

Photovoltaics for Water Supply in Rural Areas, Albania

Themes

- ★ Renewable energy
- ✳ Innovative technology applications
- ❖ Technical capacity development
- ✳ Poverty alleviation (MDG 1)
- ✳ Health (MDGs 4-6)

PROJECT DATA

Name: Photovoltaics Use for Water Supply to Rural Areas in Albania

Implementing Organization: Albania – EU Energy Efficiency Center (NGO)

Location: rural Albania

SGP contribution: \$29,960

Start Date: June 2002

ENERGY OVERVIEW

Energy Resource: solar

Technology: photovoltaic panels

Application: water pumping

Sector: domestic, agriculture (irrigation)

Number Served: 2 communities

BACKGROUND

Albania is undergoing a serious energy crisis due to insufficient investment in power generation and distribution, combined with a major increase in energy demand. Prices have been rising, putting pressure on those who have low incomes. At the same time, usage limits are also becoming stricter. Very little, if any, solar energy is being harnessed in Albania to meet this demand.

PROJECT DESCRIPTION

Overview

This project tested the viability of using solar energy to pump water in two villages in Albania. In one village, solar photovoltaic panels were installed to pump water, and in the other, they were used for irrigation. The communities were trained in maintenance, and an awareness campaign was initiated to spread information about photovoltaics. The results of the project suggest that while solar panels have benefits, other methods, such as improved efficiency and possibly solar water heating, may address Albania's energy crisis more cost-effectively.

Implementation

The Energy Efficiency Center (EEC), the grantee, first selected the two villages in which the photovoltaic panels would be tested. After researching the market, they selected a supplier of the photovoltaic equipment. The villages had some existing water supply infrastructure that had been put in place by a development agency, CAFOD. The project made as much use

of this infrastructure as possible. In addition, instead of installing battery systems for storing electricity, it turned out to be more cost-effective in both villages to construct water reservoirs in order to deal with peak hours of water consumption. After receiving training from the supplier, members of EEC installed the water supply systems, and then trained villagers to maintain and operate them. In the village in which photovoltaics are used for irrigation, the panels were mounted on a farmer's roof, and he was responsible for maintaining them. The other village decided to pay someone to take care of maintenance. Installation was followed by an awareness campaign and a survey of the villages to assess the impacts of the systems impact on their lives.

Technology

The supplier of the panels was Helios Technology. EEC designed and installed the systems, including the control unit, main switch, pumps, and supporting cable.

Environmental Benefits

Global: These two villages now use solar energy to pump their water, which means they do not need to rely on fossil-fuel powered electricity for this purpose, thereby avoiding emissions of greenhouse gases.

Livelihood Benefits

Income generation: The improved water supply for irrigation has increased farmers' ability to grow crops, thereby improving their income generating capacity.

Health: The village with improved access to potable water may have benefited from improved sanitation.

Beneficiaries

The primary beneficiaries are the residents of the two villages receiving water via solar water pumps. In addition, members of EEC have also benefited from the training and experience they through this project, which will help them implement other solar energy projects and also better assess all options for addressing the energy situation in Albania.

Capacity Development

NGO: EEC members received 4 days of intensive training by the supplier in the basics of solar energy, photovoltaics, and specific applications such as water pumping. They also made site visits to see how installed PV systems operate. Finally, they received on-site training in how to assemble the systems. This training is of immense benefit to the NGO, since its ability to assess options for meeting Albania's energy crisis is greatly improved.

Villages: The individuals selected in each village to maintain the systems were then trained by EEC. EEC also prepared written materials for them. These capacity building efforts were supplemented with an awareness campaign, which involved a documentary film, television roundtable discussions, and wide dissemination of materials.

Partners

The major partners in this case have been the implementing NGO, the technology supplier, and the communities. It does not appear that government or other NGOs have been involved.

LESSONS LEARNED

Environmental Management

This project tested the viability of using photovoltaic panels to address a lack of power supply in rural areas of Albania. While response to solar energy systems has been good in these two villages, it is also observed that compared to other options, such as improving centralized heating efficiency, insulating houses, or using passive solar applications such as water heating, photovoltaics may be too expensive. There are many opportunities for efficiency improvements in Albania, since much infrastructure already exists but it is inefficient.

Barrier Removal

Information/Knowledge: This project has focused on improving knowledge and awareness of photovoltaics as an energy option in Albania. Evidence suggests that these are the first solar-powered water pumping systems in Albania. The training received by the Energy Efficiency Center, the materials they have been disseminating, and the awareness efforts they have undertaken all improve the level of knowledge in the country about this technology.

Technical: EEC is now capable of assembling the solar power

systems. However, there is still no local supplier for the panels and equipment. Thus, technical barriers still exist for widespread use of this technology in Albania.

Financial: Although residents of the villages responded very positively to the solar panels, and there did appear to be some "willingness to pay" on the part of others nearby, there are insufficient credit schemes available, and there are no government subsidies currently available for installing the technology. Thus, even though there is an estimated 2.0-2.5 year payback period, the initial investment is difficult to meet for farmers in poor regions of Albania, where supply problems are significant.

Scaling Up

The project has been effective in helping these communities, the NGO, and others learn about the possibilities offered by photovoltaics. However, scaling up would require further work to address the financial and technical barriers that remain, as described above. It is not clear whether this option is the most cost-effective one in Albania, which already has significant infrastructure, even though it is inefficient. Investment in improving efficiency of heating systems and better insulation of houses may make more economic sense.

SOURCES CONSULTED

Project Record ALB/02/15, SGP Project Database,
<http://www.undp.org/sgp>
Gace, Arian, national coordinator; GEF Small Grants Programme,
Albania. Project Summary and Lessons, 2003.