Terminal Evaluation

Asia

I. Outline of the Project

- Country : Republic of the Philippines
- Project title : The Project for Improvement of Earthquake and Volcano Monitoring System
- Issue/Sector : Disaster mitigation
- Cooperation scheme : Technical Cooperation Project
- Division in charge : JICA Philippine Office
- Total cost (estimated at completion of the Project): 19mil. yen
- Period of Cooperation :
  (R/D):
  (F/U): Work Plan: March 30, 2004 – March 29, 2006
- Partner Country's Implementing Organization:
  Philippine Institute of Volcanology and Seismology (PHIVOLCS),
  Department of Science and Technology (DOST)
- Supporting Organization in Japan : Japan Meteorological Agency

1-1 Background of the Project

Philippine islands belong to the circum-Pacific earthquake belt and, it is one of the countries with intense earthquake/ volcano activities in the world. In the past, huge damages were occurred by the eruption of Mt. Pinatubo and the Mindoro island earthquake. A center of observation and research on earthquake and volcano activity in Philippine is the Philippine Institute of Volcanology and Seismology (PHIVOLCS).

The Project on "Improvement of Earthquake and Volcano Monitoring System in the Republic of the Philippines" (grant aid project of Japan) was implemented from the year 1999 as phase 1 project. Under the phase 1 project, replacement of equipment of PHIVOLCS was conducted with digitalized equipment for the improvement on detection capability and accuracy on earthquake observation. After that, the phase 2 project was implemented from the year 2002. Main objectives were 1) To enhance volcanological observatory network, 2) To monitor all earthquakes more than M4.0 in and around the Philippines, 3) To establish a mirror center for the backup function, 4) To enhance capability of mobile observation, 5) To enhance the function of process, analysis and management of observation data, 6) To improve basic administration such as how to grasp more accurate data to realize earthquake size or how to analyze mechanism of seismic and volcanic activities. Expected outcome from the phase 2 project is to achieve nation-wide detection capacity on earthquake larger than M4.0 within 15 minutes and to establish 24 hours observation system on main 6 volcanoes.

Although these projects provided wide and large improvement especially on equipment to PHIVOLCS, some activities (like above-mentioned 5) and 6)) require long-term and continuous endeavor. Therefore, this technical cooperation project was started as a two years project from March 30, 2004 to March 29, 2006 with the Project Purpose, which is "Data-processing and data-analysis programs are to be developed by PHIVOLCS to issue prompt and proper earthquake/ volcano information in accordance with observation data differences on quality and quantity".

1-2 Project Overview

(1) Overall Goal

Detection capability and accuracy on seismic and volcanic activities in and around the Philippines are to be improved, and a management system for issuing prompt earthquake/ volcano information is to be established.

(2) Project Purpose

Data-processing and data-analysis programs are to be developed by PHIVOLCS to issue prompt and proper earthquake/ volcano information in accordance with observation data differences on quality and quantity.

(3) Outputs

1) The magnitude formula with maximum amplitudes of seismic wave data is to be developed.

2) Existing data-analysis software is to be improved by PHIVOLCS.

3) Data management software is to be developed by PHVOLCS.

4) Data analysis software is to be developed by PHIVOLCS.

(4) Inputs

Japanese side:

Short-term Expert	total 3 persons
Trainees received in Japan	2 persons
Provision of equipment	computers
Local cost expenditure	1.35million pesos

Philippine side:

Counterpart	19 persons (number at evaluation)
Local Cost	23.29million pesos
Provision of land and facilities (office space etc.)	

II. Evaluation Team

Members of Evaluation Team:

1) Leader: Ms. Harumi KITABAYASHI, Deputy Resident Representative, JICA Philippines
2) Evaluation Planning: Mr. Kenichi KONYA, Assistant Resident Representative, JICA Philippines
3) Evaluation Analysis: Mr. Isao DOJUN, Chuo Kaihatsu Corporation

Period of Evaluation:

From January 23, 2006 to February 10, 2006

Type of Evaluation:

Terminal

III. Results of Evaluation

3-1 Achievement

As a result of improvement of monitoring system with the equipment and facilities provided under the Japanese grant aid projects (phase 1 and 2) and also conduction of this technical cooperation project, software for data processing and analysis were developed and improved. Still there is necessity to continue improvement of program, such as magnitude formula with maximum amplitudes of seismic wave data and PHILWAVE, it may be said that the project purpose is almost achieved as a technical cooperation for two years. About earthquake detection capability, PHIVOLCS can disseminate earthquake bulletin within 15 minutes after felt earthquake occurs as a result of improvement of monitoring equipment and facilities, and improvement of data processing and analysis software, etc. This achievement is as planned.

3-2 Summary of Evaluation Results

(1) Relevance

This project is in consistence with the policy, which is "mitigate the occurrence of natural disasters to prevent the loss of lives and properties" described in the Medium-Term Philippine Development Plan 2004-2010. Beside, one of the priority issues of ODA policy of Japan is "Environmental conservation and disaster management" and this project is consistence with this policy. There is conformity with needs of PHIVOLCS. Therefore, relevance of the project is high.

(2) Effectiveness

There are needs of continuation of improvement of some software, most of the Outputs are achieved satisfactorily. The Project Purpose, which is "Data-processing and data-analysis programs are to be developed by PHIVOLCS to issue prompt and proper earthquake/ volcano information in accordance with observation data differences on quality and quantity", is being achieved satisfactorily together with the effects of the Japanese grant aid project phase 1 and phase 2. Knowledge and skills of the staff concerned with data processing and data analysis have strengthened further under the Project. It is concluded that the effectiveness of the Project is good in general.

(3) Efficiency

Most of Inputs to the Project were generally well utilized in the project activities and contributed to the achievement of the Outputs. The efficiency of the Project is satisfactory. Dispatch of the Japanese short-term experts was implemented 3 times as planned (the duration of dispatch was 0.9 month each). However, it might be better if the duration of dispatches were longer because they conducted no only technical transfer on the data processing and analysis, also checked the operation and maintenance situation of installed observatory equipment and facilities, and also provided necessary advises by visiting observation stations located in the provinces.

(4) Impact

1) Prospect of achieving the Overall Goal

Detection capability and accuracy on seismic and volcanic activities in and around the Philippines are significantly improved through improvement of monitoring system with the equipment and facilities provided under the Japanese grant aid projects (phase 1 and 2), and this technical cooperation. To achieve the Overall Goal, there are several subjects that PHIVOLCS has to make efforts, such as continuous improvement of the software for data processing and management, further capacity development of staff, budget allocation for appropriate operation and maintenance of the equipment and facilities, etc. If PHIVOLCS can tackle these issues appropriately, the Overall Goal will be achieved in near future.

2) Other Impact

Now PHIVOLCS can produce quality data on seismology that can be used for collaborative studies with international scientists (i.e. exchange of seismic data with neighboring countries). With regards to volcanology, there are on going collaborative projects i.e. Japanese, French and American scientists to better define volcanic activities.

(5) Sustainability

1) Political sustainability

In view of the recent spate of natural calamities, the need for increased public awareness and involvement in measures being put in place by the government for disaster preparedness, the Four Point Action Plan for Disaster Preparedness was issued by the National Disaster Coordinating Council (NDCC) in January 2005. The first in the Action Plan is “Upgrading of the forecasting capabilities of PAGASA and PHIVOLCS”. Therefore, the importance of strengthening the capability of PHIVOLCS with regards to detection capability and accuracy on seismic and volcanic activities in and around the Philippines will remain a high priority in the political agenda of the government.

2) Organizational sustainability

It is thought that PHIVOLCS has good capacity on operation and management for issuing prompt earthquake and volcano information. However, still in regard to staff number of the manned seismic observation stations is not sufficient because of 24 hours operation. To solve this issue, there are 2 measures. One is to increase number of staff of the observation stations and another is to introduce automatic system for sending observation data from the stations to the central office of PHIVOLCS. There is difficulty with increasing staff number, because of the rationalization policy of the National Government. Therefore, PHIVOLCS is going to introduce automatic system for manned stations using internet access.

3) Financial sustainability

As of budget in the years ahead, there is expectation that PHIVOLCS will have more budgetary support from the National Government, because one of the priority agenda of the Four Point Action Plan is upgrading of forecasting capability of PHIVOLCS.

Anyhow, allocation of appropriate budget for operation and maintenance is basis for accurate and prompt detection of earthquake and volcano activity. It is desirable PHIVOLCS to have appropriate budget for maintenance of equipment and stock of spare parts in consideration of increasing needs of maintenance and spare parts for several years ahead. Because with passage of years and deterioration of equipment, maintenance costs will increase.

4) Technical sustainability

Capability on data processing and analysis of earthquake has been improved though the technical transfer by the short-term experts and the training in Japan. Considering the limited duration for the technical transfer by the short-term experts and also limited period of the Project (2 years), degree of strengthening of capability on data processing and analysis is satisfactory.

It is also desirable that more staff is to be assigned for the task of improvement of data processing and management software, because number of staffs who are engaged in data processing and management is not sufficient yet at present. At least assignment of one more computer specialized personnel is necessary.

3-3 Conclusion

Based of a series of discussion with the counterparts as well as the results of discussion by the Joint Evaluation Team, the Team evaluates that the project performance is satisfactory. Therefore, it is concluded that the Project will be terminated on March 29, 2006 as scheduled.

3-4 Recommendations

(1) Further improvement of the data processing and analysis program PHIVOLCS is continuing the further improvement of software on data processing and analysis (PILWAVE). It is recommended that PHIVOLCS provide further training of staff who are engaged in the data processing and management. It may be desirable that PHIVOLCS will employ new professional person on computer programming for helping the existing staff in charge of improvement of PHILWAVE, because number of staff in charge is not sufficient.

It is also desirable that Japanese side will provide necessary technical assistance for the improvement of PHILWAVE as the need arises.

(2) Allocation of necessary budget and stock of spare parts for good operation and maintenance of equipment and facilities.

Allocation of appropriate budget for the operation and maintenance of equipment is important. Particularly, amount of stock of spare parts for the equipment, that provided under the phase 2 project, was very limited. For the moment, because equipment is new, necessary expenses for maintenance and replacement of defective spare parts is minimal. However, with the passage of time equipment will become older, necessary expenses for maintenance and spare parts will be increased. The section in charge of instrument is recording data about exchange of spare parts, and such data will be utilized for estimation of necessary budget for the succeeding year. It is important to continue this kind of maintenance activities for assuring allocation of necessary budget and keeping spare parts for good operation and maintenance of equipment and facilities.