

Solar Energy for Battery Charging, Batanes, Philippines

Themes

- ★ Renewable energy
- * Technical capacity development

PROJECT DATA

Name: Batanes Alternative Energy and Enhancement Project
Implementing organization: Batanes Development Foundation, Inc. (NGO)
Location: Batanes Islands, Philippines
SGP contribution: \$42,183
Start Date: July 1995

ENERGY OVERVIEW

Energy resource: solar photovoltaic
Technology: battery charging station, solar refrigeration
Application: battery charging for household use, refrigeration of fish
Sector: domestic, commercial
Cost of equipment: approx. \$31,000 total for battery charging station
Capacity: 900Wp capacity for battery charging station; unknown for cold fish storage
Number of People Served: 50 households using battery charging station, unknown number for two cold storage units for fish

BACKGROUND

The Batanes Islands form the northernmost province of the Philippines. These three islands experience rough seas and frequent typhoons, making transportation to and from the mainland unpredictable. Currently, diesel generators produce electricity on the island, but they only provide power between 8am and midnight in the capital city. Other areas are not connected to any electric grid and must use batteries. Access to power has limited economic growth possibilities in the islands, whose population includes the indigenous Ivatan people. The high cost of power generation and grid extension as well as the isolation of the Batanes islands make renewable energy a competitive option.

PROJECT DESCRIPTION

Overview

This project installed a community solar battery charging (CSBC) station on one island, and a solar generator for cold storage on another island. The project encouraged community management of decentralized renewable energy sources. The solar powered cold storage systems, used to store fish for sale, were also linked to expanded opportunities for income generation through the establishment of a local fish market at the site of the cold storage equipment.

Implementation

The grantee was the Batanes Development Foundation, Inc.



Solar battery charging station for fish refrigeration and other community needs (Batanes, Philippines).

(BDFI), one of the main NGOs on the islands. BDFI worked with two barangays (communities): Raelé on the island of Itbayat, and Sumnanga on the island of Sabtang. Solar Electric, Inc., installed the equipment and provided technical assistance to train community members in maintenance and proper use. The battery charging station was implemented in Raelé, and the cold storage units in Sumnanga. In the former community, the Raelé Power Users Association was formed to manage the 15-outlet battery charging station. The cold fish storage units in Sumnanga were accompanied by efforts to expand the fish market in the area. However, SGP reports indicate that internal problems existed in the community organizations involved in the project. Also, the cold storage units were a very new technology in the Philippines at the time, and there are indications that more testing was necessary to determine optimum conditions for ice production. However, since this project was implemented in 1995, Batanes government officials, in particular representative Florencio Abad, have promoted renewable energy on the islands. Currently, wind power capabilities are being developed to expand the availability of electricity on the islands.

Environmental Benefits

Global: Instead of making use of batteries and kerosene for lighting, approximately 50 non-electrified households can recharge batteries using solar energy. This reduces their greenhouse gas emissions. In addition, solar energy, instead of diesel alternatives, is used to keep fish cold.

Livelihood Benefits

Income generation: The community in which cold storage units were installed benefited through increased possibilities for selling fish. Income generating applications were also developed in the Raelé barangay in conjunction with the solar battery charging station, which is operated by a community group. However,

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no details are available about the nature of these income-generating activities. It is not clear that community solar battery charging stations save households money over regular battery use. Batteries still must be purchased and replaced regularly. However, if residents previously traveled far to a grid-based charging station, the travel time and costs may be eliminated.

Technology

The solar battery charging station installed in Raele barangay is a 900Wp system with 15 charging outlets. Car batteries are the main type of battery charged in this system. According to Silverio Navarro of Solar Electric, Inc., solar battery charging in the Philippines is less expensive than charging batteries via grid-based electricity; grid-based charging costs \$1.07/kWh plus transportation, while solar charging costs \$0.97/kWh. According to an SGP-funded report by Sibol Ng Aghan at Teknolohiya (SIBAT), a renewable energy technology NGO in the Philippines, as of 1998 approximately 27 community solar battery charging stations had been installed in the Philippines, 13 of which were working in 1998 at the time of the study. These were mainly used in poor communities engaged in either upland farming or fishing in remote areas. However, evidence from SIBAT's study suggests that maintenance of the charging system and proper use are essential, as is regular battery replacement, if the system is to continue running effectively. Communities must therefore have easy access to replacement batteries, and must be educated about proper battery disposal. Provisions for this must be made up front when designing these systems. If the systems are community-owned and run, community organizations must be strong and have sufficient training and capacity for handling these issues.

Beneficiaries

The primary beneficiaries of this project are the residents of the two barangays, Raele and Sumnanga. Other beneficiaries include those now able to buy fish locally, or who may be benefiting from the new income-generating activities made possible by the battery charging station.

Capacity Development

The project built new community organizations at both sites. In Raele, the Raele Power Users Association was formed to manage the solar battery charging station. The Sumnanga Marine Resource Association manages the fish market and the cold storage units. Solar Electric, Inc., which installed the systems, trained community members to use them properly. However, SGP reports indicate there is still room for improvement in these organizations' capacities to maintain and trouble-shoot these systems. SGP reports also suggest that BDFI, the NGO grantee, should continue supporting these communities to try to resolve internal problems.

Partners

Partners for this project include BDFI and the two community organizations, Raele Power Users Association and Sumnanga Marine Resource Association. Solar Electric, Inc., which installed

the equipment and provided technical assistance, was another partner. The NGO brought management capacity, the communities brought human resources for continued maintenance of the systems, and Solar Electric, Inc. brought equipment and technical knowledge to the effort.

LESSONS LEARNED

Environmental Management

This project illustrates the possible use of community solar battery charging stations as an energy solution. These charging stations may be appropriate in tightly clustered communities that are far from the grid. In these cases, they are preferred to grid-based charging systems since they save transport time. In addition, overall costs are lower than installing solar panels on individual homes, although the level of energy service provided is also lower.

Barrier Removal

Information/Knowledge: This project may have removed some technical barriers to implementing renewable energy systems on the islands of Batanes. Solar Electric, Inc., has been involved in energy services there beyond this project, and presented its work in Batanes at the 1998 Village Power conference at the World Bank in Washington, DC. In addition, government officials in Batanes have shown great interest in promoting renewables, both solar and wind, on the islands. This may or may not be due to the initiation of these projects. BDFI has since received government support for implementing renewable energy projects on the islands.

Scaling Up

It is not likely that these specific community efforts are being scaled up beyond these communities. The cold storage units appear to have required additional testing, and both communities may have encountered some problems in managing these systems. However, partnerships with Solar Electric, Inc., and BDFI may have helped open the possibility for government funding for renewables, which has apparently been quite substantial.

SOURCES CONSULTED

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- SGP Philippines, UNDP. "Community-Based Promotion and Development of Non-Conventional Energy Source." In *Small Beginnings, Infinite Possibilities: A Directory of Grants and Programme Interventions*. Philippines, 2002, p.89-91.
- Ma. Liza A. Solano, "Harnessing the Wind," *The Mobile Media Project*, BusinessWorld Online, May 29, 2002. http://mobilemediaph.com/projectE/Batanes/batanes_wind.html (September 15, 2003).
- Sibol Ng Aghan at Teknolohiya (SIBAT), *State-of-the-Art New and Renewable Energy Systems in Philippine Rural Communities*. Funded by The GEF Small Grants Programme. Quezon City, Philippines, September 1998.