PART 2

Selected Case Studies
The IFC/GEF Small and Medium Scale Enterprise Program

The IFC/GEF Small and Medium Scale Enterprise Program (SME Program) was established in 1995. Financed with $20 million in GEF funds and managed by IFC, the program’s goal was to improve access to finance, capacity building, and markets for SMEs active in the areas of climate change mitigation (energy efficiency and renewable energy) and biodiversity conservation. The program was the first GEF-funded, non-grant, SME financing program targeting the private sector and the first GEF program designed to receive capital reflows.

BACKGROUND

The objective of the SME Program was to encourage the private sector to generate global environmental benefits. It provided loans of $500,000 to $1 million to various intermediaries (financial, not-for-profit, NGO), and private companies for on-lending to SMEs whose activities would conserve the global environment. The goal was to help these SMEs expand so they would generate more environmental benefits. At the same time, the program sought to demonstrate that environmental benefits could be achieved through the private sector on a commercial basis, without the need for grants or subsidies.

The intermediaries were selected by IFC on the basis of their experience working with SMEs as well as their financial viability, understanding of environmental sectors, and technical capabilities in both environmental and financial areas. The intermediaries identified, assessed, financed, and monitored environmental SME projects, assuming the risk inherent in these projects by providing loans to, or making equity investments with, the SMEs. Initially, the intermediaries typically received a long-term (up to 10 years), low-interest-rate loan (typically 2.5 percent per year) from the SME Program, combining their own funds with other sources of funding to complement the financing requirements for the eligible SME projects.

Over its lifetime, the SME Program established a solid reputation and momentum, attracting the continued interest of intermediaries and other institutions. The initial $4.3 million pilot phase was replenished with $16.5 million in 1997 to expand operations and reach additional SMEs. Over its lifetime, the SME Program approved $16.9 million to 25 nontraditional financial intermediaries, NGOs, or companies in 21 countries, which have provided financing to some 140 SMEs.

While the SME Program was not designed to specifically target the solar PV sector, it became operational at a time when IFC had become interested in making solar PV-related investments. Ultimately, the SME Program financed six projects that involved solar PV businesses: Grameen Shakti, Soluz Honduras, and Selco Vietnam (all SHS distributors); E&Co and EEAf (both nonprofit financing organizations with an environmental mission); and Cogener (a Swiss engineering company that installed solar-powered advertising panels at a Tunisian airport). This study has focused on the three SHS distributors:

- **Grameen Shakti.** A subsidiary of Grameen Bank, Grameen Shakti works to develop and deliver renewable energy systems to rural households and businesses in Bangladesh. The primary focus is on solar PV SHS.
- **Soluz Honduras S.A. de C.V.** A subsidiary of Soluz, Inc., USA, Soluz Honduras sells and rents small solar PV systems to rural customers in Honduras.

Together, these three projects have installed over 24,000 SHS, for a total electrical capacity of over 1.3MW at peak performance.

WHAT WORKED AND WHAT DID NOT

A “Hands-on” Approach
A key factor for the success of the SME Program was the small size of the program, which enabled the management to be very “hands on” and knowledgeable of the projects it financed. Unlike other IFC projects with external management, the program was managed by an internal staff team. This “hands-on” management approach enabled the program to respond rapidly to restructuring.

Diversity of Portfolio Offsets Risks of Solar PV
In contrast to other facilities with which IFC was involved in the solar PV sector, the SME Program was able to invest in SMEs working in sectors other than solar PV. Given this flexibility, the program was able to develop a diverse portfolio that was not dependent on one particular market, allowing it to offset the risks of the solar PV market through SMEs working in less risky markets. Many of the solar PV ventures operational around the same period as those financed by the SME Program had considerable difficulties. The solar PV market simply did not develop as had been expected.

The Need for Local Ownership and Government Support Proved Vital
One of the key lessons of the overall SME Program experience was the importance of local country ownership and government involvement. Evidence suggests that this was similarly the case among solar PV-focused projects, Grameen Shakti being the only project that was locally owned and operated, while both Soluz Honduras and Selco Vietnam were subsidiaries of U.S.-based companies. Both Soluz and Selco were overly enthusiastic about the size of their potential markets, and both suffered from a lack of government support. While Grameen Shakti did not have considerable support from the Bangladeshi government, it had the support of a widely recognized, respected, and reasonably well-capitalized organization with a similar client base that helped them to develop networks to overcome that obstacle.

Economies of Scale Are Hard to Come By in Sparsely Populated Areas
The SME Program experience in solar PV highlights the importance of economies of scale to the solar PV market. Grameen Shakti, operating in densely populated Bangladesh, was a successful venture; Soluz, operating in Honduras where the rural population was more dispersed, was less so. While each entity operated under a different business plan, both were confronted with having to reach a certain scale in order to be profitable. However, that scale was far easier to attain in a densely populated area than within a dispersed population. While Grameen Shakti easily gained access to economies of scale serving many people in one community, Soluz Honduras, operating in areas with more dispersed populations, found itself in a no-win situation. To increase its scale, it needed to expand its area of operations, but when it did extend, its service costs increased.

CONCLUSION
Although the SME Program initially planned to finance projects through FIs, it ultimately financed most of its solar PV-related SME projects directly. The program had found that FIs had little interest in financing solar PV projects (the two solar PV-related projects that were financed involved FIs with an environmental mission). Many FIs remained leery of financing SMEs, and when SMEs were coupled with a nascent technology like solar PV, FIs (particularly commercial banks) became even more reluctant.

Grameen Shakti, the SME Program’s most successful solar PV project, far exceeded expectations in terms of the number of solar PV systems installed. Grameen Shakti continues to perform well, with a total of 77,000 SHS installed, benefiting more than 700,000 people in Bangladesh. The performance of other PV projects of the SME Program projects has failed to live up to original expectations.

The SME Program proved overall to be quite successful, despite the mixed experience in the solar PV sector. Such experience gained has now been incorporated into the design of the EBFP. As previously mentioned, the EBFP is an IFC/GEF partnership which targets SMEs working on projects that are beneficial to the global environment. This program has RE, including solar, as one of its target technologies and activities.

Grameen Shakti (meaning “village power” in Bengali), established in July 1996 by Grameen Bank, aims to support this bank’s poverty reduction mission by developing and delivering renewable energy systems to rural households and businesses in Bangladesh. While the focus was on solar photovoltaic systems, Grameen Shakti also supported wind and biomass projects, though on a much lesser scale.

**BACKGROUND**

Grameen Shakti has a secondary mandate, that of helping connect rural areas to the world through (solar-powered) information technology. Although registered as an NGO, it is run, for the most part, as a for-profit enterprise. The company’s solar PV program represents its largest business line, purchasing solar PV panels and other systems components (i.e., batteries) from a range of foreign and local suppliers; and assembling, selling, installing, and, where necessary, financing them.

The Bangladeshi market for solar home systems is considered to be relatively large. Approximately 70 percent of households do not have accessibility to electricity, and frequent floods and cyclones, low levels of urbanization, and a very slow political and economic reform process have made establishing a traditional energy network (or grid) very challenging. Furthermore, the density of the Bangladeshi population means that, even in rural areas, there are significant concentrations of potential consumers.

In March 1998, Grameen Shakti was approved for financing from the SME Program. The $750,000 that the firm received permitted it to purchase solar home system inventory. The program loan called for the sale of 3,200 systems within two years and provided a two-year grace period on repayment. This freed capital for Grameen Shakti to provide financing to customers, enabling them to overcome two considerable barriers to solar home system sales in Bangladesh, namely, high upfront costs and lack of consumer credit.

An additional barrier to solar home system sales in Bangladesh was lack of a strong field-based sales and service structure. The company, nevertheless, was fortunate in its ability to tap into the existing Grameen Bank branch network. The latter, as indicated earlier, has a presence in approximately 36,000 villages in Bangladesh, and Grameen Shakti operates through offices housed within the bank’s branch locations. Grameen Shakti offices are established in locations with high electricity demand and no access to the grid. Each office is staffed by two people, a manager and a technician, and is overseen by division managers who report to the general manager of Grameen Shakti.
In addition to being able to tap into Grameen Bank’s branch network to reach customers and quickly establish a local presence, Grameen Shakti also benefits in other ways from the bank. Most notably is the use of the Grameen name, a name widely recognized and respected. Grameen Shakti also makes use of the expertise of the general manager of Grameen Bank, who spends 20 percent of his time directing Shakti.

OBSTACLES

Overall, Shakti has experienced many issues in the Bangladeshi market that are similar to those of other SHS companies in other world markets. There has been considerable skepticism concerning the viability and cost of SHS systems, coupled with the limited purchasing power of target end users, relative to the large capital cost of imported SHS equipment. Large volumes were needed to get unit costs down to a financially sustainable level, but to effectively do this, a large sales force was needed, and the cost of making individual sales with associated support was high.

While Bangladesh is ideally suited to solar power because of its higher than average solar radiation (ranging from 4.0 to 6.5 kWh per square meter), solar energy industry activity was minimal at the time of Grameen Shakti’s founding. The local market had not yet been established, and the Bangladeshi Government offered no support. Heavy import taxes on internationally sourced solar panels and a lack of local suppliers drove up prices. Furthermore, a general lack of awareness surrounding the technology was a consequence for low demand.

To overcome these obstacles, Grameen Shakti placed considerable focus on providing increased value to its clients, while making a dedicated effort to reduce costs and thus lower prices. An extensive warranty package (which could be extended for a small fee) included free maintenance for the first three years, training seminars for clients, routine system maintenance, and monthly inspections. This warranty has enabled the establishment to manage its maintenance costs and has contributed to a high level of customer satisfaction. Additionally, the company offers clients a 20-year money-back guarantee in the event that a client is, for any reason, unsatisfied with his/her system or the national grid, which is extended to service the client.

Lacking government support, Grameen Shakti had to rely on partnerships with other organizations in order to stay ahead. Partnerships with educational institutions and suppliers played an important role in pursuit of new technologies and identification of trends. In partnering with educational institutions, the company hoped to maximize its resources and provide clients with the most up-to-date and efficient technology. The provision of the most market-applicable technologies allowed the management to keep a step ahead of the competition. Partnerships with suppliers also proved useful.

GRAMEEN SHAKTI AWARDS

Like its parent, Grameen Bank, Grameen Shakti has been widely recognized for its efforts in the international community and has been awarded a number of honors, including:

- Energy Globe 2002—Best 50
- European Solar Prize 2003—awarded by EuroSolar for spreading RE through micro-credit
- Best Organization Award 2005—awarded by Infrastructure Development Company, Ltd., of Bangladesh

* Today there are over 160 offices.*
from both a cost and environmental management perspective. Grameen Shakti, for instance, maintains an agreement with one of its battery suppliers to take back, recycle, and adequately dispose of used batteries.

Grameen Shakti has made strong efforts to raise awareness about solar energy systems. A key marketing strategy involved targeting the wealthier members of a particular village; this approach was successful in promoting a type of demand associated with “keeping up with the neighbors.” Grameen Shakti also actively promoted the use of shs in income-generating activities.

A mere 2.5 percent of sales were full cash remittances; most sales depended on a 36-month payment plan. The seasonal cash flow of the economy proved to be a significant influence on customers’ ability to make payments, and the collection program was adjusted accordingly. Most of the systems procured were for household application and quality of life improvement (e.g., lighting and entertainment); however, some were used for income-generating applications (see box on this page for an example).

The worst flood in over a century hit Bangladesh in 1998, devastating two-thirds of the country. A full 90 percent of the Grameen Shakti operating area was flooded, and as a consequence, no sales were recorded and defaults on collections soared, as people’s focus shifted to the bare essentials of food, clothing, and shelter. The structure of the sme Program loan, with its two-year grace period and the arrangement of payments to be made on an annual basis, enabled IFC’s client to remain current on its loan, despite the delay in collections.

The importance of Grameen Bank cannot be overstated. The bank’s knowledge of the market, and its existing distribution infrastructure and client base, are key contributors to Grameen Shakti’s success. As was evidenced in the other solar pv investments under IFC’s sme Program, a lack of local knowledge and presence is a major barrier to the success of a solar pv enterprise. Furthermore, Grameen Bank was a valuable source of funding for the firm during its early stages.

Moving forward

To date, Grameen Shakti has installed over 77,000 solar pv systems, with a total installed capacity of 3.85MW (a power generation capacity of 16MW per hour). This has considerably improved lives and has provided cleaner energy to 700,000 Bangladeshis.

As rural communities have become electrified, the company has been able to work toward achieving its secondary objective, that of connecting the rural areas of Bangladesh with the rest of the world through the service of information and communication technology, as well as offering computer education and Internet access, provided by engineers at solar-powered offices. Computer education includes applications, such as Microsoft Office and graphic design, as well as hardware installation and computer language. This successful company has diversified its operations to include the construction of 500 biogas plants to provide improved energy solutions to cooking. (See Table 6 on this page for a summary of Grameen Shakti’s achievements.)

### Table 6. Grameen Shakti at a Glance, 2007

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of villages covered</td>
<td>25,000</td>
</tr>
<tr>
<td>Total beneficiaries</td>
<td>More than 700,000 people</td>
</tr>
<tr>
<td>Unit office</td>
<td>227</td>
</tr>
<tr>
<td>Total employees</td>
<td>1,135</td>
</tr>
<tr>
<td>Total installation of SHS</td>
<td>77,000</td>
</tr>
<tr>
<td>Installed power capacity</td>
<td>3.85 MW</td>
</tr>
<tr>
<td>Daily power generation capacity</td>
<td>16 MW-hr</td>
</tr>
<tr>
<td>Installation rate</td>
<td>Over 2000 SHS/ month</td>
</tr>
<tr>
<td>Installation of micro utility system</td>
<td>1,000 system</td>
</tr>
<tr>
<td>Installation of biogas plant</td>
<td>500 (through October 2006)</td>
</tr>
</tbody>
</table>
Headquartered in San Pedro Sula, Honduras, Soluz Honduras S.A. de C.V. is a subsidiary of Soluz, Inc., USA. Soluz Honduras began operations in 1998, selling and renting small solar \textit{pv} systems on a retail basis to rural customers, who had no access to electricity. Soluz Honduras was one of the first solar \textit{pv} companies to employ a rental model, which decreased the initial costs of acquiring a solar \textit{pv} system without having to depend on consumer subsidies, donor programs, or capital buy-downs.

**BACKGROUND**

Soluz, Inc. was established in 1993 to further commercialize solar \textit{pv} applications for rural areas, building upon the solar \textit{pv} sales enterprise established by Richard Hansen in the Dominican Republic in 1986. Today Soluz, Inc. has two subsidiaries, Soluz Honduras and Soluz Dominicana S.A. in the Dominican Republic.\(^{29}\) The solar \textit{pv} rental offer was added to the existing cash and micro-credit sales offers, first in the Dominican Republic in 1994, and later in Honduras, where Soluz Honduras had been selling solar \textit{pv} on a wholesale basis since 1994. Rolling out the solar \textit{pv} rental offer was a major focus aimed at penetrating rural markets. Customers were charged the equivalent of a $20 installation fee, as well as an average monthly fee of $15 for rental and maintenance of the system (purchase of the battery was an additional cost incurred by the client). Along with rural households, Soluz Honduras sought to target small businesses, churches, schools, and health clinics, providing solar \textit{pv} systems at monthly fees similar to the cost of alternative energy sources (i.e., kerosene, dry cells, and automotive batteries). Despite an entirely rural client base and the devastating effects of Hurricane Mitch,\(^{10}\) Soluz Honduras managed to attract 500 solar \textit{pv} rental clients in its first year of operations. By 2000, revenue totaled $144,556, with $100,499 (70 percent) accounting for solar \textit{pv} rental and $44,057 (30 percent) for solar \textit{pv} sales.

In late 2000, the SME Program approved a $400,000 loan and a $100,000 equity investment in Soluz Honduras. The funds were to be used to expand the Soluz customer base. With a further $1 million from a co-investment transaction with the SME Program and two other investors ($250,000 each from Corporacion Financiera Ambiental, Costa Rica, and Triodos Bank’s Solar Investment Fund\(^{31}\)), Soluz hoped to expand its solar \textit{pv} rental customer base to a break-even point of 2,500, a critical step on the way to a target of 5,000 customers.

By July 2002, the number of solar \textit{pv} rental customers was stagnant at 1,500 and in danger of declining. Unexpected grid expansion and the inability to continue to pay for installed systems meant that Soluz Honduras was forced to disconnect existing customers faster than it was adding new ones. In contrast to the year 2000, revenue in 2002 totaled $406,772, with $227,762 (56 percent) accounting for solar \textit{pv} rental and $179,010 (44 percent) accounting for solar \textit{pv} sales. In an effort to increase revenue and increase margins, Soluz increased its focus on sales (primarily by developing its dealer network).

It became evident that the unsubsidized solar \textit{pv} rental offer was not financially viable. While the up-front costs of installing a system decreased, the monthly charges remained too high for over 50 per-
cent of rural households. Furthermore, the solar PV rental offer did not succeed in creating an operating margin for Soluz Honduras, due to the high collection and maintenance costs associated with such a highly dispersed customer base. The local company then adopted a more streamlined sales model, selling wholesale through dealers and, thus, increasing sales and assuring their margins. The company began to sell off solar PV rental assets to meet lender obligations and focus staff time on increasing sales revenue through an expanding dealer network. It also continued to sell solar PV systems, on a cash and micro-credit basis, to rural customers and institutions out of its three office locations.

The Soluz business model (which included both rental and sales offers) resulted in more complicated operations than would typically be found in a solar PV business of equal size. The rental offer, in particular, required that Soluz Honduras devote considerable attention (at considerable cost) to collections and service in remote off-grid areas, where even well-established micro-finance institutions were unwilling to provide their financial products. The company attempted to essentially build a micro-rental financial product offering in a very challenging environment, without the benefit of the developmental subsidies routinely provided to micro-finance institutions when establishing operations in similar environments. All this led to high overhead and transaction costs that needed to be offset solely by customer payments. An unsubsidized commercial approach to establishing a pioneering solar PV rental operation was simply too challenging.

In July 2003, Soluz found itself in severe financial distress, with an $850,000 debt burden. When it was clear that a change was needed for the company to survive, investors offered waivers of certain fees and payments, seeking only profitability. This suggested a change in the business model of the company. Thus, an increased focus on sales, including the aggressive sale of used solar PV rental systems, was established to help meet lender payment obligations and to build a viable operation. Management proposed that, in the short term, Soluz Honduras could reduce its solar PV rental fixed-asset inventory significantly, while at the same time increasing and streamlining its sales efforts.

**OBSTACLES**

Like most other solar PV businesses around the globe, the key problem faced by Soluz Honduras was that of affordability. The Soluz business model was designed specifically with this element in mind. In addition to cash and micro-credit sales, the company placed emphasis on fee-for-service or rental
systems. By renting systems, customers avoided the high upfront costs of purchase, and the company maintained solar PV system ownership to facilitate repossession. The company, itself, however, had to raise significant capital to invest in solar PV units and to develop efficient micro-rental collection and service operations in remote areas, a process that the company struggled with for several years. While monthly fees collected from the limited number of clients during startup simply did not offset the firm's operating costs, rollout peaked at 1,500 rental units, as “customer churn” reached high levels (3-5 percent). The company’s financial structure was too highly leveraged with debt for such a risky new venture. Total financing was $1.5 million, with $850,000 in loans. Debt repayment obligations provided little in the way of flexibility if the rollout of revenue and expense did not stay to plan.

Although Soluz Honduras succeeded in significantly lowering the upfront costs for customers, many found the monthly costs of renting a solar PV system from the company to be higher than those associated with kerosene and batteries. Furthermore, when rural families lack the funds to purchase kerosene and batteries, it is not as crucial as being obligated to pay for a rental contract for a solar PV system. Many households did rent a solar PV system, but later found that they were unable to continue payments. Soluz Honduras attempted to price rental fees to the equivalence of combined current energy costs (e.g., kerosene, dry cells, car batteries), but it estimated that, at this rate, it would require 2,500 clients to break even. The firm instead disconnected a significant number of customers who were unable to make their payments, resulting not only in a loss of income, but also in costs related to the physical act of disconnecting and remarketing the solar PV system.

The unpredictable timing of government rural electrification project timing, even when there were communication efforts with the local authorities, coupled with unexpected grid expansions, especially due to election promises, meant that Soluz often found out about grid expansions just months before the grid reached a community. This required Soluz to remove hundreds of installed solar PV systems before the initial investment could be recovered. From this, an interesting paradox emerged, further compounding the issue of unexpected grid expansion: residents wealthy enough to afford solar PV systems generally lived close to urban centers. Thus, they were more likely to receive grid service in the near future, while the available off-grid customer base continually became more dispersed and thereby more difficult to serve.

Despite its difficulties, Soluz Honduras was seen as a pioneer in the area of solar PV rental in the nation. The company was well-respected and had little competition in the direct servicing of rural customers. When it came to larger sales, however, competition was strong, particularly in the areas of government bids and institutional sales.

MOVING FORWARD

Operations were further restructured in May 2005, in an effort to overcome the large debt burden. A memorandum of understanding was signed between Soluz Honduras and the SME Program, whereby a significant portion of the debt would be forgiven, and a one-year repayment plan was designed for the remaining financing. Staffing and all expenses were streamlined. At this point, Soluz began to focus exclusively on sales, using the cash proceeds from the sale of solar PV rental assets to pay back its creditors (installed rental systems continued to be serviced until they were sold on short-term credit to existing or new customers).

While the financial performance of Soluz Honduras was disappointing as a result of this overly ambitious attempt to pioneer an unsubsidized solar PV rental offer, the environmental and social benefits of the project should not be overlooked. To date, the company has installed well over 5,000 systems, and while the business model has proved difficult, the project did provide clean energy, leading to positive social and environmental impacts. The aggressive penetration of a solar PV rental system created widespread awareness of solar PV in rural areas, thus increasing demand. Employment opportunities and income were provided for the micro-enterprises that were contracted to collect monthly fees.

The move away from a rental offer to a cash and short-term credit sales focus has resulted in increased cash flows to Soluz Honduras, thus reducing its debt burden. With the reduced debt, the Honduran firm expects to now have a viable business model. Up to now, high debt on the books during the past three years of financial restructuring has made it difficult to purchase on credit. With a debt-free balance sheet, however, a viable and sustainable future, in which the company will operate with less required capital, will begin to emerge.
Selco Vietnam, Ltd., based in Ho Chi Minh City, is a subsidiary of the U.S.-based Solar Electric Light Company. Launched in 1998, Selco Vietnam sold solar systems to unelectrified households in Vietnam and was the first 100-percent foreign-owned company licensed to operate in the country.

BACKGROUND

Solar Electric Light Company is a U.S.-based company with offices in India, Sri Lanka, and Vietnam. It grew out of the activities of the NGO Solar Electric Light Fund, which was founded in 1990 to assist in the financing and installation of solar energy system projects throughout a number of developing countries. The for-profit Solar Electric Light Company was launched in the late 1990s to scale up the provision of solar electricity to households in developing countries through a commercial market-based approach. It operated through its subsidiary companies in India, Sri Lanka, and Vietnam (see box below).

Vietnam has a significant power shortage, with little capacity to meet urban demand and no infrastructure to distribute electricity beyond urban areas. The general lack of access to electricity, coupled with the fact that even rural Vietnamese had higher disposable incomes than those in neighboring countries, made Vietnam appear to be an attractive market for shs providers.

Selco Vietnam’s primary focus in the country was on the sale of shs to households. However, it also provided specialized applications, such as solar street lights, water pumps, and hot water heaters. An important part of Selco Vietnam’s business model was its relationship with the vwu, through which it had access to villages, and its partnership with the Vietnam Bank for Agriculture and Rural Development (VBARD), which provides consumer financing.

Selco Vietnam received a $750,000 loan from IFC’s sme Program in 1998. The loan was to enable the company to provide collateral to third-party financial intermediaries (specifically VBARD) for working capital financing up to $200,000, and to secure loans for the company’s customers to finance purchases of shs. In addition, the loan agreement called for the sale of 12,000 shs in two years.

OBSTACLES

The principal barrier faced by Selco Vietnam was that of affordability. Vietnam had no debt culture and, thus, no consumer financing availability, retail banking, or home mortgage market. A general overall distrust of the banking sector signified that most would rather do without than incur debt. In fact, until 2002, banks were controlled by local political institutions, and loans were approved not on creditworthiness but, rather, on the recommendations of the local people’s committee, which was at odds with the Selco Vietnam business model, since it relied on the availability of consumer finance.

Complicating the matter were the issues around the mass publicity of grid expansion and the fluctuating incomes common among the rural population, making consumers considerably price conscious. Unlike other countries, the Vietnamese did not establish income-generating businesses based on solar power (i.e., solar-charged cellular phone rental), a fact that also contributed to the price consciousness of consumers.

Vietnam presented a further complication: a television was considered more important than lighting among the targeted consumer group. As a result, larger solar pv systems, capable of powering a television, were in demand. In fact, most customers sought the largest and more expensive shs the company had on offer, which resulted in reducing the affordability of shs even further.

Most potential customers lived within 1 km of a battery-charging station. The average amount spent on batteries per month in Vietnam was the equivalent of between 66¢ and $2, considerably less than
what was required for a solar PV system. The number of those without access to electricity (60 percent) was initially taken as a measure of the prospective market, but upon later review, it was determined that only about three percent of the unelectrified population could actually afford a solar PV system.

There were also issues surrounding the policy environment. There was a heavy local political influence, yet it was not always supportive of Selco’s activities. Seen as a U.S. company, Selco Vietnam did not always get the same level of support that a Vietnamese company might have received. While import duties for solar modules and batteries were waived for Selco Vietnam, the inconsistent subsidy policy for electricity proved problematic.

In an attempt to address the issue of consumer credit, IFC originally hoped to make the GEF loan to the women’s union, so that it could on-lend to consumers. However, the VVU was concerned with the liability issue, and ultimately the funds were loaned directly to Selco Vietnam, with the VVU agreeing to administer them.

Selco Vietnam’s expertise lies in the areas of solar sales and service, not in that of consumer finance. The initial intent had been to work through VBARD (which would provide consumer financing with funds guaranteed by the SME Program) and the VVU (which would handle the collections). Unfortunately, when VBARD failed to make financing available to potential Selco Vietnam customers, Selco Vietnam was forced to start providing consumer financing itself. Subsequently, when the VVU failed to provide proper collections service (its priorities having shifted as a result of a pending election), the solar PV company was forced to take on the added responsibility of a collections agent. But this proved to be a particularly challenging endeavor, as the company was unskilled in the areas of consumer finance and collections, and was operating in a market with no debt history or consumer banking.

**MOVING FORWARD**

In the end, Selco Vietnam was forced to accept that demand for lighting was considerably less than expected in the country. During its first two years, the entity had planned on sales of 12,000 units, but it struggled to reach 1,600. Sales targets were eventually revised downward by 50 percent.

In an effort to lower the cost of the solar PV equipment, the company has now formed partnerships with other Solar Electric Light Company subsidiaries around the world in order to purchase larger quantities from suppliers with volume discounts. Additionally, it has learned from the experiences of other subsidiaries by sharing information.

Selco Vietnam has struggled financially since it began operations. The management has undertaken some significant changes to improve financial performance, reducing operational and administrative expenses, and increasing its presence in the market. Since the end of 2006, the company has been operating in survival mode, with only five employees focused exclusively on cash sales. No credit is available, and the firm is not expected to make its SME Program loan repayment deadline.