

Terminal Evaluation

Oceania

1. Outline of the Project

Country:

Vanuatu

Project title:

Rural Electrification Project

Issue/Sector:

Energy

Cooperation scheme:

Team Dispatch of Experts

Division in charge:

Southwest Asia and Oceania Division,
Regional Department 2 (East, Southwest, Central
Asia, the Caucasus and Oceania)

Total cost:

50 Million Yen

Period of Cooperation

1 June 1999 - 31 May
2002

Partner Country's Implementing Organization:

Energy Unit, Ministry of Lands, Geology, Mines, Energy, Environment
and Water Resources (MLGMEEW)

Supporting Organization in Japan:

Osaka City University

Related Cooperation:

Grant Aid: "Project for Sarakata River Hydroelectric Power Development"
Dispatch of Experts "Rural Electrification", "Electric Utility Administration"

1-1 Background of the Project

Although Vanuatu consists of a number of islands, electricity was supplied in only two cities, and the rate of the household electrification was under 10 percent. As the demand for electricity was on a small scale and widely spread, the Government of Vanuatu had been trying to develop a system of renewable energy to promote village electrification. However, the Government of Vanuatu suffered from a chronic deficit, with foreign aid being directed toward public facilities such as schools and clinics and omitting electrification of the households.

Under these circumstances, the Government of Vanuatu requested the Government of Japan to provide cooperation in the form of a Solar Home System (SHS) with individual control settings for rural-area electrification.

1-2 Project Overview

For continual rural-area electrification, individual setting type of SHS was introduced in seven areas (in the originally planned four villages of Emua, Lawa, Natapao and Navuti, the two villages of Mangaliliu and Epau where the Energy Unit was already supplying electrical power, and in Amata). Additionally, an SHS operation and maintenance system was established for both the Energy Unit and the target villages.

(1) Overall Goal

To enable Enabling to the supply of electricity to non electrified rural areas and to contribute to the improvement of villagers' lives.

(2) Project Purpose

One model system for rural electrification by SHS is established.

(3) Outputs

- 1) The energy Unit, as an organization, is established.
- 2) The electricity tariff system and the electricity charge collection system are established.
- 3) The SHS sets are installed in the site villages.
- 4) The operation and maintenance system of SHS is established.
- 5) The site villagers understand the mechanism of an electricity utility.

(4) Inputs

Japanese side:

Long-term Experts	2	Equipment and Facilities	49 Million Yen
Short-term Experts	4	Local Cost	12 Million Yen
Trainees received	3		

Vanuatuan Side:

Counterparts	8		
Equipment and Facilities	6 Million Yen		

Local Cost

2. Evaluation Team

Members of Evaluation Team

Team Leader/Technical Evaluation: Yuzo MORI, Professor, Osaka City University
Planning Evaluation: Mayumi AMAIKE, Southwest Asia and Oceania Division, Regional Department 2, JICA
Evaluation Analysis: Yosiki MIZUGUCHI, Chubu Electric Power Company, Incorporated

Period of Evaluation

18 March 2002 - 31 March 2002

Type of Evaluation:

Terminal Evaluation

3. Results of Evaluation

3-1 Summary of Evaluation Results

(1) Relevance

Vanuatu has not established a National Development Plan, and a rural electrification plan has not been developed. Therefore, it is difficult to judge the consistency in terms of development policy. However, according to interviews with the Director of the Energy Unit, it was pointed out that promotion of rural electrification was important. In the Development Plan of the Energy Unit (2000-2004), solar power will be introduced to the health, education and communications facilities. Although public facilities and households are differentiated in the plan, they are the same from the viewpoint of introduction of the Solar System. On the other hand, the Government of Japan addressed "Initiatives for Sustainable Development Toward the 21st Century (1992)" and "Development and Dissemination Plan for Solar and other Renewable Energy". Both plans promote the development and dissemination of new energies and the contents of the Project are consistent with the aid policy of the Government of Japan. Judging from above, the Project is for the most part verified as appropriate.

(2) Effectiveness

SHS has been introduced to the seven villages, the electrification target group of the Project. Some issues remain, such as the issue of tariffs: however, after the Energy Unit has explained the system and the understanding of the village people toward the electrification has been deepened, the effectiveness of the managing system has been confirmed mainly by the chiefs and the caretakers (persons in charge of system management), and the dissemination to other villages will be achieved. Thus, the expected outputs are considered to be attained. The outputs such as upgrading of technique and management capacities of the

counterparts, staff of the Energy Unit, and the understanding of the village people towards the electrical business contributed to the effectiveness of the Project.

(3) Efficiency

The dispatch of the experts and acceptance of the training participants in Japan, was efficient in terms of the timing, appropriateness and utilization. The expert in charge of strengthening the implementation system of the Energy Unit was dispatched in advanced. The expert who took care of system-management enhancement was dispatched after the management issues such as the unpaid fees were pointed out. Furthermore, the experts cooperated with the members of the Japan Overseas Cooperation Volunteers, so it is considered that the Project has been implemented with a high level of efficiency. As for the provision of equipment, there were problems in the beginning of the Project such as an unusually short battery life for SHS, so implementation fell short in this regard. However, due to the efforts of the experts and counterparts and supported by a study conducted by the Supporting Committee in Japan, the problem was solved. Judging from above, it is considered that on the whole the Project was implemented efficiently.

(4) Impact

As the life of the village people has changed, the people can return home safely from the agricultural work after dark due to the electric lighting. There were also other positive and direct impacts. For example, the lighting was useful for crime prevention and the school results of children improved because they would be able to study at home at night. No negative or indirect impacts have been observed at the terminal evaluation.

(5) Sustainability

The staffs of the Energy Unit and persons in charge of system management at each village were trained through the Project so that the implementation system and operation and maintenance system of SHS equipment were established. The General Account covers only the budget for personal costs and other expenditures of the Project. A rural electrification budget needs to be allocated from the income of hydroelectric power generation on an ongoing basis similar to other projects. From now on, although the budget for Project activities is assured, it will be necessary to decrease management expenses as much as possible. There remain some issues on the sustainability of the Project such as the difficulties of monitoring isolated islands and ensuring a budget; however, it may be possible that the Project will be managed continually and efficiently with future improvement and further consideration of Project activities.

3-2 Factors that promoted realization of effects

(1) Factors concerning Planning

N/A

(2) Factors concerning the Implementation Process

At the beginning of the Project, the monthly electric utility charge had been fixed. However, five different levels of electric utility charge were later introduced due to many delinquent accounts. The Project plan, therefore, was reviewed according to the actual situation and the collection rate was increased.

3-3 Factors that impeded realization of effects

(1) Factors concerning Planning

At the beginning of the Project, the detailed project plan had not been formulated, so it took considerable time and effort to achieve unity of purpose among all related personnel.

(2) Factors concerning the Implementation Process

At the beginning of the Project, more equipment than expected got out of order. Correction took time and adversely affected Project efficiency.

3-4 Conclusion

At the beginning of the Project, a number of problems were outstanding, such as unexpected equipment problems and delinquent electric utilities accounts. Nevertheless, positive outputs were attained during the cooperation period. During the Project, the SHS operation and maintenance system and electric charge collection system were established, and a sustainable operation and maintenance system for independent settlement type SHS were developed. As the system was applied in two target villages where the Energy Unit had been promoting solar power electric business operations independently, the possibility of model system extension was confirmed.

3-5 Recommendations

Four isolated islands were selected as the target. Time and budget constraints limited opportunities for technical instruction by the Energy Unit staff. For better Project management on isolated islands, it is necessary to either establish a branch office or improve management's capability to cope with various types of business situations.

3-6 Lessons Learned

(1) In implementing this kind of Project, it is necessary to secure local staff that can maintain and manage the technology and instruct management in operation-related matters. It is also necessary for the Government of the implementing country to ensure a budget for sustainable project management.

(2) As for equipment, in order to address upkeep problems, it is necessary to introduce equipment with parts that are available on-site. It is also necessary for the Japanese side to provide counterparts with a contingency plan that addresses expected problems.

(3) To cope with the basic issues of the rural electrification, it is necessary to carefully consider the business and management aspects of the project, such as settling electric of utility fees, collecting fees, and formulating a plan that fosters the personnel in charge of the maintenance and management.

3-7 Follow-up Situation

In order to confirm the sustainability of the Project, the dispatch of long-term experts has been extended for one more year.