

# RETOOLKIT CASE STUDY

## *PV Market Transformation Initiative*

### **1. Overview**

The Photovoltaic Market Transformation Initiative (“PVMTI”) is an initiative of the International Finance Corporation (IFC) and the Global Environment Facility (GEF), which aims to promote the sustainable commercialization of PV technology in the developing world by providing examples of successful and replicable business models that can be financed on a commercial basis.

PVMTI has US\$25 million available for concessional funding (US\$15 million in India, US\$5 million in Kenya and US\$5 million in Morocco), which may be provided as:

- Debt (senior or subordinated)
- Partial risk guarantees
- Equity (to a lesser extent)
- Up to 10% as grant for non-commercial activities

In order to establish sustainable businesses beyond the end of the PVMTI program, investee companies have to source co-financing from sponsors and other financial institutions to achieve the following leverage targets on PVMTI funds:

India	3 to 1
Morocco	2 to 1
Kenya	1 to 1

Since its launch in June 1998, PVMTI has committed more than US\$19 million to nine projects in India, Kenya and Morocco and is in the process of finalizing additional projects for the remaining US\$6 million available under the PVMTI fund.

At the end of 2003, PVMTI investments had resulted in the installation of over 10,000 SHS, and at the end of the project in 2009, the plan is for 400,000 systems to have been installed.

More details can be obtained at the PVMTI project web site. [www.pvmti.com](http://www.pvmti.com)

### **2. Investment Approach**

PVMTI targeted investments to prove the viability of a number of different business models and finance mechanisms, and concentrated on downstream business operations for off-grid systems, such as: extending sales and distribution networks, merging and expanding assembly, delivery and service operations, and building consumer finance infrastructure and providing relevant products.

No funding was provided for technology development, manufacturing, or on-grid power stations.

To date, PVMTI has backed a variety of promising business models and finance mechanisms ranging from:

- Partnerships with industrial players,
- Leveraging existing distribution networks, and

- Joint ventures between PV companies and finance institutions to provide credit for solar home system customers.

In some cases, PVMTI is also providing financial backing to some exciting new applications of PV technology.

PVMTI investments were specific to each country.

Country	Situation	Approach
India	Large market with several players (service and manufacturing) Backdrop of significant government subsidies Focus beyond solar home systems (street lighting, drinking water) Value-added approach Mainstream financial players showing interest	Promote retail sales networks supported by rural banking infrastructure
Kenya	Active market, but dominated by “trader mentality” Focus entirely on solar home systems Nexus between commercial banking and savings cooperatives key	Promote consumer credit and working capital finance for PV enterprises
Morocco	Well-regarded national utility with mandate for rural electrification Primary focus is solar home systems Originally fee-for-service model (with initial utility subsidy) appeared likely	Promote fee-for-service programs based on solar home systems

### 3. Technical Guidelines

Technical quality, particularly in rural PV markets, is one of the primary factors influencing customer willingness-to-pay under credit or fee-for-service schemes. Satisfied consumers spread the “good news” about reliable products, confirming publicity and market awareness campaigns. Conversely, products that don’t function as expected rapidly lose credibility and become increasingly difficult to sell.

In recognition of this fact, all PV systems supplied under PVMTI were required to comply with a set of technical standards referred to as the “PVMTI Technical Guidelines”.

Rather than seek to create new technical norms, the project adopted state of the art standards, protocols and procedures for systems and components. This approach was intended to contribute to broader acceptance of global standards and avoid adding to the multitude of national standards for PV rural electrification applications, most of which have never been effectively applied.

Download the guidelines for [Kenya](#), [India](#) and [Morocco](#).

### 4. Business Models Financed

Country	Company	Business Focus
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India	Shakti Alternative Energy	PV sales piggybacking on LPG sales network
	Shell Solar India	Multinational developing sales/svc infra in partnership w/ major FIs
	Sunlit Media	Streetlights w/ ads -- value-added service provided using PV
	SELCO Solar Light	Leading SHS dealer expanding network to new regions
	SREI International Finance	Major FI providing consumer finance for SHS w/ NGO
Kenya	Muramati Tea SACCO	Creditworthy credit union borrowing directly for SHS w/ svc provider
	Barclays Bank w/ KUSCCO	Comm bank lending to credit unions for SHS w/ svc provider(s)
	Equity Building Society	Commercial bank (retail) lending for SHS w/ svc provider(s)
Morocco	Salafin-Afrisol	FI providing consumer finance for SHS
	Al Amana-Noor Web	Microfinance institution providing consumer finance for SHS
	Zakoura	Microfinance institution providing micro-credit for SHS
	Sunlight Power Maroc	SHS Dealer using business investment to manage growth

## 5. Finance Mechanisms Used

Country	Company	Debt	Equity	Quasi-Equity	Partial Risk Guarantee	Partial Credit Guarantee	Grant
India	Shakti Alternative Energy	x	x				x
	Shell Solar India	x		x	x		x
	Sunlit Media	x	x				x
	SELCO Solar Light	x					x
	SREI International Finance	x		x	x		x
Kenya	Muramati Tea SACCO	x					x
	Barclays Bank w/ KUSCCO	x					x
	Equity Building Society				x		x
Morocco	Salafin-Afrisol				x		x
	Al Amana-Noor Web					x	x
	Zakoura						
	Sunlight Power Maroc					x	x

## 6. Investments in India

By the end of 2003, PVMTI had committed US\$11.9 million to five projects and had achieved significant progress on the ground.

### 6.1 *Shri Shakti Alternative Energy Ltd, India*

PVMTI committed US\$2.2 million in Shri Shakti Alternative Energy (SSAEL) through a combination of loan, equity and grant funding to help it leverage the existing LPG distribution network of its sister company (Shri Shakti LPG) to sell PV and alternative energy products. By the end of 2003, SSAEL had set up a network of 8 Energy Stores, had diversified its dealerships to install and service PV systems, and had opened additional distribution outlets with other Indian companies. Sales of over 2000 systems have been achieved to date with this promising sales pipeline.

### 6.2 *Shell Solar India*

PVMTI committed \$4.0m in loan, partial risk guarantee and grant to Shell Solar India to develop a sales/service network for PV products and provide consumer financing in South India. Shell Solar India has expanded its network to 18 sales and service centers and has installed over 8000 SHS since its deal with PVMTI was finalized in mid-2001. They are projecting continued strong growth based on credit sales.


### 6.3 *Sunlit Media Pvt Ltd, India*

Sunlit Media was formed in 2000 as an innovative business generating revenues from the sale of advertising on PV-powered streetlights, which were provided (installed and maintained) gratis to private campuses enhancing safety at night and improving quality of life. PVMTI originally committed US\$2.3 million in loan, equity and grant to help Sunlit Media expand this business. However, shifting fortunes in the Indian advertising sector have delayed the deal, and PVMTI has scaled back its commitment to US\$1.1 million.

### 6.4 *SELCO Solar Light*

**SELCO Solar Light**

SELCO Solar Light ("Selco India") represents the latest addition to PVMTI in India, with \$1.1m PVMTI funds committed as loan and grant in October 2002. Selco India is a subsidiary of Solar Electric Light Company Ltd, a leading rural solar service company that has installed over 30,000 in its target markets of India, Vietnam and Sri Lanka. In its 8 years of operations, Selco India has installed 19,000 SHS through a network of 25 service centres, primarily in the Southern state of Karnataka. With PVMTI funds recently disbursed, Selco India is now poised to expand its service infrastructure into new regions and to further penetrate existing areas via credit sales achieved in partnership with local banks.



## 6.5 SREI International Finance, India

### SREI International Finance

SREI International Finance ("SREI"), a successful non banking financial institution based in Calcutta has received commitments for \$3.5m funds from PVMTI as loan and guarantee to establish a PV project in West Bengal. The original intention was for SREI to set up infrastructure for the Ramakrishna Mission to install SHS, with SREI providing consumer finance to the end users. Following an encouraging start to the project, SREI is expanding its operations by establishing a network of PV malls and is providing working capital finance to PV integrators. These integrators will install SHS either for cash under the W Bengal subsidy scheme or on credit via local co-operatives. Following the addition of a new PV integrator, Environ Energy Tech Service, the project has made considerable progress, with two PV malls currently in operation and 5,000 SHS installed in the last year alone. Further growth is expected in the current year both in W Bengal and in the adjoining regions.



\$3.5m in loan (w/ kicker), partial risk guarantee, grant  
Develop sales/service network and provide consumer financing in West Bengal (in partnership with Ramakrishna Mission)

## 7. Investments in Kenya

Kenya has been a challenging for PVMTI. By the end of 2003, US\$4.7 million had been committed to three projects and had achieved significant progress on the ground.

### 7.1 Muramati Tea SACCO

#### Muramati

Muramati Districts Tea Growers SACCO ("Muramati") is providing savings and loan services to over 25,000 farmers in the tea sector. With \$0.6m PVMTI funds committed primarily as a loan, Muramati has started to on-lend funds to its members to finance the purchase of SHS installed by ASP (Kenya) Ltd. Following first disbursement of funds in the summer of 2002, progress was initially slow. However, a revised marketing strategy has met with a more favourable response, with Muramati holding a workshop in late 2003 to celebrate the 100th SHS installation. Since



then, installations have grown to around 150, with the number of enquiries from members increasing steadily. From a broader perspective, the Muramati scheme has generated strong interest from other SACCO's, which we hope will lead to a healthy demand for loans under the Barclays project. We also expect that Muramati's positive experience with solar lending will serve as an example for any SACCO looking to introduce a similar solar loan scheme.

## 7.2 Barclays Bank w/ KUSCCO

### Barclays Bank



Barclays Bank of Kenya ("BBK") has received a commitment of \$2m from PVMTI to fund loans to multiple Savings and Credit Corporations (SACCO's) for on-lending to their members to purchase SHS. The project builds on the experience of the Muramati loan scheme (see below) and is aimed at reaching the maximum possible number of rural households, the core clients of the SACCO's. The involvement of Kenyan Union of Savings and Credit Co-operatives ("KUSCCO") is a key strength of the project, as KUSCCO represents and provides funding and services for 1,650 SACCO's with a combined membership of 1.5m. KUSCCO will play a leading role in marketing the loans to its member SACCO's, screening applications, overseeing implementation of the project on the ground and providing a guarantee for the SACCO loans. Launch of the project has been delayed, but the structure has now been simplified and with all key issues close to a final resolution, KUSCCO has several interested SACCOs lined up to ensure a quick roll-out of the project.

## 7.3 Equity Building Society

### Equity Building Society



Equity Building Society ("EBS") has over the last 20 years grown to be a leading Kenyan micro-finance institution, providing banking services to lower income segments of the population, including those in rural areas. With a strong grass-roots presence and targeted marketing approach, EBS has achieved exponential growth to reach 200,000 clients and has established a strong track record for SME lending. Building on this experience, EBS has partnered with PVMTI under a \$2.1m project to introduce 2 new loan schemes - a consumer loan scheme to finance the purchase of SHS and a corporate loan scheme for SME's in the PV sector. Half of the funding for the consumer loan scheme will be provided via a loan under PVMTI, with SHS to be installed by PVMTI approved suppliers. For the SME loan scheme, PVMTI has provided a guarantee to share in the risk of default under the loans, which has been key to encouraging EBS to enter this new sector. Significant grant funding has been provided for both schemes, notably to fund technical and commercial mentoring for SME borrowers. It is hoped that this approach will give SME's both the funding and the support required to build successful businesses. The EMT is close to finalising documentation for the project and will work with EBS to launch the project in the coming months.

## 8. Investments in Morocco

Since the start of PVMTI, the Moroccan PV sector has undergone significant changes. After a slow start, Office National de l'Electricite has accelerated the rollout of its fee-for-service program for solar home systems (SHS). Four contracts were awarded in June 2003 for a total of 16,000 systems, and the tender for an additional 37,000 systems was completed in 2004. This brings the cumulative total for SHS awarded to over 80,000. By the end of 2003, PVMTI had committed US\$3.7 million to four projects. However, final disbursement of the funds has been delayed by Moroccan regulatory issues related to international financing.

## 8.1 Salafin SA

### Salafin

Salafin SA ("Salafin"), a subsidiary of BMCE Bank, has broken new ground by being the first mainstream bank to offer solar loans in rural areas of Morocco. With \$1m backing from PVMTI, principally as a partial guarantee for these consumer loans, Salafin is seeking partnerships with multiple PV service providers wishing to establish a credit business for SHS and other PV products. The project has seen slow progress, particularly as PV companies' attention has recently focussed on the ONE tenders. However, with an estimated 1.4 million rural households still without access to the grid and an estimated market potential for 250,000 SHS, the sponsors remain convinced of the potential for a credit market for PV. We look forward to reporting positive developments in the next newsletter.



## 8.2 Al Amana-Noor Web

### Al Amana & Noor Web



Al Amana, the largest rural micro-finance institution in Morocco, is partnering with Noor Web and other selected PV service suppliers to provide micro-credit for SHS sold both within and outside of the ONE scheme. The project was made possible by extensive lobbying by the sponsors and the EMT, leading to a groundbreaking ruling by the Ministry of Finance. This has seen the remit of micro-finance institutions expanded from the provision of credit to micro-enterprises to include loans to households to finance the purchase of SHS. Funding for the project will be provided by Banque Populaire, against a \$0.7m guarantee from PVMTI. Documentation is signed and the EMT will be working with the sponsors to launch the project following resolution of the regulatory issues mentioned above.



## 8.3 Zakoura

### Zakoura

Zakoura, the second largest micro-finance organisation in Morocco, is also looking to introduce a micro-credit scheme for SHS on a similar basis to Al Amana. PVMTI has committed \$0.9m to support the project, principally as a guarantee facility, and will be working towards a speedy launch of the project once the same regulatory issues are resolved.

## 8.4 Sunlight Power Maroc

**Sunlight Power Maroc**



Sunlight Power Maroc ("SPM") is a leading Moroccan PV systems supplier and the latest sponsor to receive backing from PVMTI. In June 2003, the company was awarded contracts for 12,000 SHS under the ONE scheme, which will involve setting up infrastructure in new regions and increased working capital requirements. PVMTI is seeking to fund this growth via a \$1.1m facility, structured predominantly as a loan. As with other projects, closure of this deal will depend on the resolution of regulatory issues, which is expected shortly.

## 9. Key Lessons Learned

As of the end of 2003, the emerging lessons learned are provided below.

### **Business**

Capable "deep-pocket" sponsors are interested in the SHS business but concerned about opportunity cost. Their willingness to partner with existing SHS players provides exciting opportunities for increasing market scale dramatically.

Understanding the business environment is critical. What works in one country may not work in another -- each country is unique.

### **Financial**

Many of domestic with rural infrastructure are not credit-worthy. Capable and bankable financial institutions are increasingly interested in micro-credit, but remain concerned about collection.

Several projects likely to be commercially viable after only one round of concessional financing

### **Technical**

Logistics for efficient O&M services remains a major challenge

System quality needs specific supports. Domestic training and testing/certification facilities limited in most countries

Structuring adequate commercial incentives to promote battery recycling proved difficult.

### **Others**

Management skills for most service providers need strengthened to ensure success.

Procurement constraints imposed by multilateral lenders has limited the use of funds.