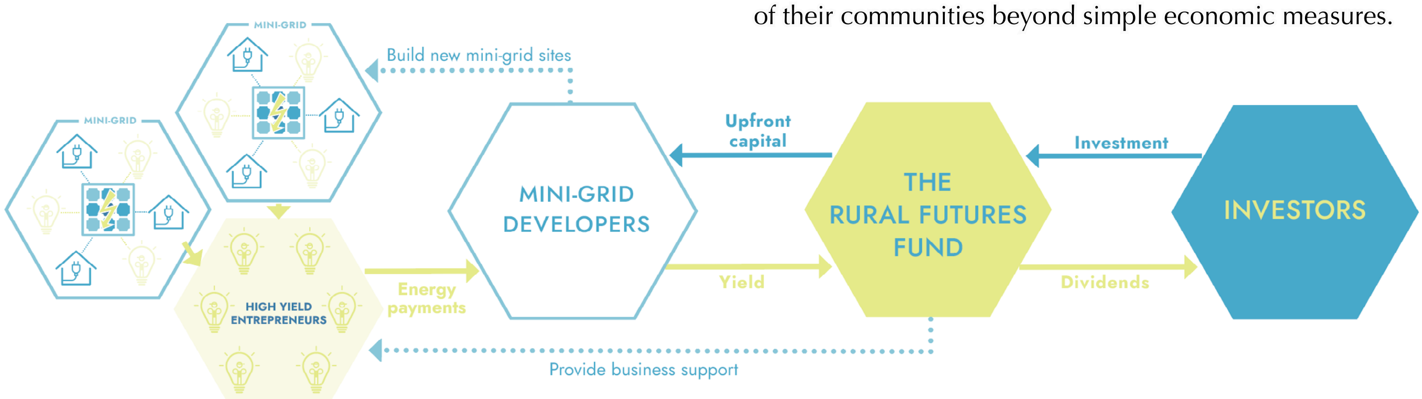
The Solution

The Rural Futures Fund uses data technology and financial engineering to solve these challenges. In simple terms, the Rural Futures Fund uses traditional securitization techniques that are adapted to the mini-grid sector. Securitization is a sign of a maturing industry. Securitization is a process whereby a company pools a group of its assets and then sells those assets, or the payment stream associated with those assets, in the form of a security. The RFF enables mini-grid developers to convert their most significant asset — their rights to future energy payments/revenues — into cash immediately (instead of slowly over the lifetime of a mini-grid) by securitizing these revenues.

The key to successful securitization is to select a group of homogenous assets that generate regular cash flow. The group of assets must have a predictable payment stream to be eligible for securitization – in other words, there must be surety that, within an acceptable margin of error, the contracts will pay as and when due. This is where data comes in. Mini-grids produce streams of high resolution, near real time data on everything from the performance of the generation equipment to the behavior of individual customers. The RFF uses the data streams from individual smart meters, demographic databases and GIS layers to reliably determine the potential revenue of each individual customer over a given time period. This allows the categorization or tranching of customers based on factors including absolute yield, potential upside, payment risk, business type or gender. The RFF can then pool and securitize customers with similar characteristics across developers and geographies into a large, diversified, data-backed fund.

The RFF will begin by securitizing high value customers on rural mini-grids. These are typically productive users of energy and rural entrepreneurs and often women and the youth. This subset is of interest as these customers typically make up 20% of the user base yet they represent 80% of the revenue. In addition, these customers often have a much higher energy consumption growth rate over time relative to household users.

These energy users are also often the drivers of change in rural economies. Productive uses of energy (PUE) can increase rural incomes, which is an important step towards rural development and unlocking a myriad of nascent rural commercial opportunities. The RFF believes in the potential of PUE to create value and build prosperity locally. It sees rural entrepreneurs as best placed to steer development as they intimately understand local needs, see the gaps in the market and have a vested interest in the greater wellbeing of their communities beyond simple economic measures.



1. **Aggregate entrepreneurs**

High yield entrepreneurs on existing mini-grids are aggregated and their pay-as-you-go energy payments are pooled.

2. **Refinance high yield connections**

Developers keep an operating fee and pay remaining yield to the RFF in exchange for upfront capital to build more sites.

3. **Provide capital and business support**

The RFF pays the entrepreneur's future energy bill directly to developers upfront and provides support to entrepreneurs.

4. **Sell shares in the Fund**

Investors make a single, high impact investment into a fund diversified across mini-grid sites, developers, and countries.

The Rural Futures Fund is built on the premise that there is significant up-side in unlocking nascent commercial opportunity in rural Africa.

Because the RFF value is based on yields (energy payments), it is incentivised to work directly with entrepreneurs to drive growth by linking them with the resources they need to develop their businesses (i.e financial services, capacity building and access to markets). Increased rural incomes mean greater community resilience and more holistic, self-driven rural development. Likewise, the RFF is motivated to leverage its data to guide developers on new demand stimulation strategies that drive mini-grid utilization and boost revenues.

Value and impact

Securitization brings a broad range of benefits to mini-grid developers. Securitized capital often has a lower interest rate than other forms of capital because the assets (rights to future energy payments/revenues) are legally isolated from the company's bankruptcy estate (company risk) and the transactions are structured to reflect a lower risk profile relative to directly financing a company. This leads to clear separation of (volatile) development activities (such as R&D and construction) and (stable) operating activities. The lower interest rates can also be attributed to the greater predictability and transparency of the financial instrument.

Securitization enables developers to free up previously inaccessible capital and improve their liquidity position. The RFF allows developers to monetize their future energy payments (which earn no return/interest) and use that capital to either reduce expensive debt and/or equity or invest in new sites which earn additional return. Essentially, the RFF allows developers to optimize their capital structure and to become more profitable.

Joseph, welder, Kisumu, Kenya

The RFF is a high performance, low transaction cost, transparent investment opportunity; a bridge between the requirements of large financiers in developed economies and highly productive entrepreneurs in frontier markets.

The RFF presents a safe and high impact investment opportunity for commercial investors who have been previously hesitant to invest into the mini-grid sector. Diversification of the fund through aggregating customers across developers and geographies significantly reduces economic, business environment and sovereign risks for investors. Investment risk is further reduced through transparency and use of advanced data analytics techniques in performing the securitization and managing the fund.

Mini-grid development to date has relied heavily on subsidies to help bridge the sector's commercial viability gap. These subsidies at times benefit private companies and distort market incentives. The RFF enables governments and development institutions to institute precise interventions and avoid costly cross-subsidization. Data allows precise segmentation of customers (i.e disaggregated by gender or by commercial viability). Development funding can go exclusively, directly and transparently to users who need it most.

In the long run, there will be a greater separation between the roles of project development, project financing, construction, project ownership, operation and maintenance, data management, demand stimulation and customer management in the mini-grid sector akin to the independent power producer (IPP) sector and utility companies. This will create a much needed and more vibrant mini-grid sector. This phenomenon has begun manifesting itself with the emergence of project ownership companies like Cross Boundary Energy Access, data management companies like Micro Power Manager and demand stimulation companies like Energrow. This is leading to leaner, specialized and more profitable mini-grid development models and companies.

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