



CONSUMER FINANCE MODELS FOR CLEAN COOKSTOVES

Global Mapping



SEPTEMBER 2015

Background

The use of open fires and traditional cookstoves and fuels by close to 3 billion people is one of the world's most pressing health and environmental problems. According to the World Health Organization, household air pollution (HAP) from cookstove smoke kills over 4 million people every year. Open fires and traditional cookstoves also have a serious impact on the climate, accounting for approximately 25% of global black carbon emissions. Women and girls, as the primary cooks and fuel gatherers for their families, suffer disproportionately from reliance on traditional cooking methods and the effects of HAP.

By reducing fuel use and exposure to cooking smoke, clean and efficient cookstoves are a cross-cutting and effective solution. In particular, women and girls who adopt improved stoves and cleaner fuels reap considerable health benefits by inhaling lower amounts of toxic smoke and decreasing their risk of burns and injury from accidents related to open fires. In addition, the time and money saved from more efficient cooking solutions allow women the time for more productive work, retain more household income for food, medicine, and school fees, and spend more time caring for their families.

Yet, despite strides made in stove affordability and quality, consumers, distributors and manufacturers have recognized a need for affordable consumer financing options at scale. Often, typical financing options available in these markets, such as microfinance loans, are not attractive to microfinance institutions (MFIs) due to the low loan amounts and a high transaction costs. Thus, clean cooking technologies are too expensive for many consumers to pay up front and not expensive enough to be cost effective for MFIs.

However, many innovative financing mechanisms have been used in the lighting and broader energy and durables sectors to assist consumers with low up front capital to purchase these products. The Alliance commissioned this study to provide a global mapping of some of the options and actors providing finance globally for consumer durables and provide a detailed analysis of those options with the greatest potential to reach scale in the clean cookstove and fuel sector.

The research was undertaken by Arc Finance and includes key opportunities and challenges for each financing type, as well as case studies with details on the mechanism's structure, distribution channels and uptake by consumers. The financing types examined include: Asset Finance, Employer Loan, Informal Savings Groups, Layaway, Remittances and Saving with a Financial Institution.

Asset Finance

Overview

While demand for small-scale renewable energy products among low-income consumers around the world is growing, most of these potential clients are unable to pay the cost of the devices they desire upfront. Poor consumers need access to finance to enable these purchases. While partnership between an energy company and a financial institution offering a credit facility has certain advantages, some energy companies are pursuing in-house asset financing that offers consumers the convenience and simplicity of a one-stop-shop for both clean energy products and finance necessary to afford them.

Demand for renewable energy products for off-grid households is massive. The case for poor households to invest in the latest generation of renewable energy products such as solar systems, biogas digesters and improved cookstoves is clear: the poorest households across the globe spend approximately 10% of their household income on energy. About 80% of their energy costs are devoted to fuel for cooking and lighting. Reducing recurring energy costs through improved energy products and services can increase disposable income, and contribute to positive health and environmental outcomes.

Affordability, however, remains as one of the primary obstacles to adoption. Many of the world's poorest households lack purchasing power or the ability to save for products with the potential to improve their livelihoods. For this reason, end-user financing models, such as in-house asset finance within an energy enterprise, enables these consumers to purchase and benefit from a clean energy product or service immediately and then pay for the product/service over time according to their ability to pay, which is bolstered with money saved on fuel as a result of the clean energy product/service.

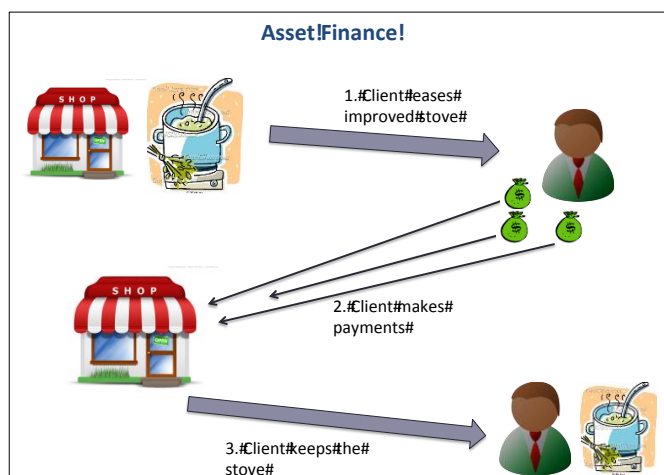
Business Model

Asset finance is a loan to purchase equipment, which can take the form of either a “hire purchase”, where the customer owns the asset upon completion of installments, or “(micro) leasing”, which is effectively a fee for service. In the former, the customer typically pays an initial deposit, with the remainder of the balance and interest paid over a period of time in regular installments. On completion, ownership of the asset is transferred from the energy enterprise to the customer – often with an option to trade in the asset for a larger or improved product, with a new payment plan. In the case of leasing, the leasing company buys and owns the asset. The customer, or lessee, then leases the asset, paying rental over a fixed period. At the end of the contract, the customer usually has a choice of extending the lease, buying the asset or simply returning it.

In summary, in-house asset finance involves providing customers with a pay plan that allows them to purchase a specific asset on an installment basis while receiving the product up front. Usually the plan has a set of conditions related to a down payment, such

as the time period within which the installments must be made, as well as interest requirements and warranty provisions.

Diagram: Asset Finance



Partner, Institutions, and Stakeholders

The asset finance agreement is often between two or three partners: the consumer and the vendor; or, the consumer, the vendor and a financial institution. For low-income consumers, having a direct financing relationship with the asset provider has a number of benefits: interest rates are usually lower than those charged by banks or MFIs; repayment terms are often longer; similar to developed markets, customers find reassurance in dealing with one entity; and, for renewable energy products like solar, the comfort of having a warranty and after sales service package is an important consideration. This alignment of incentives is key. The energy enterprise is incentivized to ensure adequate after sales service to motivate payments of the credit installments, and the customer is incentivized to maintain payments because the energy enterprise can repossess the asset.

Nuances and Complexities

Solving the affordability challenge has driven many energy enterprises to develop in-house asset financing. Companies cite a number of business reasons for doing this, including, the inability to find viable financing partners, and the benefits of having a direct financing relationship with the consumer. Sometimes, the decision is almost by default; third party financing entities like banks or microfinance organizations may be absent from the local market or may be unwilling to provide credit for energy products due to the perceived risks of this type of lending. Providing credit directly enables an energy enterprise to build an on-going relationship with customers through the installment payment process. This also makes providing upgrades or expansion packages easier to sell, and increases the pool of potential customers, many of whom cannot or do not wish to borrow from banks or other financial institutions.

As the renewable energy sector matures and lessons are learned, distribution companies are exploring whether offering in-house financing is a better option than partnering with an MFI. However, while the benefits of providing in-house credit might seem compelling, it is a complex and challenging undertaking. In order to provide this type of service, the vendor providing the credit facility needs to have built the capability to identify and manage credit risk within its own organizational framework and capabilities. The company needs to have the ability to undertake a risk assessment of low income customers who have volatile incomes, are susceptible to financial shocks, and are expensive to reach and service.

Opportunities

Asset finance provides a valuable alternative to conventional bank loans. For both the consumer and the retailer, asset finance bridges the divide between consumer demand and limited purchasing power. While demand for clean energy products is increasingly high and use of these products reduces consumers' recurring energy costs, these products require a large initial outlay, which is usually not affordable for consumer's at the bottom of the pyramid. Asset finance provides the opportunity for consumers to resolve this problem.

Supply Side Opportunities

For vendors of smaller products that sell for cash, offering finance will usually increase a vendor's customer pool by increasing the number of consumers who can afford the product. A large contributing factor to the success and feasibility of this model is that the asset being financed acts as collateral, or a guarantee. This reduces the requirement for additional collateral. A typical upfront payment of 20-30% of the product cost can demonstrate a client's commitment to pay and help to reduce the problem of liquidity, which is essential in capital-intensive industries.

The relationship with the customer is closer in in-house financing arrangements than when partnering with a financial institution. While this creates new challenges and places demands on the resources of the enterprise, maintaining strong relationships with clients through regular contact and follow-up has potential benefits. These include: reducing risk, improving opportunities for valuable customer feedback, creating repeat customers and developing customer loyalty.

Accepting collateral for clients deemed too risky or very poor can assist these clients gain access to asset finance. In addition, asset insurance can protect both the vendor and the client in an asset finance agreement from loss. For the vendor, this insurance can cover loss associated with clients who do not meet their repayments. As this lowers the risk to the vendor, the cost of providing asset finance to clients can also be reduced.

Demand Side Opportunities

The benefits of asset finance for the customer are manifold. The main benefit to the customer is that asset finance improves the purchasing power of the consumer –

increasing affordability for a range of superior products with greater features and benefits – that would otherwise not be possible. Where the product reduces or alleviates recurring household costs, asset finance can be instrumental in reducing the consumer's energy/fuel costs, which can then be allocated towards meeting the asset finance repayments. Asset finance provides the consumer with security because the asset cannot be recalled during the life of the agreement. Also, many agreements provide the option to replace or update equipment at the end of the lease period.

In addition, asset financing aligns incentives. Energy enterprises and distributors must stand by their products because successful word-of-mouth marketing depends on the product's quality and after-sales service. However, a client who purchases a renewable energy product from an MFI, knows that the MFI's core business is finance, not energy. The main priority for the MFI is minimizing risk, collecting repayments, and then lending again. Interest in a product's performance is secondary. The alignment of incentives between customer and the energy provider, in terms of timely repayment for quality service is a compelling advantage of in-house credit.

Asset finance is often best suited to a consumer who receives a regular income, or is guaranteed an income in order to ensure that repayments can be met. Where a consumer does not have a regular or guaranteed income, the vendor or MFI should work closely with the consumer to ensure ability to pay and provide flexibility if needed. For example, a farmer that is affected by drought or has experienced a poor crop yield could be given additional time to meet their repayment.

Finally, purchasing small items on asset finance can help poor and/or risky clients to build their credit rating and gain access to additional financial services. This should be applied cautiously by vendors, however, and not accepted where clients do not have the ability to meet the repayments.

Challenges

Unlike previously discussed financing mechanisms that are types of savings (informal group savings, layaway, formal savings), asset finance is a type of loan, which inherently places a greater amount of risk with the provider rather than the receiver of the loan. It also places some financial pressure on the consumer to meet the ongoing repayments.

Supply Side Challenges

In spite of the attractiveness of this model, there are several challenges a vendor must address. Firstly, the vendor needs to decide whether their product is indeed viable or appropriate for asset finance. There are many devices on the market that allow for remote 'shut-off'. This feature allows the vendor to stop the consumer from using the good unless they are up-to-date with their repayments. A smaller product without this option, at too low a price point, might make the time and financial cost of providing and overseeing a credit facility non-viable.

Second, providing goods on asset finance can create liquidity problems for undercapitalized companies, especially since renewable energy companies tend to be capital-intensive. Care should be taken to ensure that liquidity needs are met for inventory, expansion and contingencies if repayments from clients will not be complete for many months.

Third, the vendor is (usually) responsible for the credit and business risk associated with providing asset finance. Administrative costs can rise if consumers are slow or late on their repayments and the company may lose money if the consumer does not pay at all. Even where the asset finance arrangements involves collateral, the collateral may not cover the entire cost of the product. Moreover, the vendor needs to consider potential asset depreciation. Where the collateral for the credit is the product that was sold on asset finance, the product will have depreciated in value given that the client has likely already used the product.

Lastly, providing credit is a complex business. An energy enterprise needs to be sure it has the right expertise, organizational structure, funding and infrastructure in place to be able to administer, manage and understand risk. This means anticipating co-variant effects such as agricultural seasons, regular monitoring of sales and repayment figures, and overseeing the credit assessment process within branches, franchises or a head office.

Demand Side Challenges

There are also challenges and risks for the consumer too. For consumers who do not receive a regular income, it can be difficult to meet the repayments, which are typically inflexible and regular. A farmer with two harvests per year will have highly uneven income, and it is the responsibility not only of the institution but also the client to be sure that repayments will be possible.

Consumers also need avoid over indebtedness. This can particularly be a problem where consumers would not qualify for a loan, but are able to access asset finance given that the agreement is usually with a vendor and not a financial institution. Again, it is the responsibility of the vendor to conduct a diligent credit assessment, but also the responsibility of the customer to be honest.

Field experience shows that some consumers who have been exposed to asset finance agreements are wary that if they are unable to make repayments, the vendor will come to their residence and take other assets from their home as well as repossess the good that was sold to them in order to compensate for the vendor's loss. Assuaging this fear is important.

Consumers may be concerned that the product may break or be damaged while they are still making repayments. This is particularly difficult if the product is damaged to the point where the client is unable to use the product and benefit from intended savings on their

energy/fuel costs. Product warranties, aftersales service and insurance can overcome this problem. Furthermore, providing swift and open after sales service may be the single most important driver of success for an energy company employing this business model.

Table x. Opportunities and Challenges of Asset Finance

Opportunities	Challenges
<p><i>Supply</i></p> <ul style="list-style-type: none"> • Increased customer base • Collateral can reduce business risk • Partnering with an MFI can reduce costs and risk • Asset insurance can reduce risk <p><i>Demand</i></p> <ul style="list-style-type: none"> • Improves purchasing power • Potential to meet repayments as a result of reduced energy/ fuel costs • Opportunity to build credit rating and gain access to other financial services • Immediate benefit from using the product/service 	<p><i>Supply</i></p> <ul style="list-style-type: none"> • Product viability • Ability to follow-up on slow or late repayments • Asset depreciation • Administrative costs <p><i>Demand</i></p> <ul style="list-style-type: none"> • Risk of over indebtedness • Regular income recommended to ensure repayments can be met • Consequences of default • Risk of product breaking

Lessons Learned

The “specialist” function: choosing to offer asset finance is, in effect, getting into a new line of business. It means making the right product selection for the commercial and regulatory realities of a specific market and that all of the requirements for offering credit must be in place. This includes developing policies and procedures for credit assessment, monitoring and collection. The interest charged to customers must be accounted for and reported correctly. Risk of loss through non-collection must be quantified. Cash must be raised to fund the portfolio of credit for a much longer period than a vendor would have been accustomed to – up to three years, if that is the term chosen. The vendor’s monitoring and recording systems are affected from front-end data capture, new analytics, adjusted financial reporting and document management for records that are legally required to be stored and accessible for long periods. To do all of this successfully, a company needs to hire people with the right skill sets, and ideally create a new department within the energy company to manage this function.

Credit is different. Most sales are complete on delivery, however credit sales are complete when the last payment is made. Credit benefits, terms and obligations must be

clear to the customer as well as the organizations' sales channel (the sales team, dealers or agents). The process of selling products on asset finance involves more than just selling the product and its attributes; it includes a credit assessment and collection process. Since some customers will not be selected, a procedure for handling rejection is important. Incentive schemes need to be crafted accordingly.

Customer satisfaction must be prioritized. Successful asset financing depends on customer satisfaction for the full length of the credit term. If a three-year credit is offered, and the equipment fails in month 30, the customer will not pay, and costs may not be fully recovered. Therefore, close attention is required to product features, performance and after-sales support.

Financing isn't stand-alone, but must be integrated. With end user financing, the interest charged to customers must be accounted for and reported correctly. Risk of loss non-collection must be quantified and factored into the cost of providing financing. Capital to enable the financing must be raised to fund the portfolio of credits for a much longer period than previously – ensuring liquidity for working capital, credit and operating expenses for up to three years if that is the term chosen.

Outside support is key. The leadership team may lack all the key knowledge and experience for implementation of in-house credit, however this can be found elsewhere, including stakeholders and advisory boards, specialist funders, and specialist advisory organizations and consultancies.

CASE STUDIES

The following are some case study examples of asset finance for renewable energy, including K-REP Development Agency (a hybrid agent/group savings model), SolarNow (with an in-house credit facility for solar systems in Uganda), Grameen Shakti (which leverages the Grameen Bank network to finance energy products for Grameen's clients), Simpa Networks (which uses a 'progressive purchase' model with a proprietary metering system for solar home systems in India) and M-KOPA (which leverages the M-PESA platform for instalment payments for its products).

1. K-REP Development Agency

Country of Operation: Kenya

Number of Years in Operation: 30 years

Clean Energy Products:

Jiko (unbranded, improved woodstove, USD\$16)

Ecozoom Dura (wood cookstoves, USD\$34-38)

Wisdom Innovations (wood gasifier, cook stove, USD\$36)

Ecozoom Jet (charcoal cookstoves, USD\$38-49)
BURN Jiko Koa (charcoal cookstove, USD\$45)
Simgas GesiShamba (biogas digester, USD\$890)
Biogas digesters (masonry built, unbranded, USD\$1,018)
Kentank BlueFlameBioSlurriGaz (biogas digester, USD\$1,055)
Barefoot Firefly (portable solar lantern, USD\$25)
Sun King Pro 2 (solar lanterns, USD\$ 36)
Barefoot Connect 600 (solar home system, USD\$165)
Chujjio (water filter, USD\$23)

Company Website: www.k-rep.co.ke

Population of Country: 40,909,000

Number of MFIs Operating in Country: 51

Number of MFI Borrowers in Country: 1.4 million

K-REP Development Agency (KDA) is the research and development arm of K-Rep group, which consists of K-Rep Bank, K-Rep Fedha Services, Juhudi Kilimo and Makao Mashinani. Established in 1984 and sponsored by USAID, KDA is a specialized micro-finance development organization, or a financial not for profit, that focuses on the direct delivery of loans, research and capacity building in Kenya. While in the same group, KDA is entirely separate from K-Rep Bank. If KDA seeks funding from K-Rep bank, they are scrutinized with the same level of caution as any other external agency seeking funding.

The main focus of KDA is to research, develop and pilot microfinance products, which are targeted at empowering individuals to take control of their own development to improve their livelihoods. Through research and experimentation, KDA provides capacity building for institutions to successfully introduce tested microfinance products and mechanisms to the local market. This entails the research and development of new microfinance products or service delivery mechanisms, which includes rigorous testing, evaluation, redesign and documentation. Once a new microfinance product or service delivery mechanism has been successfully tested, KDA 'spins off' the product or mechanism to an implementing microfinance institute or establishes a new organization to implement the new product or service delivery mechanism.

Since 1997, KDA has successfully developed and institutionalized a number of products and financial services for low-income people. These projects have included accessibility to low-cost housing, a savings and credit scheme for HIV/AIDs affected people, a youth savings and credit scheme, a financial literacy programme for adolescent girls, health insurance for low-income earners, and business development projects for rural farmers.

Around 16 years ago, KDA pioneered the development and promotion of Financial Services Associations or Village Banks in Kenya. Financial Services Associations (FSAs) are community owned and managed financial institutions through which members can access a range of financial services. They are established to improve poor people's, and

especially poor women's, access to financial services. FSAs are built around locally available financial resources. These resources are mobilized and transformed into loan capital from which credit is provided to qualifying shareholders who require it. There are 110 FSAs currently operating across Kenya with around 202,750 members.

Clean Energy Products

Several of the microfinance products that KDA has developed and piloted, have involved financing for a variety of clean energy, water and sanitation products. Through its various programmes, KDA currently offers innovative financing mechanisms to enable target customers acquire clean and improved cookstoves (BURN Jiko Koa, Ecozoom Jet and Dura, Wisdom Innovations, and Jiko Smart), solar lanterns (Sun King Pro 2, Barefoot Firefly and Connect 600), and water filters (Chujjio). KDA has also been working on assisting village banks and agricultural businesses to develop appropriate financial products for their customers to be able to purchase biogas stoves by tailoring repayment periods to the customers' source of income.



Photo credit: KDA

Target Market

KDA focus on reaching consumers from the bottom of the pyramid. In order to ensure that they are selling high-quality and high-value cookstoves and not damage their reputation with consumers, KDA partnered with MicroEnergyCredits (MEC) to advise which products would be the best products to sell.

Business Model

KDA has a microfinance program for cookstoves in North Rift, South Rift, Eastern region and Thika. The program was piloted in Kiandutu, Thika a peri-urban slum area on the outskirts of Nairobi with around 8,400 households with a population of 40,000 residents. At the end of December 2014, KDA had sold 4,000 cookstoves across Kenya where 2,100 were sold in Thika a project financed by the Swedish Embassy (SIDA) through the Civil Society Urban Development Programme (CSUDP).

Photo credit: KDA

Through this financing from SIDA, KDA developed an innovative micro finance product named 'JAMIIOKOA', which is a financing mechanism available to the poor rural and peri-urban dwellers to purchase clean cookstoves, solar lanterns and home systems and water filters. In the Thika project, KDA engages with young Kiandutu youth green entrepreneurs to approach local savings groups and create awareness on the fuel



savings and health benefits of improved cookstoves. These entrepreneurs sell cookstoves to the savings groups and receive commission for each cookstove sold.

Similar to a typical asset finance agreement, the customer receives the stove upfront after paying a deposit of around 10 percent of the product cost. The customer typically has 3 months to repay their loan, which has 3 percent interest. Repayments are collected in two ways: via mobile payments direct to KDA or via the young entrepreneurs who collect the group repayments at the group meetings. KDA monitors both methods of repayment and contacts the young entrepreneur who sold the stove to monitor any issues with late repayments. If the entrepreneur is collecting the payments, KDA collect payment for the stoves from the entrepreneur once the full amount has been paid. Whether the consumer opts to pay by mobile transfer or by making payments to the local entrepreneur, KDA offer and bear the risk of this financing arrangement.

The majority cannot afford to buy the cookstoves up front. When a consumer opts to purchase the stove on credit, with an upfront deposit equivalent to 10 percent of the product cost, KDA provides the cookstove to the consumer and encourages them to start a weekly loan installment derived from the energy cost savings. This approach has attracted more women into the program where the capital cost of acquiring energy saving cook stoves are met by small savings out of cost of cooking savings of averagely KSH50 per household per day.

To ensure that the consumer is committed and motivated to save, KDA developed small home banks with a lock and key for each group member in the program. Each consumer is required to put KSH50 into the home bank box every day. During the regular group meetings often (weekly, bi-weekly or monthly), every member is asked to open her/his box to count the amount saved in front of the group members to convey the message that s/he was indeed committed to saving and to motivate and encourage other group members to save using the box to ease loan repayments. Money collected is paid through K-Rep mobile transfer mechanism. The cycle continues until the loans are repaid fully. Once the

group members have paid off their cookstoves, KDA assists the group to identify a viable project that will be financed by these savings in future.

Lessons learned

KDA encourages the consumer to continue saving after the consumer has finished paying for their cookstove, solar or water product. In some areas, KDA has found it beneficial to bundle the sale of cookstoves together with a water filter and a solar lantern. In this type of arrangement, the consumer would receive all the goods that they wish to purchase upfront and then repay KDA for the items in installments. In other areas, however, particularly in very poor areas, KDA finance one product at a time. A consumer can select one item and receive it up front. Once they have finished paying for the item they can then purchase something else that they need and continue to make repayments to KDA. KDA does not bundle items for all consumers as they are cautious not to over indebt consumers.

While piloting the project, KDA found that the stove price was very high for bottom-of-the-pyramid consumers and the perceived value of the stove was very low. In order to tackle this problem, KDA increased their efforts to provide education and raise awareness on clean cookstoves, and increased their product range to include lower cost improved stoves.

KDA continue to monitor and tailor their financial products to meet consumer demands. KDA conduct thorough research on the target consumer's behavior and income patterns so that they can prepare an appropriate financial product. KDA is working with FSAs across the country to increase the purchasing power of community members for solar lanterns, water filters and clean cookstoves without large upfront lump sum payments. KDA is using a revolving fund approach to do this, where the capital cost of acquiring these products are met upfront from a revolving fund set up for this purpose.

The current default rate for this financing project for cookstoves is 2%. The model in Thika has proved successful and the lessons learnt through its successful implementation can be replicated in other slum areas around Nairobi and other peri-urban areas in Kenya that have same characteristics.

2. SolarNow

Countries of Operation: Uganda

Number of Years in Operation: 4 years

Financial Services and Clean Energy Products:

Product/model name (solar home system 50W, USD\$340)

Product/model name (solar home system 500W, USD\$3000)

Company Website: www.solarnow.eu

Population of Country: 33,987,000

Number of MFIs Operating in Country: 33

Number of MFI Borrowers in Country: 511,731

Launched in 2011, SolarNow is a solar company based in Uganda that sells, installs and services high-quality modular solar home systems (SHSs) on a hire-purchase basis to mostly rural households and businesses. The company offers clients an affordable, 12-month payment plan made available via its in-house credit facility. As of early 2015, SolarNow actively provides affordable solar power to more than 6,000 Ugandan households, benefitting over 30,000 people.

Business Model

SolarNow uses the hire purchase business model and offers clients a “payplan” to enable them to buy a range of highly modular SHSs (50W to 500W) that cost from US\$340 to US\$3,000. Customers, who are identified by a group of more than 40 dedicated SolarNow franchisees, must go through a rigorous credit assessment to ensure that they are able to pay for the product. Franchisees market the products and conduct an initial credit assessment, which is approved or declined by the head office in Kampala. Once approved, customers typically pay a 25 percent deposit on the system followed by 12 monthly installments, after which they own the system (although a small number of clients pay cash). Systems are dispatched and installed within 14 days. On-site inspections are made within 30 days, and again within three months. The hire purchase comes with a 24-month guarantee for free maintenance and warranty services.

SolarNow’s operations follow a simple, highly standardized and low-cost design. A state-of-the-art back office system ensures complete and correct client information is available in the field at all times, and for management to intervene based on real-time management information as and when needed. The central team at SolarNow manages the credit approval and assessment process directly, including close, on-going interaction with customers. In addition to the introduction of a dedicated central credit risk management function, further improvements to SolarNow’s credit process have included centralizing the credit approval process, increasing franchisee ownership of delinquency management and credit losses, a proactive rescheduling model and repayment incentives.

For SolarNow, the hire purchase scheme has a number of advantages. The payment plan makes upgrading to additional power easy for all parties. The customer can double up from 50W to 100W, and ‘bundle’ the system with a low-voltage appliance such as a TV or refrigerator, signing on for another 12-month payment agreement to cover the cost of the upgrade. These payments are slightly lower than those in the initial 12-month hire purchase agreement. This not only stimulates on-time payments, it also reassures SolarNow of a customer with an established payment record, with lower-cost underwriting and reduced risk the second time around. Customers have responded positively to the payment plan and the company reports a very low portfolio at risk (PAR) (~2 percent PAR 30, and fewer than 0.3 percent write-offs), reflecting the effectiveness of the credit

assessment and monitoring process as well as high product quality and customer satisfaction.

Photo credit: Suradeep

Lessons Learned

The combination of quality, credit and strong customer relationships has been the key to success. Quality and credit go hand in hand. Providing flexible credit is critical for managing affordability and maximizing market penetration. Customer satisfaction, transparency and excellent after-sales service drives commitment to pay. Remote disconnect technologies are making this easier to manage, but building strong relationships with customers is the key to successfully managing credit and growing a strong customer base for future growth.



3. Grameen Shakti

Countries of Operation: Bangladesh

Financial Services and Clean Energy Products:

cookstoves, biogas, SHS, and any other clean energy products

Company Website: www.gshakti.org/

Population of Country: 151,125,000

Number of MFIs Operating in Country: 59

Number of MFI Borrowers in Country: 16.6 million

Grameen Shakti (GS) is an independent business that is focused on providing energy solutions for off-grid Bangladeshis. GS is a dedicated energy company situated within the Grameen network. GS was established in 1996 and today supplies renewable energy technology to more than 40,000 energy-impovertished villages in rural Bangladesh (out of an estimated 70,000). GS represents a hybrid model that incorporates features of an MFI

partnership and an in-house credit model. GS demonstrates how traditional microfinance can provide energy lending by creating a specialized entity within a larger microfinance company. To date, GS has provided finance for well over 1 million solar home systems (SHSs) and installed over 1.5 million SHSs, as well as 25,000 biogas plants and 600,000 improved cookstoves.

Grameen Shakti sources its own SHSs and biogas and cookstove components, provides low-cost financing to Grameen clients and non-clients alike, and leverages the Grameen microfinance network while operating independently. Bangladesh's high rural population density, low electrification, a very mature microfinance market, and government 'buy in' to make Bangladesh the world's first "Solar Nation" (including support for wholesale solar finance as a Partner Organization under the government-backed funder Infrastructure Development Company Limited (IDCOL), providing the perfect conditions for Grameen Shakti to reach enormous scale, with over 1.5 million SHS installed already.

GS shows how end-user finance combined with effective marketing, sales, and maintenance can lead to a breakthrough in the adoption of clean and renewable energy solutions by the poor and the middle class in the rural areas of a populous, energy-deprived country. Notably, Grameen Shakti does not arrange finance from its sister organization Grameen Bank (as many people assume). Rather, it has adapted the lessons of Grameen Bank's decades of provision of microfinance and developed its own in-house financing approach and mechanism.

The cross-pollination between Grameen Bank and GS has several advantages. GS can operate in densely populated rural areas and is able to take advantage of its relationship with Grameen Bank, which has face-to-face interactions with its eight million clients every seven days, as a marketing partner.

Grameen Bank also plays an important role in helping GS educate potential clients about its products. Its most affordable offering, an improved cookstove (ICS), is popular among Grameen Bank clients. Demonstrating the usability and benefits of ICS to potential users is essential, so Grameen Bank, through its weekly "center meetings" that are attended by more than eight million clients, provides GS staff opportunities to educate the rural population about the benefits of switching to clean, efficient and, most importantly, money-saving products in its portfolio.

Business Model

Grameen Shakti offers financing packages for SHSs, improved cookstoves and biogas plants. The SHSs range in capacities from 10W to 85W, and the larger systems provide not only lighting but can also power other devices, including TVs. Grameen Shakti allows its customers to pay for their SHSs (which typically cost between US\$150 and 300) in installments over a period of up to three years. This is achieved through a monthly service charge that combines the cost of the equipment, maintenance and financing. Customers

are offered six different financing plans that require different down payments, payback times and service charge incentives.

- Option 1: 35 percent down payment, remainder payable over 12 months at a flat rate service charge of 5 percent.
- Option 2: 25 percent down payment, remainder payable over 24 months at a flat rate service charge of 6 percent.
- Option 3: 15 percent down payment, remainder payable over 36 months at a flat rate service charge of 8 percent.
- Option 4: 100 percent down payment with a 4 percent discount on the total package price.
- Option 5: 10 percent down payment, remainder payable over 36 months at a flat rate service charge of 5 percent (only for a microutility system of 20, 40 and 50 W).
- Option 6: 25 percent down payment, remainder payable over 12 months with no service charge (only for a mosque, temple, pagoda, church).

With respect to improved cookstoves, two products are offered, one for domestic cooking and one for commercial cooking, with two types of payment plans:

- Option 1 for domestic cooking: 50 percent down payment, remaining 50 percent payable after installment.
- Option 2 for commercial cooking: 50 percent down payment, remainder payable over 6 months at a flat rate service charge of 6 percent.

For biogas, five different-sized biogas plants are offered at different prices but the payment plan is the same: 15 percent down payment, remainder payable over 24 months at a flat rate service charge of 8 percent.

The client can opt to construct the biogas plant under the supervision of Grameen Shakti engineers. In this case, the technical and supervision fee is split into two installments, 50 percent paid prior to installation and 50 percent upon completion of the plant.

The comprehensive package of services customers receive includes installation, customer training and a warranty (which for the SHS is five years on the battery and 20 years on the solar panel; for the biogas plants, it is two years). Technicians collect the installments during their monthly service visits. Customers are aware that the technician and installment collector is one and the same person, and that this person is incentivized to reliably appear once a month; likewise, Grameen Shakti knows that its customers value the necessary maintenance that incentivizes them to continue payment. The alignment of incentives between the organization and the customer is key to Grameen Shakti's successful finance facility.

4. Simpa Networks

Countries of Operation: India

Number of Years in Operation: 4 years

Financial Services and Clean Energy Products:

Simpa Turbo 80 (30W, 17 Ah battery solar home system)

Simpa Turbo 120 (40W, 26 Ah battery solar home system)

Company Website: www.simpanetworks.com

Population of Country: 1,205,625,000

Number of MFIs Operating in Country: 195

Number of MFI Borrowers in Country: 37.9 million

Simpa sells “solar-as-a-service” to households and microenterprises in rural India. A customer pre-pays for electricity via a pay-as-you-go proprietary meter that unlocks a solar home system (SHS) for the specific amount of service purchased (defined either as an amount of energy consumed or time used). As of 8 March 2015, Simpa had sold over 7,000 solar home systems in 8 districts in Western Uttar Pradesh.

Photo credit: Georg Neumann

Solar Home Systems

Simpa currently have 2 solar home system products in the market: Turbo 80 and Turbo 120. Both products are available with 2 or 3 lights + a fan, along with one or two USB charge points for mobile phones. The Turbo 80 product has a 30W panel and a 17 Ah battery, providing 55 Wh/day. The Turbo 120 product has a 40W panel and a 26 Ah battery, providing 87 Wh/day.

Business Model

Simpa offers clients in Uttar Pradesh Simpa-branded SHSs that range in size from 20W to 80W and come with a special meter - the Simpa Regulator - to enable regular payments. Simpa's Progressive Purchase technology – a combination of product-embedded hardware plus cloud-based software – makes the units affordable for the target clients. Customers make a small, initial down payment for a SHS and then pre-pay for the energy service, topping up their systems in small, user-defined increments, using a mobile phone to receive the SMS unlocking code for the meter, after making cash payments to payment agents. Each payment for energy also adds towards the final purchase price and total cost of the asset.



Once fully paid, the system unlocks permanently and produces free, unrestricted energy for the life of the product. Simpa makes its products affordable and accessible not by building proprietary distribution, but by partnering with manufacturers and leveraging existing networks of solar installers and retailers as authorized dealers. The platform's flexible architecture allows integration into a wide range of energy systems and products that are sold to multiple customer segments under a variety of pricing models. Simpa sells its products through Simpa “Urja Mitras” (Energy Friends), who are Village Level Entrepreneurs.

These VLEs serve as trusted sales representatives for Simpa within their communities, and receive a commission each time they make an SHS sale. Simpa ensures that its agents are responsible community members, selected on six criteria: education level, reputation, community presence, business experience, and community connectivity.

Once they have enlisted a potential customer, the VLE delivers the application form to the supervising Simpa Rural Sales Associate (RSA), who quickly delivers it to the credit team for analysis. Often, the credit assessment is completed as early as the following day. Through home visits and phone calls, the credit team assesses a customer's score through such factors as family income and expense of the desired product, number of earning family members, and electricity access. In 95% of cases, the customer application is approved. After the application is officially sanctioned, the technical team transports the SHS to the customer's property and immediately begins installation.

Simpa modifies the purchase process for solar technology, no longer requiring the customer to pay for the full cost of the SHS upfront. After completing a credit assessment, Simpa's customers make a small down payment – approximately 15% of the machine's total cost – in exchange for a high-quality solar PV system. Once installed, Simpa technology allows the customer to purchase solar energy as a service. On a cloud-based interface accessible through Internet or SMS gateway, the customer pre-pays for energy credits, called "energy days," each providing a day's worth of solar power. Through its tamper-proof metering mechanic, the system automatically shuts down once credits have been exhausted. The customer can easily purchase new energy days by visiting a Simpa local payment point in their village.

Lessons Learned

Simpa's credit team tracks Portfolio-at-Risk (PAR) customers at 7 day, 15 day and 30 day intervals. One of our key goals is to maintain a healthy portfolio. Our credit agents regularly visit customer homes to encourage regular payments and to find out reasons why payment cycles have been delayed. If the lag times are consistently higher than 30 days behind schedule, penalties can be imposed and systems can get repossessed by Simpa.

Progressive Purchase differs from traditional pay-as-you-go in one important respect: a portion of money spent on each credit purchase goes towards the final purchase price of the system. The credit price is fixed at a daily rate directly linked to the size of the outstanding loan. Once that price is fully paid, the machine unlocks permanently, producing free, clean energy for the rest of its useful life. Typically, full payment takes between two and three years. Through the pay-as-you-go model, they are able to incrementally pay for efficient, safe solar energy.

5. M-KOPA Solar

Countries of Operation: Kenya, Tanzania, Uganda

Number of Years in Operation: 4 years

Financial Services and Clean Energy Products:

M-KOPA III, d.light d10g, d.light d20g

Company Website: www.m-kopa.com

Population of Country: 40,909,000

Number of MFIs Operating in Country: 51

Number of MFI Borrowers in Country: 1.4 million

Based in Kenya, M-KOPA Solar is an innovative asset financing company that sells small-scale solar home systems to off-grid households on an affordable, 12-month mobile money payment plan via hire purchase. The company was established in 2011 following successful consumer trials in Kenya during 2010. The founders of the company are experienced mobile technology innovators who believe in the huge potential of transformative, affordable products designed for underserved energy consumers. As of late 2014, M-KOPA Solar actively provides affordable solar power to well over 100,000 – and continues to grow rapidly.

Business Model

Under M-KOPA Solar's model, customers buy a SHS on an affordable M-PESA payment plan, with an initial deposit followed by daily payments for up to one year. M-KOPA Solar currently offers customers two systems. The d.light d10g SHS is a 4W system with three lights and a phone and USB charging port. The user pays Ksh 40 (USD50c) per day for 360 days with a deposit of Ksh 2,500 (USD\$30). The d.light d20g SHS is a 5W system with three lights (two wall-hanging and one portable), a phone and USB charging port and a chargeable radio. The user pays Ksh 50 (USD60c) per day for 360 days with a deposit of Ksh 2,999 (USD\$35). When the system is owned outright at the end of the payment term, the user saves even further.

Payments are made via M-PESA, the world's most extensive and best-known mobile banking platform. A two-year warranty is provided, and after completing payments, customers own the product outright. M-KOPA Solar reports a higher than 95% repayment rate.

Mobile Payments

To capitalize on the advantages of using wireless micropayments for renewable energy products, M-KOPA developed M-KOPAnet, a proprietary technology platform that combines embedded GSM (global system for mobile communications) and mobile payments. M-KOPAnet rides on top of Safaricom's M-PESA, through which users can transfer money via mobile phone for as low as 5 Kenyan Shillings (USD\$0.06). A customer puts down an initial deposit followed by daily micropayments for up to one year, after which the customer own the system outright. Payments are made via M-PESA. A two-year warranty, from point of first purchase, is included. Being a pioneer in a pioneer market allowed M-KOPA to tap into M-PESA's over 20 million customers.

The payment platform allows the organization to extend credit to customers who are otherwise lacking formal collateral or credit histories, taking advantage of the obvious economic case of small-scale solar through small credit installments (a recent independent survey, by TNS Research International Kenya, reported that 97 per cent of households with M-KOPA Solar were saving money compared to their previous daily spend on kerosene). Combined with the convenience of mobile money for making regular, tiny repayments, and high organizational effectiveness in managing such regular installment payments of tiny amounts.

The linking of mobile money – highly developed in Kenya through the M-PESA platform – with a credit facility permits asset finance in a more efficient, cost-effective way, and regular, very small repayments are desirable for consumers with high income volatility.

Employer Loan

Overview

The actual number of people employed globally and in developing countries varies according to the definition of employment. However, there is a proportion of workers that are formally employed, receive low wages, are considered to be among the world's poorest, and have limited access to finance. These factors limit the opportunities for financial and purchasing decisions to improve livelihoods and well-being. Providing access to finance through an employer loan, which involves small deductions from an employee's salary, can improve the purchasing agency of this market segment.

How big is this potential market? The International Labor Organization (ILO) estimates that there are around 3 billion people employed globally. The ILO's definition of employment rests with national governments, which are generally known to overstate employment and include part-time, seasonal, and irregularly employed people. By contrast, a Gallup study suggests that 1.3 billion people worldwide are employed, which does not account for self-employed, part-time workers, or those who remain on a payroll but are not in the workforce. The study determines a 'payroll to population' rate, which demonstrates the percentage of the population engaged in formal employment. Not surprisingly, sub-Saharan Africa as a region ranked the lowest with 11% of the population in formal employment. Globally, the countries that ranked the lowest include Burkina Faso, Haiti, Malawi, Niger, and Ethiopia with as low as 5-7% of the population engaged in formal employment. However, as a region, the number of formally employed people is greater than every one in ten people, which represents a significant portion of the market.

Moreover, around one third of the developing world's workforce is living in poverty. While the general trend over the last decade has been for fewer workers to be living in extreme poverty, there are still almost 400 million workers who live on less than US\$1.25 daily household income - or around 15 per cent of the developing world's total population. Research conducted by the ILO shows that over the past 20 years the number of employed workers living on less than US\$2 per day is declining and the number of employed workers living on between US\$4 and US\$13, which is defined as an emerging middle class in developing economies (according to the ILO), is increasing.

The emerging middle class in developing countries, many of whom are employed by medium and large scale agricultural companies, provide a significant opportunity and entry point for improving access to clean energy, water and sanitation products through employer loans or guarantees.

Business Model

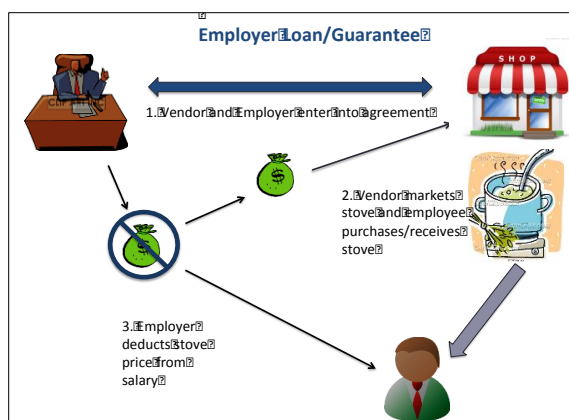
In order to take up an employer loan/ guarantee, the consumer must be employed and receive a salary. The vendor of a product or service and the employer enter into an

agreement to allow the vendor to sell their product/s to the company's employees. The vendor markets the product/s to the company's employees and the employees are able to purchase the vendor's product/s. Typically, when an employee opts to make a purchase, the employer pays the vendor for the product/s and the employee receives the product/s up front (at the point of sale). The employer then deducts the amount of the product from the employee's salary, usually over a period of time rather than one lump sum deduction.

While this is usually applicable to employees who earn a regular wage, it can also apply to employees whose salary is irregular (seasonal), however, the deductions may be larger in accordance with larger (but irregular) salary payments.

An employer loan can also be referred to as a 'check off' system, which relates to the bookkeeping method that the employer uses to 'check off' or deduct money from an employee's salary.

Diagram: Employer Loan



Partners, Institutions, and Stakeholders

As indicated in the title, this financing mechanism requires manufacturers, vendors, or retailers to partner with employers. The more employees a company has, the larger the number of potential clients. Experience on the ground shows that while very large scale employers (with more than 1000 employees) can be lucrative due to the scale of the potential market, these companies are often difficult to partner with due to slow administrative and decision-making processes. Thus, negotiations to enter into an agreement with an employer can be lengthy. Several distributors interviewed for this report, have found that mid-size corporations (with 200 to 600 employees) can produce the best results. Negotiating an agreement with a mid-size company can be quicker and easier than negotiating with large scale corporation and will still lead to a potential market of several hundred employees.

Another partner that may be involved in this type of business model is a financial institution. The employer may choose to pay from their own capital for the employees'

purchases or they may wish to partner with a financial institution to cover the cost of the employees' purchase and then repay the financial institution once an employee has repaid the employer through their salary. An employer may choose to do this if they are interested in providing access to an employer loan but lack the funds to do so.

Nuances and Complexities

While the rate of formal employment in developing countries is low and many workers are poorly compensated, a large proportion of these people work in the agricultural sector. The ILO estimates that around 60% of employed people in sub-Saharan Africa and 50% in South-East Asia work in the agricultural sector. Agricultural companies often have several hundred employees, which can allow for economies of scale when marketing and selling to employees of a company. A large proportion of the cookstove sales to employees in Kenya were to tea farm employees, coffee farm employees and other large-scale agricultural companies. Many of the low-paid, salaried employees in the agricultural sector are often located in rural and remote areas. For this reason, and possibly also due to low incomes, these employees may not have access to finance through a commercial bank or microfinance institute (MFI). This makes the possibility of securing an employer loan even more attractive to this segment of the market.

In certain circumstances, the employer may have an added incentive to assist employees to purchase specific products. For example, if an agricultural employee who resides on the employer's property purchases a clean energy, water or sanitation product that they would not be able to afford without the assistance of an employer loan, the employer may also benefit from improved employee productivity, fewer health issues among employees, cleaner employee on-site residences, and happier staff.

While it is difficult to quantify how many companies offer this type of financing mechanism to their employees, prior research conducted by Arc for the Global Alliance for Clean Cookstoves shows that, for many cookstove retailers, a small but steady percentage of sales are attributed to sales through an employer loan business model. Several stakeholders in the cookstove sector in Kenya stated that around 10 to 20% of their monthly sales were to employees of large corporations with whom they had a relationship.

Opportunities

According to the World Bank, over 2 billion people live on less than US\$2 household income per day. A significant minority of those are formally employed workers, often employed in low-paying agricultural work. While this segment of the market has a regular income, they may find it difficult to set aside savings from their meager income to make purchases with large upfront costs. Creating partnerships between employers and manufacturers and/or retailers of clean energy, water and sanitation products can create a significant opportunity for low-paid, salaried workers to purchase these products. Formally employed workers often have more stable economic and residential circumstances, and may be more willing to adopt and pay for new products and technologies that can improve their livelihood.

Supply Side Opportunities

There are several advantages for a vendor when partnering with an employer. The vendor/distributor/retailer usually gets paid up front from the employer so there is no risk of default. A manufacturer/retailer is able to leverage their resources by marketing collectively to the company's employees. The vendor/distributor/retailer can organize a demonstration at the company and invite employees to attend. This is more time efficient than marketing directly to individuals or small savings groups. Retailers are also likely to have a captive audience if the product demonstration and marketing activities are held during work hours.

Establishing a partnership with an organization to provide an employer loan to their employees is essentially the creation of a new sales/distribution channel. Once the partnership has been negotiated and the terms agreed to, the vendor/distributor/retailer does not need to do much in order to manage the relationship with the employer. The relationship can continue for years and the employer can continue to place orders from employees with little input from the retailer.

A selling point in negotiating these agreements with corporations is that employers can demonstrate to their employees that they care about their well-being and livelihood and are seeking to assist them be able to afford certain products. Clean energy, water, and sanitation products can be included in a company's corporate social responsibility policy. Clean energy products sold to employees could also be linked to the company's strategy to reduce carbon emissions.

In addition, if a retailer wishes to provide or offer consumer financing, developing a partnership with an organization or corporation can be less complicated than setting up an agreement with a formal financial institution.

Demand Side Opportunities

There are several advantages for the customer/employee. While the consumer needs to be employed and have ongoing employment (and a salary), they do not need to spend the full price of the product at the point of sale. While the employee is entitled to receive the full amount of their salary (minus tax), many salaried workers already have bills, savings, and other expenses deducted from their wage before they receive it. Salaried workers opt to do this for convenience and effectiveness because the money is diverted before they have the opportunity to spend it. Similarly, an employer loan assists the employee to make a purchase that they would otherwise find difficult to save for. As one Kenyan consumer stated in Arc's research: "Using this model, you don't feel the sting [of saving for the product]".

For employees without a formal bank account, an employer loan provides the convenience of not needing to open an account with a formal financial institution. Overall, there is generally less paperwork, no formal credit checks, and a faster loan approval time for

employees. That is to say, the consumer does not need to enter into a new partnership as a relationship already exists between the employer and employee, and consumers may be more receptive to receiving a loan through their employer than with a formal financial institution as it is less formal. Given that the employee has an established relationship with their employer, there is also no need for collateral for the loan.

Challenges

Given that the large majority of the world's poor are not formally employed, this mechanism has limited ability to provide financing on a large scale.

Supply Side Challenges

While there are few start-up or transaction costs, it may take some time to negotiate and come to an agreement with a corporation. Once the agreement to sell to a company's employees has been reached, there is the that the company may not actively market the product and the available loan to its employees, resulting in a limited number of sales relative to the time and investment put in.

Furthermore, if the company has a high turnover of staff, the organization may become dissatisfied with the agreement if employees leave their employment without paying off their loan and terminate their agreement with the vendor. In some cases, the risk of default lies with the vendor so high staff turnover could make the sales/distribution channel unviable for the vendor.

Demand Side Challenges

The ability of this financing mechanism to reach the world's poorest is limited. A large portion of the target market that require clean energy, water and sanitation products are not formally employed and do not receive a salary so this type of financing mechanism is not available to them.

For those that are employed and in low-paying jobs (a target consumer segment for this business model), employees may distrust their employer and believe that the price of the product will be higher if they purchase it through their employer using an employer loan than if they purchase direct from the vendor. Also, the employee may feel that the interest on the loan that the employer is charging is too high.

There is a potential perceived constraint on the customer, too. The employee may wish to switch employers prior to paying off their loan and feel restricted by their employer loan agreement if it is not entirely paid off.

Table x. Opportunities and Challenges of Employer Loans

Opportunities	Challenges
<i>Supply</i>	<i>Supply</i>
<ul style="list-style-type: none"> Access to large potential markets 	

- | | |
|--|---|
| <ul style="list-style-type: none"> • Time and resource efficient marketing opportunity • No risk of consumer default • Can add to the employer's corporate social responsibility policy • Potentially easier than partnering with a formal financial institution <p><i>Demand</i></p> <ul style="list-style-type: none"> • Payment conveniently deducted prior to receiving salary • Relationship with employer already established • Less formal than other financing mechanisms • No collateral required | <ul style="list-style-type: none"> • Difficult to navigate corporate decision-making to reach an agreement • Can take a long time to reach an agreement • The organization may not market or allow the vendor to market the product well • High staff turnover will negatively affect the party who bears the risk of default <p><i>Demand</i></p> <ul style="list-style-type: none"> • Not applicable to majority of the world's poorest as they are not employed in the formal sector • Employer distrust • Restricted to not switch employers |
|--|---|

CASE STUDIES

The following are case study examples of providing consumer finance for clean energy products through an employer loan: Ecobank and Emerging Cooking Solutions

1. Ecobank

Countries of Operation: 36 countries in Africa; case study focus on Ghana

Number of Years in Operation: 29 years

Financial Services:

Employer loan for consumer durables

Financing available for small to medium size enterprises

Company Website: www.ecobank.com/

Population of Country: 24,263,000 (Ghana)

Number of MFIs Operating in Country: 82 (Ghana)

Number of MFI Borrowers: Ecobank has 10 million in Africa; there are 643,878 MFI borrowers in Ghana (not Ecobank clients)

Established in 1985, Ecobank is part of Ecobank Transnational Incorporated, which is a public limited liability company that is owned and managed by the African private sector. Today, Ecobank operates in 36 countries across Africa with over 10 million customers.

Ecobank has a number of projects that aim to ensure environmental sustainability and promote socio-economic development across Africa. Ecobank has partnered with ACCION in order to develop microfinance services aimed at alleviating poverty. One per cent of Ecobank's profit is used to fund social projects carried out by the Ecobank Foundation.

Business Model

Ecobank provides financing through an employer loan mechanism to individuals in two forms.

1. It offers employer loans, or a "check-off system" as it is known in Ghana, for employees of institutions that Ecobank facilitates and administers the company's payroll system. If the employee does not have an account with Ecobank but their employer does, the employee is able to purchase a product using their future salary. Ecobank will then deduct small repayments from the employee's salary on behalf of the company. For employers with a large payroll, this relieves the company of the administrative and bookkeeping task of managing the loans that they provide to their employees.

2. Ecobank can also set up a check-off system for individual consumers who receive their regular salary directly into their Ecobank account. These consumers are able to take out a personal loan for a product and then Ecobank deducts their repayments from their salary when it is deposited into their Ecobank account. Ecobank sets up this type of agreement on an individual basis with customer's who regularly receive salary.

Lessons learned

Employer loan scheme by definition are limited to formally employed workers and therefore cannot reach populations in the informal sector. As such, employer loans are well suited to the segment of the market that is formally employed. The majority of the consumers that take up an employer loan facilitated through Ecobank are urban or peri-urban residents; all of them are engaged in formal employment.

2. Emerging Cooking Solutions

Country of Operation: Zambia

Number of Years in Operation: 4 years

Energy Products for Sale:

African Cooking Solutions/ Phillips stove (fan gasifier, US\$130)

SupaMoto Pellets (cooking fuel, US\$0.45 per kg)

Prime Stove (natural draft cookstove, US\$59)

SupaMoto (institutional cookstove, US\$540-590)

Company Website: www.emerging.se/

Population of Country: 13,217,000

Number of MFIs Operating in Country: 10

Number of MFI Borrowers in Country: 69,491

Emerging Cooking Solutions (ECS) focuses on pellet (cooking fuel) production and distribution. Established in 2010, Emerging Cooking Solutions operates in Zambia and is a subsidiary of a Swedish private limited company by the same name. The company uses waste biomass such as sawdust, straw, stems, and husks to create the pellets that they hope will eventually outpace the use of charcoal for cooking. ECS is currently operating in Zambia and hoping to move into other markets in Africa. ECS estimates the market for (cooking) pellets in Zambia to be around US\$120 million.

Zambia has a high rate of deforestation and it is estimated that around 600,000 acres of forest are lost each year. It is also estimated that around 80% of Zambian households, including 66% of urban households in Lusaka, use charcoal for cooking. ECS aims to reverse both of these trends. In January 2015, ECS had sold over 2000 stoves in Zambia and were averaging 12 to 15 tons of pellet sales per month.

Target Market

ECS targets the urban middleclass and poor consumers in Lusaka, particularly those who currently rely on charcoal as cooking fuel. Most of the urban middleclass in Zambia only use charcoal as a backup during power cuts. ECS also targets commercial businesses such as restaurants, schools and institutions that use charcoal for cooking fuel. The company is currently exploring other niche markets such as chicken brooders, who use charcoal for heating. At the moment, the primary focus of ECS is in and around Lusaka.

Clean Energy Products

ECS currently sell two types of stoves for domestic use: the Phillips (fan-forced) gasifier for USD\$130 and the Prime (natural draft) stove for USD\$59. As at January 2015, ECS had sold roughly 1000 Phillips stoves and 1000 Prime stoves. ECS currently bundles the sale of these domestic stoves with approximately two months worth of SupaMoto (cooking) pellets, which comes in four bags of 16 kilograms each.

Based on their experience with poorly built institutional stoves, ECS developed their own institutional stove. The institutional stove has proven very successful with their customers as it has resulted in dramatic fuel savings. However, given that most of the purchasers/users of the institutional stove are commercial businesses, ECS has found that it is usually not necessary to provide a financing option for the sale of the institutional stoves.

Business Model

Emerging Cooking Solutions sell both the Phillips gasifier stove/ Prime natural draft stove and the pellets in partnership with major employers in Lusaka through employer loans. These employers allow their employees to purchase the stove through the company; the company pays ECS for the stove and the employee receives the stove at the time of purchase, then the employee pays for the stove through deductions from their paycheck

over a few months. Three or four deductions from the employees' regular salary are usually required to complete the payment of the stove.

ECS facilitates these sales and manages the accounts that they have with employers without an additional implementing partner. ECS also sells through retail stores but they have found employer loans to be quite successful as a consumer financing option and a driving force behind their sales growth in 2014.

ECS plans to increase its sales staff to further leverage the success that it has had with employer loans. ECS believes that one of the reasons for success is due to a limited consumer credit market and dissatisfaction with the interest rates offered by microfinance institutes in Zambia.

Lessons learned

While the company started in 2010, ECS cookstove sales started in mid 2013. Over the last two years, ECS has significantly changed their approach. Initially, ECS only focused on selling the Philips stove - either at or below cost - and expected that the (cooking) pellet sales would grow organically as a result of the cookstove sales. However, pellet sales did not grow for a number of reasons, the most important ones included:

1. The cookstoves were used as a backup cookstove, not as a primary cooking apparatus. Most of ECS's clients had electric stoves as their primary cookstove.
2. The consumers did not use the stoves until they were fully paid off. The person who bought the stove was often not the person who was going to use it. The stove recipients did not feel as though they had the right to use the stove until it was completely paid off by the person who purchased the stove.
3. ECS believed that consumers did not receive adequate training.
4. The distribution channel for the pellets was not strong enough.
5. There were technical issues with the stoves that prevented their use, and subsequently, the need for pellets. Consumers reported problems with the batteries and fan on the stove.

Due to the high price of the Phillips stove relative to other products in the market and the technical difficulties reported by the stove users, ECS switched to a natural draft, lower priced stove; the Prime stove.

In July 2014, ECS started to bundle the sale of the Prime stove together with cooking pellets. This resulted in a much higher level of stove and pellet adoption. Moreover, ECS have had very few technical issues with the Prime stoves.

ECS currently projects a 20% increase in sales each month due to growing demand for the "stove-bundles" and as they start to target other large employers in the market, including public servants (teachers, police, army) and mine workers.

Informal Savings Groups

Overview

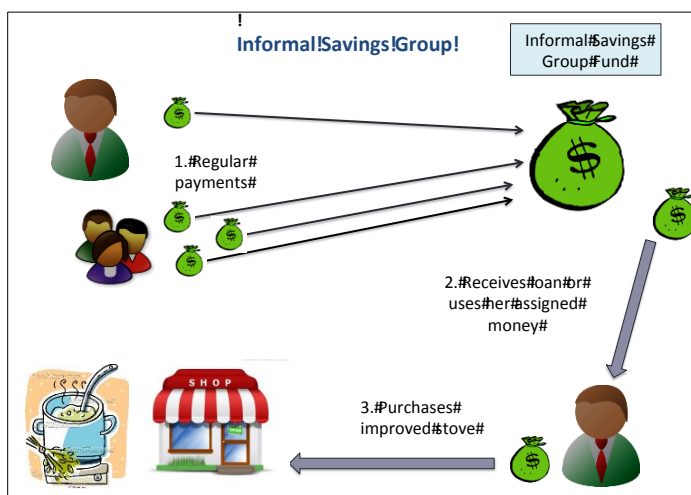
Around 2.5 billion people in the world today do not have a bank account. The vast majority of the un(der)banked are among the world's poorest and live in Africa, Asia and Latin America. Not having access to financial services has significant implications for saving, generating income, improving livelihood, making household purchases and managing personal risk. Not having a formal bank account, however, does not mean that the poor do not save. On the contrary, around 10 million people around the world today take part in savings groups, such as a Village Savings and Loan Association (VSLA), a Rotating Savings and Loan Association (ROSCA) or an Accumulating Savings and Loan Association (ASCA).

Informal savings groups have been around for centuries. They tend to form organically in most cultures and are prevalent in most societies that do not have access to formal financial institutions. Savings groups provide basic financial services and mutual encouragement to save, as well as increased purchasing agency. Women make up a disproportionately large amount of those who are unbanked. It is perhaps not surprising then that women also make up the majority of those who participate in informal savings groups.

Business Model

Typically, informal savings groups consist of between 5 and 20 people. These groups can function quite well with as little as three members and can also be successful in larger numbers of even 30 or 40. The members decide at the outset of their group how often they would like to meet, how much they would like to save, whether they will store the funds for an agreed period and then distribute the money to all the members at once, or whether each time the group meets a different member will take home the groups' contributions. If the group decides to allocate the savings to a member at each meeting, the group chooses how they will allocate who receives the money each time they meet, which could be a random selection based on who has not yet received funds or a pre-planned schedule. Whether the group members all receive their share of the funds at the end of the savings cycle or whether each member receives their contribution in turn during the savings cycle, the group completes their savings cycle once everyone has had a chance to receive the group contributions. After the savings cycle is completed, the group can alter its operating rules, add new members, or discontinue. In many cases, these informal groups continue to save and rotate their savings for years.

Diagram: Informal Savings Group



Partners, Institutions and Stakeholders

As the name suggests, most of these groups are not organized formally (without the assistance of a formal financial institution or a paid administrator), but by the community members themselves. There are groups, however, that register with an administrative body in order to receive assistance with bookkeeping and management. Savings groups that have some form of regulation are often referred to as semi-formal rather than informal and can variously fall under the category of a registered self-help group (SHG), Savings and Credit Cooperative, or a village bank.

Informal savings groups are created at the grassroots level, these groups cater to the local conditions and economic circumstances of their members. Some groups meet weekly; others fortnightly. Some groups prefer to contribute a small amount of money on a daily basis. This is often convenient for women who have a stall in the local market place and are in contact with the other group members on a daily basis. In areas where economic opportunity is greater and group members have regular jobs, the group members may choose to save a larger amount and contribute once a month to the savings group. Whatever the style, these decisions are made at the start of the savings cycle and agreed upon by all the members. The rules of operation can be changed, however, these changes can only happen after the completion of a savings cycle.

Nuances and Complexities

There are numerous variations of informal savings groups with varying complexity. Some groups are very straightforward; all group members contribute at each meeting and one group member takes home the contributions. These groups are often referred to as 'merry-go-rounds' or ROSCAs. Other savings groups are far more complex and offer loan products, interest return on savings, and micro insurance. These type of savings groups are often referred to as ASCAs. Typically, a ROSCA will distribute the combined contributions of the group at the end of each meeting, whereas, an ASCA is slightly more complex and funds are not distributed at the end of each meeting. Members of an ASCA

generally borrow from the group when needed. All of the members of an ASCA continue to save, but not all borrow. Borrowings are returned with interest and shared among the group. While each of these might vary slightly in name and style, they all have a similar overarching function, and that is to bring local community members together for the purpose of saving.

In most cultures, informal savings groups with both men and women are acceptable. In some cases, however, the men in the group may seek to dominate the group's decision-making and leadership roles. In reflection of the make-up of microfinance more generally though, many groups are women only.

Opportunities

Many of the world's 2.5 billion unbanked people participate in an informal savings group. The majority of those who are 'unbanked' are among the world's poorest and lack access to energy, water and sanitation. Informal savings groups leverage the financial and purchasing agency of the poor to be able to save and purchase household items that will increase their ability to generate income and improve their livelihood. Informal savings groups continue to have a huge impact on consumers at the bottom of the pyramid. The diverse benefits of savings groups have assisted men in Bangladesh to purchase a new rickshaw and helped women in central Kenya to purchase clean cookstoves.

Supply Side Opportunities

The main strength for vendors and retailers seeking to leverage informal group savings to purchase clean and improved cookstoves or other clean energy products is that:

1. These groups already exist; and
2. Potential clients already have access to this savings mechanism.

Another benefit for vendors and retailers seeking to sell their product to an informal savings group is that they can target and market to a group rather than individuals. If employing a direct sales channel, this can be more time-efficient than selling door-to-door. Given that the group members meet on a regular basis, this provides a natural opportunity for the seller to present their product, provide a demonstration and answer questions. In the cookstove sector in particular, research has shown that product demonstrations increase sales.

This model is already proving successful for small scale, local cookstove manufacturers and retailers in parts of Africa. A strong informal savings environment, together with local knowledge and contacts enables these retailers to gain access and sell to informal savings groups.

Demand Side Opportunities

For the consumer, the benefit to using an informal savings group as a financing mechanism is that it is familiar and accessible. Regardless of access to a formal financial

institution, many rural and/or poor people participate in a type of informal savings group and have done so for many years. It is accessible because these groups meet in the local community and are made up of people in the local community. There are also no start-up costs or transaction fees related to saving with these groups.

The group setting provides encouragement to save and promotes the discipline of saving. Furthermore, saving with an informal savings group rather than in the house provides additional safety against theft and also ensures that the savings are not diverted and spent on other things.

In addition, the setting up of the informal group and the tailoring of meeting frequency and savings amounts to the members' needs means that they will be more likely to continue to meet their savings contributions.

Challenges

Utilizing informal savings groups as a financing mechanism can provide limited scale. It is resource intensive to market to group members and the time it takes for groups or group members to save is often more than several months. There is also limited potential to receive new or referred customers beyond the group members once the group has been marketed to.

One of the biggest barriers to leveraging the ability of informal group savings to provide finance is their level of informality. Many of these groups do not register with an umbrella organization so it can be a challenge to find out where they exist, when they meet and how much they save. As such, it can be difficult for vendors and retailers to gain access to these groups and to network with new groups.

Supply side challenges

For large-scale vendors and retailers, this is a difficult model to implement due to the limited scale that selling through informal savings groups can offer. It can be time and labor intensive travelling to each group meeting to demonstrate a product. If members of the group decide to buy, depending on the size of the group and how much they save, it could take several months before the group members have saved enough to make a purchase.

Demand side challenges

This type of financing mechanism does not necessarily provide the best financial leverage for a consumer's savings. It can take several months and some times as long as a year for a consumer to save through an informal savings group to be able to purchase a product. For consumers who have no access to formal financial products or where a vendor is unwilling to provide credit to a consumer, utilizing an informal savings group is beneficial for the consumer. Where other financial options are available, a consumer may be able to purchase and receive their desired product sooner.

Another consideration for savings group members is that the collection and distribution of funds may be poorly managed and result in a dispute, theft, or unequal distribution of funds. Many informal savings groups run for years and are built on a strong bond of trust and social connection. There are times, however, when disputes arise and due to their informality, group members have no formal recourse to resolution. Also, while collective informal group savings are generally more resistant to theft than saving in the home, an informal group's savings are often stored in an unsecure location (e.g. a group members house) and are still susceptible to theft. Semi-formal and some informal savings groups often opt to store their savings in a more secure location (e.g. village elder's house) in order to reduce this risk.

Table x. Opportunities and Challenges of Informal Savings Groups

Opportunities	Challenges
<p><i>Supply</i></p> <ul style="list-style-type: none"> • Informal savings groups already exist • Strong presence in rural and remote areas as well as with urban poor • No transaction or start-up costs • Limited risk, no chance of default <p><i>Demand</i></p> <ul style="list-style-type: none"> • Accessible - meet locally and provide community support • Mutual encouragement and commitment to save • Relatively easy to join or set up • Does not require collateral, limited credit assessment 	<p><i>Supply</i></p> <ul style="list-style-type: none"> • Difficult to scale up • Limited access due to informality • Limited capacity due to small savings amounts <p><i>Demand</i></p> <ul style="list-style-type: none"> • Takes a long time to save • Provides limited financial leverage • Other group members may default • Poor group management

CASE STUDIES

The following case study on CARE is an example of how end-user finance for small-scale clean energy products can be provided through informal group savings.

CARE

Countries of Operation: 87 (all projects), 26 (savings groups)

Number of Years in Operation: 69 years (all projects), 23 years (savings groups)

Company Website: www.care.org/

Founded in 1945, CARE started out with a mandate of assisting the survivors of World War II. Today CARE has over 900 humanitarian and community projects aimed at improving health, education, economic opportunity, and facilitating access to clean water and sanitation in 87 countries around the world. CARE seeks to assist the poorest communities in the world, with a particular focus on women.

In 1991, CARE started its first savings group in southern Niger. In the years since, CARE has helped to establish more than 150,000 savings groups in 26 African countries, with nearly 3.8 million members. In Ghana alone, there are 53,236 savings groups associated with CARE or similar organizations that promote informal savings groups.

These groups are known as Village Savings and Loan Associations (VSLAs). They usually consist of 15 to 30 members and meet on a weekly basis. The VSLAs do not receive start-up capital from CARE but are instead entirely operated through group member's contributions. The VSLAs are modeled on rotating savings and credit associations (RoSCAs), but with slightly more flexibility so that group members can also access loans. Group members contribute a designated portion of money each meeting. They can choose to contribute two portions (i.e. double the amount they would have normally contributed each month) and have the option of contributing up to five portions in a given month. Members are also able to access a loan from the pooled saving, which must be paid back to the group with interest before the end of the savings rotation. Each savings rotation generally lasts for 8 to 12 months. The group members then receive back their accumulated savings with any added interest from the loans that were administered. Group members receive training from CARE on group dynamics, governance, and money management. The training aims to ensure that the group is self sustaining and able to establish and train new groups.

Clients use the savings for a broad range of household expense ranging from basic needs such as food to "luxury items" such as TVs, and some clients report having used the savings to purchase consumer durables. Research has shown that VSLA group members also use their savings on income generating activities. Participation in VSLAs have been shown to generate other positive impacts such improving women's ability to influence decisions in their household and their community. CARE's VSLAs illustrate how village and informal savings groups can provide a way to finance livelihood-enhancing household consumer durables such as stoves and lanterns. Clean energy products that reduce recurring household expenses and improve lives are potentially an attractive savings target for VSLA group members.

Layaway

How Layaway can Finance Clean Energy Products

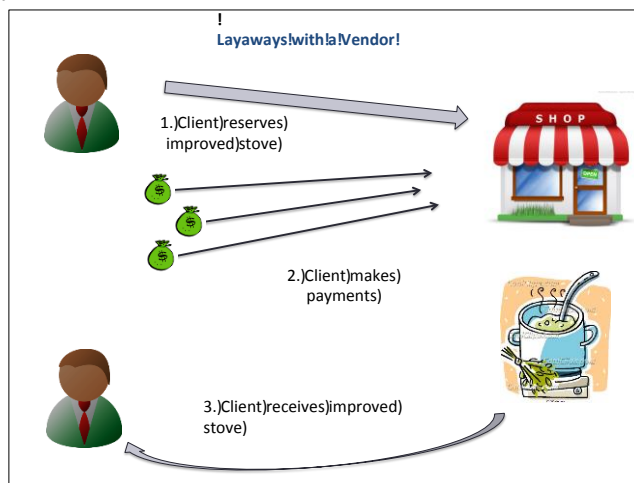
Overview

In many developed economies, layaway – the option for a customer to pay for a product in installments over time and then collect the product from the vendor at a later date once all installments are complete – has been a popular consumer financing option since the Great Depression in the 1930s. The use of layaway declined in recent decades with the increased use of credit cards and access to store credit, however, recent economic hardship linked to the global financial crisis at end of the last decade has seen a rise once more in the use of layaway. The resurgence in the use of layaway in developed countries has led some global retailers to introduce e-layaway schemes in recent years. A similar interest in layaway as a financing option for consumers in developing countries is also on the rise due to risk adverse lenders and consumers that are wary of finance or overburdened with microloans.

Business Model

A form of savings that shares characteristics of asset finance, layaway allows the consumer to put a product on hold with a vendor or retailer and then make payment installments to the vendor until the product is paid for in full, after which, the consumer receives the product. The payment installments can vary; some vendors may request that the customer pay a fixed amount at fixed intervals or the consumer could be free to make payments when they choose. In order to cover the administrative costs of offering layaway, some vendors charge a fee to the consumer when they purchase an item on layaway. In most cases, when a consumer is unable or unwilling to complete their layaway payments, the vendor will return the consumer's savings after subtracting an administrative fee.

Diagram x: Layaway



Partners, Institutions and Stakeholders

Layaway programs are typically offered by large retail stores in order to increase sales and to encourage consumers to save towards a particular product. While the vendor, or retailer, needs to cover the administrative costs of offering layaway, there is no risk of customer default, which makes layaway an attractive financing mechanism for vendors to offer to their clients. Vendors do not need to have access to finance or large start-up funds in order to offer this type of financing option to their clients. Layaway programs are generally offered and administered by the vendor and do not involve a financial institution. The layaway agreement is usually a direct agreement between the vendor and the customer. This type of financing is often used for consumer durables, including household items and appliances, furniture, clothing, and electronic devices.

Opportunities

Layaway programs offer consumers a type of ‘semi-formal’ saving plan that generates commitment to purchase a product. Layaway mechanisms have proven successful across numerous sectors in developing countries, including the sale of irrigation pumps, solar home devices (see case studies below), seeds to rural farmers, and photovoltaic (PV) systems to rural consumers.

Supply side opportunities

Offering layaway has the potential to significantly boost sales. For consumers who wish to purchase the product but do not have the ability to do so, entering into a layaway agreement commits the consumer to purchase the product in the future. This allows the retailer to retain consumers who wish to purchase their product but cannot make the purchase immediately. Without offering layaway, the consumer may save for the product but then make the purchase with a different retailer. It also allows the retailer to develop a relationship with the consumer through regular points of interaction during payment. This provides an opportunity to build consumer loyalty. Moreover, the retailer does not bear any risk of default as they would with other finance schemes (like asset finance where the consumer receives the product upfront). Given that there is no risk of default, no collateral is required and this type of financing mechanism can be extended to (perceived or actual) high-risk consumers.

Mobile payment mechanisms can reduce the retailer’s operational costs incurred by offering a layaway option and provide a direct communication channel between the retailer and consumers (for marketing other products, gathering information for carbon credits, or understanding the customer base). Mobile payments also lower the consumer’s time and transportation costs when making payments towards their layaway.

Demand side opportunities

Layaway is particularly suited to low-income consumers who are unable to purchase items in one transaction as it allows for them to save in accordance with the frequency of their income and their ability to pay.

One of the most frequently cited benefits to engaging in layaway from a consumer's perspective is that they have the freedom to decide when and how much they will pay towards their product. Engaging in a layaway scheme creates a financial incentive for the consumer to save, it channels motivation, and, by depositing installments with a vendor, the consumer does not have access to their savings to then spend it on something else.

Challenges

While there are some challenges for retailers when providing layaway as a financing mechanism for consumers, there are more challenges for the consumer when considering whether to enter into a layaway agreement. This is because there is more risk for the consumer than the retailer.

In some economies where the currency is not stable, layaway may not be practical given that the price of the product is usually agreed at the beginning of the layaway period. If the currency is devalued over the period of the layaway, the vendor will receive less for the stove because the real price of the product will have decreased. If the currency increases in value, the real price of the product increases and the consumer may not be willing or able to stick to the agreed price as they would have to pay more for the stove. This has been a significant issue in Ghana where the currency has been significantly devalued since the beginning of 2014. As such, one vendor who was offering layaway as a financing option for the purchase of improved cookstoves limited, through a *de facto* currency hedge, the length of the layaway period to a maximum of one month to avoid the costs associated with changes in the value of the currency.

Supply Side Challenges

Tracking and accounting for layaway agreements with consumers will inevitably incur a certain amount of operational and administrative costs for the retailer. However, providing access to layaway as a financing option may increase overall sales, which could assist with covering the administrative costs. In addition, strong market presence and brand reputation are essential in order for the consumer to place trust in the vendor given that the vendor is holding onto the consumers savings via the layaway mechanism.

Demand Side Challenges

While one of the strengths of the layaway model is that consumers can choose when they make payments; this is also one of the challenges. Due to the unstructured nature of layaway, there is limited incentive to make payments given that there are no repercussions. This may result in consumers taking a long time to pay off the entirety of the layaway. Some consumers may not finish the payments and, depending on the agreement with the vendor, it may result in relinquishing the savings that the consumer

had made towards the product. A way to overcome this could be for the retailer to send reminders to consumers via text messages and/or to suggest a layaway payment plan that the consumer could realistically meet.

Layaway as a financing option is often offered by large retail stores in urban areas. Traveling to and shopping at a large retail store can be intimidating for rural and BOP consumers and may not be practical due to time and transportation constraints. Offering layaway through a more informal sales/distribution channel also has its challenges. If using a door-to-door model, consumers may be wary of parting with their money without receiving the product, particularly if the sales agent is unknown to them (i.e. not residing in their village). It is very risky for the consumer who may be concerned that the sales agent will not return and they will lose the money paid towards the layaway for the product.

Time and transportation costs associated with making repayments can also be a barrier to taking up layaway, particularly when the repayments are small. Utilizing mobile payment mechanisms can help to address this barrier, however, some consumers may not be willing to utilize mobile payment mechanisms because they wish to 'see' the product and/or they have difficulty trusting that the vendor will stick to the agreement.

Table x. Opportunities and Challenges of Layaway

Opportunities	Challenges
<p><i>Supply</i></p> <ul style="list-style-type: none"> • Easy for the vendor to set up • Low start up costs for the vendor • No default risk or repercussions borne by the retailer or consumer • Opportunity to build customer loyalty • Can capture consumers that may otherwise purchase the same product from a different retailer 	<p><i>Supply</i></p> <ul style="list-style-type: none"> • Administrative and account keeping costs for the retailer • Consumers wary to trust retailers with their savings • Retailer requires strong brand reputation and market presence
<p><i>Demand</i></p> <ul style="list-style-type: none"> • Dedicated savings towards layaway provides incentive and commitment for consumers without financial pressure • Consumer able to decide when payments are made • No collateral required • Mobile payment mechanisms can limit time and transportation costs for the consumer and reduce 	<p><i>Demand</i></p> <ul style="list-style-type: none"> • Could take a long time for consumer to pay off/ they may not complete payments • Consumers may find it difficult to trust that the vendor will stick to the layaway agreement • Time and cost intensive to pay installments with the vendor

administrative burden for the retailer

- Some consumers may be wary of mobile payments before the receive or 'see' the product

CASE STUDIES

The following case study on Kickstart is an example of providing end-user finance for small-scale clean energy products through layaway.

Kickstart

Countries of Operation: Main countries of operation include Kenya, Tanzania, and Mali

Number of Years in Operation: 23 years

Energy Product/s for Sale:

- MoneyMaker Max - irrigation pump
- Super MoneyMaker - irrigation pump
- MoneyMaker Hip Pump - irrigation pump
- MoneyMaker Block Press - oil press
- MoneyMaker Oil Press - oil press

Company Website: www.kickstart.org/

Population of Country: Kenya, 40,909, 000; Tanzania, 44,973,000; Mali, 13,986,000

Number of MFIs Operating in Country: Kenya, 51; Tanzania, 21; Mali, 22

Number of MFI Borrowers: Kenya, 1.4 million; Tanzania, 346,628; Mali, 286,976

In 1991, the founders of what is now known as KickStart, had a broad vision of assisting rural, small-scale farmers. A few years later, in 1998, KickStart began to develop a line of manually operated irrigation pumps. By September 2014, the founder's vision had been realized and KickStart had sold almost 250,000 pumps across Africa, with the majority of sales in Kenya, Tanzania and Mali.

With a market-based approach to their business operations, KickStart developed a layaway financing mechanism to help their clients pay for products. The layaway system allows KickStart customers to contribute small amounts toward the purchase of a pump.

Business Model

KickStart's layaway program is called *Tone Kwa Tone Pata Pump*, or TKT for short. From Swahili, this translates to 'drop by drop gets the pump'. Consumers are required to make a 15 to 20 percent deposit when they start their TKT layaway and reserve a KickStart product. They are then able to make small payments at any time, for any amount, using M-PESA mobile money in order to pay for the product in full. Each consumer receives an

M-PESA PayBill number, which is an individual code that must be cited when conducting an M-PESA transaction to make payments.

KickStart products are sold to rural farmers through local agricultural stores and marketed by KickStart sales representatives. Some of the sales representatives previously offered informal layaway plans to farmers that they knew. Realizing the potential to scale up this type of financing mechanism, KickStart decided to develop a layaway program that utilizes mobile payments through the Kenyan mobile money platform M-PESA.

In the past, KickStart allowed consumers to take up to nine months to complete their layaway. They found, however, that payments start to lag after the first few months of the layaway period. KickStart limited the payment period to a maximum of three months and found this to be a more successful payment period.

KickStart found that more than 30 percent of the TKT layaway customers are women, which is a higher representation of female consumers than for purchases without the use of layaway. KickStart also found that consumers tend to complete their layaway plan faster when using the TKT mobile plan than an informal layaway agreement.

Lessons Learned

KickStart acknowledges several lessons that they have learned since commencing their operations. One of them is that KickStart products are particularly well suited to a layaway mechanism as the irrigation pumps are mechanical, not electric, and therefore do not have a 'shut-off' device. Many of the products sold on 'pay-as-you-go' or asset finance are viable because they have an internal "remote shut off" functionality that renders them useless unless the agreed payments are met. This has led to the implementation of consumer finance mechanisms like their layaway program.

Remittances

Overview

Millions of migrants around the world send money to friends and family back home, this transfer of funds is known as remittances. With increasingly fast and reliable means to transmit money, international remittance transfers are estimated to be greater than US\$500 billion annually, with domestic remittances adding billions to this figure. World Bank figures indicate that around three quarters of international remittances are sent to developing countries. The United States Agency for International Development (USAID) estimates that, globally, there are over 230 million people, known as diaspora, residing outside their country of origin. Whether by choice, due to an environmental disaster, or for political reasons, the vast quantity of remittance flows suggests that diaspora seek better economic opportunities and wish to share their monetary gains with family back home. As

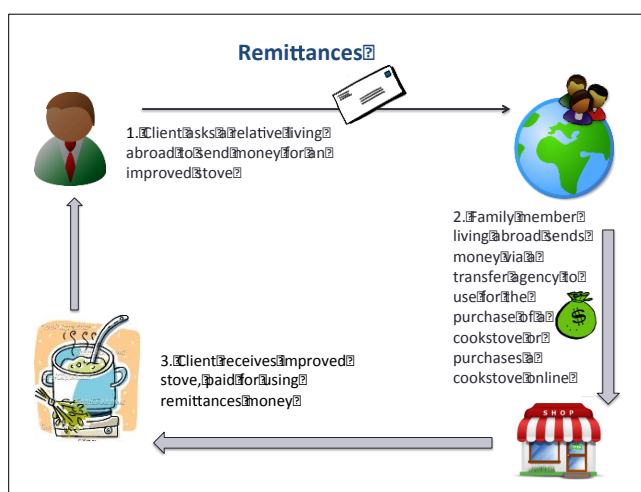
remitters continue to reside outside of their country of origin, they are increasingly interested in linking their remittances to products and services rather than sending cash.

Remitters wish to purchase products and services for their family that will improve their livelihood and well being, increase their ability to generate income, and relieve them of some of the large and recurring expenses. Majority of the recipients of remittances are among the world's poorest, which means that many of these recipients lack access to clean water, sanitation and energy. Clean energy products, clean and improved cookstoves, agricultural tools, as well as water and sanitation apparatuses are the types of products and services that remitters can send to have a fundamental impact on their family. As the number of international migrants continues to grow, so too does the potential for financial institutions and companies operating in these sectors to benefit from tapping into remittance flows.

Business Model

Remittances as a business model, or financing mechanism, involve a migrant earning money outside of their usual country or place of origin while members of their family remain in the migrant's home. The migrant wishes to share part of their monetary wealth with their family so they decide to send, or remit, money to their family back home. Given the cost of physically traveling back to their home and the risk of carrying cash, the migrant, or remitter, typically opts to remit money through an external partner or institution for a fee in order to safely deliver the cash to their family. To provide this service successfully, the partner usually has an office in the place where the remitter is located as well as a branch or a partner institution in the remitter's place of origin.

Diagram x: Remittances



Partners, Institutions, and Stakeholders

There are a number of partners or mechanisms that can facilitate the transfer of remittances. Official remittance transfers typically happen through a specialized financial institution like Money Transfer Organizations (MTOs). MTOs are a dominant remittance channel, which often have huge distribution and sales networks within the receiving country. Sending remittances through an MTO usually involves the remitter depositing the cash with the MTO in person where they have migrated to, after which the family member is then able to pick up the cash in person from a branch in their (and the remitter's) country/place of origin. Formal financial institutions, including large commercial banks, microfinance institutes (MFIs), and non-bank financial institutions, are another popular means to send remittances. Remittances transfers through formal financial institutions can operate similarly to MTOs or may be tailored to provide a financial service to the remitter's family. Some financial institutions have already developed financial products that capture remittances to finance housing improvement, education loans, contributions to savings or pension schemes as well as bill payments.

Nuances and Complexities

Remittances can also occur through e-commerce websites. The rapid growth of online retail platforms – often local adaptations of Amazon's business model – into recipient markets provides another platform for remittances to be targeted at specific purchases, including consumer durables and clean energy products. Remittances via e-commerce sites allow a remitter to purchase a product or service online, from any location in the world where they have access to the internet. The remitter typically pays via debit/credit card or a money transfer system like PayPal¹ and is able to opt for the product or service to be directly delivered to their family in their country of origin. Local delivery of the product or service is key to an online retailers success. For this reason, the online retailer will usually be based in the remitter's country of origin to enable and ensure that the product or service that was purchased is delivered successfully.

Remittances occur on both an international and a domestic scale. While it is more difficult to collate international data on the number of internal migrants within countries, the number of domestic migrants on a global scale is likely to be higher than international migrants. Increasing rates of urbanization and the economic opportunities that exist in urban areas, together with the cultural and linguistic familiarity of remaining within one's country of origin, provide strong incentives to relocate domestically. This provides a significant opportunity for financial institutions and domestic companies to tap into domestic remittances and leverage the wealth of (urban) migrants to support their (rural) family members.

Opportunities

Global remittance flows dwarf Official Development Assistance. The World Bank estimates that in 2013, official remittance flows to developing countries from the migrant diaspora topped US\$415 billion. An estimated 30 million African migrants send US\$60

¹ Some online clean energy retailers also accept Bitcoin.

billion to their home countries per annum, yet Africans pay the highest charges for money transfers in the world (12% vs. 9% as a global average, according to the World Bank). McKinsey estimates that by 2025, the African online retail market will be worth \$75 billion. Combined with unofficial flows, and remittances within national corridors, overall remittances may be more than a trillion dollars annually.

Supply Side Opportunities

Strong migration trends make it possible for the private sector to target and tap into this growing market by tailoring their products to meet consumer needs. Countries that migrants choose to relocate to are often linked to their own with political and cultural ties, but provide greater economic opportunity. French-speaking African nationals are likely to move to France. Large numbers of diaspora are often found residing in states that were an ex-colonial power or had strong ties to the country, as demonstrated by the Kenyan diaspora in the United Kingdom or Filipinos in the United States. Brands with a strong market presence in the remitter country or their country of origin can target their marketing efforts at a select diaspora group and tailor their business model to allow for remittance flows.

Demand Side Opportunities

Recipients of remittance flows are often received by part of the two billion un(der)electrified people in the world, many of whom use expensive, low-quality, inefficient and dangerous energy sources for lighting, cooking and heating, the opportunities for leveraging remittance channels to finance small-scale clean energy access are enormous. Given the growth in the volume of remittances annually, the importance of remittances as a source of cash in poor households, and the correlation between high remittance-receiving countries and low electrification rates, the idea of using remittances as a way to finance improved energy sources is increasingly compelling. It is estimated that up to 25% of remittances are already spent by the recipients on household energy costs. Typically part of the global 'energy poor', recipients use remittance funds to cover traditional sources of fuel like candles, kerosene, charcoal, wood and diesel.

Remitters regularly report that they prefer to pay for recurring household expenses directly as it enables them to control the use of the money they send. Remittances sent via bank transfer could be used to pay utility bills or pay for Solar Home Systems (SHSs), cookstoves, bio digesters or other renewable energy products via a housing improvement loan. In addition, there are some companies that offer specialized services for remitters, where remitters can pay directly for food, cement or mobile phone top-ups for relatives at home, which is appealing to remitters. These are a form of 'in-kind' or goods remittances and potentially represent an interesting way to finance clean energy products.

Challenges

The remittances sector is highly regulated. There are international and country-specific laws and regulations that must be followed to prevent money laundering and terrorism. As a result, while the potential for tapping remittances to achieve a number of different

development goals – including financing small-scale clean energy – is high, it is also complex, with key challenges.

Supply Side Challenges

Brand reputation and strong market presence are essential for financial institutions and companies alike in order to build confidence with remitters that the products and services that they purchase will be of a high quality, delivered on time, and delivered (and installed) at the correct address in their country/place of origin. In addition, a very targeted marketing strategy is required to create awareness and build demand among remitters.

Demand Side Challenges

Recipients of remittances may be averse to receiving products and services rather than cash. However, remitters are increasingly willing to send goods to their family rather than cash because they know what the money is being spent on. Some remitters may have resided outside of their country of origin for several years and may have lost touch with the best and most appropriate products and services available in their country of origin. It is essential that any products or services offered by way of remittances are high quality, culturally appropriate and do not require significant behavioral change on behalf of the recipient (otherwise the product or service may not be used). Consideration also needs to be given to potential ongoing costs that the product or service may require.

For example, a remitter, who has adopted the use of LPG for cooking in their new country or place of residence, may purchase an LPG stove via an online website for their family back home. The stove is delivered and the family can use it for cooking on special occasions until the cylinder runs out of fuel. Once the cylinder runs out, however, it may end up sitting in the corner of the kitchen, unused. This can be a result of the cost of refueling the LPG cylinder, which the recipients either cannot afford or do not prioritize because they are able to collect wood or purchase cheaper² fuel. It may also be because they prefer cooking with a different type of fuel. In this type of situation, purchasing a fuel-efficient improved wood or charcoal stove may provide more value to the remitter's family. This is where knowledge of the demographics and behavior of the target market and the products that would best suit the recipients is essential.

Table x. Opportunities and Challenges of Remittances

Opportunities		Challenges	
<i>Supply</i>		<i>Supply</i>	
<ul style="list-style-type: none"> • Large and increasing global and domestic remittance market • Increasingly easy to facilitate remittances with e-commerce sites 		<ul style="list-style-type: none"> • Raising awareness with diaspora • Strategic marketing and targeting approach 	

² A wealth of research now shows that traditional biomass fuels are more expensive than cleaner fuels like LPG. This is dependent on many factors, mostly fuel prices, but the ability to purchase fuel in increments rather than a large lump sum, like refueling an LPG cylinder, is also a key factor.

- Limited transaction, operational and start-up costs
- Targeted and direct marketing and sales possible online
- No potential for default, limited risk for the supplier and the consumer
- Delivery, installation (where necessary), after-sales and warranty services necessary

Demand

- Draws on personal finance rather than aid or formal finance
- Low transaction costs for remitters
- Remitters are often familiar with the need for water, sanitation, and clean energy products to significantly improve the livelihoods of their family

Demand

- Remittance recipient averse to receiving a product or service rather than cash
- Ability to afford the associated and/or recurring costs of the product

CASE STUDIES

The following are three case study examples of providing end-user finance for small-scale clean energy products through remittances: Niokobok in Senegal; Mama Mikes in Kenya; and Sogexpress in Haiti.

1. Niokobok

Country of Operation: Senegal

Number of Years in Operation: 2 years

Energy Products for Sale:

d.light S10 (solar light) USD\$12

d.light S250 (solar light) USD\$35

BBOXX Solar Home Systems (USD\$479 – 821)

Company Website: www.niokobok.com/

Population of Country: 12,951,000

Amount of Remittance Inflows: USD\$1,614 million

Remittances as a % of GDP: 10.7%

Number of MFIs Operating in Country: 50

Number of MFI Borrowers in Country: 205,159

Niokobok is a Senegalese company that sells food and household goods via an online retail platform. The e-commerce site is targeted at over 650,000 Senegalese who live outside of Senegal. Many of the Senegalese diaspora live in France, which makes it easier to target and market to Niokobok's intended audience. Niokobok markets their online retail platform and delivery services via a digital marketing strategy, utilizing Google and Facebook advertisements to reach their target market.

Niokobok's online platform allows diaspora to bypass the high transfer charges of money transfer agencies and provides remitters with the ability to send specific items rather than money.

Clean Energy Products

Since 2013, Niokobok has offered clean energy products on its online retail platform, including d.light solar lanterns (USD\$12-35) and BBOXX solar home systems (USD\$479-821). Initially, in 2013, around 20% of Niokobok's sales were made up of clean energy products. In the past year however, this has decreased due to challenges related to finding appropriate partners in order to sustain the installation of solar home systems in rural and remote areas.

Business Model

Niokobok is a typical e-commerce site and remitters are able to purchase goods online from anywhere in the world with the use of a credit card. The products purchased on Niokobok are then delivered or made available for pick-up in Senegal. At the time of purchase, customers can choose whether they wish for the goods they are purchasing to be delivered or picked up at Niokobok's depot. Niokobok expected that around 50% of orders would request delivery of their goods. Request for delivery has been much higher than expected, however, with around 95% of orders requesting delivery.

Source: Niokobok website



The average purchase amount on Niokobok's online retail platform is around USD\$95. While Niokobok advertises that it was the first company to facilitate the sale and delivery of a ram, the most popular items that are purchased on their site are basic food items, including rice, oil, sugar, and milk powder.

Niokobok delivers food items in and around Dakar and Thies. These two regions cover about 45% of the population in Senegal. It takes Niokobok up to 2 days to complete the delivery of small items in these areas. For delivery within these two cities, the delivery charge is USD\$4.5.

Solar home systems (SHSs) purchased through Niokobok can be installed anywhere in Senegal. Installation of a SHS takes around one week to complete. The cost of installation varies on the location of the installation and the size of the SHS but it can be anywhere between USD\$17 to USD\$170. Niokobok has a network of local partners to provide the installation of a SHS outside of Dakar and Thies.

The current challenge for Niokobok is to develop their delivery channels across Senegal. Niokobok is currently seeking to expand its network of local partners who can install SHSs so that they can ensure and guarantee the installation of SHSs anywhere in Senegal within approximately one week of purchase.

2. MamaMikes

Country of Operation: Kenya

Number of Years in Operation: 13 years (sale of cookstoves just over 1 year)

Energy Products for Sale:

Wisdom Malaika Jiko (fuel-efficient wood stove, USD\$83)

BURN Jiko Koa (fuel-efficient charcoal stove, USD\$45)

Greenlight Planet Eco Solar Lamp (USD\$12), Pro2 Solar Lamp (USD\$43), Mobile Solar Lamp (portable, USD\$33)

Barefoot Go Solar Lamp (portable, USD\$43)

Barefoot Connect 600 (solar-powered lighting, phone-charging solution, USD\$200)

Company Website: www.mamamikes.com

Population of Country: 40,909,000

Amount of Remittance Inflows (Kenya): USD\$1,338 million

Remittances as a % of GDP: 3.0%

Number of MFIs Operating in Country: 51

Number of Borrowers in Country: 1.4 million

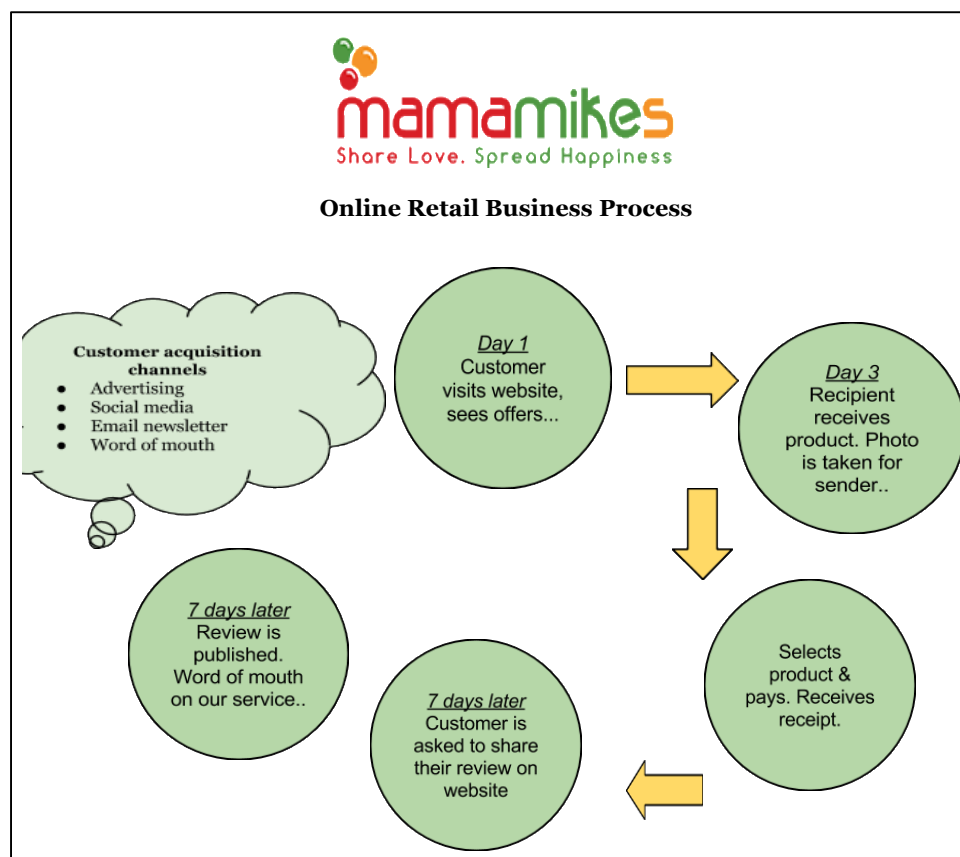
MamaMikes is a Kenyan company with an e-commerce business model. In operation since 2001, the MamaMikes website facilitates the flow of domestic and international remittances by allowing the Kenyan diaspora to send gifts, vouchers (such as food and electricity vouchers), services (such as mobile airtime or tuition credits) and products (including renewable energy devices) to family members or friends living in Kenya. MamaMikes was created to address two issues: the expense and logistical difficulty of sending goods from abroad back to Kenya and the preference of diaspora for directed remittances over cash transfers. According to MamaMikes, they were the first company to offer an online retail platform to facilitate the flow of remittances into Kenya.

Business Model

Anyone with access to the internet is able to access MamaMikes online retail platform. When a remitter, typically a family member or close friend, wishes to send something to someone in Kenya, they can access the MamaMikes website online and make a purchase. The MamaMikes website allows for remitters to use typical e-commerce payment channels, including credit cards and PayPal, to pay for the products that they are ordering online. Payments are made at the time of the online sale in one lump sum.

At the time of purchase, the remitter (who could be based anywhere in the world) provides a Kenyan phone number, and a delivery address (where available) in Kenya. MamaMikes uses the phone number to contact the recipient and arrange delivery of the ordered goods. It generally takes MamaMikes between 1 and 3 days to then deliver the product to the recipient in Kenya depending on the receiver's location. MamaMikes uses a motorbike delivery system to deliver goods to its consumers around Nairobi and outsources delivery when consumers reside outside of Nairobi.

Diagram x. MamaMikes Remittance Model



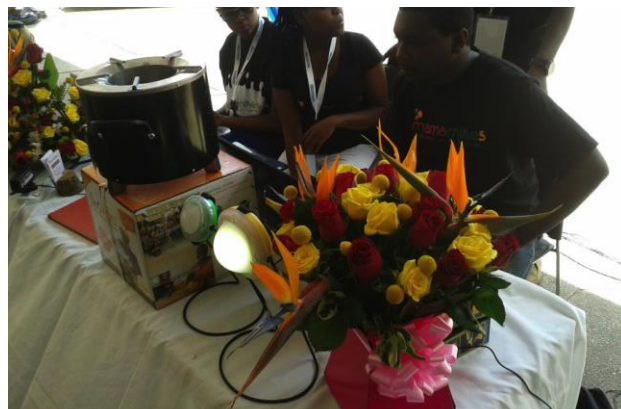
Target Market

MamaMikes decided to target the remittances market because they saw potential in the model given the large number of Kenyan diaspora. MamaMikes's platform users are widely dispersed across Europe and North America, as well as Nairobi, though the majority are based in the United States. MamaMikes believed that the diaspora were looking for the opportunity to order something online and have it delivered locally in Kenya. MamaMikes also recognizes that there are diaspora within urban areas in Kenya that wish to send goods to rural areas in Kenya. As such, MamaMikes intends to increase their focus on the domestic market and believe that it will be easier to target and market to local Kenyans.

Clean Energy Products

MamaMikes focuses on products with social impact or income-generating opportunities, including vouchers for supermarkets, cellular airtime, payment of utility bills or school fees, and renewable energy products. MamaMikes has also identified the promise of energy focused consumer durables, and sells clean and improved cookstoves, as well as solar lights. The cookstoves include: BURN Jiko Koa (charcoal improved stove), which retails at USD\$45, and the Wisdom Malaika M2 (improved wood stove), which retails at USD\$83. The solar products include several Greenlight Planet Solar Lamps, which retail between

USD\$12 and USD\$ 43, as well as the Barefoot Go Solar Lamp (USD\$43), and the Barefoot Connect 600, which includes four solar lights and a phone charger, and retails at USD\$200. These products are available via remittance purchases from international buyers and also directly to local customers in Kenya.



Lessons Learned

Over the last 13 years of improving their business model, MamaMikes have learned several lessons. MamaMikes tried several marketing channels but found online marketing to be the most efficient for their business model. MamaMikes uses social media, including Facebook, as well as direct marketing via phone calls and text messages using WhatsApp. MamaMikes has found strong partnerships with suppliers to be key to the success of their business. They build and maintain good relationships with all product suppliers, particularly those that MamaMikes receives supplier credit from. MamaMikes has found it important to establish distribution centers or franchises across Kenya. This has made it easier to outsource the delivery of goods. This is particularly essential for perishable goods like flowers and cakes. Shifts in the foreign exchange market can have significant effects on a remittance business model. MamaMikes has taken out an insurance policy to mitigate any negative shifts in currency. They add a small fee to each transaction conducted through their website in order to cover the cost of insurance and reduce their risk.

3. Sogexpress

Country of Operation: Haiti

Number of Years in Operation: 12 years (2 years facilitating remittances)

Energy Product/s for sale using remittances:

D.light S1 (USD\$11)

D.light S250 (USD\$57)

Barefoot Firefly (USD\$33)

Barefoot Power 2.5W (USD\$90)

Barefoot Power 5W (USD\$147)

Company Website: www.sogebank.com

Population of Country: 9,896,000

Amount of Remittance Inflows: USD\$1,781 million

Remittances as a % of GDP: 21.1%

Number of MFIs Operating in Country: 8

Number of Borrowers in Country: 180,642

Sogexpress is part of the Sogebank group, which includes Sogebank and several other entities. Sogebank was founded in November 1985 and Sogexpress was founded in October 2002. Sogexpress is the leading Money Transfer agent in Haiti and controls about 30% of the total market share of the money transfer business, with annual revenues of approximately United States Dollars (USD) \$923,000 and over 350 employees. Sogexpress is Western Union's largest agent in Haiti and controls about 70% of the Western Union money transfer business in Haiti. Sogexpress has national coverage with 62 flagship stores around Haiti.

In 2013, remittances accounted for more than 20% of Haiti's gross domestic product (GDP). Haiti's highly developed remittance market is a response to a geographically close and engaged diaspora, its position as the poorest country in the hemisphere, and an electrification rate of below 30%. Haiti received over USD\$2 billion in remittances in 2011, or the equivalent of 26% of GDP. This comes from over 2.5 million Haitians who live overseas, of which approximately one million are in the United States of America (USA), mostly in and around New York City and Miami.

Photo credit: Georg Neumann



Sogexpress is using the Haiti-USA remittance corridor to allow diaspora to remit clean energy products to families through an established and trusted Money Transfer Organization (MTO). A pilot project began in 2012 to leverage the existing remittance corridor, the very low electrification rates in Haiti, and the established network of Sogexpress branches in the country, to bring small-scale solar products to poor Haitians. The pilot (Phase I) was funded by the Inter-American Development Bank's Multilateral Investment Fund and the Clinton Bush Haiti Fund, while Phase II received support from

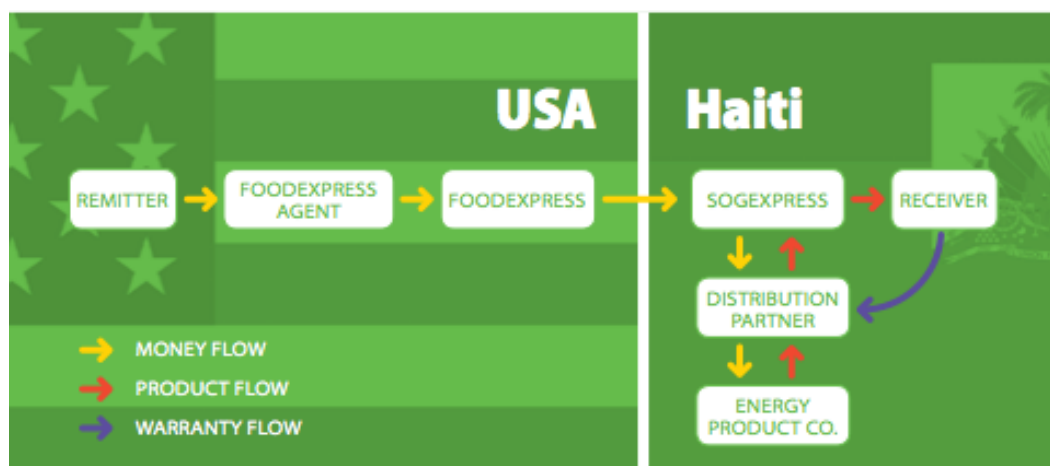
the United States Agency for International Development's (USAID) Renewable Energy Microfinance and Microenterprise Program (REMMP). Both phases, have built upon market research to strengthen Sogexpress's remittances platform to reach more customers by fostering access to clean energy in Haiti. It achieves this by using remittances as a viable source of end-user finance for the purchase of clean energy products and developing a credit facility for customers and sales agents.

The pilot phase, which ran between April 2012 and April 2013, was a success, with high demand and satisfaction among customers for the solar lighting products (listed above). The fierce competitiveness of the Haitian remittances market meant that appropriate pricing was extremely important. These products were selected partly because they matched the average monthly remittance size (USD\$60-200). Larger solar models have higher utility and desirability among consumers. Moreover, expensive systems can absorb supply chain costs better than smaller systems. The next, expanded phase of the project involves formalizing a street agent network in Haiti, enabling street agents (i.e. vendors) to access credit for inventory financing, and expanding the remittance element of the model through a partnership with a large international remittance company.

Business Model

In partnership with an existing MTO, the sender visits the MTO agent in person and purchases an energy product. For example, in the Phase I of this project, the MTO partner was Foodexpress and in Phase II it will be Western Union. As part of the agreement, the MTO (Foodexpress or Western Union) has agreed to provide a range of clean energy products that the remitter can choose from, such as basic solar lanterns, solar lanterns with cell phone chargers, and solar home systems. After selecting the item to be purchased, the remitter provides the contact information of the receiving family member in Haiti. The recipient then picks up the product at a specific location in Haiti – in this case, one of Sogexpress' 62 stores. Figure 1 (below) illustrates the funding chain from remitter to recipient.

Figure x. The Sogexpress Remittance Model



A robust technical service solution was established through a partnership with Micama Soley, which is the solar division of a larger company called SAFICO. Micama Soley provides training to Sogexpress agents on the use of the clean energy products, as well as a warranty and after-sales service. Micama was contracted to handle shipping, importation, and warranty services. Micama delivers the products to the Sogexpress warehouse and Sogexpress delivers inventory to its flagship stores. For warranty issues, the Sogexpress flagship stores send malfunctioning products back to the central warehouse, where Micama picks them up, services or replaces them, and then re-delivers them to the warehouse.

During the pilot phase, which lasted until April 2013, 6,136 solar products were sold - benefiting approximately 30,700 people. As of mid-2014, well over 10,000 products benefitting 50,000 people had been sold. Importantly, more than 90% of the total customers who bought a lamp (including cash purchases from agents) indicated that they were remittance clients, suggesting that for the majority of people, remittances contributed either directly or indirectly to the purchase of the clean energy device.

Saving with a Financial Institution

How Saving with a Financial Institution can Finance Clean Energy Products

Overview

Households have always saved - as insurance against emergencies, for religious and social obligations, for investment, and for future consumption. However, there are an estimated 2.5 billion adults worldwide who do not have a formal bank account. While 89% of adults in developed economies have a savings account, only 41% of adults in developing economies have an account. Within developing economies there is significant inequality in who has an account. Men hold an estimated 6% to 9% more bank accounts than women across all income levels in developing economies. Moreover, the wealthiest people are twice as likely to have a bank account as the poorest in developing countries.

This does not mean that the poor do not save. Most poor people use a variety of informal savings instruments, like savings clubs or investments in gold and livestock, to manage their small and unpredictable incomes. These informal mechanisms are often at risk of loss, theft or depreciation and fail to meet the savings needs of the poor. When poor households are provided a safe, easily accessible opportunity to save, their commitment to saving, and the amount they manage to save in proportion to their total income is often remarkable.

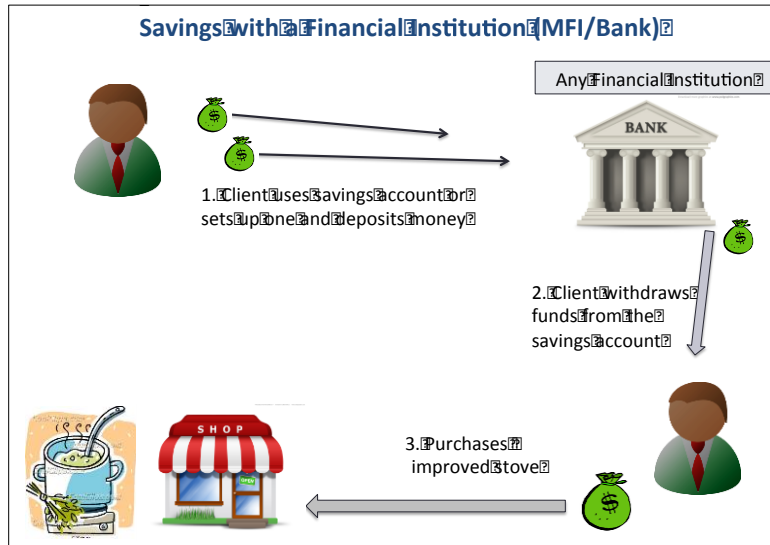
Microfinance institutions have long offered savings products for targeted purposes. This includes savings accounts for school/education fees, savings for a wedding or dowry, the purchase of gold or for specific income-generating assets, such as a motorbike or auto

rickshaw. Less common are savings products specifically for clean energy products. However, given the widespread use of savings products for other specific household and personal needs, this financial service provides an interesting opportunity for risk adverse consumers seeking a safe and affordable mechanism to save for a clean energy product. To date, finance for small-scale renewable energy has overwhelmingly focused on credit, and the sector is yet to thoroughly test the demand and business model for dedicated energy savings products.

Business Model

Saving with a financial institution is essentially the basic banking model for the individual user. The user deposits their savings with a financial institution and then can use their money for purchases once enough savings have been accrued. Fees and charges vary among financial institutions, however, savings accounts generally do not incur a cost to the consumer or the cost is minimal. Savings products offered by microfinance institutions for a specific purpose are sometimes offered for a period of time (such as 6 months, 2 years, 5 years) and the consumer is required to maintain a certain balance or deposit a fixed amount at fixed intervals. For example, a savings product may require the consumer to make one deposit per month and no withdrawals in order to not incur a fee. The stakeholders involved in this business model are generally limited to the individual and the financial institution; the clean energy retailer is usually not involved.

Diagram x. Saving with a Financial Institution



Opportunities

Although demand is high, only around half of the world's households have access to a savings account. Financial institutions can bring much-needed financial services to underserved groups, such as women, youths, and the poor, by engaging technology innovations and economies of scale. Mobile money and mobile banking offer a great opportunity to expand financial services and savings products into more remote areas of

developing countries where bank branches are often not readily available. To design more appropriate financial and savings services, institutions must actively work to better understand poor people's needs. Demand studies are in short supply, and more research is greatly needed to help institutions better design and market their savings products to poor clients.

Supply Side Opportunities

There are benefits for financial institutions that offer specific savings products for clean energy purposes. These could include increasing the institution's future client base, or increasing an institution's information on clients' ability to manage finances and repay loans. In addition, the overwhelming majority of transactions would be deposits. Generally, the poor want to be able to withdraw if a pressing need arises, however, they tend to seldom make withdrawals. Poor people have a multiplicity of needs and are not always looking for a highly liquid account to use on a regular basis. Savings accounts targeted for medium and long-term needs are particularly attractive to MFIs in search of capital for lending, and appropriately designed products could encourage these.

There are also many ways for financial institutions to minimize the cost of providing savings services, and possibly even to make a profit from doing so. These can include structured pricing to encourage customers to maximize deposits and minimize withdrawals. Institutions can elect to pay interest only on accounts with balances above a certain minimum, or charge fees for specific savings services. In order to reduce withdrawals, institutions can limit the number of withdrawals per period, set minimum withdrawal amounts, require notice to withdraw, or charge for withdrawals. In addition, an institution can reduce costs through use of alternative delivery channels. Furthermore, institutions offering "micro" savings can also seek up-market, higher-value savers to spread the costs.

Demand Side Opportunities

Research also suggests that the poor often have a strong "illiquidity preference" – meaning that they have a need for structured savings mechanisms that prohibit withdrawals for trivial wants and that allow them to fend off the demands of marauding relatives. Structured savings and security of their savings is highly valued and it has been shown that even consumers at the bottom of the pyramid are willing to pay for these services. For example, the Ghanaian 'susu' system, where consumers pay savings collectors to regularly collect a small amount from them at their home or place of work.

Challenges

Although demand is high, only around half of the world's households have access to a savings account. The main barrier to opening or offering savings accounts for consumers and financial institutions alike is cost.

Supply Side Challenges

The main challenge to financial institutions considering offering a savings product for clean energy is the cost and perceived lack of profitable benefit. Financial institutions generally perceive the poor to be a low profit generating market segment and those that do provide financial services to the poor often focus on loans rather than savings. Many institutions are reluctant to offer a savings product for poor people because of the many small transactions – and therefore high costs – involved. The smallest savings accounts are also the most costly for financial institutions to maintain, and these are usually the accounts held by poor and low-income clients. Moreover, the geographical isolation of many of the poor, who often live in rural and remote areas, are far removed from banks' branch networks.

However, these challenges can be addressed. While it is necessary for financial institutions to provide full financial intermediation, including a profitable credit business, to cover their costs and be sustainable, significant opportunities exist (for the above-mentioned reasons) for specific clean energy savings products.

Demand Side Challenges

There are economic, social, geographic, and technological barriers to the poor accessing financial services and formal savings accounts. Global self-reported barriers to having an account (from 70,000 respondents) include: not enough money (30% of participants), too expensive (25%), family member already has account (23%), too far away (20%), lack of necessary documentation (18%), lack of trust (13%), and religious reasons (5%).

Annual banking fees and transaction fees make small transactions unviable. Since much of the poor population moves small amounts of money the fees are disproportionately high. High fees are sometimes a reflection of a poor physical or institutional infrastructure or a lack of competition. The poor are sometimes affected by predatory lending. The very appearance and location (often in an urban area) of a financial institution can be intimidating. The complexity of the paperwork, which may be exacerbated by illiteracy, along with the terms and conditions or regulations governing the financial services on offer can be overwhelming. Women are more likely than men to be indirect users of a family member's account, and therefore not seek to open their own account. The world's poorest people live in rural and remote areas, where it would be disproportionately expensive (in time, transportation costs, and economic opportunity costs) to travel to a savings institution. Furthermore, new technologies (such as internet and mobile banking) developed to streamline financial services and overcome geographical barriers are often not accessible to the poor.

Table x. Opportunities and Challenges of Savings with a Financial Institution

Opportunities	Challenges
<p><i>Supply</i></p> <ul style="list-style-type: none"> • Increase client base • Improve client's financial education and ability to leverage 	<p><i>Supply</i></p> <ul style="list-style-type: none"> • Administrative and account keeping costs



their finances through additional financial services

Demand

- Savings secure from theft, diverted use, family members, impulse spending
- Commitment to save through dedicated savings account

- Limited ability to reach rural and remote consumers
- (Perceived) low profit

Demand

- Costs – expensive bank fees, and time, transportation, and opportunity costs of travelling to the financial institution
- Social barriers – structural violence, intimidation, illiteracy, gender disadvantage
- Geographical – distance to the financial institution
- Technological – ability to use and access financial technology (internet banking, mobile banking)

CASE STUDIES

The following case study on KUSCCO is an example of providing end-user finance for small-scale clean energy products through a savings and loan program.

KUSCCO

Country of Operation: Kenya

Number of Years in Operation: 41 years (cookstove project started in October 2013)

Energy Product/s for Sale:

Envirofit M5000 (wood cookstove, USD\$28-40)

BURN JikoKoa (charcoal cookstove, USD\$40)

(Previous products have also included bio digesters and LPG cylinders)

Population of Country: 40,909, 000

Number of MFIs Operating in Country: 51

Number of MFI Borrowers in Country: 1.4 million

Kenya Union of Savings and Credit Co-operatives (KUSCCO) was registered in 1973 to coordinate and oversee the Savings and Credit Cooperatives (SACCOs) in Kenya. Within Africa, Kenyans have the highest SACCO membership, accounting for around 33% of national savings. Of the 5000 SACCOs that exist in Kenya, around 3000 are aligned with KUSCCO.

The main role of KUSCCO is to provide support to SACCOs regarding advocacy and lobbying, organization and development, and the internal management of savings. In addition to their administrative role, KUSCCO also facilitates the sale of consumer durables. KUSCCO partners with clean energy manufacturers and distributors on behalf of SACCOs that are KUSCCO members. SACCOs are generally concentrated in peri-urban and urban areas, which means that KUSCCO's target market is also concentrated in urban areas.

Business Model

The KUSCCO, and subsequently the SACCO, model is based on savings. This model encourages and aims to leverage savings through a method that is also known as a 'savings and loans' model. If a SACCO wishes to purchase clean energy products for their clients through KUSCCO, they must first save a portion of money. KUSCCO will then provide the SACCO with a loan or credit for up to three times the amount that the SACCO saved. For example, if a SACCO saved USD5,000 then they are eligible to receive up to USD15,000 in credit. SACCOs provide a similar savings and loan model to their clients. The client is required to save some money, after which they are able to borrow up to three times the amount that they have saved. Some SACCO products provide their clients with a multiplier of up to five times the savings.

KUSCCO encourages SACCOs and their clients to use their savings (and loan) to purchase clean energy products. As such, KUSCCO partners with clean energy retailers. KUSCCO currently has a partnership with Boma Safi, a cookstove retailer. KUSCCO encourages their partners, like Boma Safi, to send sales agents with the technical knowledge of the clean energy product to SACCOs across Kenya in order to demonstrate their products to SACCOs and their clients. In addition to cookstoves, Boma Safi offers a range of life improving items to SACCO members, including solar equipment, solar lanterns and water purifying equipment. KUSCCO is currently only working with Boma Safi but aims to be working with more clean energy distributors in the near future.

Once a consumer decides that they wish to purchase the clean energy product on offer, they have the option to purchase the product direct from the retailer, or from their SACCO, or from KUSCCO. KUSCCO encourages consumers to purchase through their SACCO. This saves KUSCCO administrative costs and increases the SACCOs business. When a consumer purchases through their SACCO, the financial terms are agreed between the consumer and the SACCO and follow the savings and loan methodology described above.

The consumer is charged an interest rate on the amount that they loan from their SACCO, which is often below the personal interest rate charged by local banks or microfinance institutes (MFIs). KUSCCO estimate that they have sold between 5000 to 6000 improved cookstoves to SACCO members since their cookstove program started in October 2013.

KUSCCO is involved in the relationship between the clean energy retailer and the SACCOs for several reasons. KUSCCO can provide access to a large potential client base for the retailer. The SACCOs often require additional financing from KUSCCO in order to provide access to additional savings and loan credit for their clients. KUSCCO also plays an important role in vetting clean energy products and retailers so that SACCOs can rely on the quality of the products that KUSCCO introduces to them.

Lessons Learned

KUSCCO has learned by experience that it is best to stick to their expertise: finance. When promoting clean energy products to SACCOs and their members, KUSCCO recognized that they were not in a position to provide expert knowledge on the products and their technology. As such, KUSCCO has developed strong partnerships with clean energy retailers like Boma Safi. The clean energy retailers focus on marketing, raising awareness, and selling the products while KUSCCO and its' SACCOs ensure that the client has access to the appropriate financial services to purchase the product.

KUSCCO has also found that the price of a cookstove is key when determining whether a product should be sold on credit or cash. When the pricing of a product is low, a lot of emphasis should be on raising awareness. Incidentally, most SACCO members can easily afford USD\$40 to purchase a cookstove on a cash basis. So the value add for KUSCCO with these members is that they are promoting a product that is economically, environmentally and socially beneficial to SACCO members. However, for SACCOs in rural areas, many of their members require financing for a USD\$40 cookstove so their members can take advantage of the 'savings and loan' product available for purchasing a cookstove.