

SELCO BUSINESS PLAN – 2006-2010



SELCO – The Rural Energy Service Company



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Executive Summary

SELCO INDIA– A VENTURE TO REACH THE POOR VIA SUSTAINABLE ENERGY

SELCO INDIA (referred to as ‘SELCO’) is a rural energy service company, registered in Bangalore, Karnataka, India.

SELCO has been operating in Karnataka and Kerala since 1995, focusing on the enormous need for providing reliable energy services to the poor, in a sustainable way. Solar lighting was the first energy service that SELCO successfully promoted in the rural areas of the states mentioned above, where 10 million households have no access to electricity and severe power shortages face those already connected to the electricity grid. SELCO, to date, has installed more than 65,000 solar home systems (SHS) in the un-served rural households of rural India. SELCO initiated the first end-user solar loan program in India in association with several of the country's largest commercial banks, rural development banks, and non-banking finance institutions. SELCO's products meet the needs of the poor, and enable the poor to pay for the energy services from savings or extra money earned. The experience, gained from the success of solar home lighting systems, is now being used for promoting other technologies like cleaner and efficient cook stoves, bio-gas systems, and solar dryers. In other words, technology that is able to link the poor to a better quality of life via sustainable energy.

SELCO's target is to reach 200,000 underserved households (families) by the year 2010. SELCO can provide reliable energy services to 200,000 households in a sustainable way and help create models for poverty alleviation through commercial channels. SELCO's model is to combine door-step service with door-step financing. To provide door-step service, SELCO opened 25 energy service centers, run by local youths, over the last 11 years. SELCO's future plan is to open 25 more service centers by the year 2010 in order to serve the additional 200,000 households. To further support the supply chain, SELCO will work with an additional six to eight rural banks with large rural branch networks to stimulate affordable loans to the poor and expand access to door step financing. SELCO has created long-standing partnerships with similar minded organizations like financial institutions, micro-finance institutions and NGOS in order to scale up its ability to reach the poor.

Dr. H Harish Hande is the Founder and Managing Director of SELCO and is ably supported by a top management staff of four highly qualified personnel. SELCO is governed by a board of directors, based out of Bangalore India. Presently SELCO employees 142 people in its 25 energy service centers and headquarters.

1.0 SELCO INDIA - Background and overall picture

SELCO INDIA provides sustainable energy solutions to rural clients, who typically have no other access to reliable energy services. SELCO's expertise is in making provision for energy services for clients in rural and remote parts of India in an affordable manner.

SELCO INDIA (SELCO) was established in 1995 to disprove the following 'myths':

- Myth 1. Poor people cannot afford sustainable technologies.
- Myth 2. Poor people cannot maintain sustainable technologies.
- Myth 3. Social ventures cannot be run as commercial entities.

SELCO, a for-profit company, has over the last 11 years proven the fact that only NGOs need not be the ideal catalysts for creating social enterprises. The impacts desired from social enterprises can be achieved by for-profits and in ways that can easily lead to sustained scalability. SELCO's profits are ploughed back into the company for innovations and creating further access to reach the poor – a mission passed by resolution of the board.

Registered in Bangalore in March, 1995, SELCO has achieved international recognition as the first company to concentrate on marketing and servicing solar home lighting systems for the underserved households in rural India. Solar Photo-voltaics (PV) was one of the first technologies to be adopted by SELCO as a means to provide small amounts of reliable power to poorer households in the rural areas. SELCO has, as of today, established twenty five solar service centers in the states of Karnataka, Gujarat and Kerala, and has installed 65,000 solar based home lighting systems in the three states. The Company's headquarters is located in Bangalore, which oversees the network Solar Service Centers in the states of Karnataka, Gujarat and Kerala.

As of today, SELCO has more than 140 employees and has partnered with numerous financial institutions, microfinance institutions and NGOs, those who have similar missions to empower the poor.

SELCO has, over the last 11 years, successfully disproved the above stated myths by:

- For Myth 1: Installing 65,000 'expensive'¹ solar lighting and solar powered accessories in the poor households of rural India. All the 65,000 systems have been paid for by the users using various financing methods designed by SELCO and its financial partners.
- For Myth 2: Hiring local youths to maintain the 'hi-tech' solar systems in the rural households. Many of the employees of SELCO INDIA are from the local villages.
- For Myth 3: Successfully growing many folds over the years, while promoting energy services like solar power to the rural poor.

SELCO INDIA in the last 12 months is transforming itself from a solar service company to an energy service company – to provide complete energy solutions for the un-served and under-served. The mission is to offer the clientele a range of energy services that can uplift the quality of life (either in terms of health or increased income or both).

¹ Traditional Solar PV has been branded as an expensive technology.

2.0 SELCO INDIA – a for-profit model for social enterprise

SELCO INDIA distinguishes itself as an organization that believes social good can be achieved in a sustainable way provided every process for delivering it is itself sustainable. The points below describe SELCO's path and parameters that define its very existence.

2.1 MISSION

SELCO's mission is *to empower the lives of underserved populations throughout the world by selling, servicing and financing products that continuously improve their quality of life*. The products that SELCO is promoting are sustainable energy services.

SELCO's innovative approaches address various issues; be it health, childcare, education or better wages for their work; that poor people face in their daily life. The interventions by SELCO have been a success in delivering an integrated solution to address many of the problems. SELCO's energy interventions spans across improving health conditions, increasing education levels, ensuring decent housing, ensuring reliable water and electricity and providing market linkages to producers – leading to overall improvement in quality of life.

2.2 SUSTAINABILITY

All the processes that SELCO has developed, in order to provide a specific energy service to a rural household, are commercially oriented. As mentioned before, SELCO has provided reliable solar electricity to more than 65,000 households in rural India. All of the households have paid for the system, using the multiple payment modes established by SELCO via local financial institutions.

SELCO has created affordable products, that the clients acquire by accessing need based financing mechanisms, which have been created by SELCO and its financial partners. Creation of need based energy services has led to increased willingness to pay among the poor, thus leading to a sustainable commercial chain – it is this very chain that SELCO has strengthened over the last 11 years.

2.3 EMPOWERMENT

SELCO's products, energy services, and its way of working are determined by its clients and employees. Many of SELCO's employees are local youths. The bottom to top approach of SELCO has helped it to create specific need based products – products that meet the needs and expectations of the end-user. The grassroots level approach has also led to a governance structure which is transparent and based on ground realities.

Many of the internal processes of SELCO have been developed by the local employees. SELCO staffs its local centers with local youths, not only leading to the creation of local employment but also creating a wealth of local knowledge. These very employees become the eyes and ears of the company, thus its ability to remain closer to the clients it serves.

SELCO processes and products have empowered the employees and its clients, leading to a viable partnership between the company and the rural households.

2.4 INNOVATION

SELCO's success of being sustainable company while promoting energy services to the poor, lay in its ability to innovate – innovate not only in the usage of technology, financing methodology, modes of

marketing etc but also in ways of ‘linkage’² innovation. SELCO has pioneered in creating innovative linkages between technology, appropriate financing, energy services, income generation and quality of life.

SELCO emphasizes the need to innovate; else the needs of the poor cannot be met by technology in an affordable way, and even if the needs are met they cannot afford it because of lack of *appropriate* financing. The very belief that poverty can be reduced via affordable energy services has prompted SELCO to keep innovating and thus its ability to reach out to many poor clients.

2.5 SCALABILITY

SELCO’s processes to implement the usage of sustainable energy services in poor households of rural India are very replicable and scalable. From one service center in 1995, SELCO now has 25 centers. At the end of 1995 SELCO had less than 50 clients, while today it has more than 65,000 rural clients. Most of SELCO’s clients lie in the middle and lower part of the economic pyramid.

The scalability of SELCO’s model is very dependent on its partners (financial, NGOs, institutions). The expansion of SELCO’s operation from 1 district in 1996 to 10 districts in 2006, itself is the proof of the concept.

2.6 TRANSPARENCY

SELCO firmly believes that for its operations to be sustainable and replicable while serving the needs of the poor, all its processes have to be very transparent to all its stake holders

From a client perspective, SELCO does respect the fact that the poor are paying for the services through their very hard earned earnings thus there needs to be a very thorough design of the product (both in terms of technology and finance). It is imperative that SELCO’s products meet the complete expectations of the end-user; else its ability to scale up would be seriously jeopardized.

SELCO expects *very active participation in its activities from shareholders and lenders*. Very regular interaction with the shareholders and lenders would help in increasing the efficiency of various processes in the company and also would lead to transparent governance. SELCO in turn would benefit from the other experiences of its shareholders and lenders; experience they might have from investing in other similar companies – thus reducing SELCO’s learning time.

² Linkage innovations have been explained later in the document – as ‘Chains’ - the model of SELCO

3.0 Background on Energy Services in India

Access to modern energy services is key to development of rural areas in India or for that matter of fact in any developing country. The vast majority of rural households in India currently lack access to reliable energy services like electricity, better cooking etc. SELCO believes energy service(s) is an important ingredient for poverty reduction, income generation, health, education etc.

Over 60% of India's population lacks access to reliable energy services. The linkage between the development of a family, the up-liftment of quality of life and the availability of reliable energy services is very strong. There is ample proof to show that the availability of a reliable source of energy leads to better education, healthy working conditions and increased income thus leading to better quality of life for the poorer households. While the linkage between adult-literacy, health, education and productivity to the availability of energy is obvious; life expectancy and other parameters used to measure the quality of life also have a direct linkage to the availability of a reliable and sustainable energy services.

In developing countries, one of the rarely satisfied needs of the rural peoples is that of a reliable source of energy. The vast majority of the population suffers from chronic cooking fuel shortages, lack of reliable lighting, lack of power to undertake income generation activities or run small businesses, etc. For the underserved, the only options for reliable energy supply are decentralized, clean and renewable energy options such as solar, biogas, etc. However, the paradox is that, these people who are really in need of alternate energy options cannot procure these, as they cannot afford the same or cannot utilize efficiently the presently available systems. Innovative products, innovative linkages, and innovative finance programs are needed to create ample opportunities for the lower income groups in the society to access alternate energy sources and thereby uplift their quality of life – *SELCO aims to be that catalyst of change.*

As mentioned before, SELCO took up solar lighting as one of the first energy services to promote in the rural areas. The background to take up lighting and electricity based needs have been documented below.³

3.1 BACK GROUND ON LIGHTING AND OTHER ELECTRICITY BASED ENERGY SERVICES

In the case of electricity more than half of rural households are not connected to state electricity grids. In addition, pervasive power cuts leave even those connected searching for sources of backup electricity for use during periods of load shedding. While the Government of India has long made rural electrification a high priority, most rural Indian households still lack access to grid electricity. While the electric power grid has reached into an estimated 85% of villages, the distribution network has yet to be extended to reach India's rural populations living outside village centers. As a result, there are an estimated 10 million households without access to the electricity grid in India's four southern states of Andhra Pradesh, Karnataka, Tamil Nadu, and Kerala.

Chronic power shortages in southern India have left even electrified homes and businesses without reliable sources of electricity. Daily power outages of 4-5 hours are common in urban areas. Rural areas face even higher frequencies of brownouts, power-cuts and load shedding. The growing demand for electricity in all sectors of the economy is outstripping the ability of the national government and State Electricity Boards to provide adequate or reliable power supplies. This electricity deficit is expected to increase dramatically in the near future. According to India's 14th Electric Power Survey, the peak demand for electricity is expected to grow to an estimated at 172,262 megawatts (MW) by the year 2010. In order to meet this expected demand, the electric generating capacity will need to be increased by an additional 100,000 MW -- a stupendous 6,500 mw each year. Increasing India's generation capacity by the required 150% over eleven years would require an investment of approximately \$170 billion, or nearly \$12 billion per year, almost 3% of Gross Domestic Product.

³ SELCO is in the process of preparing similar documents for solar thermal, cooking, biogas and other energy services. These documents will be provided on request.

In addition to the financial constraints to electricity generation growth, there are social and political factors, which inhibit the development of additional generation capacity. Electricity tariffs are set by the government and do not allow for a rate of return, which would encourage further public investment in generation. Furthermore, the political intractability of licensing power generation facilities in India make it prohibitively difficult for private power development companies to assist in developing these resources. Ongoing local political disputes over privately financed power projects continue to delay the planned construction of many central generating plants. Despite well-publicized promises by government authorities that power shortages will ease, most observers agree that India's power crisis will continue for the foreseeable future.

3.2 ALTERNATIVE SOURCES OF ELECTRICITY

Based on the large percentage of rural households, specially the poor, without electricity and the inadequate power available to serve those customers which already connected to the grid, there is a large and growing market for alternative sources of electricity. Backup electricity generators, such as small diesel gensets and uninterrupted power supply (UPS) with inverter battery systems have become popular consumer items and are marketed extensively throughout the country.

In areas lacking access to the electrical grid, there are several other methods by which rural off-grid families currently receive home lighting and entertainment communications (TV, radio-cassette players). These methods include kerosene lamps, rechargeable electric storage batteries, individual diesel generators (gensets), solar lanterns, or Solar Home Systems.

Kerosene: Small kerosene lamps are the most widely used form of household lighting for un-electrified families. These lamps consist of a glass or metal container and a fabric wick. Small lamps consume 3 ml/hour. Prices for kerosene average \$0.25 per liter, but can be considerably higher in more remote rural areas. While kerosene is inexpensive, these lamps have many problems. Light output from a kerosene wick lamp is low, offering only 40 lumens, compared to 400 from an 8w compact fluorescent light bulb. In addition, kerosene lamps create undesirable smell and smoke, as well as being a constant fire hazard. Tens of thousands die or are disfigured from kerosene lamp fires every year.

Dry-Cell Batteries: Disposable dry-cell batteries are widely used throughout the developing world, primarily to power flashlights and radio-cassette players. While the electricity from these batteries is extremely expensive per kilowatt-hour, families are able to purchase electricity in small, affordable quantities.

Battery Charging: Rechargeable car batteries are used by some rural un-electrified families to power televisions and electric lights. These batteries typically have capacities in the range of 60 to 120 Ah (720-1440 Wh). Batteries must be transported to recharging centers, typically powered by a diesel generator or the electric grid. This practice is not common very common in India.

Individual Diesel: In some many un-electrified areas, households are using small gasoline generators ("gensets") to power household loads. Small generators can be run for several hours to recharge a bank of lead-acid batteries, or can be used directly to power larger loads. Generators must be refueled several times per day, requiring access to gasoline and oil. Often the cost of transporting fuel is higher than actual fuel cost itself. Gensets are generally inefficient, creating unpleasant local noise and air pollution. Furthermore, gensets must be rebuilt after a several hundred hours of use. Electricity from a small genset averages \$0.50 per kWh.

3.3 WHY SOLAR ELECTRIFICATION

Solar home systems, rather than other options, make the most sense for subsistence household electrification in off-grid areas, and they also make sense as a reliable backup system for grid-connected households.

Numerous studies by the World Bank, the UNDP and other agencies have concluded that providing bright electric lighting and power for TV's, radios and small appliances through solar electrification is the least-cost option when compared to the cost of grid extension to service these low household loads. SELCO has also found that an enormous market exists for SHS as an "un-interruptable power supply" (UPS) for grid-connected households where electricity from the State Electricity Board is unreliable and erratic. Solar UPS are cheaper in the end than conventional UPS, which rely on the same unreliable grid for their power, and then must use precious stored electricity to service inefficient AC-wired homes. The battery life in an SHS is up to 3-5 years longer than a UPS.

The dissemination of SHS is entirely dependent on commercially sustainable grass-root sales and service network, such as SELCO has initiated in South India. Public awareness campaigns and marketing must educate the public on the benefits and limitations of PV for household use. Once solar PV is seen as an alternative to no electricity, for whatever reason, then it must also be seen as something to "own," thereby empowering the client. SELCO has helped power numerous small motors (water pumps, sewing machines) with solar thus linking energy service to income generation.

3.4 SELCO'S TECHNOLOGY SOLUTION

For the above explained problems in the areas of electricity, SELCO-India has designed photovoltaic (PV) solar-home-systems (SHS), principally for lighting, but also suitable for radios, cassette players and fans. A typical SELCO solar system includes four 7W compact fluorescent lights (CFLs). Electricity is generated by a 35 or 40 Wp PV panel, which is mounted on the roof of a house. The solar panel charges a 90 Ah lead-acid battery, and the loads (lights, radio etc) run off the battery during the day or night. The batteries used are designed to run the loads for specific periods even during the heavy monsoon season. An electronic charge-controller protects the battery from over charging or over use by the customer. These charge controllers help maintaining the life of the batteries to at-least 5 years.

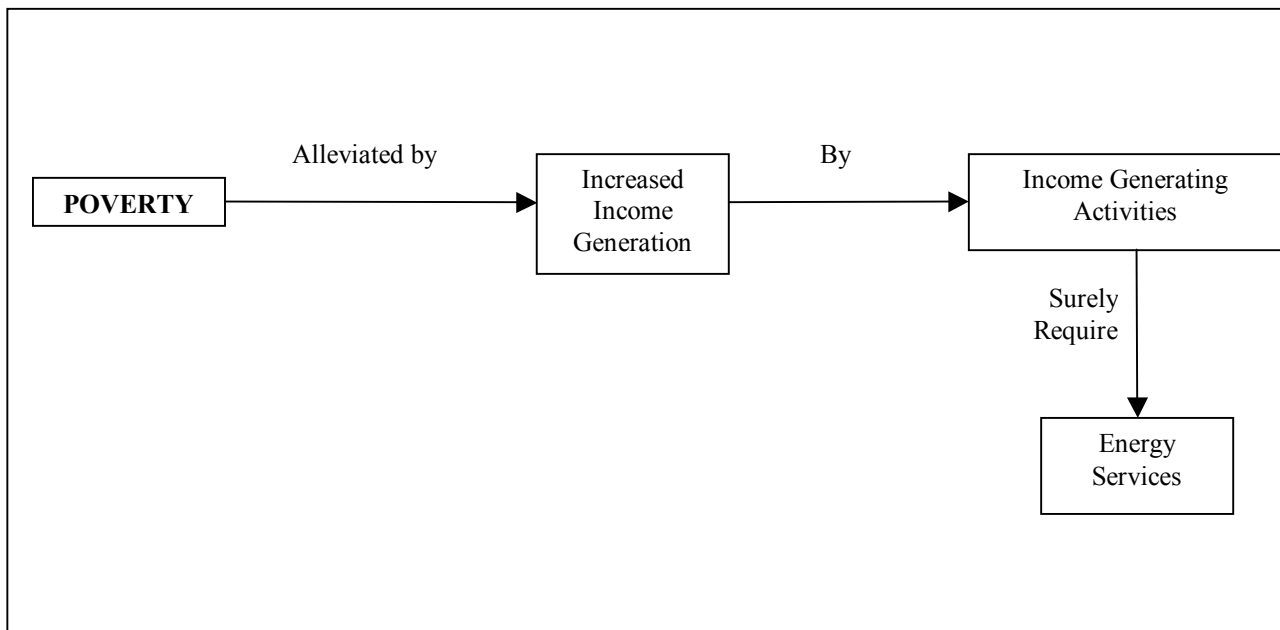
In most of the cases, SELCO systems are customized to meet the expectations of the specific clients or particular segment of the society. The systems are required to meet the needs (and budget) of each customer, and there are many variations which can be used. The installation of the system is carried out by SELCO technicians.

Very similar challenges exist for other energy services in India, and SELCO firmly believes that its model (as described later in the next chapter) is a very viable way to promote similar services in the rural areas.

4.0 SELCO's Concept of Innovative Linkages – The core of its business model

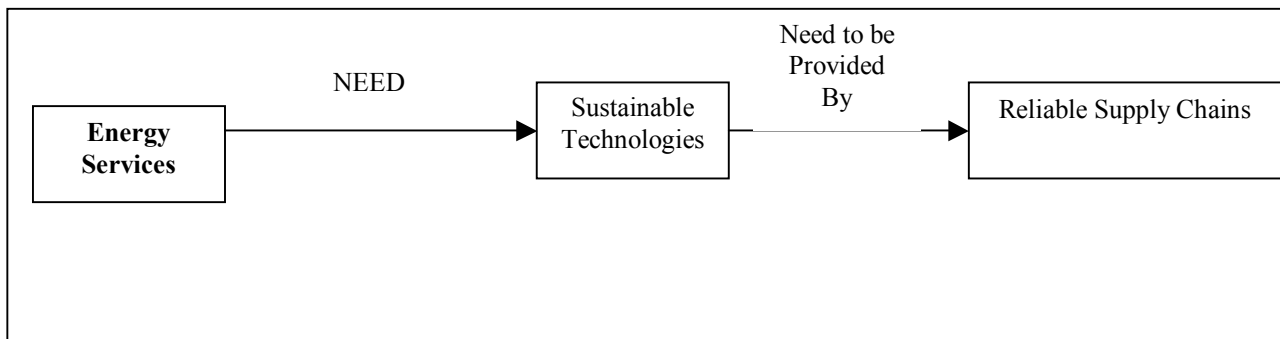
SELCO believes that there are numerous chains that have to be interlinked in-order to diffuse sustainable technologies to the poor in an economically viable manner.

4.1 CHAIN [1] – “THE PRIMARY LINKAGE BETWEEN POVERTY ALLEVIATION AND ENERGY SERVICES”



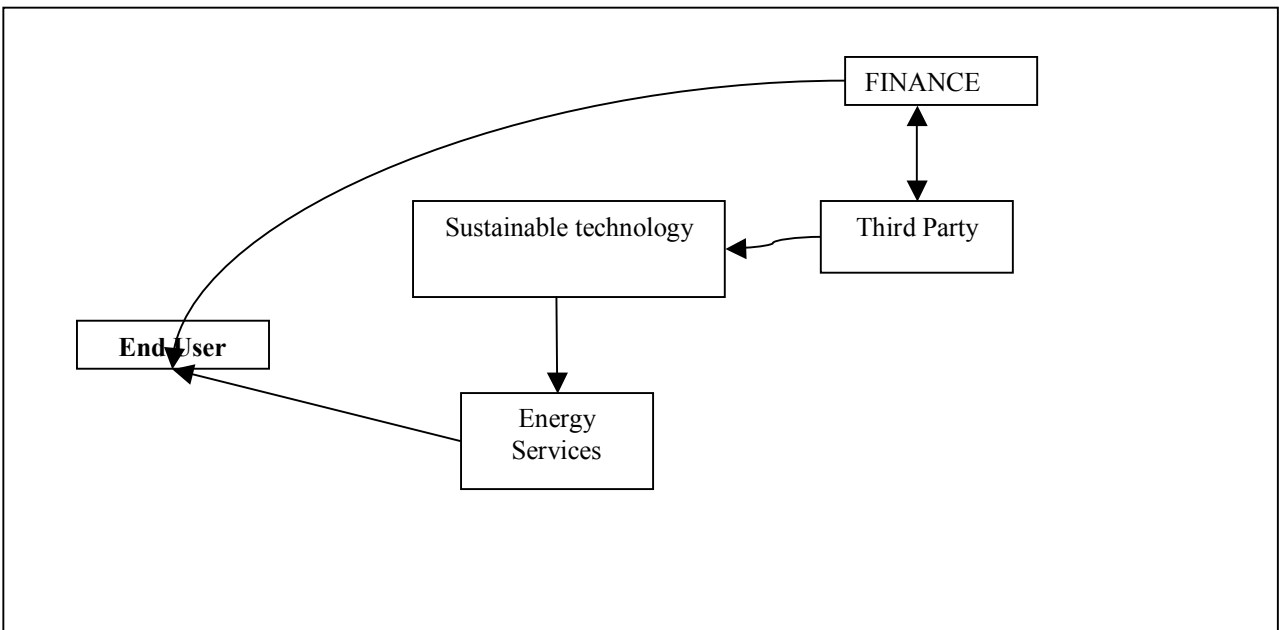
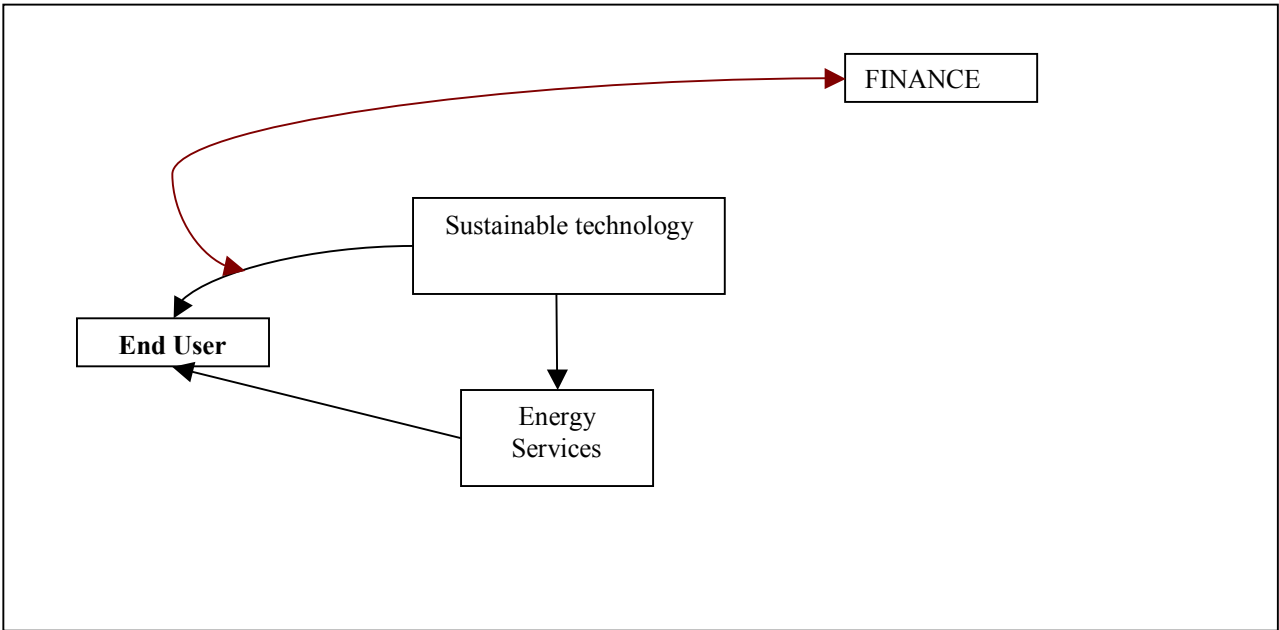
The above chain (Chain [1]) describes one of the ways for poverty alleviation. To reduce poverty in a particular household or community, income needs to be increased or generated. To generate income, income generating activities need to be created and many a time those need one or more type of energy services.

4.2 CHAIN [2]- “THE LINKAGE BETWEEN TECHNOLOGY AND ENERGY SERVICES”



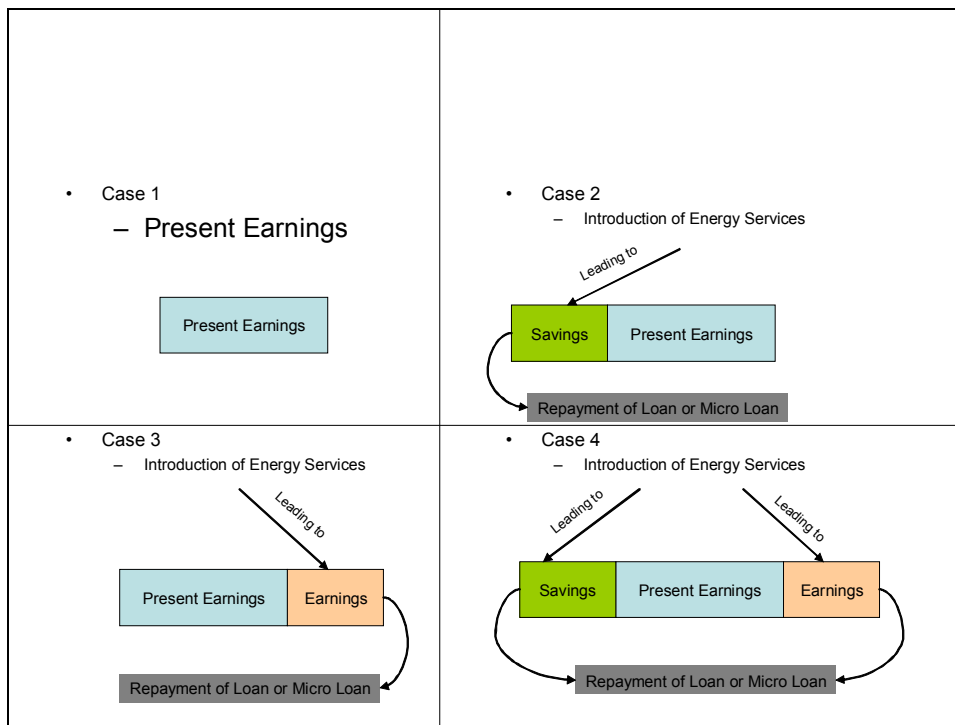
Energy services, essential component in Chain [1], need to be provided in the rural areas or remote areas. Many a time sustainable technologies make sense, in those locations, to be the primary source for the energy services. The next step is to ensure that for proper implementation of these technologies, reliable supply chains needs to be established.

4.3 CHAIN [3A] AND [3B] - “LINKAGE BETWEEN THE END-USER, ENERGY SERVICES, FINANCING AND TECHNOLOGY”



Chains [3a] and [3b] show ways of how an end-user could afford energy services. In [3a], the end-user owns the technology that ultimately provides the energy service, while in [3b], the user only pays for the energy service while the technology is owned by a third party (e.g. an entrepreneur owning a solar power plant for charging batteries).

4.4 CHAIN 4 – “LINKAGES BETWEEN END USER PAYMENT SOURCES AND LOAN REPAYMENTS”



In Chain 4, four cases are presented to bring to light the ‘affordability’ of any particular energy service. Case 1 is the simplest, where the client pays for the energy service from his present earnings. In most of the cases in this category, people would have bought or availed the energy service because of health reasons or plain convenience (reduction of drudgery, savings in time etc).

In case 2, people pay for the energy services from the savings that occur because of the energy service they bought. For example in case of improved cook-stoves, people pay for the stoves from the savings that occur from buying less wood.

In case 3, people pay for the energy services from the extra earnings that occur because of the energy service they bought. For example, in the case of solar powered sewing machine they are able to earn more and thus are able to generate enough extra cash to pay the loan for the solar powered machine.

In case 4, people pay for the energy service from a combination of savings and earnings. For example, a street vendor pays for a solar light from the savings of not buying kerosene and earnings from selling his produce under solar lights.

4.5 THE SELCO BUSINESS MODEL

SELCO’s business model has been to create and put in place various innovative linkages explained in the above chains. To sum up, the role of SELCO has been the following:

1. To create established supply chains for various energy services, as explained in Chain [2].
2. To create appropriate channels for financing as explained in chains [3a] and [3b].
3. To create appropriate financing products that would meet the specific user’s personal cash flow, as laid out in cases 2,3 and 4 in Chain [4].
4. To create rural entrepreneurs (third parties) and linking them to appropriate financial programs as explained in chain [3b].

5. Creating site specific income generating activities involving energy services. (as explained in Chain [1]).

4.6 TYPICAL SELCO CLIENTELE

In its existence of 11 years, SELCO has served various sections of the society. The 65,000+ clientele of SELCO can bifurcated in the following manner:

4.6.1 Type 1 – Primary SELCO Clients

65 to 75% of SELCO clients fall into these categories:

- Small farmers - earning between 1200\$ to 1500\$ a year
- Small businesses - earning between \$2 and \$4 a day.
- Individual Households with regular monthly incomes (postman, rural school teachers etc) – between \$100 to 150\$ a month.
- Home based workers – earnings between \$2 to \$4 a day.

4.6.2 Type 2 – Secondary SELCO Clients

10 to 15% of SELCO clients belong to the following categories

- Farmers – earning between 2500\$ to 5000\$ a year
- Individual houses – earning between 250\$ to 400\$ a month.

4.6.3 Type 3 – Institutional SELCO Clients

The rest belong to the following category

- Institutions that cater to the poor – for example residential schools for poor children or old aged homes.
- Religious institutions like temples, churches and mosques.
- Refugee camps – the Tibetan settlements in the state of Karnataka.
- Government institutions, training schools and private institutions.

SELCO does not have an active marketing strategy to cater to Type 3 clientele. Most of its efforts are directed towards Type 1 clients.

4.7 HOW DO CLIENTS PAY

SELCO over the years has partnered with numerous local banks and micro-finance institutions for providing third party financing to its clients in the rural years. The confidence in the banking system for the technology (specially solar) has grown over the years because of the service support provided by SELCO centers in the State of Karnataka.

A typical 2-light SELCO solar lighting system costs the user about 225\$, which includes the installation and service. The financing institutions finance for 85% of the costs of the system. The monthly repayment amounts to 6 to 8\$ a month, for a loan period of 5 years.

The financing products are dependent on the type of clientele. For example, paddy farmers pay once a year as their crop cycle is once a year. The installments can range from being monthly, quarterly, half yearly to yearly, depending on the type of crop cycle the client has. Monthly payments are normally reserved for salaried employees like school teachers, local postman and small businesses.

SELCO also has designed financing products that lead to daily collections of loan installments. Typical in the case of street vendors, they use kerosene lamps as their primary source of lighting. For them the savings from not using kerosene contribute towards the payment of the loan on a solar lighting system. They can afford to pay 10 Rupees a day (22 Cents) but cannot afford to pay 300 Rupees (\$8) a month. Daily collection mechanisms have helped making solar lighting systems affordable for very poor street vendors.

4.8 HOLISTIC APPROACH

As explained before, SELCO provides a holistic solution – a total solution that links poverty alleviation to energy services. SELCO-India was established on the premise that successful penetration of energy services among the poor depended fundamentally on meeting their specific needs. From the beginning, SELCO has understood that selling solar lighting or any other energy service to the poor in rural markets requires not only providing the right technology to them, but also creating access of affordable financing, installation, training, and all other products and services necessary to develop a sustainable sales and service infrastructure. Many a time, SELCO (via its partners) is able to link the small producers to the market (extra produce because of the energy service). SELCO has been able to create a platform to establish all linkages in Chain 1, 2, 3 and 4. Some of the results have been:

User needs based products: SELCO offers high quality and reliable products that meet the energy needs of the client. SELCO's products would fully meet the expectation of the poor, in a way that it directly leads to a better quality of life – in terms of health, savings and extra earnings. The grassroots presence of SELCO helps it to design products that have a “bottom-to top” approach than the other way around.

On the ground presence: SELCO is actually in the rural areas, selling services directly to the clients. Only companies willing to undertake this effort, and do it well, will succeed in creating a sustainable venture in the rural areas of the developing world.

Energy Service Centers: The Energy Service Center (“ESC”) is the basic building block of SELCO's service and distribution chain. The ESC is modular in nature, allowing SELCO to expand its field operations while avoiding the need for large increments of risk capital devoted to capital additions at any one time.

Installation and After-sales Service: While SELCO is in the business of selling and installing its products, SELCO believes its core competency lies in its ability to deliver ongoing service on its products. All SELCO technicians have been thoroughly trained in the installation and service of the its products.

Standardized Financing Packages: In order to facilitate customer purchases of energy services, SELCO has partnered with numerous financial institutions and micro-finance institutions in the areas of its operations. Through financing programs of its finance partners, SELCO provides its clients the

ability to purchase its products and services through payments that are affordable to every particular target group.

Brand Name, Trademarks and Logo: In SELCO's service territory, customers already ask for a "SELCO". This product identification based on quality, reliability and its proximity to the actual clients.

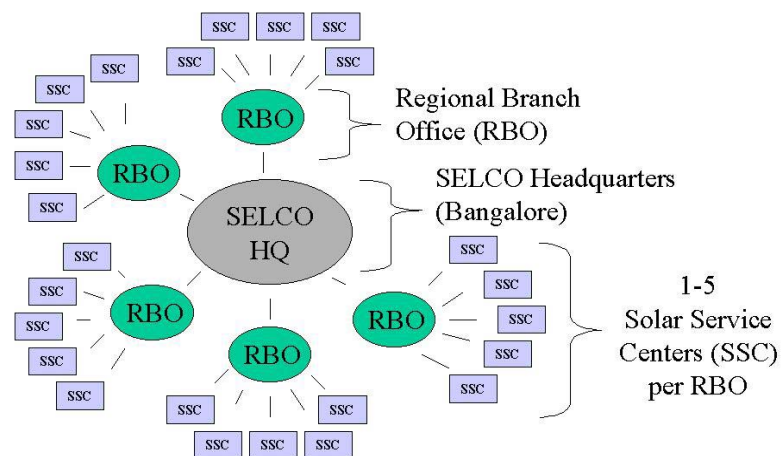
SELCO can afford to create a foundation to achieve the above results only if there exists a solid operational structure. The next part of the document explains the operational structure of SELCO INDIA, on which its model totally relies on.

5.0 SELCO Operations

SELCO has refined and articulated a delivery system, which delivers an energy service to its ultimate customer while, at every step along the way, providing for a high quality, highly identifiable product experience. The SELCO customers' total needs are considered, including provision of a high quality product, installation, financing options, technical reliability, equipment maintenance and customer education

Operations are conducted through four administrative levels: At the village levels, there are “motivators” to service and market the energy services. Area motivators work through an Energy Service Center (ESC), located in a small to mid-sized provincial town. Each ESC coordinates the local sales & marketing, installation, and after-sales service of the particular energy service to its customers, as well as managing its staff of sales motivators. All ESCs operating in a given area are administered by a Regional Branch Office (RBO). The RBO is responsible for establishing all ESCs, providing them with supplies, coordinated marketing efforts, technical assistance, ongoing training, and management assistance. Each RBO service territory may contain approximately five ESCs. The SELCO HQ is responsible for all technical components and BOS equipment procurement, ESC operating procedure, component R&D, quality control, management and technical training, as well as overall financial and managerial control of the subsidiary. Below is a chart illustrating the structure for SELCO’s rural operations.

SELCO Operational Structure



Energy Service Center (ESC): The ESC is the basic building block of the Company’s rural operations. Each ESC has a service territory in which it markets, sells, installs, and services SELCO’s energy services. Through these ESCs, SELCO reaches into the smallest and most remote communities. While closely following SELCO operating procedures, ESCs are responsible for local sales and marketing, as well as installations and service. The availability of periodic maintenance needs and installation techniques has significantly increased durability and reliability of any SELCO provided service.

Regional Branch Offices: SELCO operates Regional Branch Offices throughout its service territories to supply, administer, and manage its ESCs. Each RBO is responsible for identifying, establishing and managing each ESC in its district. The RBO provides ongoing management and supply of SHS components to these ESCs, and serve as contact point between SELCO central headquarters in Bangalore, and ESC offices. It is responsible for maintaining relationships with branches in participating Banks, through which SELCO will provide its customers with product

financing. Finally, RBOs may operate their own ESC-style retail outlet for supply and service of energy services, until such time that an ESC can be found to service the adjacent service territory. SELCO expects to operate approximately one Regional Branch Offices (RBO) for each five ESCs.

Headquarters Office: SELCO Headquarters office in Bangalore is responsible for the overall management of SELCO operations. The Headquarters office handles the procurement and delivery of all SHS components and installation materials to its RBOs. It is responsible for development and management of its RBOs and ESCs. Headquarters staff trains RBO staff in SELCO administrative and technical procedures. The headquarters provides all accounting and managerial oversight.

5.1 TIE UP WITH FINANCIAL INSTITUTIONS

One of the primary reasons for SELCO's success is its tie up at the ground level with the various financial institutions in its areas of operations. As of today, SELCO has working relations with the following types of financial institutions:

1. Commercial Banks
 - a. Like Canara and Syndicate Banks in the State of Karnataka.
 - b. There are a total of four commercial banks that work with SELCO to finance its energy products.
2. Regional Rural Banks (or known as Grameen Banks)
 - a. Like Malaprabha Grameen Bank and Vardha Grameen Bank in Karnataka.
 - b. SELCO has partnerships with nine similar rural banks in Karnataka and Kerala.
3. Rural Farmers Cooperatives
 - a. SELCO works with numerous farmers co-operatives like rubber cooperative, vanilla cooperative etc.
4. Micro-Finance Institutions
 - a. SELCO works with SEWA BANK in Gujarat to cater to its 300,000 women client base.

Operationally SELCO has piggy backed on the above network of financial institutions to reach its desired client base. There have been barriers (as explained later), but those are the challenges that SELCO has overcome (partially) and thus led to the creation of numerous innovative finance products for the different sets of clients.

5.2 CURRENT SELCO OPERATIONS LEVEL

SELCO currently has operations in the states of Karnataka and Kerala. From its Headquarters office in Bangalore, the Company manages operations in ten of Karnataka's sixteen districts, as well as the district of Kasargod in northern Kerala. In these areas, the Company has installed 65,000 systems, mostly solar lighting systems. Through its headquarters office, RBOs, and 25 ESCs, the company's 142 technicians, managers, sales motivators and administrators are actively engaged in selling, installing, and servicing energy relate products and services.

5.3 REMAINING BARRIERS TO SUSTAINABLE DIFFUSION OF ENERGY SERVICES TO THE POOR

While SELCO has made tremendous progress in developing the necessary infrastructure to accommodate the market for energy services especially solar, there are several barriers which remain. Following is a description of several significant challenges that still exist and would be prevalent for the new services that SELCO would introduce in the coming year.

Customer Financing: Despite SELCO's success in generating credit programs for solar electrification, there have been difficulties, and numerous barriers persist. In the case of SELCO's current financing programs through rural banks, there are no standard loan schemes among the many banks SELCO deals with, and different criteria and terms apply for each. SELCO is also dependent in many cases on the willingness of local bank managers, despite their expressed interest in the solar loan program, to actually make the loans quickly and in sufficient numbers to meet the demand. Also sometimes, the flexibility of the local manager is very important, to fine tune a particular financing program to suit a particular economically disadvantaged community. Similar financial barriers would crop up while trying to introduce new energy services.

Market Presence vs. Managerial Capacity: While SELCO's existing 25 RBOs and ESCs have been successful in promoting the use of SHS in their respective market territories, the Company understands that to significantly develop the market for various energy services, it must dramatically increase its presence throughout the rural areas. However, the Company also realizes that there are formidable challenges presented in the management of large-scale but decentralized operations. Achieving a structure able to accommodate the large-scale expansion of its village-level ESCs without the right personnel is a barrier.

Market Awareness: While SELCO products have proven themselves throughout the past 11 years through the difficult Karnataka environmental conditions, there still remains the perception that "solar doesn't work." Similar perception will come up for new technologies. To overcome these deep-seeded convictions, SELCO must engage in large-scale market development programs to provide the necessary information to customers about the characteristics of various energy services and their impact on quality of life and income.

Expensive loans: The business of providing energy services to the poor is not an easy one, and one that does not yield high returns. The reasons are many, but the foremost being the cost of initial transactions is very high. SELCO terms these transactions as 'Innovative Linkages' – somebody needs to do it and SELCO shall keep doing it – and the costs of these linkages (as explained in the Chains before) are not cheap. SELCO in 2003 availed a loan from the International Finance Co-operation (IFC) for a million dollars at interest rates that fluctuate with Libor. The interest rates floated anywhere between 5% to 8.5%. As of today, due to various market conditions, this loan has become unsustainable for SELCO to service. SELCO requires loan structures to be flexible according to the prevailing market conditions, thus its request to have more active participation of shareholders and lenders in its operations.

Lack of capital resources to Innovate: SELCO has always spent its expensive equity and loans to create innovative products and financial programs. In many cases the returns are not remunerative enough to justify the usage of equity and loans. On the other hand if the company had not spent that money for 'trail-blazing' activities, it would not have reached to the scale it has today. Soft financial resources would help SELCO innovate many more ways to reach out to the bottom of the pyramid.

Lack of market linkage: As explained many a time in the document, there are not enough linkages for the poor to sell the products in a particular market. SELCO admits that this is a very big challenge and would have to be addressed, if many its other innovations need to succeed.

SELCO believes that with enough financial backing and ground-based processes the above barriers can be tackled.

6.0 Present and Future Plans of SELCO

SELCO has ambitious plans to cater to 200,000 clients by the end of 2010-2011 financial year. These clients will benefit from a menu of energy service options that SELCO would be able to offer to its clients in the rural areas of India. SELCO's business is categorically divided into the following three categories:

1. Business as usual in its present areas of operation with existing products, solar and cooking.
2. Expansion into new areas with existing products.
3. Expansion of its menu of energy services in existing areas and new areas.

SELCO has the opportunity to fundamentally transform the way energy services are provided to the poor by replicating its operations in India's four states.

6.1 GEOGRAPHICAL PRESENCE

SELCO is presently active in 10 of the 27 districts of Karnataka, 1 of the 14 districts of Kerala and 1 of the 25 districts of Gujarat. By the end of 2010-2011 financial year, SELCO would be present in 16 districts of Karnataka, 3 districts of Kerala, 4 districts of Gujarat and 3 districts of states like Maharashtra and Andhra Pradesh.

6.2 PRIMARY PRODUCTS

SELCO's expertise, as of today, is in the technology of solar photovoltaics, but over the next 4 years SELCO would add to its menu the following⁴:

- a. Solar Thermal
 - a. Individual
 - b. Community
 - c. Institutional
- b. Efficient Cooking
 - a. Individual
 - b. Community
 - c. Institutional
- c. Biogas – Animal and Human Based
 - a. Individual
 - b. Community
 - c. Institutional

The other technology under consideration is biomass based cooking and drying.

6.3 LINKAGE PARTNERS – FOR PRIMARY PRODUCTS IN THE ENERGY SERVICE SECTOR

SELCO success has been primarily credited for its partnerships with various finance institutions, micro-finance organization and NGOs. Rural entrepreneurs or as SELCO calls them business associates have also played a very key role in promoting SELCO's mission and products.

SELCO's presently has 22 business associates and would aim to have 100 additional business associates by the 2010. These business associates are rural youths, who would have a chance to create sustainable livelihoods for themselves by providing energy services to clients in his/her own

⁴ A separate note has been prepared on each technology and could be provided on request.

areas of operations. These business associates add stability to SELCO's business model – adhering to its policy of being a *bottom to top* company.

SELCO plans to increase its present financial partner base from 7 to 15 by 2010 and increase its NGO partners from 5 to 25 during the same period of time.

6.4 POTENTIAL PARTNERS IN OTHER SECTORS

SELCO's solid rural service network that directly interact with the rural client has attracted the attention of many organizations, that would like to partner with SELCO for various reasons – with the ultimate goal to uplift the quality of life among the poor. Some of the examples of such partnerships are:

1. Venture Development Department of Business, Colorado State University, Fort Collins.
 - a. The department of business in the Colorado State University is looking to develop many products that would enhance the lives of the rural clientele in the developing world. For example they have developed a stove, called as 'StarLight Stove', which not only is an efficient cooker but also generates electricity. Similar rural targeted products could be easily tested by SELCO via its supply chain. Successful and need based products would then be introduced into SELCO's product menu.
 - b. SELCO would also approach the labs in MIT that work on poverty related issues, for partnerships.

2. ICT

- a. Two organizations with plans to set up multiple services based e-kiosks in the rural areas of India, have approached SELCO for providing reliable solar power solutions to their kiosks. Also the talks are on to extend energy based services from the kiosks, thus helping in increasing the income for the rural entrepreneur, one who is running the kiosk.

3. Water based services

An organization specializing in providing safe drinking water to rural households has approached SELCO for the following:

- a. To provide reliable solar based power solutions for their purifying facilities, those are run by local entrepreneurs or local communities.
- b. To leverage the network of SELCO, in-order to install clean water centers in many parts of Karnataka and Gujarat.

Similar partnerships would enhance the need of energy services in various sectors and thus lead to sustainable solutions for the rural clientele.

6.5.3 Innovation Fund

One of the priority thrusts for SELCO has been innovation. To strengthen its areas, SELCO plans to open a separate Innovation Department under its present structure, to achieve the following:

1. To have a greater degree of freedom to risk and create more linkages between poverty, technology, income generation, financial services and quality of life.
2. Create programs that could be then replicated and taken to scale by the main business arm of SELCO.

As mentioned earlier in the document poor people who are in real need of alternate energy options cannot procure these, as they cannot afford the same or cannot access financing. Innovative products, innovative linkages, and innovative finance programs are needed to break that barrier.

To create innovation – be it in product development, linkage creation or financing- time, awareness and money: all expensive resources, are required. In addition to these resources, innovations required for diffusion of sustainable energy services in the rural areas can only come from grassroots establishments, in partnership with rural NGOs and rural financial institutions. Thus, an organization like SELCO-India, with extensive rural experience, can in partnership with rural NGOs and rural financial institutions create innovations to deliver sustainable energy services that will ultimately lead to the up-liftment in the quality of life of the poorer households; the segment of the society that needs these reliable energy services the most.

In order to ensure innovations that help the underserved access alternate energy sources while creating replicable models for energy delivery that can be implemented around the world, SELCO INDIA proposes to set up an innovation Fund that will help to link modern energy services to income generating activities for the rural underserved. The replication potential of successful models that come out of this department shall be replicated by SELCO's energy service centers and will follow the traditional business lines. Round the world, there is a tremendous lack of successful grassroots level work in the field of rural energy services. The need of the hour is to develop successful models to deliver energy services to the underserved, thus making this innovation fund very important.

SELCO India has been a pioneer in its efforts to promote solar in the rural areas, and surely will be in a position to make sure that the models under the Innovation Fund are successfully replicated in other parts of the world; leading to meeting of some of the United Nations, Millennium Development Goals. (MDGs)

The geographical area that SELCO works in also has the potential to be the ideal testing ground for technical and financial innovations in energy delivery to the under-served, as the rural areas of Southern India has the required diversity in social and economic conditions. In addition, since South India is already the area that SELCO operates its energy services business, SELCO has in place the required linkages with NGOs and financial institutions to ensure the smooth progress of the innovation fund and its goals. The credibility that SELCO has in the area will also help SELCO access the rural populace and give it the required flexibility to innovate. Very importantly, with the reputation that SELCO has as a reliable solar service company and with the diversity of successful models under the innovation fund, the results can be easily replicated in other parts of the world.

The innovation fund would address the following barriers:

- a. Lack of innovative site-specific and community specific financial mechanisms.
- b. Lack of innovative linkages between energy services and income generation.
- c. Lack of access to markets for finished goods
- d. Lack of 'affordable' products (combination of both financial and technical product)
- e. Lack of perception regarding the requirements of the poor households.
- f. Lack of trained personnel in the rural areas of diffusion of such technologies.

SELCO INDIA pioneers in innovating in all the above mentioned points, and has created specific solutions for each of them in SELCO's routine business activity. However, to cater to the underserved, various solutions for each of the above mentioned barriers would be required and would lead to different models that are very much needed for scale up in the rural areas.

The rural financial institutions are ready to replicate successful models, but first we need to prove that the various linkage models are successful.

6.5.3.1 Aims and goals of the Innovation Department

The Innovation Department would help create various models of linkages (as described before), which could be replicated as business as usual models.

The results would be

1. Availability of reliable energy services would be looked upon directly as an avenue of income generation by the poor. This would encourage faster dissemination.
2. The proven linkages between energy services and income generation would encourage more of the financial institutions to take up financing of similar activities, that would directly help the poor access renewable energy sources.
3. Poor beneficiaries in the rural and urban areas will have affordable and accessible financing at their door-step, in order to enjoy the benefits of energy services.
4. Creation of models for energy delivery for the underserved that can be replicated by grassroot level organisations all over the developing world.
5. Numerous energy enterprises run by the poor youths.

6.5.3.2 Proposed Budget for the Fund

The budget for the innovation part has been divided into many parts. They are:

- a. Man power resources – SELCO will have dedicated personal to look at the potential innovations and the corresponding new linkages. Dedicated department would lead to having a focus.
- b. Innovation Identification Costs – As in any process, problems need to be identified, potential solutions marked out, and an approximate estimation of the perceived potential. These costs money and have been termed under as Innovation Identification Costs.
- c. Prototype Experimentations – Once the innovation is identified, whether it is technical, financial or marketing it needs to be experimented on the field with a certain set of clientele. These could be in the form of guarantees, demos etc.
- d. Capacity Building Exercise - Some innovations would succeed and some would fail. Successful innovations would be taken forward. These need training and capacity building of potential entrepreneurs, financial institutions etc (channels that will help scale up the successful linkage).
- e. Market Development Costs – Awareness needs to be created for the innovations/linkages. These are of two types – awareness of new innovations in existing areas and new areas or awareness of existing products in new areas; both require soft money.
- f. Replication of Prototype Innovation – Some of the new innovations/linkages need to be experimented in other areas (to iron out site specific variables). For example, providing guarantees of new entrepreneurs in other areas to test out an existing process or product.
- g. Monitoring and Evaluation – M&E is an important line item, in order to maximize the learning from all the innovations.

The next two stages of the process mainly distribution and scale-up would be transferred to the business side of SELCO.

8.0 SELCO INDIA MANAGEMENT and BOARD

SELCO INDIA was co-founded by Harish Hande and is ably assisted by a top management who have a combined 39 years of experience in delivery of rural energy services

8.1 MANAGEMENT

Dr. H Harish Hande, Managing Director, SELCO-India, which he co-founded with Neville Williams in 1995. Dr. Hande earned his Doctorate in energy engineering (solar specialty) at the University of Massachusetts (Lowell). He is an engineering graduate of the Indian Institute of Technology, Kharagpur, India's most prestigious technical university. Dr. Hande serves on the boards of many organizations, both national and international. He manages SELCO's operations from offices in Bangalore.

M R Pai, Executive Director, brings to SELCO extensive experience in rural operations and management. Mr. Pai has a post graduate degree from Mysore University with specialization in Genetics. He started his career in solar by being a dealer of a multi-national solar company in 1993. He later joined SELCO in 1997 as General Manager - Operations. Mr. Pai was invited to join the SELCO INDIA board in 2003 and was promoted to the position of Executive Director.

Thomas Pullenkav, Vice President, has a graduate degree in Physics and is an alumnus of Institute of Rural Management (IRMA), Anand. After graduating from IRMA, he worked in the National Dairy Development Board (NDDB) for 3 years in their Management Pool Division. Before joining SELCO in 1996, Thomas worked for a year in the marketing department of TATA BP Solar. In SELCO Thomas heads the projects department and brings to the table many years of experience in implementing projects in the rural areas.

Mrs. Revathi, AGM (Finance and Accounts), is a qualified Chartered Accountant and Cost Accountant with an excellent academic record. She secured all India 8th Rank in ICWAI - Final Examinations and all India 2nd Rank in ICAI (Institute of Chartered Accountants of India) -Intermediate Examinations. Prior to joining SELCO in 2004, Mrs. Revathi has had more than 6 years of accounts and finance related experience in various multinational companies. In SELCO she is responsible for all accounts and finance related matters of the company.

8.2 BOARD

The board of SELCO INDIA consists of Harish Hande, M R Pai and Mr. Udupa. Dr. Hande's and Mr. Pai's experience has been described above.

K M Udupa, Director.

Mr. Udupa is the Managing Trustee of a Manipal based NGO, Bharatiya Vikas Trust (BVT), which was founded by Dr. T A Pai. Prior to joining BVT, Mr. Udupa retired as the Deputy General Manager of Syndicate Bank. Mr. Udupa brings to the board, his 31 years of experience in rural development and rural banking.

9.0 Conclusion

SELCO's success has been in its commitment to "*do what it takes to meet the needs of its customers.*" SELCO's success in the solar home system market has depended on its ability not just to supply products, but financing, service, and all other necessary factors necessary to provide its customers with complete solutions. SELCO is the first solar service company in rural India, and during its eleven year operating history, it has pioneered many aspects of the solar home market, including the development of consumer financing programs, rural service delivery models, and market awareness campaigns. These necessary mechanisms did not exist when SELCO was founded, so it went forward and created them. It is only through the Company's dedication to its underserved customers and commitment to the development of a market for solar in rural India that SELCO has been able to develop so quickly and operate so effectively.

SELCO is uniquely positioned to expand its operations as well as increase its menu of services. It has a large rural presence, with an existing network of 25 rural sales and service offices in its service territory in the state of Karnataka, Gujarat and Kerala. It has developed strong relationships with south India's largest commercial, retail and rural development banks to finance its customers and has also earned the trust of rural peoples throughout the areas it serves. It also has a exclusive partnership with SEWA BANK, the world's most well know women's microfinance institution. The combination of these above aspects has resulted in SELCO's superior product performance, customer satisfaction, and the development of a sustainable business model for provision of affordable energy services.

A successful SELCO project would serve as a model for the world. By securing additional funding, SELCO could

1. Be able to provide energy services to more poor people.
2. Expand its service territory to include the majority of districts in south India.
3. Expand its products to include biogas, biomass and other sustainable energy services.

Funding would help SELCO to create more innovative linkages, thus leading to more poor families getting access to much needed energy services. SELCO's program would be the first large-scale energy services for the poor being implemented by a private company. The program would serve as a model not only for the Indian Government, the State Electricity Boards, and other Indian companies, but for the bulk of the world's utilities who are struggling to serve the vast majority of their rural service territories.

ANDHRA PRADESH



2008



2010

GUJARAT



2006



2008



2010

