

Replacing Expensive, Ineffective, and Unhealthy **Sources of Energy**



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At a Glance:

Simpa Networks' Progressive Purchase Technology for Home Solar Systems

- Environmental challenge: Provide affordable, green, and healthy energy source
- Technology solution: Progressive Purchase technology for purchasing solar energy, composed of an integrated hardware component plus a centralized cloud-based software system to manage accounts and payments
- Global technology dissemination: Progressive Purchase technology and know-how
- Transactions: Sales and partnerships; software as service; technology licensing
- Key players: Simpa Networks; local channel partners in India
- The technology "Secure prepaid payment platform for clean energy" is accessible at www.wipo.int/green

The environmental – and human development – challenge

Globally, an estimated 1.3 billion people do not have any access to electricity, an additional 1 billion lack *reliable* access to electricity, and over 2.7 billion people do not have access to clean cooking facilities.¹ More than 95% of these people are in sub-Saharan Africa and developing Asia, and 84% are in rural areas.² In many places, people – particularly the poor – use kerosene lamps for light despite them being dangerous, dirty, dim, and harmful to the environment and health. The World Health Organization (WHO) estimates that indoor air pollution causes 2 million premature deaths per year.³

Use of kerosene by the poor is rational: lamps are affordable, and consumption of kerosene can be increased or decreased easily as income varies. Although there are cleaner, less expensive, and more reliable ways of accessing electricity – such as home solar systems – these must typically be purchased by paying upfront, either in cash or by taking out a costly loan. This is not feasible for the poorest consumers who, due to low and variable incomes, need the flexibility provided by a pay-as-you-go energy system such as the purchase and consumption of kerosene. Using energy from inefficient sources such as kerosene, while convenient, is ultimately very expensive (as well as unhealthful and environmentally-unfriendly); poor consumers in developing countries may spend as much as 30% of their income on inefficient means of obtaining energy.⁴

Access to reliable energy is an important driver of social and economic development. According to United Nations Development Programme (UNDP), electrification can reduce poverty by increasing productivity, employment, and time spent in school, in addition to reducing environmental stresses.⁵ UNDP, together with other UN agencies, emphasizes the need to broaden access to clean energy, in order to promote equitable and sustainable development and also to benefit the environment. The UN General Assembly, acknowledging that energy distribution cannot be considered separately from political and social exclusion, has proclaimed 2012 the "International Year of Sustainable Energy for All".

1. International Energy Agency (IEA) World Energy Outlook 2011, at www.iea.org/papers/2011/weo2011_energy_for_all.pdf

2. See International Energy Agency (IEA) World Energy Outlook 2011

3. WHO Fact Sheet no. 313, November 2011, at www.who.int/mediacentre/factsheets/fs313/en/

4. See International Energy Agency (IEA) World Energy Outlook 2011

5. Chapter 4, UNDP Human Development Report, 2011, at hdr.undp.org/en/media/HDR_2011_EN_Chapter4.pdf

Technology solution developed by Simpa Networks

Simpa Networks has developed an innovative Progressive Purchase technology that brings affordable solar energy to poor consumers. The technology consists of a combination of product-embedded hardware and cloud-based software. The hardware, called the “Simpa Regulator”, is a tamper-proof device that is connected to a solar home system (SHS).⁶ The Simpa Regulator turns the SHS on when payments are made and a code is entered, and locks the system temporarily when credits run out. The Simpa Regulator works in conjunction with the “Simpa Revenue Management System”, a centralized software solution in the cloud that is accessible by SMS or online and which manages payment processing and accounts settlement.

Progressive Purchase technology was developed for the Indian market, where there is not currently an easy way to send money using mobile networks. Thus, the platform works through local agents, who buy bundles of credits from Simpa then resell them to individual clients. A client makes a cash payment to the agent, who sends a text message to Simpa Networks to inform them that the client has purchased SHS credits. Simpa then sends an encrypted text message to the client containing the access code, to be entered into the Simpa Regulator, which unlocks. Simpa cloud-based software updates the account details of the agent and client accordingly.

This way of accessing energy is similar to pay-as-you-go mobile telephony, with a key difference: under the Progressive Purchase system, each purchase of energy counts towards eventual ownership by the client of the solar home system. The client pays a down payment for the SHS, then makes small payments to use energy produced by the system. Each time the client buys credits, in order to unlock the SHS and use the energy produced by it, that amount is also applied against the purchase price of the SHS in other words, the client is progressively purchasing his home solar system. It takes between 1 and 3 years to pay off the system, at which point it unlocks permanently and produces solar energy to be used by the family for the rest of its 10-year life.

Global technology dissemination

Progressive Purchase hardware and software were developed by engineers in the United States and in India. First established in the United States, Simpa Networks is now also a registered Indian company, with offices in Bangalore. Simpa is currently selling Progressive Purchase across India in several states. The technology is diffused primarily through channel partners.

Potential partners include not only SHS providers but also others in the supply chain for which the Progressive Purchase technology adds value, such as:

- Micro-grid operators, as the Progressive Purchase system enables them to simply turn off services once credit runs out (as opposed to badgering clients for payment);
- Financial institutions and lenders, which could mitigate the risks of lending money for the purchase of energy systems by using the Progressive Purchase system rather than loans; and
- Companies selling SHS, as the Progressive Purchase system provides a pricing model that responds to the needs of a potentially broad range of consumers.

Outlook for the Progressive Purchase technology

PCT and USPTO applications for the Progressive Purchase system are pending; these applications, together with essential know-how, have been important to investors and channel partners who rely on Simpa’s technology and processes. Fully capitalized, Simpa Networks is now scaling up sales and distribution. The company has already received over 100 requests for technology licenses, from all parts of the world.

Simpa Networks has uploaded Progressive Purchase to WIPO GREEN and is open to license, offer services, for a research & development collaboration or joint venture. WIPO GREEN provides a platform for raising awareness about green technologies such as Progressive Purchase, a technology solution that provides key human development in addition to environmental benefits. In a 2011 report, the UNDP notes that while the provision of energy, on the one hand, and climate change mitigation, on the other, are often presented as trade-offs, this need not be the case.⁷ Progressive Purchase, a win-win technology solution in this respect, underscores this point.

6. The solar home system consists of a solar panel, battery, charge control, at least 3 or 4 lighting points, a mobile phone charging station, and power for charging or powering small devices. The lighting points provide brighter lights than kerosene lamps.

7. Chapter 4, UNDP Human Development Report, 2011.

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