# Summary

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<tr><td colspan="2">Issue/Sector：Energy/Electricity</td><td>Cooperation scheme：Technical Cooperation Project</td></tr>
<tr><td colspan="2">Division in charge：JICA Philippine Office</td><td>Total cost：　420 million　yen</td></tr>
<tr><td rowspan="2">Period of Cooperation</td><td>(R/D): June 2004 – June 2009</td><td>Partner Country's Implementing Organization：<br>Department of Energy (DOE)</td></tr>
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**１．Background of the Project**

The Philippines is a country comprised by 7,101 islands, and this geographical characteristic brings the difficulties to deliver the electricity all areas of the country. In this regards, the GOP has a long history on the barangay electrification programs. Renewable Energy Management Division (REMD) of DOE is responsible for Barangay Electrification Program (BEP), which promotes the barangay electrification utilizing the renewable energy, specifically micro-hydro and solar system. ER Program targets to reach 100% barangay electrification by the year of 2009, and also tries to attain 90% electrification at household level by 2017.

In the previous ER Program, the critical issue was the "sustainability" of the project. DOE has responsibility to evaluate and approve the appropriate proposal of the electrification project. ANECs and LGUs have responsibility to monitor and support these barangays technically and socially to maintain the renewable energy power system properly, and if they find any trouble, they have a role to report to DOE.

However, these responsibilities were not fully understood by these stakeholders, and also DOE, ANECs, are not well furnished the necessary techniques and knowledge to carry out these required responsibilities. Under these conditions, many inappropriate projects have been approved. Once they got out of order, they are just left without repaired.

To respond these problems, JICA has supported the REMD-EUMB of implementing the project, called "Sustainability Improvement of Renewable Energy Development in Village Electrification", under JICA's Technical Cooperation Project (TCP), to enhance the capacity of key stakeholders such as DOE-REMD, ANECs, NGOs, LGUs, and CeMTRE to promote and manage sustainable RE based village electrification projects.

**２．Project Overview**

**（１）Overall Goal**

Village Electrification Program under Expanded Rural Electrification Program is successfully

implemented

**（２） Project Purpose**

Capacity of the target group (DOE-REMD, ANECs, LGUs, NGOs and CeMTRE) is enhanced to promote and manage sustainable RE based village electrification projects

**（３） Outputs**

1. Knowledge and skills on MHP technology are enhanced and transferred
2. Knowledge and skills on PV technology are enhanced and transferred
3. Knowledge and skills on SP are enhanced and transferred
4. Policy and Procedure of RE based rural electrification are set-up

**（４） Inputs**

**Japanese side：**

**Long-term Expert 3 Equipment 13 Million Yen**

**Short-term Expert 18 Local cost 17 Million Yen**

**Trainees received 13 Third Country Trainees received (Indonesia) 8**

**Philippine's Side：**

**Counterpart 13 Local Cost 795,314 Pesos**

**Land and Facilities**

**II. Evaluation Team**

| | | |
|---|---|---|
| **Members of Evaluation Team** | 1) JICA side<br>Mr. Shiro Akamatsu, (Senior Advisor, JICA-Headquarter) Team Leader<br>Mr. Katsuhiko Otaki, (Proact International), Rural Electrification Technology<br>Mr. Rey Gerona, (In-house Consultant, JICA-Philippines), Evaluator<br>Ms. Keiko Asato, (Representative, JICA-Philippines), Planning<br>Ms. Jennifer Erice, (Program Officer, JICA-Philippines), Coordination and Survey Assistant<br><br>2) Philippine side<br>Mr. Mario R.Libiran, (Senior Science Rsearch Specialist,Planing Division, Energy Policy and Planning Bureau (EPPB)-DOE)<br>Mr. Raymund G. Bungcayao, (Senior Science Research Specialist II, Rural Electrification Administration and Management Division (REAMD), Electric Power Industry Management Bureau (EPIMB)-DOE) | |
| **Period of Evaluation** | **19/ 1/ 2009~ 5/ 2/ 2009** | **Type of Evaluation：Terminal** |

**III. Results of Evaluation**

**１. Project Performance**

**Output 1**

Knowledge and techniques on MHP technology were successfully transferred to counterparts

through OJT exercises, technical trainings, seminars and workshops, short lectures and coaching during hands-on practical training activities.

**Output 2**

Through the conduct of OJTs and technical trainings, the PV technology and troubleshooting techniques were successfully disseminated among REMD and DOE Field Office staffs in the Visayas and Mindanao. The trainer's training had successfully yielded 30 qualified engineer-trainers who gained high degree of self-confidence.

**Output 3**

Through repeated workshops and consultation meetings on social preparation, the counterparts had become confident in explaining the relevance of BAPA, roles and responsibilities of individual members, importance of tariff setting and other aspects of BAPA management such as bookkeeping. Unlike the situation before the project, counterparts are now confident to carry out social preparation activities in the community level following appropriate community organizing processes.

**Output 4**

The standard MOA made by the project has been utilized by DOE for its projects under the Barangay Electrification Program (BEP). However, the monitoring manual and management guidelines, which were recently drafted by the project, were not fully utilized as yet. In addition, the monitoring framework and database which were formulated by the project are also not utilized fully because data collection and inputting are still ongoing. As such, the applicability of the framework and the usefulness of data for benchmarking needs more time to verify if it is functional.

## ２．Summary of Evaluation Results

### （１）Relevance

The relevance of the project is high. Renewable energy (RE) sources are accorded high priority by the GOP in light of the global issues on warming and environmental degradation. Among the renewable energy resources, the utilization of micro-hydro and solar power is promoted by the GOP for the implementation of its expanded rural electrification program, which is aimed at energizing 90% households by 2017. In addition, the new renewable energy law (Republic Act 9513) is promoting the development, utilization and commercialization of renewable energy resources. Through this law, investments on micro-hydro and solar projects are expected in the future. The same law upgrades the previous REMD to Renewable Energy Management Bureau (REMB), whose staff are responsible in evaluating project proposals for RE projects. As such, the demand for knowledge and skills on RE technologies, information, education and communication within the new REMB is becoming evidently high.

The project is consistent with Japan's ODA policy. Rural electrification, which is related to "Securing a Basis for Stable Supply of Electric power", is one of the key areas under the development approach of "sustainable economic growth aimed at creating employment opportunities" of the Country Assistance Program of Japan's ODA and JICA's Country-specific Program for the Philippines.

**（２） Effectiveness**

Owing to the ongoing formulation of the monitoring framework and the initial establishment of database, the project is not prepared as yet to enumerate the operational status of RE systems that are caused by the project interventions. However, the project successfully laid down the basic technical and manegerial framework of supporting system among DOE, ANECs and LGUs, which is a pre-requisite in the effective promotion and management of renewable energy-based village electrification. Through this project, the counterpart could experience the complete system, including exchange of MOA with LGUs, better endeavor in the civil works, the local fabrication of water-turbin and ELC, social preparation at barangys and others. The project had successfully provided the counterparts the basic know-how on micro-hydro and solar power in which the counterparts did know little practical applications of the theories before the project.

Since the number of micro hydropower projects that require assistance is not so large and high level of expertise is required at the planning stage of micro hydropower development, effective approach is to develop a limited number of skilled engineers and let them cover the whole country. The Project employed this approach, which is appropriate. On the other hand, in case of PV system development in rural electrification, the number of target sites and installed systems is very large, and required technical expertise is not so complicated as that of micro hydropower. Thus, the effective approach is to develop many local engineers and/or technicians all over the country. The Project, at the later stage, started a training module targeting ANECs and LGUs based on this approach putting more weight on practical training, which is expected to be repeated by the trained PV engineers (trainers) later on. As such, the effectiveness of the project is high.

**（３） Efficiency**

Both inputs from the Philippine and Japanese sides were delivered as planned. The DOE assigned dedicated REMD staff to the project. In the Project, teaching and hands-on training are well balanced. Despite the adhoc approach applied for the supervision and project management, REMD counterparts were highly motivated and able to fully acquire the know-how on micro-hydro and solar power necessary for their daily works at the DOE. The Japanese experts are experienced specialists in the fields of micro-hydro and solar power thus the smooth transfer of knowledge and techniques to counterparts. In addition, the utilization of Indonesian experts (third country experts) by the project made the transfer of applicable technologies on MHP turbine and ELC to Filipino counterparts at lower cost. As such, the project is concluded as efficient.

**（４） Impact**

There are visible positive effects already produced by the project.

(1) At the technology aspect, the trained REMD counterparts had acquired high self-esteem and confidence in their works related to evaluating proposals, conducting topographic surveys, determining potentials and feasibilities, designing, fabrication or manufacturing water turbines and ELCs, inspecting civil works and reactivating inactive BAPA organizations. In addition, trained REMD staff can now competently deliver related lectures unlike their situation before the project.

(2) At the institutional level, a more visible cooperation and support system can be observed between ANECs and municipal LGUs, between municipal LGUs and REMD-DOE staff and between REMD staff and BAPAs. Before the project, the interaction only happened most commonly between ANECs and BAPAs.

(3) Economically, community residents saved an average of P50 pesos a day from kerosene expenses plus their ability to work during early hours of the evening such as repairing of fishing nets, etc. Also, community residents saved an average of P10 every two days from charging fees of cellular phones. More important than the economic effects, community residents highly value the social impacts brought about by rural electrification such as enabling the children to study at home during night times.

**（５）Sustainability**

(1) Technical aspect

The technical sustainability of the project is secured. According to the draft organizational structure of the new REMB, the trained counterparts of REMD will be doing the same works everyday under the new REMB. This means that the trained counterparts can continue applying knowledge and techniques on MHP and PV especially in evaluating project proposals, monitoring of ongoing construction and completed projects, and in conducting similar trainings.

(2) Organizational aspect

The project activities are part of the regular functions of the REMD counterparts at the DOE. In this context, the project activities are inherently institutionalized within the DOE and as such, the organizational sustainability of the project is secured. However, the organizational sustainability of the project at the ANECs levels reveals uncertainty at the time of evaluation. ANECs are DOE's creation and therefore have to be included in the discussions about sustainability. Because of funding limitations from DOE, the continued existence of ANEC teams in the respective universities is presently threatened.

(3) Financial aspect

With the new RE law and with the creation of the new REMB (an upgrading of the existing REMD), availability of budgets for trainings related to MHP and PV technology dissemination and promotion can be expected. As such, the financial sustainability of the project is secured. However, the financial sustainability of ANECs are uncertain. While universities will continue provide small funds for internal research and development related to MHP and PV, university staff may not anymore undertake design, installation and monitoring activities that are carried out under DOE funding.

**３．Factors promoting sustainability and impact**

**（１）Factors concerning to Planning**

The implementation of pilot and rehabilitation projects was not included in the first PDMs and therefore was not part of the project activities. However, the project realized that even with the conduct

of experience-based lectures, trainings and practical exercises would remain theoretical unless the counterparts are exposed to actual designing, planning, fabrication, installation or civil works and actual BAPA formation or strengthening. Through the implementation of pilot and rehabilitation projects, trained counterparts became more confident in applying learned skills and techniques related to renewable energy-based rural electrification projects particularly on micro-hydro and solar power.

**（２）Factors concerning to the Implementation Process**

IBEKA has long years of experience in planning, implementing and managing micro-hydro projects in Indonesia where many of its cultural aspects are also shared by Filipinos. Recognizing the potential of IBEKA to expedite technology transfer process to project counterparts, a formal linkage between the project and IBEKA was created. This linkage paved the way for the conduct of technical and hands-on trainings on micro-hydro in Indonesia and Philippines by IBEKA and the dispatch of Indonesian expert from IBEKA to the project in order to supplement the technology transfer activities of Japanese experts.

**４．Factors inhibiting sustainability and impact**

**（１）Factors concerning to Planning**

The position of Project Supervisor for this project, which is responsible in synchronizing and harmonizing various project activities to attain project objectives, had been assigned to three different counterparts at a time. As such, there was no continuity of project supervision and thus affect the decision-making processes of project management. The third assignment of the Project Supervisor has only become permanent beginning in 2008 in compliance with the recommendation of the Mid-Term Evaluation Study Team in late 2007.

**（２）Factors concerning to the Implementation Process**

Since the beginning, even there was a project management structure, due to lack of permanent assignment of project supervisor, scarce opportunity of Joint Coordination Committee (JCC), and also the multi-tasking system of DOE staff, beginning of this project had to go through the hard time from the aspect of project management. However, as the project progressed, owing to the effort of the Philippines side, daily project management process was improved. For the Japanese expert team, a project coordinator position would have provided a coherent factor of the project management activities.

**５．Conclusion**

There are already indications of positive technological effects produced by the project especially on the part of trained REMD staff and ANECs. The project was also able to lay down the grounds for effective communication among municipal LGUs, BAPAs, ANECs and DOE which is expected to eventually result to establishing support system among service delivery agencies and institutions. Some economic and social effects are already visible at the community levels even if the pilot and rehabilitated projects are working very recently only. The inputs were delivered as planned and utilized fully to produce the outputs. The sustained production of positive effects largely depends on the ability of trained counterparts to continuously conduct related trainings to ANECs, LGUs and even industry players such

as developers and manufacturers as well as the budgetary support of the DOE for these activities.

While the project's sustainability is secured at the DOE level, the continued existence of ANECs is threatened due to budgetary problems. In addition, BAPAs in the pilot and rehabilitation sites are just newly formed or reorganized and therefore requires more in-depth community organizing and community development interventions. Meanwhile, the results of the pilot and rehabilitation projects could not be monitored immediately.

**6. Recommendations**

(1) For the immediate term (until June 2009)

1) Undertake necessary preparation activities for the termination of the project

2) Conduct sustainability preparation seminar-workshops with ANECs and other relevant organizations

3) Conduct extended work for monitoring the pilot and rehabilitation projects and BAPAs

(2)For the long-term

1) Provide trained human resources by the project with opportunities to continue working for renewable energy.

2) Continue technology improvement and dissemination to the extent that good quality products are manufactured locally by domestic developers or manufacturers and continuous job opportunities are created

3) Strengthen relationship with regional/local organizations

4) Secure funds for monitoring and rehabilitation of off-grid electrification systems

5) Conduct internal discussions, workshops or similar activities that will eventually establish strong links between policy and implementation

6) Full utilization of deliverables, such as manuals, guidelines and educational/promotional material

7. Lessons Learned

1) For micro-hydro and solar power projects, the strategy for technology transfer should be anchored on the reality that solar power is relatively an easier technology and prospective sites are in large numbers, therefore trainings should be able to target many local technicians. On the other hand, micro-hydro technology requires professional engineers and prospective sites are limited, therefore trainings should be contented with limited targets.

2) A functional project management is important for the successful implementation of technical cooperation projects. Permanent assignment of full-time supervisor and project coordinator is equally important to synchronize and harmonize activities of other experts and counterparts in various fields of expertise. Project management activities outside of the PDM structure such as monitoring of important assumptions and appropriate adjustments to the plan as necessary are just few of the activities a functional project management unit could effectively contribute to the successful implementation of the project.