Solar Energy for Heating Water in Urban/Peri-Urban Areas, Egypt

Themes

★ Renewable energy
❖ Financing mechanisms and private sector involvement
❖ Technical capacity development
✷ Poverty alleviation (MDG 1)

BASIC INFORMATION

Name: Renewable Energy for Daily Life: Solar Water Heating in El Menia
Implementing Organizations: Society for Community Welfare in Kom El Aghdar-Maghagha, CBO (2 projects), and Coptic Evangelical Organization for Social Services, NGO (1 project)
Location: urban and peri-urban areas, Egypt
SGP contribution: 3 grants, totaling $65,835: $11,184 (June 1998-June 1999); $26,527 (June 1998 – June 2000), and $28,124 (November 2000 – November 2001); $211,166 for all eight SGP solar water heater grants in Egypt
Start Date: June 1998 (2 projects), and November 2000 (1 project)

ENERGY OVERVIEW

Energy Resource: solar energy
Technology: solar water heaters
Application: water heating
Sector: domestic
Water Heater Capacity: 150 liters
Number Served: 164 solar water heaters (total for all three projects); 429 solar water heaters installed by 8 SGP-funded projects in Egypt, reaching 3,790 people

BACKGROUND

Hot water is critical to maintaining adequate sanitation and health. Often, water must be boiled in order to make it safe to drink. In poor communities in Egypt, water is normally heated using agricultural residues in a kanoun, which produces smoke and is generally unsafe. In more well- off communities, electric or gas water heaters are used, but there may be shortages of gas cylinders, or electricity costs may be high. Egypt is well endowed with solar energy, so solar water heating is a viable option; on average, the sun is shining for 9-11 hours per day, with an average insolation of 1900-2600 kWh/m^2. These solar water heater projects took place in poor villages and neighborhoods surrounding El Menia, a city in Upper Egypt.

PROJECT DESCRIPTION

Overview

These three projects introduced the use of solar energy to heat water, and raised awareness about climate change and the effects of pollution produced by traditional methods of heating water. SGP has funded at least eight projects in Egypt related to solar water heaters.

One of approximately 160 solar water heaters installed in urban and peri-urban areas (El Menia,Egypt).

Implementation

The projects installed solar water heaters in poor neighborhoods of El Menia, and also carried out training and education programs for community members regarding the installation and maintenance of solar heaters and how the use of solar water heaters is related to solving global and local environmental problems. Community members contributed part of the costs of the water heaters,which increased project ownership and allowed more water heaters to be installed. In addition, the projects partnered with private sector entities and local governments to improve the quality of the technology used and to sustain the effort.

Environmental Benefits

Global: The use of solar energy to heat water for household use reduces or eliminates the need to use agricultural waste or other traditional fuels to heat the water, thereby reducing greenhouse gas emissions. These three projects installed a total of 164 water heaters.

Local: The reduced use of agricultural waste and/or wood for heating water reduces the amount of smoke released into the air, thereby improving the local air quality.

Livelihood Benefits

Health: Improved access to hot water can help improve sanitation, and therefore lead to health benefits. Reduced smoke inhalation due to the reduced burning of agricultural waste to heat water is another health benefit.

Cost savings: Although no specific cost savings information was available for these projects, it is estimated that solar water heaters of 150-liter capacity save a household 10-15 Egyptian pounds every month.

Employment: The project implemented most recently involved training three local young people to install, maintain and repair solar water heaters.The training should help these young people earn an income doing this work.

Capacity Development

Each project has incorporated training to improve the community's understanding of solar and other renewable energy sources, and their capacity to maintain and use solar water heaters.The first project, which installed a total of 33 water heaters, held 10 seminars through which 250 people learned about the water heaters and how they relate to local and global environmental problems.The most recent of the three projects held 8 such seminars.

Partners

One of the lessons learned through the first project was the importance of working with the private sector and local governments to ensure high quality technology and the sustainability of the project.Through these projects,relationships have been developed with the government's Renewable Energy Authority as well as companies manufacturing solar water heaters.

Beneficiaries

Beneficiaries are residents of poor areas in and around the city of El Menia who are now using solar water heaters.In addition, those who are now working as solar water heater technicians have directly benefited from these projects.Approximately 160 water heaters have been installed, which can be assumed to benefit at least that many households, and more if some of these are publicly used.

LESSONS LEARNED

Barrier Removal

Technical: Since the projects have trained local community members to better understand,operate, install and repair solar water heaters,technical barriers to their use in this region have been reduced. However, it is unclear where these solar water heaters are being constructed, and whether or not these projects have helped reduce any barriers to their construction and adaptation to local needs.

Financial: One important lesson learned from the first project implemented was the importance of requiring individual contributions from households to help cover the cost of water heaters.This also means that households are not paying the full cost for the heaters, and implies that access to the water heaters would still depend upon subsidies from non-governmental organizations like those implementing these projects. However, there is evidence within SGP documents that because of the relatively large number of solar water heater projects funded by SGP, SGP has played a brokering role between the projects and the solar water heater suppliers.SGP seems to have sought bids from eight different suppliers, and asked these suppliers to offer a discount off regular costs for these projects.This would reduce financial barriers for those directly benefiting from these projects, but it is unclear how this contributes to lowering overall financial barriers to accessing this technology.

Information/awareness: These projects have placed great emphasis on raising awareness, educating hundreds of people about the connection between renewable energy use and global and local environmental problems. The importance of public awareness in promoting renewable energy use is another of the lessons learned from these projects.

Policy: According to SGP reports, these projects have encouraged policy-makers to support environmental activities and to welcome community involvement. However, no information is available about specific policy steps taken.

Scaling Up

In Egypt, SGP has been very active in sponsoring solar water heater projects in many regions of the country. Recent direct contact and negotiations with solar water heater suppliers may be seen as a step toward consolidating the impact of these dispersed small projects. Certainly, lessons learned in one SGP-sponsored project are being transferred to other SGP-funded projects. Information is not currently available about how access to solar water heaters is improving in areas where NGOs are not involved. However, according to one source more than 25,000 household solar water heaters have been manufactured and installed in Egypt, particularly in new cities.

SOURCES CONSULTED

Project Records EG-OP1-06,EG-OP1-05,and EG-OP2-11,SGP Project Database, http://www.undp.org/sgp

SGP Egypt,Biennial Programme Review, February 2001.

SGP Egypt,Semi-Annual Progress Report,December 2000.

SGP Egypt,Solar Heaters Projects.Project summary, received July 2003.

SGP Egypt,"The Land of the Sun." Script for video about solar water heaters,2003.