

Introduction

GSEII's Solar Hot Water Systems (SHWS) Program seeks to make the systems affordable and available to the general markets of St. Lucia and Grenada. GSEII partner organizations developed a financing mechanism for SHWS, provided financial training sessions, and built consumer awareness programs. Installation and use of these systems significantly reduce the high cost of water heating for both residential and commercial buildings.

The islands' conventional water heating uses propane heaters or electric shower heaters, which attach directly to a shower head and can be installed cheaply. However, electric shower heaters are inefficient and expensive to operate. In contrast, solar heaters reduce electricity bills and help transition islands away from inefficient fossil fuel technologies.

Project Description

The Solar Hot Water System (SHWS) Program established a financing program through local credit unions in order to make SHWS available to low and middle-income households. The program began on Saint Lucia in 2005, and launched on Grenada in 2009 after troubleshooting and making modifications.



Rooftop Solar Hot Water System

The SHWS consisted of a water tank and one or two solar panels, depending on the size of the tank. The systems cost between EC \$4,900 and EC \$6,900, which includes the cost of installation and a three-year warranty. Although conventional devices, specifically electric shower heaters, are much cheaper initially, they consume 60 kW per hour. With electricity rates approaching EC\$1.00/kWh, using the electric heater for even 10 minutes a day can easily cost EC\$150 a month. At that rate, an SHWS would pay for itself within a few years.

Table 1: Costs of Water Heating Systems (EC\$)

	Electric Shower Heater	SHWS
Base Cost	\$100	\$0 (\$6,900 w/out loan)
Monthly Charge to Heat Water	\$153	\$0
Monthly Financing Cost	\$0	\$140
Cost Over First Year	\$1,935	\$1,680
Cost Over 5 Years	\$9,280	\$8,400

Table 1 compares owning and operating a conventional electric water heater and a SHWS financed through the program. In this example, the electric system is the largest available (80 gallons) and is financed over five years at 8% interest. It operates at 3.3 kW to heat 80 gallons a day, using 6 kWh at a cost of EC\$0.85/kWh. Over the course of the five-year loan, using the SHWS saves this theoretical household EC\$880 (US\$325). After the loan is repaid, the hot water is essentially free, which magnifies savings exponentially.

Saint Lucia: This pilot program began in September 2005 with a two day training course for ten of Saint Lucia's eighteen credit unions. This course familiarized representatives with SHWS technology and expected cost savings. Trust for the Americas loaned US \$46,000 to finance SHWS loans and thus remove financial barriers for households that found upfront costs prohibitive.

Four months into the project, only a few loan applications had been submitted, so the GSEII modified the terms of the loans and expanded eligibility requirements. After an advertising campaign failed to generate interest, the SHWS program underwent a serious review process. Based on identified problem areas, the five following steps were agreed upon: a 'fast-track' to distribute loans one week after application submission, the improved communications between the Saint Lucia Cooperative League manager and participating credit unions, a briefing document for tellers and loan officers, and more radio and television advertisements. All action steps were implemented by October 2007, but only few new loans were issued.

Grenada: In 2008, a modified SHWS program expanded to Grenada through the Sustainable Energy Partnership for the Americas (SEPA) program of OAS. An agreement signed between GSEII member ESG and the Grenada Public Service Co-operative Credit Union Limited (GPSCU) established a US\$20,000 fund to finance SHWS loans and to operate the program.

Changes made in Saint Lucia over the course of the program were probably more successful when included as part of initial launch on a new island. The Grenada program streamlined the loan process by working with a single credit union, GPSCU, the largest in the country. Again the program began with a training session for loan officers; this familiarized people with the SHWS technology, explained financial and environmental benefits, and covered the entire financing structure of loans.

Since November 2009, the GPSCU's marketing committee and John Auguste, Energy Officer from the Government of Grenada, have developed a televised ad campaign and flier distribution. Ads will air soon and run for a year, at which point GSEII will be in contact with GPSCU to monitor the incoming loan applications and the number of those that result in installed SHWS.

Evaluation of Project Results

The Saint Lucia program failed to increase distribution of SHWS on the island. OAS officials attribute shortcomings to include not having the relevant stakeholders involved at the beginning, unnecessary bureaucratic complications, poor public outreach, and lack of legislation and incentives.

Nonetheless, several positive results can be drawn from the Saint Lucia program. The review process demonstrated partners' ability to identify problem areas and modify the program. This problem solving produced improvements that have been transferred to the Grenada SHWS program, which has a fresh start. The Grenada program has not reached the loan distribution stage, so the loans cannot yet be evaluated as an operational program. The training session received positive feedback, and the program is in an excellent position to succeed.

Problems Encountered and Lessons Learned

The GSEII's program to make SHWS efforts available and affordable in St. Lucia was unsuccessful for the following reasons. 1) The funds used to finance the loans went through five different groups before reaching the public. This bogged down the process and increased miscommunication between groups. 2) There were too many layers and credit unions to monitor, making errors and problem areas more difficult to detect. 3) Key stakeholders in the process lacked enthusiasm for the project.

To fix these issues in Grenada, GSEII involved the credit union league only to recommend a reliable local credit union that would be used exclusively. The training program was modified to increase emphasis on understanding the financing mechanisms. Furthermore, the source of the money has been changed from a loan made by UNIDO to a grant which can be used to make SHWS loans indefinitely.



Photos from Grenada training session for credit union employees (Photo: ESG)

4) At the onset of the Saint Lucia program, the maximum household income requirements prevented some middle-income homes and small businesses from taking part in the program, who would be most likely to participate. The Grenada program has been adjusted accordingly.



SHWS on Hotel Roof

5) The public outreach in Saint Lucia was lackluster and has been modified for Grenada. Too few people knew of the program or understood that the loan would pay for itself over time. To build consumer awareness, GSEII is informing local retailers about the loan offerings thereby increasing the marketing campaign. GSEII

is also closely collaborating with the credit union to develop a more cohesive message. Television advertising will be used more heavily because it has the greatest reach

6) The Saint Lucian program was hampered by a lack of legislation indicating standards and guidelines for the systems or creating necessary incentive for islanders to purchase the systems. Greater government support would be extremely helpful in standardizing the market and allowing SHWS to get a stronger foothold with consumers.

The improved approach in Grenada shows a good deal of promise. The government of Grenada has increased the market potential of SHWS through innovative policy measures, and GSEII is working with the government and the national utility, Grenada Electricity Services (GRENLEC), to launch a national promotional campaign.

Potential for Expansion

High electricity prices and abundant sunshine make solar hot water heating systems a practical and cost-effective option for tropical islands. The largest barrier will continue to be high up-front cost, which discourages consumers from purchasing a SHWS, even if they are aware of long-term savings.

The GSEII SHWS program has successfully increased awareness of the technology and developed financial mechanisms that remove the upfront cost barrier. GSEII is confident that its fundamental program can succeed on most if not all islands, provided special care is taken to work with local stakeholders and to fine tune the approach for each island.

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