

## Simplified Ex-Post Evaluation for Technical Cooperation Project

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|------------------------|--|------------------------------|
| Evaluator, Affiliation | Sawa Hasegawa<br>Japan Development Service Co., Ltd.           | Duration of Evaluation Study |
| Project Name           | The Project on the Practical Energy Management Training Center | January 2010 – December 2010 |

### I Project Outline

|                             |   |                   |  |  |
|-----------------------------|---|-------------------|--|--|
| Country Name                | The Kingdom of Thailand   |                   |  |  |
| Project Period              | April 2002-April 2005   |                   |  |  |
| Executing Agency            | Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy  |                   |  |  |
| Cooperation Agency in Japan | The Energy Conservation Center, Japan   |                   |  |  |
| Total Cost                  | 493 million yen   |                   |  |  |
| Related Projects (if any)   | Green Aid Plan, etc.  |                   |  |  |
| Overall Goal                | Energy management in designated factories and buildings is effectively executed to meet the objective of the Energy Conservation Promotion Act.   |                   |  |  |
| Project Objective           | High-quality PRE (Person Responsible for Energy) education system is set up.  |                   |  |  |
| Output[s]                   | 0. Management system for Practical Energy Management Training Center (PEMTC) is established.<br>1. State examination system for PRE is prepared.<br>2. PRE-exam training courses are established.<br>3. Implementing structure of PRE-exam training is established.<br>4. Follow-up system for PRE is proposed. |                   |  |  |
|                             | Inputs (Japanese Side)  |                   | Inputs (Thai Side)   |  |
| Experts                     | 4 for Long term, 10 for Short term (at the time of terminal evaluation)   | Staff allocated   | 33   |  |
| Equipments                  | 194 million yen (at the time of terminal evaluation)  | Equipments        | Provided (the amount is unknown)   |  |
| Local Cost                  | 21.7 million yen (at the time of terminal evaluation)   | Local Cost        | 23.5 million baht (at the time of terminal evaluation)                                 |  |
| Trainees Received           | 11  | Land etc provided | Project office, etc.   |  |
| Others                      |   | Others            | Construction of the Mini-Plant for practical training and the access road to the plant |  |

### II Result of the Evaluation

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| Summary of the evaluation  |
| <p>The relevance of the project is high, and Project Outputs, Objective and Overall Goal set by the project have been largely achieved. The project operation was also implemented largely on schedule. Thus the project got the good results in terms of the relevance, effectiveness/impact and efficiency during its implementation.</p> <p>In terms of the sustainability of the project, “the Third Country Training Program on Energy Conservation to reduce Global Warming for ASEAN Countries (December 2008 ~ March 2011)” is being implemented with a view to disseminating the effects of the project to neighboring countries. In addition, the follow-up for the project has also been undertaken by JICA since 2009.</p> <p>After the project was finished, PEMTC continues to be used by DEDE as a training center, both to foster PRE within Thailand and to provide the third country training courses on energy conservation for aforementioned ASEAN countries. However, the differences are recognized within ASEAN between countries such as Thailand with high industrial energy consumption and as Laos and Cambodia, where livelihood activities consume most of country’s energy. Activities to promote energy conservation at PEMTC therefore recognize, as the important components, both energy assessment at factories and the saving of energy consumed by the use of air conditioners. Since PEMTC has not yet been equipped with facilities for training on air-conditioners, the personnel has been dispatched as part of JICA’s follow-up to support drafting equipment list for procurement, research on and locally procure equipment, and to ensure the receipt and installment of the purchased equipment. Accordingly, the project effects are sustained after the project completion.</p> <p>In light of the above, this project is evaluated to be highly satisfactory.</p> |

## 1 Relevance

### (1) Relevance with the Development Plan of Thailand

At the time of planning the project, Thailand's "8th National Economic and Social Development Plan (1996~2001)" recognized 'use and conservation of natural resources and environment' as one of its goals, and 'management of natural resources and environment' as its development strategy. Likewise, the "9th National Economic and Social Development Plan (2001~2006)" formulated and implemented during the project period also identified 'management and conservation of natural resources' as one of its seven development strategies, underlining the promotion of the efficient resource management for environmental conservation. Besides, the revision in 2004 of a ministerial ordinance under the 1992 "Energy Conservation Promotion Act (ENCON Act)" increased the responsibility attached to PRE and served to the strengthening of Thailand's energy conservation policy. The 9th Development Plan and the revised ministerial ordinance were supported throughout the project period. Accordingly, the project can be evaluated to have been relevant with the development plan of Thailand.

### (2) Relevance with the Development Needs of Thailand

At the time of planning the project, while 1992 ENCON Act prescribed the posting of PRE at every designated factory and building, huge needs existed for the increase, training and capacity development of PRE to address the lack of integrated know-how on PRE and of prospective PRE personnel both in quantity and quality. Those development needs persisted till the end of the project and the need for PRE training was recognized throughout the project implementation. From the situations above, the project can be evaluated to have met the development needs of Thailand.

### (3) Relevance with Japan's ODA Policy

At the time of planning the project, Japan's "Country Assistance Program for Thailand" recognized 'environmental conservation' as one of the priority areas of assistance, underlining the importance of the continued assistance in areas such as human resource development in environmental policies. JICA's project execution policy for Thailand likewise considered as its priority issues, public nuisance control, expansion and strengthening of environmental management system, energy conservation promotion and responses to global environmental issues. The program and policy above had no change till the end of the project and were supported throughout the project period. Accordingly, the project can be evaluated to have been relevant with Japan's ODA policy.

This project has been highly relevant with Thailand's development plan, development needs, as well as Japan's ODA policy, therefore its relevance is high.

## 2 Effectiveness / Impact

### (1) Achievement of Project Outputs and Project Objective

The achievement level of each Project Output is as follows.

As for Output 0, relevant activities for the opening of PEMTC were implemented, and necessary personnel, budget and facilities were ensured.

As for Output 1, a guideline on the examination for PRE were created and utilized during the pilot implementation of the exam. A state examination committee was also established and was made operational during the pilot stage. Furthermore, the content of draft state examination was prepared and used for the same pilot examination. The draft, however, has not since been revised by the counterparts, although they have acquired enough capacity to undertake the revision.

As for Output 2, the skills of all lecturers in charge of the training at the Mini-Plant were confirmed as sufficient to properly operate the Mini-Plant and attached facilities under their supervision. Training curriculum and materials were also created and utilized for the country's pilot national exam.

As for Output 3, the curriculum and materials for lecturer training were produced and made use of at a trainers' training in September-October 2004.

As for Output 4, the "Follow-up system for PRE" was established by way of continuously enhancing the knowledge on PRE, raising awareness and promoting energy conservation. The system was discussed at seminars held in July 2004 and January 2005 respectively, whose results were reflected in a plan proposed to a relevant authority (Training Department) in February 2005.

The project can be evaluated to have almost achieved Project Outputs since the indicator set under each Output was basically achieved.

In terms of the achievement level of Project Objective, it should be noted that as many as 738 PREs received training through the courses provided by the project, and that pilot examinations were implemented in October 2004 ~ February 2005 and favorably received by many participants from the industrial sector. It was further confirmed that future national examinations would be implemented at larger scale. However, formal approval and legal institutionalization of PRE as a national certificate was not realized during the project period. The legal institutionalization itself was not clearly defined as an indicator under Project Objective, so the project can be evaluated to have almost achieved the Project Objective since most indicators set under the Objective were basically achieved.

### (2) Achievement of Overall Goal, Intended and Unintended Impacts

In terms of the achievement level of Overall Goal, the rate of PRE appointment increased from 37% of designated factories and 77% of buildings at the beginning of the project in 2001, to 77% and 84% respectively in 2005. The data from the first quarter of 2004 also recorded the submission by 63% of designated factories and 66% of designated buildings of the semi-annual reports on energy savings and consumption. These data justify that the project, till up to its completion, had constantly generated effects in pursuit of the achievement of Overall Goal.

Some indirect effects of the project have also been reported, where the awareness of the Thailand's industrial sector on energy saving was raised through the project's implementation of training courses and various seminars. Another effect is that DEDE provides

the simulation software for the Mini-Plant to the training participants who can use it in the factory and has a long queue for attending the training course now. Building on these achievements, “the Third Country Training Program on Energy Conservation to reduce Global Warming for ASEAN Countries” is being implemented after the project completion for two years and 4 months from December 2008, with a view to disseminating the project impacts to neighboring countries. Meanwhile, no negative impact on natural environment through the project has been reported so far.

This project has largely achieved its objectives, therefore its effectiveness is high.

### 3 Efficiency

#### (1) Outputs

As mentioned in (1) of “Effectiveness/Impact,” the project achieved the expected Project Outputs.

#### (2) Elements of Inputs

The inputs of the project are shown in “Project Outline.” The terminal evaluation of the project analyses that “the inputs were efficiently converted to the outputs in terms of quality, quantity and timing.”

#### (3) Period of Cooperation, Project Cost

The actual period of cooperation was 3 years against planned 3 years, exactly as planned (100% of planned period). The actual project cost was 493 million yen against planned 440 million yen, slightly higher than planned (112% of planned budget).

The inputs are appropriate for producing outputs and achieving the project objective, therefore efficiency of the project is high.

### 4 Sustainability

#### (1) Related Policy towards the Project

The Thai government’s energy conservation policies remain unchanged, and the current national development plan of “10th 5-Year National Economic and Social Development Plan (2006~2011)” continues to recognize ‘sustainable use and conservation of natural resources and environment’ in its major development strategy aiming at ‘establishment of stable and sustainable economic infrastructure.’ Furthermore, there has been some changes to the ENCON Act revised in 2004, such as simplifying the process of issuing or changing minor laws by giving the authority to the Energy Minister, introducing energy management to be a major tool for energy conservation instead of using engineering solution, and setting up the energy efficiency standards for equipment while having the information illustrating the equipment efficiency to be shown to the consumers.

#### (2) Institutional and Operational Aspects of the Executing Agency

No negative issues have been reported on the institutional sustainability of DEDE as the executing agency. The present implementation system for managing PEMTC and sustaining the training and examination system for PRE is maintained and the assignment of personnel is sufficient. It is also reported that the decision-making process is clear and the techniques transferred by the project have been certainly taken over by successors.

#### (3) Technical Aspects of the Executing Agency

As for the current technical needs, it is reported that DEDE needs to get an expert specialized in furnace such as fire tune burner and for the machine side in case some parts of machine are broke down. The need is handled in the follow-up for the project by dispatching the personnel to support planning, bidding and acceptance of energy-saving equipment.

#### (4) Financial Aspects of the Executing Agency

It is reported that DEDE get a budget from the ENCON fund to run and manage PEMTC. It is reasonable to say that there is no major financial difficulty at DEDE since the third country training courses on energy conservation for ASEAN countries are provided by JICA.

#### (5) Continuity of Effectiveness and Impact

The teaching materials for training made by the project are still used after the project and other than these training materials, the manual or handbook on energy conservation including the good energy management practices and methods with practical data, figures and tables has been made. Senior PRE and Conventional PRE are certified by the legal framework and as the national qualification, and the training courses for both PRE developed by the project are required for the certification of both qualifications. The implementation of the examination system for PRE has been also expanded. The training courses have been improved by adding to the curriculum such items as energy audits, good energy saving practices and successful case studies. In addition, the supporting system for PRE has been established like that DEDE has set up the simulation software for the Mini-Plant and it can help training participants learn about the machine before practical training. As a result, the response of industrial communities to PEMTC and PRE training system is good. Furthermore, the energy efficiency standards for energy consuming equipment commonly used in factories and buildings such as for economizer and air pre-heater for boiler and recuperator for furnace have been developed. The equipment provided has been appropriately maintained and managed. Especially, the Mini-Plant has been operated according to an efficient management system regarding spare parts and additional equipment of Mini-Plant.

No major problems have been observed in the policy background, the structural, technical, financial aspects of the executing agency, therefore sustainability of the project effects is high.