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MICROFINANCE LOANS FOR INCREASING ACCESS TO OFF-GRID SOLAR PRODUCTS



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PREPARED SEPTEMBER 2021

CONTENTS

INTRODUCTION	1
1. OGS CONSUMER FINANCE MODELS	2
2. MAIN CHALLENGES FOR OGS PRODUCT FINANCING	3
3. MICROFINANCE GOOD PRACTICES	4
4. MICROFINANCE POLICIES AND REGULATIONS	6
5. OGS AFTER-SALES SERVICE	7
6. FOREIGN EXCHANGE AND HEDGING	8
7. RISK MANAGEMENT OF SOLAR LOANS	9
8. PILOTING NEW LOANS FOR OGS PRODUCTS	10
9. SCALING AFTER PILOTING	14

INTRODUCTION

This document aims to serve as a resource for off-grid solar (OGS) companies, microfinance institutions (MFIs), and local banks (hereafter referred to together as MFIs) on providing loans for off-grid solar products in sub-Saharan Africa. The market for off-grid solar technology in this region is growing rapidly, and OGS companies and MFIs are naturally suited to helping each other enter and grow in this market. Moreover, by partnering to design and market loans for off-grid solar products, OGS companies and MFIs can help to increase access to energy, particularly for rural, low-income households, farmers, and small businesses. This document offers lessons learned from partnerships between MFIs and OGS companies, advice on gender and social inclusion, and information about piloting and scaling solar loans.

MFI Loans for OGS

Suppliers of OGS systems, which have helped to increase rural communities' access to electricity, use various channels to distribute products in rural areas, including:

- Establishing their own network of sales agents and technicians who promote, sell, install, and maintain solar products and educate customers on solar solutions.
- Partnering with local networks, such as associations of rural teachers and fuel stations, which benefit from small lanterns and plug-and-play systems that do not require advanced technical knowledge to operate.
- Selling their systems through energy entrepreneurs, agricultural cooperatives, or agricultural input vendors. OGS companies train these parties and supply them with inventory to sell on commission. These products are replenished as needed, which is particularly important for productive use of energy (PUE) products.

Because 80 percent of sub-Saharan African farms are smallholdings¹ employing 60 percent of sub-Saharan Africans, most of whom live in rural regions², partnering with agricultural inputs suppliers and industry associations is one of the best ways to reach new customers. Agricultural associations are often well-organized and collaborative groups that have a network of stakeholders who produce, process, stock, and distribute agricultural commodities. MFIs often have relationships with these groups. These farmer-based associations aim to support the well-being of members who are:



Small agricultural producers



Agricultural processors



Seed suppliers and nurseries

To increase access to energy, in particular for lower-income customers without significant savings, OGS suppliers should consider offering consumer finance options to their customers. Although some OGS companies provide consumer finance in the form of pay-as-you-go (PAYGO) credit, this is not always possible in all areas of a country, and so other types of consumer finance need to be explored. OGS companies can partner with MFIs to provide a wider range of credit options for purchasing solar systems, particularly to last-mile customers in rural areas.

¹ OECD/FAO, "Agriculture in Sub-Saharan Africa: Prospects and Challenges for the Next Decade," in OECD-FAO Agricultural Outlook 2016–2025 (Paris: OECD, 2016), accessed August 19, 2021, www.fao.org/3/BO092E/BO092E.pdf.

² Suwadu Sakho-Jimbira and Ibrahima Hathie, "The Future of Agriculture in Sub-Saharan Africa," Policy Brief No. 2 (Southern Voice, April 2020), accessed August 19, 2021, www.ifad.org/documents/38714170/42030191/future_agriculture_sahara_e.pdf/1cb6b896-b9c1-0bb8-87b8-83df3153d0af.

I. OGS CONSUMER FINANCE MODELS

Some OGS companies are partnering with MFIs to reach last-mile rural households. These MFIs often have good knowledge of these households and the logistics needed to finance solar home systems (SHS) and PUE equipment (e.g., solar-powered water pumps, mills, grinders, egg incubators, and dryers). MFIs can support OGS companies with distribution, marketing, and sales to reach more customers.

MFIs offer loans to those who normally cannot afford to pay in cash for solar systems. Such loans enable OGS customers to buy energy products in installments. MFIs usually have two main streams of income from energy lending:



Interest income from loans.



Commissions on sales from the OGS companies when they market and sell systems financed through the MFI. The general rule is that the more the MFIs are involved in the business activities of the OGS companies, the greater the amount of commission they receive.

Typically, the MFI processes the OGS customer's loan request and approves the loan and collateral payments. The MFI then charges interest on loans and receives a commission from the OGS company if it was involved in selling and/or promoting a product.

OGS companies often promote their solar products to the MFIs' existing and potential customers. When trying to reach new customers, the MFI and OGS company normally agree on requirements that customers must meet and on the screening and evaluation process. Once customers have been approved for a loan, the MFI typically issues a voucher which the customer pays to the OGS company that will install the system. The OGS company is normally responsible for any after-sales services and maintenance required by the customer.

Because MFIs are financing institutions, they often decide to focus on their core business of lending and avoid getting involved in OGS companies' activities. However, MFIs can support promotional activities when the MFI's loan officers have knowledge of solar products and experience in product sales. As MFI loan officers work to build trust with their customers they can recommend new solar product loans relatively easily. MFIs can also get involved in product logistics by receiving stock from solar suppliers at their branches and distributing the products to rural customers. Some MFIs have established their own OGS companies to finance and sell solar products simultaneously. Examples are Baobab MFI which founded Baobab+ in West Africa, and FINCA International, which established BrightLife in Uganda.

Although MFIs that supply their own solar products receive increased income, they must bear the cost of maintaining a dedicated staff for energy products and additional space for stock. As an alternative, some MFIs allocate space in their branches to their OGS partner, which makes available an employee to market its products to the MFIs' customers. This allows the MFI to focus on its core business and let the OGS partner promote and sell the solar equipment.

To promote, sell, or facilitate loans through MFIs' customer networks, OGS companies can offer financial incentives to MFIs in the form of sales commission. Commission rates range from ten to 20 percent depending on the product and country. These rates are normally paid after the loan has been approved and the solar system installed.

MFIs typically offer incentives to their loan officers to increase sales performance.

2. MAIN CHALLENGES FOR OGS PRODUCT FINANCING

MFIs have been trying to finance solar products since the 1990s, and although there have been some successes in certain countries—such as Crédit du Sahel in Cameroon and Caurie Microfinance and CMS in Senegal—many programs have failed. These failures are due to several factors, including:

- 1 Lack of knowledge of the political environment and regulations affecting off-grid energy systems and MFIs.
- 2 MFIs' lack of knowledge about the product categories and manufacturers of OGS systems.
- 3 Many countries' limited quality control regulations, testing, and enforcement of standards for solar products, which has made MFIs wary of investing in solar systems because of their concerns about product failure.
- 4 Some OGS companies' limited distribution networks with little to no maintenance and after-sales service.
- 5 MFIs' shortage of trained staff who are able to market loans to customers.
- 6 Low public awareness of loans for solar products.
- 7 High operating and logistics costs owing to limited GSM and mobile money coverage, necessitating face-to-face payment collection and customer reminders.
- 8 High cost of capital for MFIs and very high interest rates passed down to lenders.
- 9 A mismatch between MFIs' financial products and customers' needs: Most agricultural workers in sub-Saharan Africa have seasonal incomes, making fixed repayment schedules unappealing or impossible.

3. MICROFINANCE GOOD PRACTICES

MFI tend to avoid the risk of expanding beyond the customer base and geographic locations they are used to serving. However, MFIs can grow outside of these areas by partnering with intermediaries such as agricultural cooperatives, agricultural input dealers, and NGOs. Offering energy loans can benefit MFIs as well as their customers, improving access to finance and bringing in new customers who may continue to take additional loans for larger systems and appliances.

When starting out, MFIs need to review their financing criteria to ensure that they meet customers' needs in terms of:



Size of
installments



Repayment
frequency



Loan length

Below are some good practices for OGS companies and MFIs:

Loan approval standards

MFI should maintain strict loan approval standards to ensure that their customers are not over-leveraged on loans they cannot afford. Customers' loan repayment installments should not exceed 45 percent of their monthly net income.

Strategic partnerships

To lower the cost of loans and broaden their reach, MFIs can partner with rural stakeholders such as agricultural cooperatives. These organizations can provide market and customer insights and help to promote solar products through their cooperative leaders who can communicate product information to farmers.

Patience

Solar loans are typically push-loans, which mean they require marketing and persuasion to motivate potential customers to take out a loan to buy solar products. Customers need to understand the benefits (in terms of finances, health, and quality of life) before they decide to take out a loan. This process requires time and patience on the part of the MFI. MFIs can help their customers decide by:

- Involving sales representatives.
- Building confidence in loan officers.
- Encouraging word-of-mouth marketing.

Warranties and financial incentives

MFI should partner with OGS companies that provide warranties for their solar products, so that their customers are protected against product defects. The OGS company and MFI should together determine incentives that encourage the MFI's agents to market new loans proactively, and to ensure that loans are provided only to customers who can afford the repayments and need the solar system being marketed.

Gender and Social Inclusion

To increase women's access to energy, MFIs should ensure that their services are gender inclusive. To do so, MFIs can incorporate measurable indicators for gender and social inclusion into their evaluations of their products. Examples of such objectives include:

- Understanding the barriers that limit women's access to financial services.
- Providing financial products and services that seek to reach women and remove barriers to financial inclusion.
- Setting gender-specific targets for the number and size of loans.
- Educating all customers on financial literacy, focusing on women, who may traditionally have been excluded from managing finances.

These objectives would be best met with a gender-balanced management team and a workforce that includes women customer-facing staff, as well as a business strategy that prioritizes gender equality.

4. MICROFINANCE POLICIES AND REGULATIONS

Several African countries have been developing regulations that limit the non-financial activities of MFIs, with the West African Economic and Monetary Union (WAEMU) adopting a law in 1993 to harmonize the legal status of MFIs within the zone. This law, known as PARMEC,³ allows national finance ministries to issue operating licenses exclusively to credit unions and financial cooperatives. This law resulted in the microfinance sector being regulated on a statutory level, but left disparities in the granting of licenses and in the rigor of reporting and supervision. The West Africa Regional Central Bank acts as an independent supervisor in parallel with the national regulators, granting all approvals for MFIs with outstanding loans or savings exceeding \$4 million. Smaller MFIs remain under the supervision of national finance ministries. Some countries, such as Senegal and Côte d'Ivoire, allow MFIs to sell agricultural inputs and solar devices to rural households to aid local development. Some East African countries, in particular Kenya and Somalia, allow MFIs to import and market non-financial products.

Although there are no specific regulations preventing MFIs from providing loans for solar products, relevant policies and regulations vary between countries. However, if an MFI is involved in buying and selling energy products in African countries, it may face regulatory limitations that restrict MFIs venturing beyond savings, loans, insurance, and remittance. Non-financial products, such as SHS product sales, should not represent more than ten percent of an MFI's turnover in countries that are part of the West African Economic and Monetary Union (WAEMU).

In the WAEMU region, MFIs registered as private entities are regulated by the central bank, whereas MFIs registered as NGOs are regulated by the local government. However, MFIs registered as NGOs will become regulated by the central bank when their activities reach a certain threshold, as determined by the central bank office of each country, based on local economic indicators such as the size of the MFI's loans and its level of income.

Although most MFIs provide only loans to the customers of solar products, some have been involved in selling the products directly. However, in all WAEMU countries, MFIs that are regulated by a country's central bank are not allowed to buy or sell energy products. Other relevant regulations include those such as Tanzania's MFI Act, approved in 2020, which affects the PAYGO model and solar companies selling products on credit. The MFI Act may mean that OGS companies need to partner with MFIs to provide solar loans instead of offering PAYGO services. In contrast, Ghana's Digital Finance Act (2020) seems to be more open to PAYGO offered by OGS companies and to solar loans from MFIs.

³ Support Project for the Regulation of Mutual Institutions for Savings and Loans (Projet d'Appui à la Réglementation sur les Mutuelles d'Épargne et de Crédit [PARMEC]). See Sandrine Kablan, "Microfinance Efficiency in the West African Economic and Monetary Union: Have Reforms Promoted Sustainability or Outreach?" Munich Personal RePEc Archive Paper No. 39955 (Munich: MPRA, July 6, 2012), accessed August 20, 2021, https://mpr.a.ub.uni-muenchen.de/39955/1/MPRA_paper_39955.pdf.

5. OGS AFTER-SALES SERVICE

OGS companies generally provide after-sales service, which includes maintenance and replacement, for the solar systems they have sold and installed (although the defect ratio for quality-certified products is typically less than two to three percent). However, because the MFIs are often the ones that have the closest relationship with their customers—managing their loans and receiving information about operational issues with the solar systems—the OGS company and MFI should carefully negotiate the terms and conditions of the after-sales service. Through such negotiation, the MFI could secure replacement units included with every shipment or provide guidelines on how it will handle servicing issues (such as the conditions for offering replacement units).

OGS companies should train the MFI's field staff, including the loan officers, to approve replacement products when required. However, the MFIs should provide after-sales services only if they have qualified technical staff, and if it has been agreed with the OGS company.

Product warranties usually require the manufacturer to repair or replace the product if any defect arises within the warranty period. Warranties typically do not cover normal wear and tear or abuse. There are two main types of warranties:

1. **Replacement warranty:** If the product malfunctions within the warranty period, then the manufacturer or its partners are required to replace or repair it. The most common manufacturing defects are solar panel charging issues and faulty charging ports and batteries. Most OGS companies provide a warranty of two to three years for small solar products (e.g., solar lanterns and SHS) while larger products can have up to six years' warranty.
2. **Repair warranty:** Depending on the defect, manufacturers are required to repair the systems at no cost within the warranty period.

In addition to warranties, OGS companies and MFIs should provide their customers with educational materials and training on taking care of their products, which may minimize product malfunctions and help customers to identify issues before they become serious.

MFIs and OGS companies should encourage customers to report product faults as quickly as possible. The OGS supplier should repair or replace faulty products quickly to ensure that its reputation is not damaged. If products need to be repaired, OGS companies should ideally provide their customers with another system until their product is returned. MFI partners should ensure that the repair and replacement process is as efficient as possible.

6. FOREIGN EXCHANGE AND HEDGING

Although regulations in many countries do not allow MFIs to trade in foreign currencies, foreign currency financing can have many advantages:

- It can provide capital not always available locally.
- It can help to raise funds on the domestic market.
- Its conditions can be generous and flexible.
- Foreign currency financing is often more accessible than funds available on the domestic market.
- Debt denominated in foreign currencies (e.g., loans in dollars or euros) can be offset by an equal amount of assets denominated in the same currency (i.e., investments in dollars or euros), insulating the MFI from fluctuations in the exchange rate.

MFIs exposed to currency risk have three options:

- Protect themselves against the risks linked to their exposure. For example, MFIs can buy a financial instrument that will protect them from the consequences of adverse movements in exchange rates.
- Adopt a position in which their risks are partially covered.
- Choose to do nothing and accept the consequences of changes in the value of currencies.

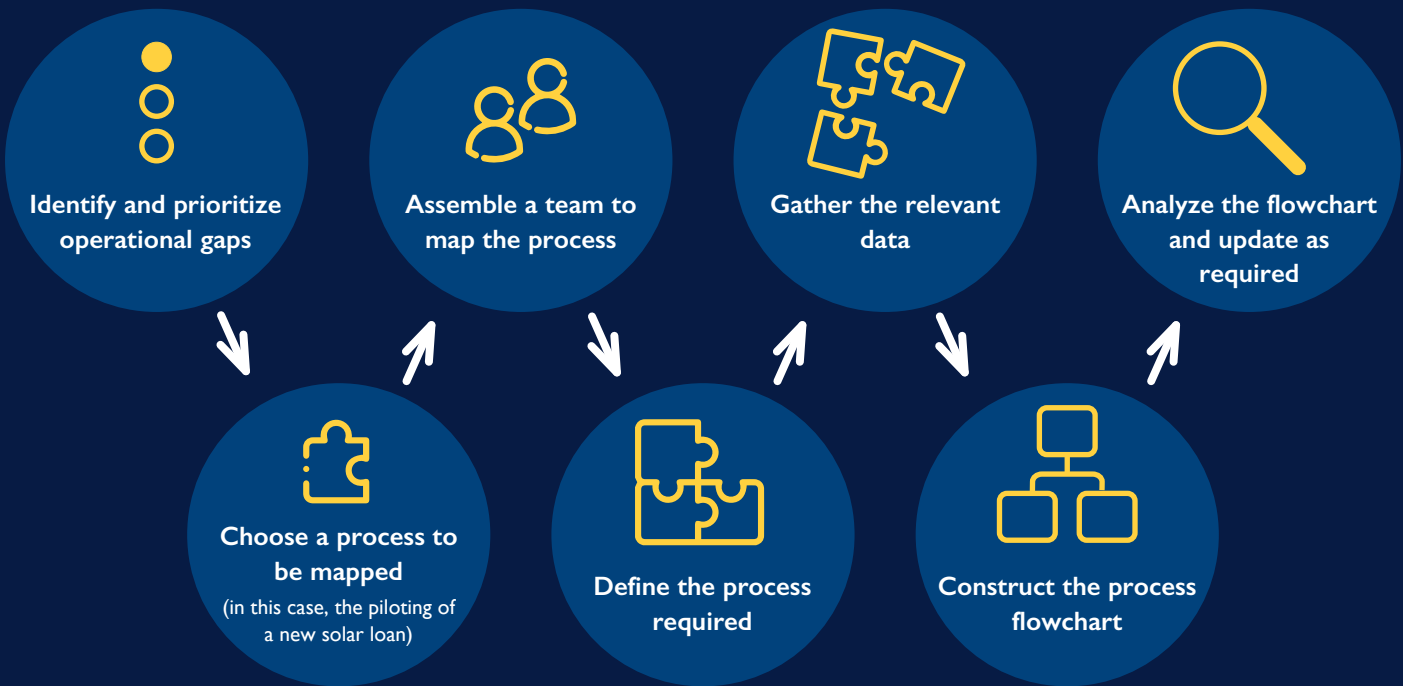
Classic hedging instruments are forward contracts and futures contracts by which both parties agree to trade or sell currency at a certain price in the future.

7. RISK MANAGEMENT OF SOLAR LOANS

The best tool for MFIs to manage the risk of a new solar loan product is to carry out process mapping.⁴ Process mapping is a technique for making workflows visible, which typically includes a flowchart showing who is doing what, with whom, when, and for how long. Process mapping helps demonstrate how operational decisions are made and the sequence of events following key decisions.

Process maps are good for streamlining work activities and explaining to new staff and customers who is responsible for what. These maps can reduce cycle time and prevent errors. Process mapping has broad applicability and is used to analyze and mitigate risks in developing new products. Such mapping can optimize training, plan an activity-based costing system, and improve documenting procedures.

Designing a process map typically requires the following steps:



⁴ See Henry Sempangi, David Cracknell, Madhurantika Moulick and Hermann Messan, "Process Mapping in Practice," MicroSave, March 2005, accessed August 23, 2021, www.microsave.net/files/pdf/Process_Mapping_in_Practice.pdf.



8. PILOTING NEW LOANS FOR OGS PRODUCTS

MFI should pilot new financial products for solar systems to test customers' response before considering scaling. For example, a Kenyan MFI was interested in financing solar water pumps, and a solar manufacturer financed the equipment for the pilot, helping to de-risk the new product.

Once an MFI has decided to provide solar loans for the OGS market, it should plan a pilot loan to test it before scaling. A pilot helps the MFI understand the demand for such loans, how the partnership with the OGS company will work, and how the customers experience the solar products. If available, technical assistance grants can be crucial in reducing the risks for MFIs in piloting new products by covering the cost of marketing, training workshops, and market analysis.

At first, MFIs should pilot a relatively small solar loan, which can be scaled as they understand the energy business better and gain confidence in financing solar products. In this initial phase, MFIs should base their strategy on partnerships by:

- Seeking a local partner that they trust to supply the solar products and to take care of maintenance and repair.
- Testing the solar product with established customers they already understand and trust.

Once MFIs have more experience in energy lending, they can finance larger systems that can accommodate PUE appliances, such as fridges and water pumps. Larger solar and PUE loans can also be marketed toward small businesses in rural areas, which often have greater ability to repay them because of their revenue-generating potential.

Loan Product Pilot Design and Implementation

MFIs piloting a new loan ideally should adhere to the following steps:

- a Select the pilot testing team.
- b Design the loan product, including the testing protocol.
- c Define the objectives of the pilot and prepare all the systems, including the development of a prototype process description document.
- d Model the financial projections and document the product definitions and procedures.
- e Identify the branch for the pilot and train the relevant staff.
- f Begin testing and marketing the product.
- g Monitor and evaluate the pilot.

Some of these steps are detailed in the next sections.

Loan Product Design

Once the testing team has been selected, an MFI should start the pilot by designing the loan, determining the most relevant characteristics such as those outlined below. This information should be discussed by the pilot team in deciding the features of the loan.

LOAN CHARACTERISTICS	ENERGY LOANS
Loan size	As this corresponds to the product price, a larger system will require a larger loan size than a smaller system.
Loan term	Lower-priced systems will likely have shorter loan terms than higher-priced systems, but ideally should not be longer than the product warranty period.
Loan repayment frequency	This should be based on experience from other loan recovery processes and, when possible, on discussions with customers and the OGS company.
Interest rate	The rate should be similar to or lower than other MFIs' loans.
Fees	Fees should be as low as possible or non-existent to help attract customers.
Down payment	Although a down payment should be low for smaller products, larger down payments are required for larger systems. MFIs should discuss larger down payments with the OGS company to draw on its experience.
Number of installments	This depends on the loan size, payment terms, and the needs of the customer.



Prototype Process Description

A prototype process description document (PPDD) is a draft of the newly developed financial product that will be piloted. If the MFI’s management approves the pilot, this document will be refined into the financial product prototype.

A PPDD typically contains the following sections, and once it has been completed and refined into a testable product, the MFI can begin the pilot.

SECTION	CONTENT
Methodology	States the methods and process of marketing the loan to potential customers. It normally also provides a high-level description of each step involved.
Lead generation and closing new loan deals	This provides information for loan agents on the process for identifying potential customers for the new loan and how to market the loans to them.
Administrative procedures	Describes the rules and regulations for new customers to apply for the loans. Administrative procedures include the process for approving the loan and installing and maintaining the solar system, which is typically carried out together with the OGS company.
Necessary forms	All necessary forms should be included in the document, including a customer purchase commitment form, loan application form, and a product registration form.
Loan disbursement, recovery, and default management	This describes the processes for loan disbursement and recovery; this process tracks the installation of the solar system, accounting, stock, and customer defaults.
Delivery of solar system to customer	Describes the process of delivering the product to the customer, installation and demonstration, regular maintenance, and troubleshooting.
Complaints, defects, repairs, and replacement management	Describes the procedures for warranty management and after-sales service.

Selection Criteria for Identifying Pilot Branch

The success of a pilot depends on the branch location and its staff. Therefore, during the pilot planning phase, the MFI should identify a branch with the following attributes:

- Located in an energy-poor area.
- Good performance indicators (e.g., portfolio quality, cost efficiency, and profit).
- Smooth operations (there is no serious conflict among staff or between staff and customers; there is no negative trend in Performance and Accountability Reporting⁵ [PAR]).

⁵ “Performance and accountability reporting (PAR) is the process of compiling and documenting factors that quantify an institution’s profitability, efficiency and adherence to budget, comparing actual results against original targets. The PAR process is usually carried out once per fiscal year, although in some cases it is done more often.” See “Performance and Accountability Reporting (PAR),” TechTarget, 2012, accessed August 23, 2021, <https://searchrsoftware.techtarget.com/definition/performance-and-accountability-reporting-PAR>.



- Has operated for at least one year, as it is better to have customers who have completed at least one loan cycle.
- Adequate physical space at the branch for staff and customers to interact and for training facilities, solar product displays and, ideally, maintenance.
- Easy to commute to by the energy finance team.
- Should not be the central or principal branch as the pilot project may create too much distraction.
- Organized branch manager with good leadership and management skills.
- Good communication channels with head office.
- Population in pilot location is representative of the general population profile of the country. This will help the pilot to scale.

Monitoring and Evaluation of the Pilot

The table below outlines several aspects that should be monitored during the pilot, with approximate timelines for each. These focus areas will help the MFI assess whether the pilot is proceeding as planned or needs to be adjusted.

TIMELINE	KEY POINTS TO ASSESS	APPROACH
1 st month	Systems and procedures	Observe the branch office and its operations.
	The staff’s knowledge of the new products, processes, and policies	Observe operations; interview staff and survey customers.
2 nd month	Product policy compliance; customer service quality	Observe operations; interview staff and survey customers.
5 th month	Customer satisfaction and organization	Conduct qualitative research, including focus groups, to learn whether the product design and service satisfies customers. Complement qualitative research with quantitative analysis of product use, benefits, and productive uses.
	Marketing and communication	Observe operations; analyze marketing methods and interview customers to understand their views on marketing and promotion.
	Product costs	Use allocation-based costing (ABC) to assign overhead and indirect costs (e.g., salaries and utilities) to products and services.
Final pilot evaluation before completion	Financial viability, competitive advantages, institutional limitations, and product features	Complete on-site observations and then review and analyze data against targets; interview staff and survey customers.



9. SCALING AFTER PILOTING

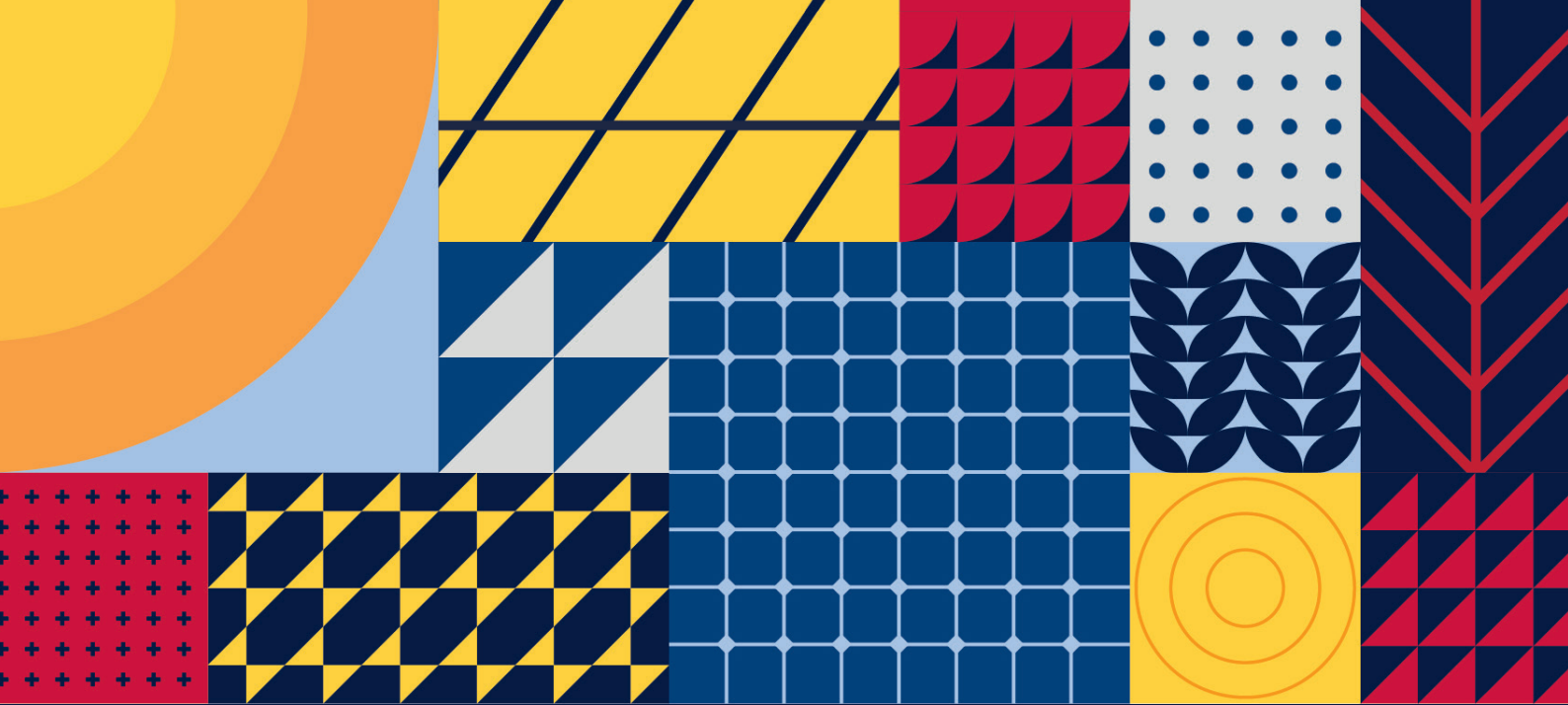
If a financial product pilot achieves the following results, an MFI can consider scaling the product:

The uptake of the new loan is increasing, or outstanding loans are increasing but the portfolio is high-quality.

The MFI has gained enough experience and knowledge to give it confidence in its new financial product.

The MFI believes there is sufficient demand for the new loan.

Meeting these criteria should give MFIs confidence that they are identifying the right customers and offering loans that satisfy the needs of their customer base. A thorough pilot helps MFIs to develop and improve products and to avoid significant risk to their reputation.



Power Africa's goal is to add at least 30,000 megawatts (MW) of cleaner and more reliable electricity generation capacity and 60 million new home and business connections by 2030.

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