AFFORDABILITY MECHANISMS AND ENERGY ACCESS

Using Innovative Metering Technology for Pre-Paid Solar Systems to Increase Affordability for India’s Energy Poor

Simpa Networks brings the established “pay-as-you-go” pricing model into the world of energy access. With the same pricing structure that first allowed the poor to access the mobile phone, Simpa removes the financial barriers that leave energy services inaccessible to the bottom of the pyramid. Through its proprietary “Progressive Purchase” metering technology, Simpa’s clients pay to use their Solar Home Systems through monthly pre-paid installments, and own the assets by the end of the period, making solar technology “radically affordable” and bringing the social and economic benefits of modern energy to underserved communities.
Simpa’s Customers

Simpa is based in India, with current operations in the state of Karnataka and eight districts of Western Uttar Pradesh: Mathura, Aligarh, Agra, Kasganj, Hathras, Budaun, Bareilly and Pilibhit.

Simpa targets three main demographics: wholly off-grid households, poor-grid households, and micro-enterprises. Simpa’s market is rural and peri-urban India, where 60 million households lack any access to the grid and many more households are severely under-electrified. Within this market segment, off-grid households average a US$50 to US$100 annual expenditure on inferior, dangerous electrical products, even though evidence shows they are willing to pay for reliable energy access.

A typical Simpa customer has a household income of INR100,000 (US$1,500) to INR200,000 (US$3,000) per year. More importantly, as farmers, their incomes tend to be irregular and uncertain, making it difficult to save. Through its unique business model, Simpa empowers these same Indian households to spend their money more efficiently.

The Triple Advantage of Pre-Paid Technology

Simpa’s pre-paid metering and mobile payments technology platform does three jobs:

- **Makes it very easy to pay**: Creates a familiar pre-paid, pay-as-you-go experience for our customers.

- **Reduces transaction costs**: Greatly reduces transaction costs of collecting micro-payments from large numbers of distributed customers.

- **Mitigates risks for investors**: Full transparency into customers, agents, transactions and payments histories, links service to payments.
Many of the world’s poor would be able to purchase solar power if they were able to pay for it in small increments over an extended period of time. Simpa seeks to make Solar Home Systems (SHS) affordable for the poor through innovative technology that allows for asset financing through “Progressive Purchase.” Borrowing from the highly successful pay-as-you-go pricing mechanism that launched the mobile phone into the Indian mass market, increasing the number of mobile phones in India from 5 million to 900 million over the course of a decade. Simpa hopes to likewise render the SHS “radically affordable” to the poor.

In Simpa’s Progressive Purchase model, the customer pays for the SHS in small increments as part of an energy bill rather than paying the full cost upfront. After passing a credit assessment, Simpa’s customers make a small down payment – approximately 10 to 20 percent of the system’s total cost – and a SHS is installed. Once in place, Simpa technology allows the customer to purchase the solar energy produced by the system as a service. On a cloud-based interface accessible through the Internet or a SMS gateway, the customer pre-pays for energy credits, called “energy days,” each providing a day’s worth of solar power. Through its metering mechanism, the system automatically shuts down once credits have been exhausted. The customer can easily purchase additional energy days via local agents with a mobile phone at any time.

Progressive Purchase differs from traditional pay-as-you-go mechanisms in an important respect: a portion of the money spent on each energy credit purchase goes towards the ultimate purchase 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 system unlocks permanently, producing free, clean energy for the rest of its lifespan. Typically, full payment takes between two and three years.

Progressive Purchase allows customers to access safe, bright and efficient solar energy for a fraction of the long-term cost of kerosene. This purchase process not only benefits customers by making it easier for them to pay, but also allows Simpa to greatly mitigate the costs of collecting micro-payments from large numbers of widely distributed customers.

“To realize a world in which everyone has access to clean, abundant and modern energy, it will be critical to leverage the now ubiquitous mobile phone networks and replicate the successful pay-as-you-go pricing that works so well for the mass market.”

– Paul Needham, CEO, Simpa Networks
Implementing a New Business Model

In its first phase, Simpa entered the Indian market in partnership with a local solar vendor. This arrangement allowed Simpa to focus exclusively on its technology innovation while allowing its partner to handle sales and customer service. In 2013, Simpa split from that partner in order to explore the broader marketplace. In its second phase, Simpa took control over the entire value chain and now controls all aspects of its products, from product design to distribution and after-sales service.

Since its business model pivot, Simpa has accessed the Indian marketplace through a direct-sales channel. The company enlists village-level entrepreneurs, or VLEs, to serve as contract sales agents within their own communities, branding them “Energy Friends,” or Urja Mitra. These VLEs primarily sell to their own rural networks, earning a commission on each sale. They handle marketing and customer acquisitions and co-ordinate installation, and after-sales service. The VLEs are regionally recognized and trusted businessmen.

Since the introduction of its Urja Mitra approach, Simpa’s customer base has grown dramatically. As of August 2015, the company was signing up over 1,000 new customers per month and achieving 10 percent month-over-month sales growth. Simpa’s sales and distribution team strategically work toward three primary goals: driving sales volume, improving economic units and maintaining a healthy portfolio.

Honing the Process of Purchase and Installation

Through direct sales, and by carefully selecting its agents, Simpa fosters trusting relationships with its customer base. VLEs are Simpa-branded sales representatives who work within their native communities; each receives product training and marketing support from Simpa. Because they are embedded in local populations, VLEs are uniquely able to enhance two-way communication between Simpa and its clientele. VLEs not only effectively communicate Simpa’s innovative pricing model to potential customers, but also gather important feedback from them about their broader energy needs. Over the course of 2014, Simpa managed to recruit and train 2,900 VLEs.

VLEs employ commissioned field agents who serve as direct liaisons between the customers and Simpa. Because agents handle day-to-day relationships with the client base, it is crucial that they are reliable and trustworthy. Simpa ensures that its agents are responsible community members, selected on four criteria: education level, reputation, community presence and sales experience.

After enlisting a potential customer, the agent delivers the client’s application form to the supervising Rural Sales Associate (RSA), who quickly delivers it to Simpa’s 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 credit score, examining factors such as total family income, number of earning family members, expense of the desired product and grid access. Simpa typically approves Simpa recruits and trains rural Solar Technicians.
95 percent of applications because it has invested in training its sales organization to generate only high quality applications. After the application is approved, the technical team delivers the SHS to the customer’s property and immediately begins installation. Simpa’s credit team directly tracks portfolio-at-risk customers at 7-, 15-, and 30-day intervals in order to ensure that loans are repaid.

Because Simpa’s sales and service channel is remunerated based on performance, each employee is directly incentivized to provide the best possible service. In 2014, Simpa created a Customer Care Call Center to provide on-demand customer service seven days per week.

In order to build its technology team, Simpa trains people from rural areas as Certified Solar Technicians. Once trained, these operators are qualified to provide after-sales service for the company’s customer base. Each successful graduate receives a small loan to purchase a toolkit. Simpa provides some income security to its technicians, guaranteeing each a minimum number of installation and service calls.

Simpa continually tests and experiments with new products while carrying out customer mapping interviews catering to market preferences and determining ways to improve customer experience.

The Simpa SHS is linked to a cloud-based software system that allows the customer to redeem energy credits. Initially, the customer purchases energy days from a local Simpa agent. Agents carry pre-purchased Simpa credits, which they resell to customers. After the transaction, the customer receives a credit redemption code via SMS. Once the customer receives the code, he or she can enter it into the built-in meter on the SHS enclosure box. Through this web-based technology, Simpa is able to mitigate the risks to investors that loan companies generally carry. Its online system provides full transparency into customer habits, agent performance and transaction and payment histories.
Fortifying the Production Chain
Simpa’s technology is manufactured by partners in India and China. Its solar panels are constructed from mono-crystalline and poly-crystalline material. The metering mechanism is composed of a glass display and a rubber keyboard. The SHS enclosure box is made of sheet metal. Simpa’s vendor in Chennai, India, assembles all its electric circuits, but the meter and hardware design is performed in-house. The company’s LED lights are sourced from Solarland and Schneider Electric. Each light is assembled from glass and aluminum, with fitted electric wires. Simpa’s fan, made of fiber-plastic, is sourced from its supplier in China.

Because of its active participation in product manufacturing and direct sales, Simpa is able to ensure that it sells only high-quality solar technology that directly meets the needs of its clients. Over the course of 2014, Simpa was able to reduce the per-unit cost of its manufacturing by five percent through design improvements. The company is constantly developing new products for its Turbo line, in order to provide its client base with the best technological merchandise. The production management team continually tests samples of new products with customers.

Offering Clients a Winning Value Proposition
Simpa directly measures its impact using its own triple bottom line framework. This evaluative paradigm borrows from successful monitoring and evaluation (M&E) tools developed in the energy and microfinance sectors. After receiving a Stage 2 USAID Development Innovation Ventures (DIV) grant in May 2013, Simpa conducted two in-depth

Simpa Invests in Agents and Solar Technicians
Simpa addresses the barriers surrounding adoption, affordability and technical infrastructure by accessing the energy poor through trusted, Simpa-branded, local village level entrepreneurs (VLEs). VLEs are proven entrepreneurs in their own villages who work with Simpa as contract sales agents and earn a commission on each sale, selling to their own rural networks. By selling directly, Simpa gains greater scope to communicate its pricing model and obtains reliable feedback from the market about potential customers’ broader energy needs. By empowering agents with product training and marketing support, and building a clear business case for them to spread solar in their communities, Simpa has netted almost 3,000 agents to date. Over 400 are active today.

Simpa also recruits and trains young men from rural villages to become Simpa Certified Solar Technicians. The company invests in each successful graduate of its training program by providing a loan so each can purchase a complete toolkit and begin working. Simpa guarantees a minimum number of installation and service calls to each technician, providing income security as trainees embark on their new careers. To date, over 120 Solar Technicians have been certified.

Rural marketing activities
studies to analyze its customers’ energy usage and the quality of its SHS as part of M&E requirements. The baseline study was conducted from November 2013 to February 2014; the midline study began in September 2014 and was completed in February 2015. An endline study began in April 2015 and was completed in August 2015. Using a data-analytics system to measure the various benefits that have been brought to the community, Simpa concluded its technology has significantly improved the lives of women in rural India. It is estimated that 47.7% of the company’s current beneficiaries are female.

The surveys demonstrate that a Simpa product reduces the time a household needs to conduct farming work, household chores, cooking, and cleaning. Moreover, customers reported health benefits from substituting kerosene with solar. Before installing Simpa technology, 80 percent of customers surveyed reported suffering eye irritation due to smoke in the home. After installation, that figure dropped to 25 percent. Similarly, before SHS installation, ten percent of customers reported suffering fire accidents in the household. After installation, that figure dropped to zero.

Simpa projects that its products will further benefit its customers by increasing both the number of hours children study and the number of hours small businesses can remain open.

The benefits of solar technology are not limited to the sphere of social and economic development, but also extend into positive environmental impact. Simpa estimates that having sold two million clean energy days to its customers, it has saved over 95 tonnes of carbon emissions thus far. To date, Simpa has generated over 170 MWh of clean solar energy.
FACTORS INFLUENCING SCALE

Achieving scale is central to Simpa’s ambitions. There is a huge untapped off-grid renewable energy market in India with about 60 million people who lack electricity, and many more are under-electrified. Simpa aims to be a leader in serving this largely untapped market. The company is on a strong growth trajectory: in 2011, Simpa was active in 39 villages and following the introduction of its new business model in 2013 it now operates nine branches with sales agents and customers in over 1,400 villages.

Seeking to Foster Trust Among Clients
Simpa’s unique business model allows it to overcome the distrust that has impeded the success of other solar loan models. The market has been plagued with dishonest vendors who do not provide after-sales service for faulty SHS systems. Should the system malfunction or fail to meet expectations, the customer is forced to purchase alternate energy sources while still in debt to the vendor. Many at the bottom of the economic pyramid are wary of undertaking this risk.

Simpa is able to address many of these concerns. Selling solar-as-a-service rather than a product, the company is fully incentivized to provide effective after-sales care for its technology. Because of Simpa’s marketing strategy, customers are aware that they do not have to pay if the technology does not work.

Simpa is further able to mitigate customer concern through its Urja Mitra system. Each Simpa VLE is a well-known individual: legitimate, accountable, and trusted within the community. When dealing with such recognized individuals, customers are less likely to fear being cheated by a dishonest vendor.

Through its service channel, Simpa continues to build trust within local communities. It is able to foster close working relationships with its client base by engaging with customers using regular demos and surveys. The company believes that this relationship-building is essential to deepening its impact. Because word-of-mouth marketing is highly effective in rural areas, the company strives to ensure

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that its existing customers are pleased both with the high quality and benefits of their product. Ultimately, Simpa anticipates that its satisfied customers will be able to convince neighbors to purchase and reap the benefits of solar-as-a-service.

Building Healthy Relationships with Investors

Simpa’s executive team is based in Bangalore and Noida, India, and is supported by a strong board of directors and a global network of respected advisors. The leadership team has experience in fields such as solar finance, energy access, micropayments and information technology. Under the leadership of this group, Simpa has been awarded funding from a wide array of international impact investors and development finance institutions, such as USAID-DIV, the Asian Development Bank, Khosla Impact Fund, Sorenson Impact Foundation, Schneider Electric, the HILTI Foundation, the DOEN Foundation, Village Capital, and more.

Simpa believes that the most powerful indicator of its commercial viability is its ability to attract equity and debt capital. In 2014, Simpa received approval from the Reserve Bank of India to raise debt capital internationally to finance the capital costs of its solar equipment. Later that year, the company completed a US$4 million debt financing round, with financing provided by OPIC and GDF Suez Rassembleurs d’Energies. In the short term, this new debt facility will allow Simpa to finance 20,000 new customers. Over the next few years, through recycling, Simpa projects the capital will enable the company to reach 50,000 customers. Moving forward, Simpa will continue its efforts to attract equity and debt capital from social impact and commercial investors in order to replicate its model in other places.

“Globally, more than one billion people lack access to modern electricity. We invest in for-profit solutions that can scale to meet this challenge. In Simpa, we have an opportunity to support a growth-stage company scale up its impact to reach tens of thousands more people with affordable, clean, renewable electricity.”

— Jérôme Broutin, CFO at GDF Suez Rassembleurs d’Energies

Moving Forward

Simpa is committed to using commercially sustainable methods to increase access to modern energy. It is developing plans and raising capital to dramatically expand operations. Simpa has identified 177 high-potential energy-poor districts across six states in northern India. Simpa’s management, board and investors are pursuing a plan to reach one million solar rooftops by 2020. While the target is ambitious, the market opportunity is large. Simpa has created a compelling customer value proposition and an innovative sales and distribution model that is reaching into energy-poor villages. Simpa’s management is convinced that profitability is well within reach. The most powerful driver of commercial viability will be the company’s ability to attract further equity and debt capital to scale and replicate the model in new areas across India.
Lessons Learned

1. Foster a Strong, Trusting Relationship with Clients

Simpa enters long-term relationships with its customers based on service delivery. Traditional solar product companies simply sell their products to end-users. Once sold, these companies have little financial incentive to service those customers because they have already captured the revenue. Simpa’s revenue is entirely based on its ability to deliver energy (and technical) service to its customers. It only gets paid if the customer is receiving energy service, aligning Simpa’s interests with those of the customer.

2. Quantify Success in Commercial Terms

Simpa’s team measures and tracks the unit revenues and costs of serving individual customers and then aggregates these unit economics to develop a break-even analysis at the village, block and district levels.

3. Measure Key Performance Indicators (KPIs)

Simpa tracks a range of KPIs such as service ticket turn-around time, portfolio health metrics such as PAR15 and PAR30, customer satisfaction metrics and average revenue per user.

4. Ensure Team is Invested in Boosting KPIs

The team is aligned around Simpa’s KPIs. All team members have some performance component in their compensation that is linked to financial sustainability metrics.

5. Reward Strong Performance

The company’s sales and service channel is paid based on performance. VLEs earn commissions based on sales achievement. Rural solar technicians get paid based on the resolution of service tickets. Payment point entrepreneurs get paid a percentage of the payments they collect.

This case study series is a core offering under the Renewable Energy Microfinance and Microenterprise Program (REMMP), which is implemented by Arc Finance and funded by the US Agency for International Development (USAID). The central goal of REMMP is to increase access of underserved populations to clean energy products to improve livelihoods and quality of life, while minimizing climate-damaging emissions.

Thank you to the Simpa team for their collaboration in writing this case study.