Project on Measures for Rationalization of International Energy Use

Project on Human Resources Development for Energy Conservation

"Project on Improvement in Infrastructure for Energy Management in ASEAN Countries"

ACTIVITY REPORT

March 2012

The Energy Conservation Center, Japan

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Summary

In spite of receiving effects from the European financial crisis and the progress of the economic downturn in the US and Japan, the various ASEAN countries, China and India are continuing with their economic growth. Following from this, their energy consumption amounts are increasing, and this situation is expected to increase further in the future. It is believed that the more efficient use of energy would contribute to the prevention of global warming and environmental preservation activities.

This project is one pillar of the ASEAN energy cooperation that is authorized at the energy minister level on the ASEAN side as the PROMEEC (Promotion of Energy Efficiency and Conservation), which currently comprises the three projects of “Major Industries”, “Buildings”, and the “Energy Management System”.

The Major Industries and Buildings energy conservation promotion projects are entering their twelfth years, while the Energy Management System project is beginning its eighth year. The activities carried out by related persons in the various ASEAN countries, including our counterpart organization, the ASEAN Centre for Energy (ACE), have also become increasingly active, and the projects have become firmly established. On the other hand, the price of crude oil, which had been fluctuating around the US$90/barrel level, has recently been showing signs of a gradual rise, due partly to the instability of the situation in the Middle East. Because there are limitations in the amount of recoverable oil reserves, awareness that the price of crude oil will continue to rise over the long term is becoming established. In practice, the rise in energy prices is threatening the competitiveness of companies, so that together with the further development and reduction in costs of renewable energies, the further enhancement of energy conservation promotions that realize an immediate effect will be required. In view of this change, while it is a fact that the PROMEEC Project has been building an energy conservation promotion infrastructure and contributing to improved awareness in order to reduce energy consumption in the various countries concerned through implementing its activities, it is becoming necessary to implement activities at an even higher level to build an infrastructure that is capable of certainly promoting energy conservation.

Against the background described above, the project with the various ASEAN countries in the current fiscal year has been positioned as activities following the entry to the third stage, working even harder towards the implementation and dissemination of the results that have been achieved up till now through self-help efforts. That is, in a continuation from the previous fiscal year, by building on the actual results and outcomes of energy audits that were implemented in various types of factories and buildings in the ASEAN countries carried out in the past, we are aiming to establish the infrastructure and educate the human resources required to implement and disseminate actual improvements centered on improvement measures discussed and proposed in each country. Further more, it was planned to incorporate the introduction of JASE-World activity and their Technical Directory for more information of high efficiency energy conservation technology and equipment to promote energy conservation measures, and to establish the infrastructure of dissemination of them.

In addition to the Major Industries and Buildings Project activities, this project was started in 2004 based on an agreement obtained through discussions held with representatives of each of the ASEAN countries in an aim to prepare and enhance the Energy Management System in the various ASEAN countries that will become the core for promoting energy conservation to more effectively achieve the above objectives. With the objective of rationalizing this project, first the basic functions of the ASEAN Energy Management System which can be commonly used in the 10 ASEAN countries were

to be constructed taking around five or six years, and continuing from the previous year the current fiscal year was also positioned as the year in which this objective would be realized.
Accordingly, in the current fiscal year, based on the basic plan of the ASEAN Energy Management System, the construction and operation of the functions were started as shown below while maintaining links with the Major Industries and Buildings projects, and the following results were achieved.

1. Implementation of an Awards system that has the purpose of information sharing related to the Best Practices of Energy Management for Industries and Buildings, and the announcing of awarded case studies

   ☛ The fifth Award ceremony was completed in May 2011. 24 case studies were received as applications from seven countries, and 12 case studies received awards.

2. Review of energy management tools (Technical Directory, In-house Database, Handbooks), and the construction and operation of a dissemination system

   ☛ Dissemination of the Energy Management Handbook, and preparation of related handbooks.

3. Construction and operation of an existing implementing organization usage system that is capable of providing energy audits and training

   ☛ Expansion of the registration of implementing organization, and start of trial operation of the "ASEAN Energy Management Service", which is a search system between implementing organizations and ASEAN customers.

4. Enlargement of the ASEAN Network of Cooperators

   ☛ Expanding the number of members in the Network of Cooperators through providing advice to participants in Seminar-Workshops and by visiting companies.

Specifically, the following activities were implemented and smoothly completed, achieving the targets described above.

- ♦ Intensive Seminar-Workshops were held in four ASEAN countries, and advisory visits were also made to several companies and organizations. The basic plans of this project and the latest "ASEAN Energy Management System" were introduced to related persons, and in addition to gathering opinions, requests were made for people to participate in the project planning and utilize the programs and tools. Further, as described below Training was implemented in three counties in order to encourage use of the Energy Management Handbook.
- ♦ Operation of the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings

  The Award system which was started in fiscal year 2006, was operated smoothly. This system is planned to collect outstanding case studies in energy management in the Industries and Buildings sectors and disseminate them in each ASEAN country, and the 5th Awards were completed.

  The Board of Judges (BOJ) meeting for selecting the Awards was held on May 23-24, 2011. Among the 24 cases that were collected from seven countries as Best Practices for the 5th Energy Awards ceremony, a total of 12 cases were selected. These consisted of Special Submissions Awards given in each of the Industries (Large scale) and the Buildings (Large scale, and Small and

Medium scale) fields, together with Best Practice Awards given to two cases in the Industries sector and one case in the Building sector, and outstanding case study awards given to six other cases. These cases were awarded at a ceremony that took place during the AMEM (ASEAN Ministers Meeting on Energy) Meeting which was held in Brunei Darussalam in September 2011. Following this, the awarded cases were uploaded on the ASEAN Centre for Energy website with the objective of wide dissemination.

The call for submission of applications for the 6th Energy Awards has been carried out from January 2012. When implementing this call for submissions, analysis was carried out of the results of the 5th awards, and improvements were made in order to collect cases that have greater dissemination effect.

- Construction of a system for disseminating various types of energy management tools (Technical Directory, In-house Database, Handbook, etc.), and its partial operation

  The Energy Management Handbook was finally completed in January 2009. In addition, the Technical Directory and the In-house Database, which were developed in a continuation of the Major Industries and Buildings Projects, were set as energy management basic tools together with the Energy Management Handbook, and were disseminated during the Intensive Seminar-Workshops and Training in each country. Regarding the Technical Directory and the In-house Database, reviews were investigated concerning the information gathering methods and the contents.

  Regarding the Energy Management Handbook, translation to the local language was strongly required in Myanmar and Cambodia, however, it was a little hard for them to proceed it by their self effort, so we supported for translation of them and they have been finished within this fiscal year Although the translation to the local language in Lao PDR had been completed, support for binding was provided to allow distribution at the seminars.

- Construction of the ASEAN Energy Management Service

  Aiming to achieve wide utilization of existing implementing organizations in various ASEAN countries, the registration of implementing organizations in the completed Customer and Implementing Organization Registration Search System (This was previously known as the Cyber Search System or the Online Energy Information System, but the name was changed to the ASEAN Energy Management Service from the current fiscal year) has been carried out through the Focal Points in each country, and 17 companies have completed registration. Moving towards the start of trial operations, in addition to striving to carry out PR activities targeting potential customers through the implementation of further activities by the Focal Points in each country, we encouraged additional registration of implementing organizations in each country.

- Investigation of the ASEAN Energy Management System (Step-2) Basic Plan

  Based on the activity outcomes and actual results described above, the construction of the basic functions of the ASEAN Energy Management System has been almost completed as planned, and the Step-1 System has begun operations. While evaluating the actual results using this system, we were additionally investigating the improvement and addition of functions in an aim to develop this system into the Step-2 System as a system that would be even more effective and easy to use. However, many things need to be implemented to realize this aim, and regrettably we could not make as much progress as expected, so that in the current fiscal year the Step-1 functions were thoroughly completed and a review was carried out in order to allow the actual start of Step-2.

Note that in the project of the current fiscal year, local activities started from the Board of Judges

(BOJ) meeting to select the 5th Energy Awards case studies in May 2011. However, the practical start of activities is the Inception Workshop (Three Joint Projects) held in July 2011 to finalize the project plan and confirm the implementation preparations. Following this, activities were implemented in four countries, and the activity results and outcomes were shared among the representatives from each country at the Summary and Post Workshops (Three Joint Projects) held in early March 2012. In addition, the policies of future activities to be tackled in the next fiscal year and beyond were discussed at this workshop.

The specific activity contents in the current fiscal year in this project are as described below.

1. Board of Judges: May 23-24, 2011 (Overseas business trip: May 22-28)

Eight Judges gathered in Singapore to evaluate the 24 case studies that had been submitted from seven countries, and selected cases of Energy Management in the Industry and Building sectors to award.

2. Inception Workshop: July 21-22, 2011 (Overseas business trip: July 20-23)

Participation was made in the Inception Workshop on Promotion of Energy Efficiency and Conservation (PROMEEC) (Major Industry, Building and Energy Management), SOME - METI Work Program 2011 - 2012 (Held in Bangkok, Thailand, jointly with Major Industries and Buildings). Note that the business trip period included the advance meetings with the ASEAN Centre for Energy.

21 persons gathered, including persons related to focal point of each ASEAN country, the ASEAN Centre for Energy (ACE), and representatives of the Energy Conservation Center, Japan (ECCJ), and discussed the following subjects.

Opening Greetings (Related representatives including persons from the host country)

Session 1: Buildings Project Implementation Plan

Session 2: Major Industries Project Implementation Plan and Joint Activities Plan

(Joint Activities: Development of In-house Database and Technical Directory for Buildings and Major Industries)

Session 3: Energy Management Project Implementation Plan

The Energy Management Project in the current fiscal year was planned as described below. Although implementation requests were received from seven countries (Brunei Darussalam, Lao PDR, Indonesia, Malaysia, Myanmar, Thailand, and Vietnam), the four countries of Myanmar, Malaysia, Lao PDR, and Thailand were selected for implementation through coordination with other implementation requests and plans in the PROMEEC Projects,. The activity contents basically consisted of the following three activities.

(1) Activity-1: Intensive Seminar-Workshop (First Day)
(2) Activity-2: Practical Training Activity utilizing the Energy Management Handbook, etc. (Second Day)
(3) Activity-3: Advisory Visits to factories and buildings and counseling including Energy Management Handbook introduction, use, follow-up, and/or new implementation(Third Day)

3. First Local Activity: October 24 to November 2, 2011 (Overseas business trip: October 23 to November 3)

The following activities were implemented in the two countries of Myanmar and Malaysia.

(1) Implementation of the Intensive Seminar-Workshop (ISW)

The project activities and the ASEAN Energy Management System basic plan, together with the included functions and tools, were explained to the related persons, and analyses of case studies from the current fiscal year's ASEAN Award of Best Practice in Energy Management for Industries

and Buildings were also introduced. In addition, requests were made that the workshop participants should participate in the project planning and should utilize the programs and tools. Although case study training used to be carried out using the Best Practice case studies in a Group Work format during the ISW, the Group Work in the current fiscal year's ISW was canceled for the reason that it was similar to the Group Work carried out on the following day. Additionally, in the current fiscal year a theme relating to Awareness & Financing was adopted as Session 3 and reporting from the host country, ECCJ, and ACE was planned. However, no report was presented by the host country.

(2) Training for Utilization of the Energy Management Handbook

Regarding the utilization of the Energy Management (EM) Handbook, although training was implemented concerning the utilization methods, as well as giving lectures on the contents of the Energy Management Handbook, group activities were carried out using the same case studies in both countries. These consisted of the application contents submitted by the Green Energy Office from Malaysia and Glaxo Wellcome Manufacturing from Singapore, which received ASEAN Awards in the current fiscal year.

(3) Advisory Visits to Companies Willing to Introduce the EM Handbook

Advisory visits were made to one company in Myanmar (Earth Industrial (Myanmar) Co. Ltd.) and two companies in Malaysia (Green Tech Malaysia and Diamond Building) that are willing to newly introduce energy management tools including the EM Handbook. Based on the on-site inspections of the buildings and factories, advice was given and exchanges of opinions were made regarding energy conservation promotion activities for each of the companies.

4. Second Local Activity: January 11-16, 2012 (Overseas business trip: January 9-18)

The following activities were implemented in the two countries of Lao PDR and Thailand.

(1) Implementation of the Intensive Seminar-Workshop (ISW)

The ISW implemented in Lao PDR had the same contents as the ones in Myanmar and Malaysia described above, but in Thailand a so-called "Focused Group Meeting" was held in the same way as two years ago, in which consultants and persons related to ESCO businesses gathered together led by the Focal Point, DEDE, Ministry of Energy. In addition to introducing the ASEAN Energy Management System and the tools in the PROMEEC Energy Management Project, exchange of opinions was made in order to realize further improvements.

(2) Training for Utilization of the Energy Management Handbook

This activity was only implemented in Lao PDR. As well as distributing the Energy Management Handbook which had already been translated to Laotian to all of the participants, in the case study training two of the ASEAN Best Practice case studies from the current fiscal year were selected by the Laotian side and group activities were carried out. In spite of the fact that the training was held in Savannakhet in the central part of Lao PDR, which is a long distance from the capital Vientiane requiring a five or six-hour drive, the Focal Point and other related persons who participated from Vientiane kindly and positively participated by becoming advisors in the group activities in a positive step towards the independent implementation of these activities.

(3) Advisory Visits to Companies Willing to Introduce the EM Handbook

Advisory visit was made to the Lam Plastic Manufacturing Company in Lao PDR which is willing to newly introduce energy management tools including the EM Handbook. Based on the on-site inspections of the buildings and factories, advice was given and exchanges of opinions were carried out regarding the energy conservation promotion activities in the company, and utilization of the Energy Management Handbook was promoted.

5. Research Forum in Japan

In the current fiscal year, the Research Forum in Japan was not implemented due to budgetary reasons and less necessity to hold it in this year.

6. Summary & Post Workshop: March 7-9, 2012 (Overseas business trip: March 6-10)

Participation was made in the Summary and Post Workshop on Promotion of Energy Efficiency and Conservation (PROMEEC) (Major Industry, Building and Energy Management), SOME–METI Work Program 2011–2012 (Held in Siem Reap, Cambodia, jointly with the Major Industries and Buildings). 12 persons gathered, including persons related to the various ASEAN countries, the ASEAN Centre for Energy (ACE), and representatives from the Energy Conservation Center, Japan (ECCJ), and carried out the following summarization and discussions. Note that for unavoidable reasons, there was no participation in the Workshop this time by Myanmar, Philippines and Singapore.

Situation and key points of the ASEAN Plan of Action for Energy Cooperation (APAEC) 2010-2015
Confirmation of basic activities policies in Phase-3
Summary Workshop
Session 1: Energy Management Project Activity Results and Outcomes
Session 2: Major Industries Project Activity Results and Outcomes
Session 3: Buildings Project Activity Results and Outcomes
- Evaluation Report of Current Fiscal Year Activity Results and Outcomes (Summaries by the various countries and ECCJ)
- Policies for activities in the next fiscal year and beyond: Current style of the project was declared to be finalized in this fiscal year, and new project requirements and their contents from ASEAN countries are confirmed and discussed in the following Post Workshop.

Post Workshop
- Discussions on Post PROMEEC Project directions and contents

Based on the evaluation of actual results up to the current fiscal year and request and discussion for new project, mutual basic understanding was obtained to conduct the project to be much linked with business development with Energy Efficiency and Conservation Technologies and Equipment, while main focus still on Human Resources Development. According to this result, project development policy will be decided by the discussion with METI (Ministry of Economy, Trade and Industry, Japan), and obtained with ASEAN SOME-METI agreement, then details shall be discussed and decided at the Inception Workshop in the next fiscal year.

While continuing to realize support in the current fiscal year for firmly building the infrastructure in each of the ASEAN countries to realize continued energy conservation activities, activities were also conducted in the higher level PROMEEC Project Phase-3 that is seeking to enlarge the actual implementation and dissemination through increasing the level of self-help efforts by each country.
As a result, the Step-1 System has been almost completed, providing the basic functions for the ASEAN Energy Management System which realizes the target of shared use among various ASEAN countries, and an infrastructure allowing smooth operation has been established. The dissemination activities of the key energy management tools were also actively carried out, and it was also possible to smoothly operate the ASEAN Award System of Best Practice in Energy Management for Industries and Buildings. In addition, many fruitful results were obtained, including the fact that it was possible

to expand the Network of Cooperation to include many related persons, companies, and organizations. The implementation situation of the local activities held during past 8 years up till now is shown in the table below. In the ASEAN region, Singapore as a developed nation has not made implementation requests regarding this project since the end of the initial two-year period, and has been taking the stance of giving the opportunities to other countries. Thailand has also taken the same position, and it differs from the other countries in requesting opportunities that mainly consist of discussing key issues and exchanging opinions and information.

Fiscal Year	Brunei	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
2004	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲	●▲
2005			▲		▲		▲	▲	▲	▲
2006	●■	●■	●■	●■	●■		●■			●■
2007	●■	●◆■	●◆■	●◆■			●■		▼	●■
2008	●◆■	●◆■	●◆■	●◆■						●◆■
2009	●◆■			●◆■	●◆■		●◆■		▼■	
2010	●◆■	●◆■	●◆■			●◆■				●◆■
2011				●◆■	●◆■	●◆■			▼●	

●: Seminar ◆: Training ■: Company Visits ▲: Surveys ▼: Special Group Meetings

Finally, when implementing this project, it was possible to obtain the full cooperation of the persons in charge at related organizations in all the countries, including the ASEAN Centre for Energy (ACE). We would like to take the opportunity here to warmly thank all the people concerned.

I. Objectives and Background of the Project

This project aims to plan to build a stable and appropriate energy demand structure corresponding to the internal and external economic and social environments in countries and regions that contribute to the stable supply of energy to Japan by investigating and providing advice on effective energy usage policies through carrying out energy measures, understanding and analyzing energy consumption trends, and interchanges of human resources.

The project has been carried out since 2000, and is known on the ASEAN side as the PROMEEC Project. PROMEEC is the abbreviation of "Promotion of Energy Efficiency and Conservation", and is a project conducted in cooperation with the Japanese Ministry of Economy, Trade and Industry that is authorized by the Senior Officials Meeting on Energy in the 10 ASEAN countries. It comprises the three projects of the Major Industries Energy Conservation Promotion Project (PROMEEC (Major Industries)), the Building Energy Conservation Promotion Project (PROMEEC (Buildings)), and the Energy Management System Improvement Project (This project: PROMEEC (Energy Management)).

This project started from fiscal year 2004, four years later than the other two projects. It is constructing the ASEAN Energy Management System that is essential for promoting energy conservation in the Industries sector and Buildings sector of various ASEAN countries, and is supporting the forming of a mechanism to enable the realization of improvements from a technical and practical viewpoint. That is, it supports activities on the ASEAN side that plan to promote energy conservation by enhancing energy management particularly in the fields of Major Industries and Buildings in various ASEAN countries, and as a result it promotes energy conservation measures in Southeast Asian countries in an aim to contribute to and aid the promotion of energy conservation together with environmental preservation.

This project is constructing the Energy Management System essential for energy conservation promotion in the Industries sector and Buildings sector, and cooperates in supporting improvements from a technical and operations viewpoint.

The ultimate objectives of this project are the construction and operation of the ASEAN Energy Management System which can be commonly used by the ASEAN countries. The utilization of this system is expected to contribute to the establishment of a sustainable system for energy conservation promotion in the Industries and Buildings sectors.
In order to realize and achieve these targets, activities are being implemented that place great importance on the following points.

1. The "ASEAN Energy Management System" should be provided with the following functions, and should be easy and practical for users. That is, the following functions should be the basis of the system.

   ♠ The supply of useful information

   ♠ The provision of services such as energy audits and training

   ♠ Rules and systems for appropriately and smoothly operating the above functions

   In addition, specific and effective sub-systems, programs, and tools should be prepared for each

function described above.

2. Effective links should be made with energy conservation promotion projects in the Industries sector and Buildings sector. (Information sharing and utilization for dissemination of result)
3. Creation and expansion of the ASEAN Network of Cooperators formed by ASEAN countries in order to widely disseminate the ASEAN Energy Management System while continuously improving and operating it.

It is believed that a long-term viewpoint will be required for tackling the items described above. First the Step-1 System which fully provides the basic functions and necessary minimum programs, tools, and sub-systems was established over a five to six-year period in the current fiscal year, and operations have been started. Then based on an evaluation of the operation and dissemination of the Step-1 System, in addition to improving the system it is planned to establish and start operations of the Step-2 System that adds the functions and programs that are thought to be additionally required.

The Step-1 System that has been almost completed in the current fiscal year has been constructed and operated as described below. In addition, activities were also implemented for the dissemination and application of this system.

(Phase 1): Completed

Development of the plan for the ASEAN Energy Management System based on the Energy Management System investigation in the ASEAN countries and the transfer of technology and experience to the ASEAN countries from Japan.

Appropriate reviews of parts of the plan should be carried out as required.

(Phase 2): The Step-1 System has been completed. The Step-2 System investigation has started.

Development of the methods of constructing and operating the ASEAN Energy Management System

(Phase 3): Step-1 System has been completed.

Operation and improvement of the ASEAN Energy Management System by the ASEAN countries

The programs required for the basic functions have been completed, and the basic tools for energy management including the Energy Management Handbook have also been finished. In addition, the sub-systems including the information system required for disseminating the Energy Management Best Practices that have been collected through the Awards system, and the reciprocal search system (ASEAN Energy Management Service) between the energy management implementing organizations and customers, have reached the actual operation stage.

At the same time, in order that the same system described above will be capable of dissemination in the ASEAN region and can be practically used by the related persons, local activity plans were developed in four countries, and the activities were implemented. In addition, the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings has already successfully completed its 5th Energy Awards. Further, improvement policies were also specified from an operation viewpoint, and in the future it is planned that the Board of Judges for the ASEAN region shall hold discussions to determine implementation rules which match the evaluation guidelines.

Note that although time was taken to carry out the initial registration of implementing organizations in the ASEAN Energy Management Service, the registration of the implementing organizations was basically completed in the current fiscal year. In addition, while it has been judged that the registration of customers is not always required and this registration has been put off, requests were made for even more registrations of implementing organizations in each country.

The Energy Conservation Center, Japan (ECCJ) is in charge of implementing this project, and activities have been implemented mainly by the following three experts. In addition, the ASEAN Centre for Energy (ACE) in Jakarta, Indonesia has become the contact point for the ASEAN region, responsible for linking with the contact organizations (Focal Points) in each country and cooperating with the promotion implementation.

Technical Cooperation Department of the International Cooperation Division:

Experts, their duties and back grounds

General Manager Mr. Yutaka Ogura	Project Manager: Industries (Iron & Steel)
Technical Expert Mr. Fumio Ogawa	Leader: Industries (Petroleum Refining)
Technical Expert Mr. Takashi Sato	Sub-Leader: Industries (Petrochemical Plants)

II. Plan of ASEAN Energy Management System and Implementation Plan for FY2011-2012 Aiming to Construct the System

II-1. ASEAN Energy Management System Construction Plan

The system plan of the established ASEAN Energy Management System is shown in Fig. II-1-1.

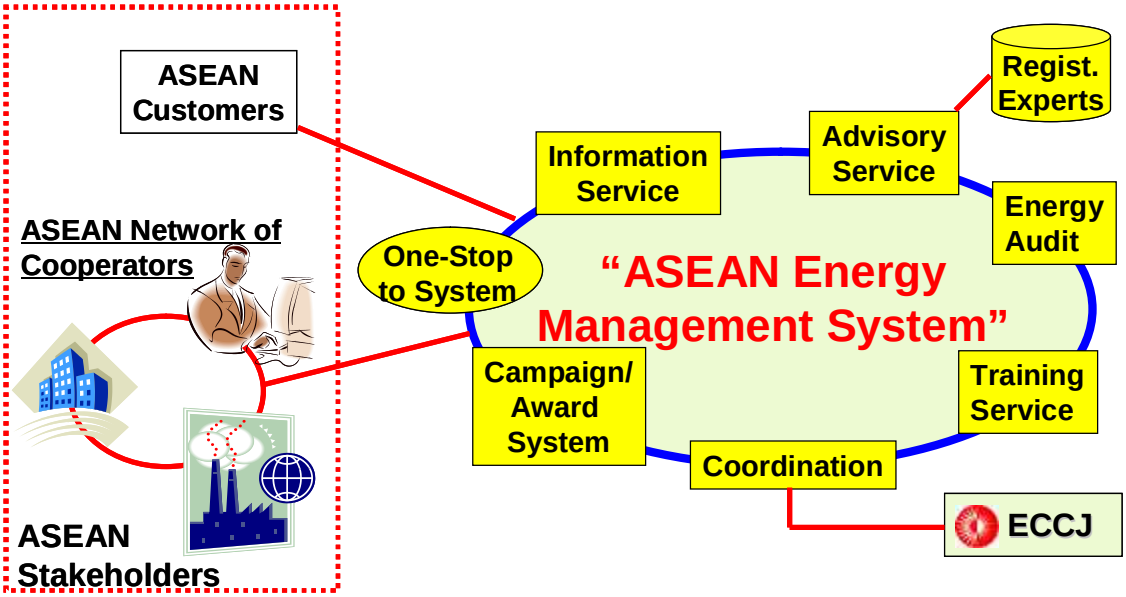

Fig. II-1-1: Plan of ASEAN Energy Management System

In the system described above, first the most important functions were developed and built as the first stage, and operations were actually started as the Step-1 System using the functions that were capable of being used. Then, while assessing the results of these operations, the addition of further effective functions was investigated, and progress was made from fiscal year 2009 to the Step-2 System as the second stage in which priority items were developed and prepared. Note that even in the development stage of the Step-2 System, it was determined to establish a system and program that would continually improve the Step-1 System.

In consideration of this point, the basic schedule of the ASEAN Energy Management System was renewed. Fig. II-1-2 shows the latest schedule for the construction of the ASEAN Energy Management System. This figure indicates that the Step-1 System should have been completed in fiscal year 2011, but since it has not yet actually been completed, the completion year was changed to fiscal year 2012.

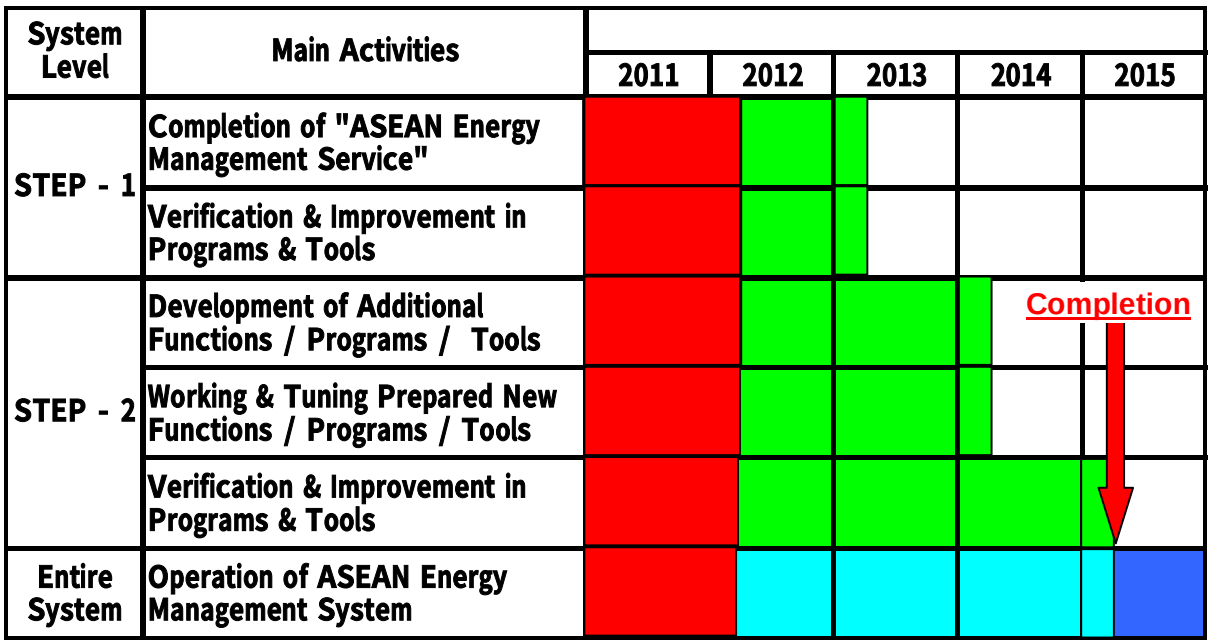

Fig. II-1-2: Schedule for Constructing the ASEAN Energy Management System

The activities in which priorities were placed in fiscal year 2011 are shown below.

(1) The 5th Energy Awards of the ASEAN Award System of Best Practice in Energy Management for Industries and Buildings were smoothly completed, and the points that should be improved from an operation point of view were narrowed down. In particular, from the point of view of encouraging submissions, improvements were pursued to enable the collection of a wider range of even better cases. To realize this, from the previous fiscal year two types of classifications consisting of large-scale, and small and medium-scale were prepared using the annual energy consumption amounts, in order to increase the number of submissions and the opportunities for small and medium-scale enterprises to receive awards. Additionally, a category known as Special Submissions was also established for evaluating the energy conservation effect of single technologies and equipment in a start to reconsider the system to realize the gathering and awarding of more improvement cases. However, the results of these improvements have not yet been fully reflected in the number of submissions. The application situation is shown in Table II-1-1, from which it can be seen that although many applications are being made relating to buildings in the small and medium scale sector, no application has been made regarding industries in the two years since establishing the new classification. Further, the opposite situation is found in the Special Submissions category, where there are many submissions relating to industries, but only one regarding buildings. We anticipate that there will be many submissions in these fields as well. In addition, the numbers of applications and number of awards received by each country in the five Energy Awards are shown in Fig. II-1-3.

(2) The standard energy management tools should be prepared and popularized. That is, although the ASEAN Energy Management Handbook has already been finalized, it should be systematically utilized as an effective tool together with the In-house Database and Technical Directory, and activities are being developed to promote their utilization and dissemination in each country. Additionally, in the Industries and Buildings groups, work to review the actual In-house Database and Technical Directory is being investigated together with ACE.
Further, investigations are being carried out regarding information gathering and development of even more effective energy conservation handbooks to supplement the tools described above, and requests are being made for the provision of the electronic data versions of the various handbooks possessed by each ASEAN country.

(3) In order that existing implementing organizations can be widely utilized by ASEAN-related persons, we are intending to begin trial use of an implementing organization and customer

searching system (ASEAN Energy Management Service), but are not making much progress. In addition to making wider calls for participation, we are currently requesting increase in the number of registrations of implementing organization in each country.

(4) Working towards the construction of the Step-2 System which began from fiscal year 2009, the functions that should be additionally added, together with the programs and tools required by these functions, will be investigated based on an evaluation of the operations of the Step-1 System. Investigation has already been carried out to develop of a useful information supply system (e-Directory) including a directory of suppliers of energy conservation technology, machinery and equipment including the JASE-World technology collection that summarizes Japanese energy conserving technologies, with the aim of developing tools such as Technical Handbooks for providing information to businesses and mediating between business developments.

(5) Based on the results of implementing the activities described above, improvement of the ASEAN Energy Management System plan should be considered, and reviewed if necessary.

(6) In order that the ASEAN Energy Management System can be utilized by as many related people as possible while increasing the number of cooperators for operating the system, activities will be continued to expand the ASEAN Network of Cooperators.

Table II-1-1 ASEAN Award Best Practice in Energy Management Awards and Applications Conditions

	1st Award 2006-2007	2nd Award 2007-2008	3rd Award 2008-2009	4th Award 2009-2010	5th Award 2010-2011	Cumulative Number
Countries	6	7	8	7	7	35
Year	2006	2007	2008	2009	2010	
Industries (L)	11	8	8	8	8	43
Industries (SM)				0	0	0
Buildings (L)	5	7	9	5	6	32
Buildings (SM)				2	6	8
Special Submission (Ind.)				3	4	7
Special Submission (Build.)				0	0	0
Total	16	15	17	18	24	90

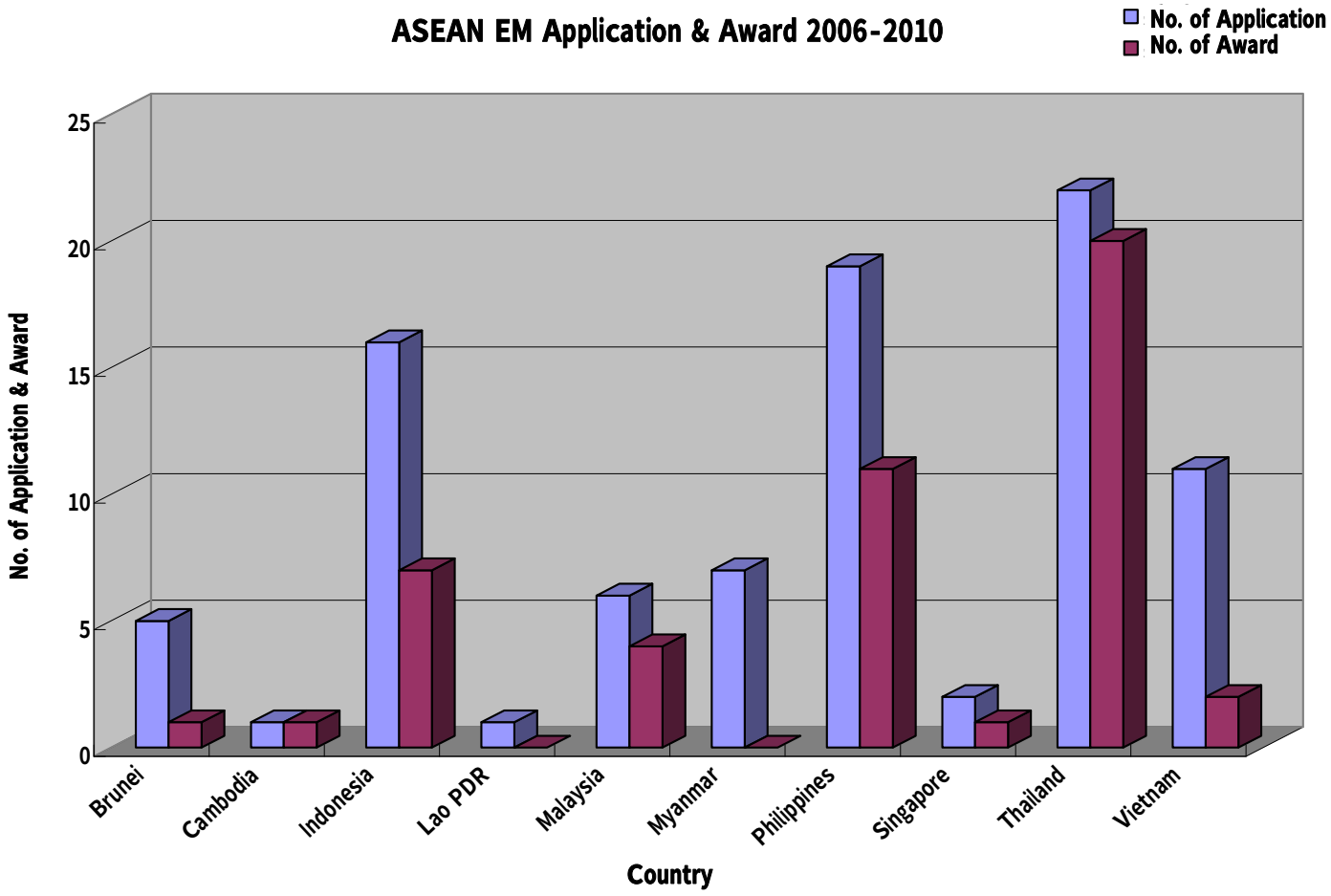

Fig. II-1-3: Number of Applications and Number of Awards for Each Country

II-2. Implementation Plan for FY2011-FY2012

Activities were planned following the basic plan for constructing and operating the ASEAN Energy Management System described in the previous section. The implementation plan was finalized at the Inception Workshop that was held in July 2011, and agreement was reached with the government-related persons from each of the ASEAN countries.

In the current fiscal year also, submissions of activity proposals have been received from each country following the fiscal year 2011 basic implementation plan that was agreed at the fiscal year 2010 Post Workshop held in mid-February 2011. Based on each of these proposals, ECCJ created an implementation plan proposal, which was discussed at the Inception Workshop. Regarding this project, local activity implementation proposals were submitted from seven countries, excluding the Philippines, Singapore, and Cambodia, and as a result of discussions conducted to narrow down the candidates, it was planned to carry out activities in four of the seven countries consisting of Myanmar, Malaysia, Lao PDR, and Thailand (listed in order of implementation).

The priority activities in the current fiscal year are as described below.

1. ASEAN Energy Management System: Completion of building the Step-1 System, and continued operation

<u>♣ Construction of Information Supply Functions and Start of Operations</u>

(1) Continuation of the gathering and dissemination of the Best Practices in Energy Management: Holding of 5th Energy Awards
   a. Smooth operation and improvement of the ASEAN Award System of Best Practice in Energy Management for Industries and Buildings
   b. Improvement of the system for sharing the awarded case information
   c. Improvement of operation methods in order to collect a wider range of better cases

(2) Development of energy management tools and establishment of systematic usage guidelines
   a. Finalization of the ASEAN Energy Management Handbook (Reflecting the results of its introduction and usage in factories and buildings)
   b. Establishment of policies for effectively utilizing the Handbook described above and the Technical Directory and In-house Database prepared by the Major Industries and Buildings Projects.
   c. Investigation of collecting and preparing Technical Handbooks to supplement the above.

<u>♣ Development of Energy Audit and Training Service Functions</u>

(1) In order to promote the utilization by existing implementing organizations (including ESCO businesses), start a trial operation of the implementing organization and customer searching system (ASEAN Energy Management Service).

<u>♣ Expansion of the ASEAN Network of Cooperators</u>

(1) Through holding Seminar-Workshops and advisory visit of various groups and companies, request activity introductions and cooperation and participation in activities.

2. ASEAN Energy Management System: Investigation of Building the Step-2 System
3. Based on the results of the above activities, review the ASEAN Energy Management System plan

In order to realize the targets described above, the following types of activities will be implemented.

1. Implementation of Intensive Seminar-Workshops in ASEAN countries

The purposes of holding the Intensive Seminar-Workshops are to introduce the PROMEEC Projects

including the Energy Management Project, to introduce and analyze the awarded results of the 5th ASEAN Award System of Best Practices in Energy Management for Industries and Building, to introduce and discuss the functions and programs that should be fully provided in the ASEAN Energy Management System, and to disseminate these programs and tools. During this session, JASE-World activity and its Technical Directory were introduced widely, and certain level of infrastructure for those business was formulated. Additionally in the current fiscal year, acting in unison with the APAEC energy conservation-related activities, Awareness & Financing was again adopted as Session 3 in a continuation of the previous fiscal year. In this session, as well as reporting the situation in the countries visited, introductions were given to those situations from Japan and contents common to ASEAN countries. In addition, the electricity-saving measures due to the great earthquake and nuclear accident that occurred in Japan during the current fiscal year were also introduced.

2. Training to utilize the ASEAN Energy Management Handbook

The contents of the ASEAN Energy Management Handbook were carefully introduced, and in order that the host country participants should thoroughly understand and be aware of the contents, the training was reviewed and carried out in to spend the whole morning of the second day for giving explanations. Then in the afternoon, one case study from each of the Industries and Buildings sectors was selected by the host country from among the cases from their country that had received awards in the recent ASEAN Award System of Best Practice in Energy Management for Industries and Buildings, and these were distributed to the participants as case study research materials. Discussions were then carried out among the participants forming Small Group Activities (SGA) to analyze the case studies following the 11 Key Steps in the “Key Step Approach” that is a major theme in the Energy Management Handbook, and the results of these discussions were presented by the participants.

3.Advisory Visits to Companies and Related Organizations

After implementing the Intensive Seminar-Workshops and the Training utilizing the ASEAN Energy Management Handbook, advisory visits for companies are carried out for the following purposes (Approximately two locations in each country)

(1) Giving of advice and exchanging of opinions regarding energy conservation activities in factories and buildings wishing to newly introduce the ASEAN Energy Management Handbook. This includes energy conservation promotion, understanding of the condition of the energy management system, and giving advice to problems .
(2) Making requests for utilization of the ASEAN Energy Management System, and participation in the activities. Also giving an introduction to the ASEAN Award System of Best Practice in Energy Management for Industries and Buildings system, and if possible making requests to obtain submission of applications.

4. Activities for Operating the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings

The following activities are to be implemented to make improvements in the awarded case study selection and evaluation standards of the 5th Awards ceremony of the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings.

(1) Participation in the Meeting of the Board of Judges

Participating as an observer with the judging committee (officially known as the Board of Judges (BOJ)) in the evaluation of the submitted applications and selection of awarded cases.

(2) Requesting Submissions of Applications for the 6th Energy Awards

Based on an analysis of the 5th Energy Awards cases, activities will be continued to encourage submissions for the 6th Energy Awards with the aim of further expanding the participating companies, such as by improving the evaluation standards.

5. Holding of the Research Forum in Japan

The Research Forum in Japan was put off in the current fiscal year partly due to less necessity to hold. It invites the BOJ judging committee from the ASEAN countries with the following purposes.

(1) Research of improvement guidelines for PROMEEC Phase-3 of the ASEAN Energy Management System
(2) Research toward improving the operation method of the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings, including the evaluation standards
(3) Visits and interchanges with Best Practice case companies

6. Various Investigations, and Tool Creation

The preparation of the above activities on the Japan and ASEAN sides, the investigation of the plans through analyzing the implementation results, and the creation and preparation of various tools including the Energy Management Handbook will be continuously carried out.

The above activity plan and implementation schedule are shown in Table II-2-1.

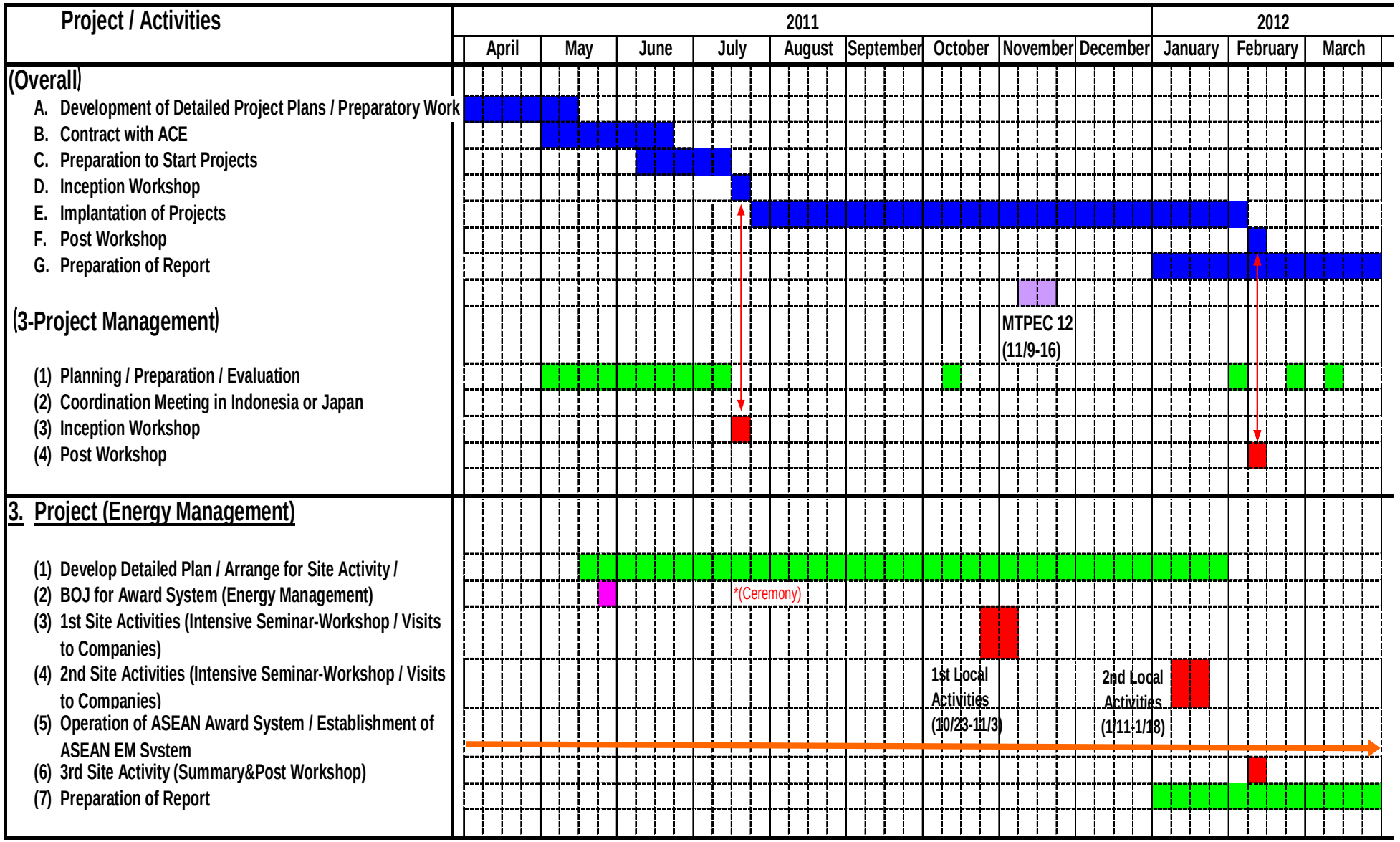

Table II-2-1: Fiscal Year 2011 Implementation Plan

III. Activities in Each Country (Intensive Seminar-Workshops, Training, and Advisory Visits to Companies)

III-1. Overview

As planned, four countries consisting of Myanmar, Malaysia, Lao PDR, and Thailand were visited, and local activities were implemented. With the exception of Thailand, the content of the visit to each country lasted for a three-day period. The first day consisted of the Intensive Seminar-Workshop, while the second day gave training in the utilization of the Energy Management Handbook. On the third day, advisory visits were made to factories and buildings willing to introduce the Energy Management Handbook to their energy conservation activities, and advice and exchanges of opinion were carried out regarding the activities.

It was planned that Myanmar and Malaysia would be visited during the first dispatch in October 2011, while Lao PDR and Thailand were initially to be visited during the second dispatch in November. However, due to the effect of the torrential rain that fell in the northern part of Bangkok in Thailand causing disastrous flooding to the north of Bangkok and in the city center over a long period, the period of the activities were postponed together with those of Lao PDR to January 2012.

In the current fiscal year there were also many participants in the Intensive Seminar-Workshops from a wide range of organizations, including government-related groups, implementing organizations, industry groups, companies, and universities, and the total number of participants was 128 persons. In addition, a maximum of two companies or related organizations were visited in each country, making a total of four locations for the four countries mentioned above.

The Energy Management Handbook usage training also attracted the interest of many related persons, and 105 persons participated in the three countries where this one-day training was implemented. The Q & A was very lively, and participants worked enthusiastically the group work.

An example Intensive Seminar-Workshop program is shown in Attached Materials III-2-1-1. The Workshops generally consist of the following sessions.

Session 1: Outline and Achievements of the PROMEEC Projects, and the current fiscal year plan

Session 2: Functions and Programs of the ASEAN Energy Management System

(1) Overview of the Latest ASEAN Energy Management System

(2) Specific Functions and Programs
- Results of the 5th ASEAN Award System of Best Practices in Energy Management for Industry and Buildings
- Analysis of the above results
- Introduction of “the implementing organization and customer search system” (ASEAN Energy Management Service to Utilize Existing Implementing Organizations)
- Introduction to the JASE-World Technical Directory
- Introductions to the tools for use in energy management

Session 3: Awareness and Financing

As described above, in the current fiscal year activities were carried out after changing the following points from the previous configuration.

(1) In Session 3, the Training (Group Activities for improving energy management) had formerly been carried out using ASEAN Energy Management Best Practice cases. However, because this was very similar to the case study implemented on the second day, the activities were reviewed and became unified and concentrated for the second day. Instead, reporting was carried out by

related persons on the theme of “Awareness and Financing”, which had been newly requested by APAEC.

(2) As one part of the e-Directory, introductions to the JASE-World activities and its technology collection were included to introduce Japanese energy conservation technologies.

In addition, on the second day, a Training program for utilizing the Energy Management Handbook was held in the three countries. Example contents are shown in Attached Materials III-2-1-2. These were made up of two sessions.
In particular, in the current fiscal year nearly three hours were allotted once again to giving a key point explanation of the Energy Management Handbook to achieve full awareness.

Session 1: Seminar
(1) Detailed explanation of the Energy Management Handbook

Session 2: Workshop: Case study research using Small Group Activities
(1) Outline introduction to ASEAN Award Best Practice cases selected by the host country as case studies
(2) Group Work
- Discussion: Improvement Proposals utilizing the Energy Management Handbook
- Presentation of investigation results, discussions, and exchanges of opinions

In addition, after carrying out the Intensive Seminar-Workshop and the Training utilizing the Energy Management Handbook in all three countries, company visits and hearings were implemented concerning the Energy Management Handbook usage activity situation in the companies, and discussions were held. The above activities were carried out through the efforts of the related persons from each country including the Focal Points and the relevant persons in the ASEAN Centre for Energy, and the activities could be implemented smoothly according to plan. As a result, it was possible to achieve the following outcomes.

(1) Also in the current fiscal year, many participants from each country and almost all the companies and various related organizations expressed interest in the project and in the ASEAN Energy Management System program. In addition to receiving assessment that these energy conservation activities are effective, we could gain confirmation that participants actually wished to take part.
(2) Energy Management Best Practice cases in the ASEAN Energy Management System were widely collected from each country, and the Awards System, which has already been held four times since its introduction as a program to achieve dissemination in the ASEAN region, is attracting even greater attention and anticipation. It was possible to promote the creation of the foundations for the Awards System, including making improvements from an operations point of view, in order that even more companies will be encouraged to continue submitting applications in the future.
(3) The Energy Management Handbook includes specific activity guidelines that enable promotion of energy conservation. By using these guidelines in Group Activities using specific cases, it was possible for the participants to experience the usefulness of the guidelines. Brunei Darussalam has expressed its intention to develop its own version of the Handbook at the national level for use as its energy management guidelines.
Further, the introduction and use of the Energy Management Handbook was implemented in five

pioneer companies and the results of these introductions were reflected, enabling the creation of a general-purpose ASEAN version that we are planning to disseminate in each country. Lao PDR, which was visited last year, has also completed a local language version, while in Vietnam the translation to Vietnamese has been carried out by a pioneer company, and a request for translation has also been raised in Myanmar and Cambodia, so we have supported them to translate.

(4) Including the companies that were also visited in the current fiscal year, it was possible to enlarge the Network of Cooperators for this project. Since the start of this project in 2004, 121 companies (factories, buildings, ESCO companies, etc.), implementing organizations, government institutions, universities and research institutes have been visited and investigated, and advice has been given concerning their activities.

In addition, in all three countries, companies and factories were also visited, and we could confirm that they understood the usefulness of the tools for energy management such as the Energy Management Handbook, together with the fact that the PROMEEC activities are implemented every year, realizing large results. At the same time, we also called for their participation through submitting applications for the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings. Detailed explanations of the actual activities carried out in each country are given below.

III-2. Activities and Implementation Results in Each Country

III-2-1. Myanmar

The Intensive Seminar-Workshop and Training was carried out at the same hotel of last year, the Amara Hotel, in Myanmar's new capital city, Nay Pyi Taw, and the venue was the new Fantastic Room. Nay Pyi Taw is an administrative city that has been developed in a location approximately 400 km north of the former capital city, Yangon. There are only a few flights between the two cities which are utilized by persons related to the military and the government, and even though there is a railway it is apparently inconvenient, so normally cars or buses afre used for transport.

1. Intensive Seminar-Workshop

The program of the Intensive Seminar-Workshop on the first day is shown in Attached Materials III-2-1-1.

(1) Greetings: Welcoming addresses were made to the cooperating organizations by the Deputy Minister of MOI (2) Mr. Myo Aung, Director General of MOE Mr. Htin Aung, ECCJ's Mr. Yutaka Ogura, and ACE's Mr. Pham Van Duong, and the significance of energy conservation promotion and the PROMEEC/EM project and its activities and developments in the future were introduced. An overview of each greeting is shown below.

<1> Mr. Myo Aung expressed appreciation for the continued financial and technical support from Japan, and spoke about the importance and attractions of energy conservation, its contribution to cost reductions, the importance of popularizing the Energy Management Handbook (EHMB), and the introduction of the ASEAN Award Best Practices.

<2> Mr. Htin Aung expressed appreciation to the related persons and organizations including METI, and spoke about the target to reduce energy consumption towards 2015 by 8% compared to 2005 in the EE&C of APAEC Program 4 and the human resource

development required to achieve this, together with the importance of the EMHB, In-house Database, Technical Directory, benchmarks, guidelines, EM System, OJT Energy Audit, ASEAN Award System, and MTPEC training.

<3> In the ECCJ greeting, gratitudes were particularly given for the aid given by each country for the Great East Japan Earthquake and tidal wave which had occured earlier in the year. Mention was made of the fact that much can be learned about large-scale earthquakes and tidal waves from history, and that an introduction would be made later to the points learned from the responses to the electricity shortage caused by the nuclear power reactor accident this time. In addition, in this eighth year of the PROMEEC EM, with Myanmar conducting its second EM project continuing from the previous year, a request was made to Myanmar to work even more proactively for the Phase-3 activities.

<4> The greeting from ACE included mention of making energy security sustainable by determining targets, promoting energy efficiency, developing energy management tools, and pointed out that the current year's EM project would begin from Myanmar.

(2) Session 1: PROMEEC Projects/PROMEEC EM Project: Outline & Achievements Introduction to the overall PROMEEC Project and the EM (Energy Management System Improvement) Project

<1> Outline and Achievements of PROMEEC Project (Mr. Pham Van Duong, ACE): Introduction to the EE&C activities in the APAEC 2010-2015 Program, to the activity situation and number of participants until now in the three PROMEEC Projects, and to the activities in the current year.

<2> Outline and Plan of the PROMEEC (Energy Management) Project (Mr. Yutaka Ogura, ECCJ): Introduction to the EM Project of current year project plan

<3> Realized Activities/Outstanding Improvement through PROMEEC Projects in Myanmar (Mr. Than Oo, Ministry of Industry No.2): Explanation that there are nine ministries related to energy policies and energy (Ministry of Energy: Petroleum and gas; Ministry of Electricity No.1: Gas and hydroelectric power generation; Ministry of Electricity No.2: Power transmission; Ministry of Mines: Coal; Ministry of Environmental Conservation & Forestry and Ministry of Agriculture: Biomass and wood fuels; Ministry of Industry No.2: Energy conservation and renewable energy; Ministry of Science and Technology: Renewable energy; Ministry of Construction: Building energy conservation). The Ministry of Energy is positioned as the coordinator. Barriers and resolution directions, PROMEEC Projects previously implemented, and the numbers of participants were explained.

(3) Session 2: Introductions to the Functions and Programs of the ASEAN Energy Management System

<1> Outline of the Updated ASEAN Energy Management System (Mr. Yutaka Ogura, ECCJ): Introduction to the issues and items to be undertaken in the system in the current fiscal year, together with requests for the provision of application and information data.

<2> Specific Functions and Programs

A) ASEAN Award System of Best Practices in E.M. for Industry and Building

- Outline, Results of ASEAN Awards for 2010-2011 and Plan for 2011-2012 (Mr. Pham Van Duong, ACE): Introduction to the details and judging results by the BOJ

of the 24 cases submitted in the EM sector this year, together with details of future issues in the Buildings sector.

B) Information System

- Information Analyses to Ease Dissemination of Awarded Cases (Mr. Yutaka Ogura, ECCJ): Explanation of plan to extract and share characteristics that can be read from the current year's application contents, and introduction to characteristics of the Best Practice cases in the three sectors.

- Introduction of JASE-World (Mr. Yutaka Ogura, ECCJ): In relation to the e-Directory for Technologies & Equipment, introduction to JASE-World and to the methods of utilizing the technology collection.

C) Energy Management Tools

- Energy Management Handbook (EMHB) and Other Tools (Mr. Yutaka Ogura, ECCJ): Introduction to the EMHB and related thermal and electrical technical handbooks, together with the versions in each country, and the EE&C Manuals that are being prepared in each ASEAN country.

- Updates on the Development of PROMEEC EM Tools:

A. Technical Directory (TD) for Industries and Buildings

B. In-house Database (IHDB) for Industries and Buildings

C. ASEAN Energy Management Service to Utilize the Existing Implementing Organizations (Mr. Pham Van Duong, ACE):

Introduction to the TD types, cases, access methods, IHDB separate industry and building types and activity situation, revised and corrected cases, introduction to the ASEAN Energy Management Service and request for participation and usage, and introduction to registrations which currently consist of 17 institutions registered as implementing organizations.

D) Harmonization of ISO 50001 and EMHB (Mr. Yutaka Ogura, ECCJ): While explaining an overview of ISO 50001 (Energy Management) that was established and published in June of the current year, a comparison was given with the frameworks of EMHB, AEMAS, and the Japanese Act on the Rational Use of Energy. In addition to having many similar points, the practicality using the EMHB Key Step Approach and the superiority of the two-way Top-down & Bottom-up activity observance was also conveyed, and it was explained that ISO 50001 should be easily acquired if it is based on the EMHB.

(4) Session 3: Awareness and Financing

<1> Situation of Awareness Raising (Mr. Than Oo, Ministry of Industry No.2): While explaining about awareness-raising examples of seminars held particularly from 2009 to 2011 in the PROMEEC Industries Project and Energy Management Project, and in voluntary seminars held by the Myanmar Ministry of Industry No.2, he confirmed the important positioning of the PROMEEC Project.

<2> Situation of Environmental Awareness and Financial Support System in Japan (Mr. Yutaka Ogura, ECCJ): Introduction to the activities relating to awareness-raising such as the Eco-point System and Top Runner Program held as energy conservation measures in Japan originating from the global warming overall situation and resource exhaustion problems, and explanation of the Japanese energy conservation financial assistance

system and the JICA Two-Step Loan.

<3> Financial Support System in ASEAN (Mr. Pham Van Duong, ACE): Introduction using tables of the potential funding sources in the main ASEAN countries.

<4> Japanese Experience of Energy Saving after Huge Disaster (Mr. Yutaka Ogura, ECCJ): Introduction to the details and results of electricity-saving measures implemented in Tokyo due to the Great East Japan Earthquake, including the results of measures implemented by ECCJ and in his home.

(5) Q&As

<1> The current year's Best Practice cases include the case of Toshiba Information, but isn't this a case of a Japanese company rather than a Philippines company? Why is a Japanese company being awarded at the ASEAN Awards? What are the policies of the Awards? -> As long as the company is from an ASEAN country, we make no special distinctions. In addition, the purpose of the Awards is not the competition itself, but to study the good points of the Best Practices.

<2> You kindly introduced many methods including the TEM HB, EMHB, and ISO 50001, but which do you recommend? -> Although each method has its own characteristics, we would first recommend that you master the contents of the EMHB as the most practical method. As we explained, because there are many similarities with ISO 50001, application will be easy.

<3> Training using products will also be effective, and we would like you to consider this in the future. (Comment base) -> The person making the comment was hoping for a facility such as the Mini-plant Training Facility in Thailand. Since Myanmar is close to Thailand, if necessary the Thai facilities could be used, as was done by Lao PDR, and we suggested during the coffee break that they should discuss this with DEDE through the FP.

<4> Why is the EM System important? -> In energy conservation activities, energy management (EM) forms the basis. Mastering the ways of thinking and the methods will create a system that will allow the continuous implementation of energy conservation activities. Without adequately investigating by yourselves, simply accepting advice and capital resources, the installation of high-efficiency energy conservation facilities and realizing of energy-conserving results is a temporary phenomenon, so if you do not appreciate the importance and worth of energy conservation for yourself, you will tend to forget.

<5> How is it possible to access the In-house Database? -> From the ACE website.

<6> Regarding ASEAN financial support, can you let us know the contact numbers of potential fund sources? -> Although we don't have the direct contact numbers, if you make a request through your FP, we will make investigations (ACE).

<7> How was it possible to raise awareness in Japan? -> Particularly due to the two oil crises, for a country like Japan with limited natural resources, ways to limit energy consumption to maintain and improve the international competitive strength of manufacturing costs became issues both for each company and for the country. In addition to establishing the Act on the Rational Use of Energy and thoroughly implementing energy management at the country level, energy conservation was voluntarily pursued at the company level, realizing a large effect. Through these actions,

awareness was also improved.

<8> (Relating to the electricity-saving measures following the Great East Japan Earthquake) Why does Japan have two zones with 50 Hz and 60 Hz frequencies, and isn't it possible to mutually accommodate these zones? -> The introduction of two frequencies took place more than 100 years ago due to the introduction of different electricity generating technologies from Germany and the US in the Kanto (East Japan) and Kansai (West Japan) regions, creating two zones of 50 Hz and 60 Hz that have remained separate until the present day. Although mutual conversion is possible, a large capacity is required for the transformers, which are insufficient for large-scale accommodation.

<9> Have any changes been made to the Action Plans before and after the earthquake and tidal wave disaster? -> Although the energy conservation and electricity-saving measures that were carried out over the summer mostly ended in September, some of these measures are being continued and electricity shortage is also anticipated in the winter as well, so it is planned to implement similar measures. In addition, peoples' lifestyle has also been changed.

(6) Details of participants

<1> Ministry of Industry No.2: 8 persons (Excluding the 3 women undertaking the reception and moderator)
<2> Ministry of Energy: 2 persons
<3> Ministry of Science and Technology: 2 persons
<4> Ministry of Industry No.1: 2 persons
<5> Ministry of Electricity No.1: 2 persons
<6> Ministry of Electricity No.2: 2 persons
<7> Ministry of Environmental Conservation and Forestry: 2 persons
<8> Ministry of Agriculture: 2 persons
<9> Myanmar Engineering Society: 2 persons
<10> Myanmar Industry Association: 2 persons (Out of these, one person was the president of company <11>)
<11> Earth Industrial (Myanmar) Co., Ltd: 4 persons (Company was subject to the Advisory Visit on October 28)
<12> Fame Pharmaceuticals: 1 person
<13> ACE: 1 person
<14> ECCJ: 2 persons

(7) Responses and Issues at the ISW, etc.

<1> Preparations and implementation were excellent. Most of the participants were from energy conservation-related ministries, but some non-governmental persons kindly participated from faraway Yangon, and it can be thought that the energy management methods and the Handbook are being steadily disseminated. In addition, because the Energy Management Handbook (only the English version) was distributed to all the participants, we can expect that it will be utilized. However, in order to become more widely disseminated, there is still a requirement to translate it to the local language. Actually after this, ther support for translation was rapidly progressed and completed in this fiscal year.

<2> The Ministry of Industry No.2 has also independently started conducting energy management such as by holding energy conservation seminars, so it can be expected that they will plan to conduct dissemination developments in cooperation with related ministries in the future.

2. Training related to Methods of Utilizing the Energy Management Handbook

It had been explained on the previous day that the second day corresponded with a special holiday in Myanmar, so we had been concerned that this would mean the number of participants would be greatly reduced from the first day. However, we were relieved to find that the resulting number of participants was even more than on the first day.

There were 32 participants (excluding the representatives from ECCJ and ACE and several persons from the host organization, the Ministry of Industry No.2), and all the persons participated from the lectures in the morning until the Workshop in the afternoon. We had thought possibly several persons would leave in the afternoon, but this did not happen. By grouping the number of participants, three groups were formed for the Group Work activities on this day.

From the previous fiscal year (also taking into account the fact that the PROMEEC (EM) Program has entered Phase-3), the contents of the second day had been changed as described below.

<1> In the morning, the explanation of the In-house Database and Technical Directory that was formerly carried out was omitted (since a summary explanation was given during the Seminar on the first day), and time was spent to an explanation of the Energy Management Handbook.

<2> Formerly, the Energy Management Handbook was explained almost page-by-page, but since the actual book was separately distributed, the key points were explained by showing PowerPoint slides..

<3> Group Work was the main activity of the afternoon. The Group Work that was formerly carried out on the first day was discontinued and concentrated on the second day.

In the case of Myanmar, although there was a certain period of time before the previous fiscal year, the Training on the second day was highly successful, realizing results that were better than expected. In this fiscal year due to the deliberate preparations by Mr. Than Oo, even greater progress was seen as described below.

<1> The number of participants in the Training Session increased even further from the previous fiscal year. This is most probably due to Mr. Than Oo making sufficient efforts to contact potential participants beforehand, and some participants have taken part after hearing about the favorable results from the previous year.

<2> In addition to the copies of the PowerPoint presentation materials, copies of the actual Energy Management Handbook were also distributed to all participants, allowing them deeper understanding.

<3> The two cases for the Group Work were quickly decided and copies were prepared. In addition, two of the participants were assigned the role of explaining the case study details.

<4> This year, Mr. Than Oo did not join in the Group Work itself, and adopted the position of offering overall guidance. However, the other participants from theMinistry of Industry No.2 adequately participated in the lively discussions and summarizing.

Although the characteristics of the current fiscal year are as described above, the details (Program) of the Training that was actually implemented are shown in Attached Materials III-2-1-2.

The following describes the results of implementing each item on the day.

(1) Lecture: A lecture was given relating to the overview and characteristics of the Energy Management Handbook and its detailed contents and key guidelines by Mr. Ogawa.

All the participants enthusiastically listened to the explanation, and the Q&A just after was as follows.

Question: "Although I understood about energy management using energy intensity, in the factory where I work we are manufacturing a total of three types of machines. In this situation, I think it's difficult to know what to select as the denominator for the manufacturing amount, so can you give me some advice?"

Answer: "That is a good question. As you say, in the situation of manufacturing multiple product types instead of a single product, the calculation of energy intensity is difficult. In this situation, the calculation method will depend on the actual manufacturing situation. That is, taking an example where the time for manufacturing one product is comparatively long at two days, figures during this time can be used for calculation. Further, in the situation where manufacturing of three product types are always carried out, if the average ratios do not change by much the method of calculating by using the common overall production amount (for example in tons) over a long period can probably be used. In this situation, the workers or operators carrying out the work on the front line know best about the actual on-site production situation, so which index would be best to use for managing and controlling the energy would be a good topic of their Small Group Activities.

(2) Workshop (Group Activities): Group Activity Guidance (Mr. Fumio Ogawa)

<1> Introduction to the energy conservation actions incorporated in the case studies of the following two companies that were awarded in the current fiscal year's ASEAN Awards.

A) Green Energy Office (GEO) (Building Best Practice case from Malaysia)

B) Glaxo Wellcome Manufacturing Pte. (GWM) (Factory Best Practice case from Singapore)

For both cases, Mr. Kyaw Swe Lin (Deputy GM, Ministry of Agriculture) and Mr. Myint Soe (Assistant Director, Ministry of Industry No.2) kindly gave detailed explanations. We were particularly surprised that they gave outstanding explanations using PowerPoint considering of the fact that they were told to prepare these presentations just previous day by Mr. Than Oo.

<2> Group Work Experience

As described above, in the case of Myanmar, practically this was the second Group Work. At the start of the Group Work, an explanation was given by ECCJ of the basic facts. The analysis and assessment of cases were to use the Energy Management Handbook for the standards as far as possible, and discussions were held regarding whether the necessary items had been implemented without omissions.

Discussions were summarized and the following items were finally presented (as in the past).

A) Good points of the energy conservation activities based on the contents introduced above, and

B) Advice on improvement plans that could be implemented in the future.

The participants were divided into three groups according to the number of participants. The number of persons in each group and the selected cases were as follows.

Group No.	No. of Members	Selected Case Study

1	10 persons	GEO
2	11 persons	GEO
3	11 persons	GWM

Although the time for discussions was only one and a half hours, each group discussed the main points well, and prepared the summary and presentation. Although a whiteboard was provided for each group to use in the discussions and presentation, all the groups used PCs to adequately summarize the key points in PowerPoint and give the presentation. The high capabilities of the participants were proved. The presenter of each group was as shown below.

Group 1: Mr. Myo Zarni Win (Central Research Development Center)

Group 2: Mr. Min Lwin Thein (Ministry of Electricity No.1)

Group 3: Dr. Khin Mg Latt (Ministry of Science and Technology)

Each group faithfully followed the Key Step Approach of the Energy Management Handbook to arrange the contents of each case study, which was highly outstanding. Although there were differences in some detailed points, each group devoted themselves to devising methods of arranging and announcing the cases.

<3> Comments from ECCJ Experts

The comments from ECCJ are summarized as follows.

- Despite the fact that the participants had little experience in Group Work, we were deeply impressed by the substantial discussions with participation by all members and the appropriateness of the content summarization and presentation. Although the time was also limited, the fact that the participants skillfully incorporated the content into PowerPoint materials was very good. In addition, we were also impressed by how outstanding the previous explanations of both cases were.
- We were highly encouraged by confirming the fact that the EM Handbook methodology, particularly of the Key Step Approach which was explained in the morning on the day, had been well assimilated and was in a condition to be utilized.
- Although the participants on the day were mainly persons from government agencies, each person will eventually reach a position of giving guidance to the private sectors in the future. We hope that participants will be able to spread this methodology to realize good results. Concerning the SGA, we believe that it will be effective if the participants can hold this type of Workshop and give guidance in Group Work.
- In the explanation of the ASEAN Energy Management Service given on the previous day, the Myanmar Engineering Society was the only registered Service Provider from Myanmar. Because we became aware this time that there are other capable companies, we would very much like for these companies to become registered (following discussions with the Focal Point).
- Concerning the translation of the ASEAN Energy Management Handbook to the Myanmar language, we also would like to positively investigate the possibility.

(3) Comments from ACE

Comments were given including thanks by Mr. Pham Van Duong.

(4) Comments from the Host Country

Mr. Than Oo gave an explanation and greetings expressing thanks to METI, ECCJ, and the

participants, and spoke to encourage the participants to maintain close contacts among each other when carrying out all duties, not just in energy conservation activities, and also explained about the awarding of certificates. There was a request to receive a list of the contact numbers of the participants this time, and Mr. Than Oo promised that this would be distributed.

(5) Comments from VIPs

Comments were received from the following three persons among the participants.

Mr. Htun Naing Aung (Myanmar Industry Association)

- As I will be required to convey the information to other persons, it is very effective as in this Seminar to be able to ask questions directly to the ECCJ experts. Wouldn't it be good to investigate holding this kind of Seminar in Yangon and Mandalay instead of just in Nay Pyi Taw?
- I believe that it is very important that the participants of this workshop keep in mutual contact and assist each other in the common purpose of energy management.

Mr. Tin Htut (Director, Ministry of Energy)

- The above proposal would involve several ministries (at least the Ministry of Industry No.2 and the Ministry of Energy), so that it would not be easy to implement, but I will report it to my superiors and conduct investigations.

Mrs. Khaing Zaw (Myanmar Industry Association, and the president of the company whose factory was to be visited on the 28th.)

- Expression of greetings including words of thanks and the intention to implement energy management.

(6) Awarding of Certificates and Close of Meeting

All the participants were divided into three, and certificates were presented by Mr. Yutaka Ogura, Mr. Pham Van Duong, and Mr. Than Oo.

(7) Closing Remarks by Mr. Than Oo

Finally, remarks were given by the host, Mr. Than Oo, to close the entire Seminar. The detailed contents were as described below.

- I am pleased that such a highly substantial Program could be accomplished thanks to METI, ECCJ, ACE, and all the participants today.
- The various tools of the ASEAN EM System, consisting of the TD, IHDB, EM Handbook and ASEAN Energy Management System, are highly effective items. I think that all the participants well understood the Seminar and Training held this time.
- Regarding the SGA Group Work, I was pleased to see how very well all the participants did.
- Concerning the proposal expressed this time of the idea of holding this type of Seminar more widely in other locations, I will report this to my superiors and carry out investigations.

(8) Breakdown of Participants

The details of the 32 participants are as shown below, and as expected, participants related to government agencies were the majority. Further, because Mr. Than Oo was on the host organization side this time (also in the position of awarding the certificates), together with several subordinates (including the female moderator) he did not participate in the Group Work.

<1> Ministry of Industry No. 2	:9 persons
<2> Ministry of Energy	:2 persons
<3> Ministry of Industry No. 1	:2 persons
<4> Ministry of Electricity No. 1	:2 persons
<5> Ministry of Electricity No. 2	:1 person
<6> Ministry of Science & Technology	:2 persons
<7> Ministry of Agriculture	:2 persons
<8> Ministry of Environment Conservation & Forestry	:2 persons
<9> Myanmar Engineering Society	:2 persons
<10> Myanmar Industry Association	:2 persons
<11> Private companies	:6 persons

3. Company Visit

Based on the Intensive Seminar-Workshop and the Training regarding the usage of the Energy Management Handbook held this time, Earth Industrial (Myanmar) Co., Ltd. was selected as one company from the companies wishing to utilize the tools including the Energy Management Handbook in their factory and building energy management activities and energy conservation promotion. This company was visited and interchanges were carried out on October 28. For details, refer to Attached Materials III-2-1-3.

(1) Earth Industrial (Myanmar) Co., Ltd.

Attached Materials III-2-1-1: Agenda of Myanmar Intensive Seminar-Workshop

AGENDA: Intensive Seminar-Workshop
Promotion Of Energy Efficiency And Conservation (PROMEEC) - Energy Management
Under The SOME-METI Work Programme 2011-2012

The Amara Hotel, Nay Pyi Taw **25 October, 2011**

08:30 – 09:00	Registration
09:00 – 09:08	Welcome Address by Deputy Minister of MOI(2), U Myo Aung
09:09 – 09:14	Welcome Remarks by Director General of MOE, U Htin Aung
09:15 – 09:26	Opening Statement by The Energy Conservation Center, Japan (ECCJ)
09:27 – 09:33	Opening Statement by ASEAN Centre for Energy (ACE)
09.34 – 10:00	*COFFEE BREAK & GROUP PHOTO SESSION*
10:00 – 10:55	Session 1 : PROMEEC Projects / PROMEEC EM Project: Outline & Achievements
10:00 – 10:37	Presentation by ACE & ECCJ 1) Outline and Achievements of PROMEEC Project (ACE) 2) Outline and Plan of PROMEEC (Energy Management) Project (ECCJ)
10:38 – 10:54	Presentation by Host country Realized Activities / Outstanding Improvement through PROMEEC Projects
10:55 – 15:20	Session 2 : "ASEAN Energy Management System": Functions & Program
10:55 – 11:15	Presentation by ECCJ Outline of Updated "ASEAN Energy Management System" (ECCJ)
11:15 – 12:02	Presentation by ECCJ and ACE Specific Functions and Program 1) ASEAN Award System of Best Practices in E.M. for Industry and Building - Outline, Results of 5th ASEAN Awards for 2010-2011 and Plan for 2011-2012 (ACE) 2) Information System - Information System to Disseminate Awarded Cases (ECCJ)
12:10 – 13:30	*LUNCH*
13:30 – 15:00	2) Information System (Continued) - Introduction of JASE-World (ECCJ) 3) Energy Management Tools - Energy Management Handbook and other tools (ECCJ) - In-house Database for Industries and Buildings (ACE) - Technical Directory for Industries and Buildings (ACE) - ASEAN Energy Management Service to Utilize The Existing Implementing Organizations (ACE) - Harmonization of ISO 50001 and EMHB (ECCJ)
15:00 – 15:20	Q&A
15:20 – 16:00	*COFFEE BREAK*
16:00 – 18:00	Session 3 : Awareness
16:15 – 16:33	1) Situation of Awareness Raising, U Than Oo, MOI-2, Host country
16:33 – 17:12	2) Situation of Awareness Raising and Financial Support System in Japan (ECCJ)
17:12 – 17:15	3) Financial Support System in ASEAN (ACE)
17:15 – 17:45	4) Japanese Experience of Energy Saving after huge Disaster (ECCJ)
17:45 – 18:00	Q&A
	End of Intensive Seminar-Workshop

Attached Materials III-2-1-2: Agenda of Myanmar EMHB Training

AGENDA

Training: Utilization of "Energy Management Handbook and Tools for ASEAN"
Promotion of Energy Efficiency and Conservation (PROMEEC) - Energy Management
Under The SOME-METI Work Programme 2011-2012

The Amara Hotel, Nay Pyi Taw **26 October, 2011**

08:30 – 09:00	Registration
09:00 – 12:30	Session 1: Seminar by ECCJ
09:05 – 10:30	Explanation by ECCJ: Outline of Energy Management Handbook for ASEAN (part 1) (ECCJ)
10.30 - 10:45	*COFFEE BREAK*
10:45 – 12:20	Outline of Energy Management Handbook for ASEAN (part 2)(ECCJ)
12:15 – 12:30	Q&A
12:30 – 13:30	*LUNCH*
13:30 – 17:10	Session 2: Workshop (Training for Small Group Activities) by Host Country/ECCJ
13:30 – 13:35	Guidance for Group Work by (ECCJ)
13:35 – 13:55	(Experience of Dissemination of ASEAN Award Best Practices of EM) Brief Introduction of Best Practices /EM in Building by Host Country (Case 1) <2010-11 Best Practices /EM in Industry, 1st Runner-up: Glaxo Wellcome Manufacturing PTE LTD, Singapore> (Participants)
13:55 – 14:00	Brief Introduction of Best Practices /EM in Industry by Host Country (Case 2) <201011Best Practices /EM in Building, 2nd Runner-Up: Green Energy Office(GEO), Greentech Malaysia, Malaysia> (Participants)
14:05 – 15:45	Group Work Based on Cases Studies 1 & 2 by Host Country/ECCJ - Preparation for Group Work - Discussion by Groups: Guideline and Basic Plan to Improve Using "Energy Management Handbook"
15.45 - 16:00	*COFFEE BREAK*
16:05 – 16:41	Presentation by Participants: Results of Group Work for Cases Studies 1 & 2 (Participants)
16:41 – 16:52	Comments by ECCJ Experts and Host Country
16:52 – 17:08	Awarding Certificates
17:08 – 17:20	Closing Remarks by Mr. Than Oo, MOI-2
	COMPLETION OF TRAINING

PROMEEC (Energy Management) Related Organization Visit: Myanmar (No. 1)
Visit to Earth Industrial (Myanmar) Co., Ltd.
(Document produced by Mr. Yutaka Ogura)

No.	Item	Details
1	Date and Time	October 28 (Friday) 09:30-13:00
2	Company visited	Earth Industrial (Myanmar) Co., Ltd.
3	Persons met	- Ms. Ma Khine Zaw (President) - Mr. Kyaw Min (Director) - Ms Yin Nwe Myint (Director, Financial) - Mr. Myint Swe (Director, Electrical Power) - Ms. Tin Tin Aye (Factory Manager) - Mr. Aung Naing Win (Factory Manager, Electrical Power) - Mr. Saw Naing Soe (Quality Control Manager) - Mr. Min Kyaw Thu (Production Control Manager) - Mr. Saw Kler Moo (Manager, Production) - Ms. Than Than Myint (Project Engineer) - Mr. Thazin Shwe (Production Engineer)
4	Accompanied Persons (MOI-(2))	- Mr. Than Oo (Director, Central Research & Development Centre) - Mr. Myint Soe (Assistant Director, Directorate of Heavy Industries Planning) - Ms. Yi Yi Khine (Assistant Director)
5	Visitors (ACE, ECCJ)	- Mr. Pham Van Duong (ACE, Technical Expert) - Mr. Yutaka Ogura (ECCJ, Technical Cooperation Department, General Manager) - Mr. Fumio Ogawa (ECCJ, Technical Cooperation Department, Technical Expert)

6. Overview of Visited Company by presentation and website

(1) Established in 1997, 1600 employees, building site area 24 acres, sales US$4 million
(2) Factory: Transformer Factory (Since April 1997), Thermal Cut-off (Fuse) Factory (Since July 1999), PCB Assembly Factory
(3) ISO 9001:2000 Acquisition: JQA of Japan also participated in the certification
(4) Quality Policy: Total Customer Satisfaction
(5) Group Mission: To Improve Productivity through Team Activities
(6) Customers: There are also many Japanese companies including Oki Electric Industry, Toshiba Corporation, Canon Corporation, and Kyocera Corporation
(7) Employee training is actively implemented

7. Hearing and Discussion Details

(1) Energy Conservation Activity Details: By presentation

1) On October 4, 2011, Mr. Than Oo of the Ministry of Industry No.2 visited the company and carried out Awareness Training while providing the EMHB.
2) Transformer Factory: Improvement activities have been carried out since 2008. Due to the introduction of a voltage stabilizer, the utilization of diesel was improved by 60%. The introduction of solar security lighting from April 2011 saved 7,300 kWh/Y of electric power, while the use of a capacitor bank from August 2011 improved the power factor from 0.8 to 0.95.

In addition, the energy conservation target from October to December 2011 was set to 5%. The energy consumption intensities of the products were converted to trend graphs, which showed a reduction since 2009. The details of the energy consumption fields were also converted to graphs, and were being well regulated. The energy units were not only shown in kWh, but as the other factory, frequently showed conversions to MJ. In the lighting coefficient, the ballast of the 768p fluorescent lighting was changed from a magnetic type to an electric type, realizing electricity saving of 29%. A person has been made responsible for switching off the lighting up to working area 1-7.

3) Thermal Cut-off Factory: By changing the oven cart design, the process energy was improved by 35%. Security lights were changed to solar and LED types. An energy management Master Plan was established for the period between October 2011 and March 2012, and the energy conservation target was set to 15%. In this factory also, analysis was carried out of the changes in energy consumption intensity and energy consumption fields. Note that since the energy consumption percentage of the ovens used as dryers is high at 47%, investigation is being carried out into how energy conservation can be planned. From October until March of the following year, it is planned to exchange the 100p fluorescent lighting ballast from a magnetic type to an electric type, and in the same way in this factory a person has been given responsibility for switching off the lighting.
4) Incandescent lamps for the security lamp are being changed to LED lamps, and the showroom fluorescent lighting is being changed to LED tubes.

(2) Explanations, Opinions, and Proposals made by ECCJ, including the On-site Inspections

1) The company's energy conservation implemented actions were outstanding, based on the energy management methods and the Energy Management Handbook. Policies, organizations, and targets have also been set, energy data has been collected and changed into graphs, shown as intensities, and converted to MJ. We were surprised to see how good the implemented activities were.
2) There were also displays relating to 5S and the seven types of waste. Rather than simply showing displays, these were linked to the implementation of actual activities, and if improvements can be realized they will result in reward.
3) It is thought that these activities are due to the circumstances and experiences in acquiring ISO 9001.
4) In the Training Room, various types of standards and manuals were also available, and the English PPT materials of persons who had participated in Japanese AOTS Training were filed and were being used as texts. It appeared that education of new employees is being properly implemented, and when we visited there were four employees receiving guidance.
5) Regarding the products in each factory, there was talk of how difficult it was to determine the energy index for each, since the specifications were different and the process periods also differed. However, we commented that as long as the transformers and fuses are summarized, it will not be necessary to develop energy indexes into further detail.
6) Based on the above points together with the results of the activities implemented until March of next year, if the contents were summarized they would probably become a good candidate to receive an ASEAN Award, and we encouraged them to consider submission.
7) In addition, Mr. Than Oo also expressed the fact that he would support the preparation of a proposal for an ASEAN Award as a start for Earth Industrial (Myanmar) Co., Ltd. to also apply to become an ESCO company.

(3) Response of Visited Company

1) The female owner-president kindly supported the visit from start to finish, and we could well appreciate her enthusiasm in carrying out the activities. Together with six of the company's executives, she also kindly attended the ISW and the Training at faraway Nay Pyi Taw on the 25th and 26th to positively learn as much as possible.
2) The total of more than 11 related persons including president, directors and factory chiefs, kindly gave support with great attention, and their degree of interest was conveyed through their actions.

8. Overview of the On-site Inspections

(1) Following the visit to the Transformer Factory, a visit was also made to the Thermal Cut-off Factory.
(2) In both cases, many young female employees were working on several production lines inside the large factories silently assembling transformers and fuses using individual assembly and partly assembly-line operation. Work is being carried out by labor-intensive method. Although mechanization and automation would result in a large reduction of employees, there was a feeling that this was not yet desirable, and probably employment was to be initially secured. In the working environment, it appeared that the air conditioning and lighting were not always sufficient.
(3) Near the entrances and exits in the factory, many notices concerning quality policies, 5S and other activity examples, and the seven types of waste were posted on the walls in English and the Myanmar language.

III-2-2. Malaysia

The implementation of this project in Malaysia was being carried out after a two-year break. Up till the previous implementation, the Malaysian energy conservation institution, PTM (Malaysian Energy Center) acted as the FP while also providing the core of the support. However, in response to the organizational modification and change in name of the related Energy Ministry in January 2010, PTM also underwent an organizational modification and name change. In addition, the FP for the ASEAN PROMEEC activities also returned to be under the charge of the original Ministry of Energy, Green Technology and Water (MEGTW), who also kindly provided support this time.
The Intensive Seminar-Workshop and Training was implemented in the Corus Hotel, located right beside to the Kuala Lumpur City Center (KLCC) Twin Tower in the center of Kuala Lumpur City.

1. Intensive Seminar-Workshop

The program of the Intensive Seminar-Workshop on the first day is shown in Attached Materials III-2-2-1.

(1) Welcoming remarks: Welcoming addresses were made to the cooperating organizations by Mr. Badaruddin Mahyudin, Deputy Secretary General of MEGTW, Mr. Yutaka Ogura of ECCJ, and Ms. Maureen Balamiento of ACE, and the significance of energy conservation promotion and the PROMEEC/EM projects and their activities and developments in the future were introduced. An overview of each greeting is shown below.

<1> Mr. B. Mahyudin: Against the background of climate change problems, Malaysia is aiming to become a sustainable low-carbon society. While electric power consumption will increase 3-4% from 2010 towards 2020, CO_2 will be reduced by 40% in 2020 compared to the levels in 2005. Malaysia also completed its Energy Master Plan in November 2010, and the introduction of the AEMAS Energy Management System also began last year. We would like to thank METI/ECCJ/ACE also from Malaysia's energy security viewpoint for the continued provision of the latest technology through the PROMEEC activities. In both the private sector and public sector, the education of human resources is very important, and I hope for the success of this seminar.

<2> In the ECCJ greeting, thanks were particularly given for the aid given by each country for the Great East Japan Earthquake and tidal wave which had occurred earlier in the year. Mention was made of the fact that much can be learned about large-scale earthquakes and tidal waves from history, and that an introduction would be made later to points learned from the responses to the electricity insufficiencies caused by the nuclear power station accident this time. In addition, in this eighth year of the PROMEEC EM, a request was made for Malaysia to implement the Phase-3 activities with a more independent framework. However, as this was the first EM project after the change of the Focal Point from PTM to MEGTW, a request was made for participants to learn as much as possible. Further, mention was made that METI/ECCJ are giving cooperation in the development of Malaysia's Energy Conservation Law.

<3> From ACE, thanks were expressed to MEGTW, METI, and ECCJ. Mention was also made that because ASEAN region economic growth is increasing, a continuous energy development and capacity improvement plan is planned in APAEC 2010-2015, and a request was made that participants utilize the Energy Management Handbook & Tools,

Technical Directory, In-house Database, ASEAN Award, and ASEAN Energy Management Service from the PROMEEC Project which has reached its 12th year.

(2) Session 1: PROMEEC Projects/PROMEEC EM Project: Outline & Achievements; Introduction to the overall PROMEEC Project and the EM (Energy Management System Improvement) Project

<1> Outline and Achievements of PROMEEC Project (Ms. Maureen Balamiento, ACE): Introduction to the EE&C activities in the APAEC 2010-2015 Program, to the activity situation and number of participants until now in the three PROMEEC Projects, and to the activities in the current year.

<2> Outline and Plan of PROMEEC (Energy Management) Project (Mr. Yutaka Ogura, ECCJ): Introduction of the EM Project in current year project plan

<3> Overview of Major Energy Efficiency Initiatives in Malaysia (Mr. Zaini Abdul Wahab, MEGTW): Explanation regarding the National Energy Policy, National RE (Renewable Energy) Policy, present laws, current developments in EE-related laws, AEMAS activities, recent energy conservation-related government-determined issues, Green Building demonstration cases, labeling and the SAVE Rebate Program (similar to the Eco-Point System in Japan), financial incentives, implementation of NEEMP (National Energy Efficiency Master Plan), and the establishment of the SEDA (Sustainable Energy Development Authority) in September 2011.

(3) Session 2: Introductions to the Functions and Programs of the ASEAN Energy Management System

<1> Outline of Updated "ASEAN Energy Management System" (Mr. Yutaka Ogura, ECCJ): Introduction to the issues and items to be implemented in the system in the current fiscal year, together with requests for the provision of application and information data.

<2> Specific Functions and Programs

1) ASEAN Award System of Best Practices in EM for Industry and Building

- Outline, Results of ASEAN Awards for 2010-2011 and Plan for 2011-2012 (Ms. Maureen Balamiento, ACE): Introduction to the details and judging results by the BOJ of the 24 applications submitted in the EM sector this year, together with details of future issues in the Buildings sector.

2) Information System

- Information Analyses to Ease Dissemination of Awarded Cases (Mr. Yutaka Ogura, ECCJ): Explanation of plan to extract and share characteristics that can be read from the current year's application contents, and introduction to characteristics of Best Practice cases in the three sectors.

- Introduction of JASE-World (Mr. Yutaka Ogura, ECCJ): In relation to the e-Directory for Technologies & Equipment, introduction to JASE-World and to the methods of utilizing the technical directory.

3) Energy Management Tools

- Energy Management Handbook (EMHB) and Other Tools (Mr. Yutaka Ogura, ECCJ): Introduction to the EMHB and the related thermal and electrical technical handbooks, together with the versions in each country, and the EE&C Manuals that are being prepared in each ASEAN country.

- Updates on the Development of PROMEEC EM Tools:

A. Technical Directory (TD) for Industries and Buildings

B. In-house Database (IHDB) for Industries and Buildings

C. ASEAN Energy Management Service to Utilize The Existing Implementing Organizations (Ms. Maureen Balamiento, ACE): Introduction to the TD types and cases, access methods, IHDB by industry and buildings types and activity situation, revised and corrected cases, introduction to the ASEAN Energy Management Service and request for participation and usage, and introduction to registrations which currently comprise 17 institutions registered as implementing organizations.

D. Harmonization of ISO 50001 and EMHB (Mr. Yutaka Ogura, ECCJ): While explaining an overview of ISO 50001 (Energy Management) that was established and published in June of the current year, a comparison was given with the frameworks of EMHB, AEMAS, and the Japanese Act on the Rational Use of Energy. In addition to having many similar points, the practicality using the EMHB Key Step Approach and the superiority of the two-way Top-down & Bottom-up activity observance was also conveyed, and it was explained that ISO 50001 should be easily acquired if it is based on the EMHB.

(4) Session 3: Awareness and Financing

<1> Situation of Awareness Raising of the host country: Because this was included in Mr. Zaini Abdul Wahab's previous explanation, it has been omitted here.

<2> Financial Support System in ASEAN (Ms. Maureen Balamiento, ACE): Introduction using tables of the potential funding sources in the main ASEAN countries.

<3> Situation of Environmental Awareness and Financial Support System in Japan (Mr. Yutaka Ogura, ECCJ): Introduction to the activities relating to awareness-raising such as the Eco-point System and Top Runner Program held as energy conservation measures in Japan originating from the global warming overall situation and resource exhaustion problems, and explanation of the Japanese energy conservation financial assistance system and the JICA Two-Step Loan.

<4> Japanese Experience of Energy Saving after Huge Disaster (Mr. Yutaka Ogura, ECCJ): Introduction to the details and results of electricity-saving measures implemented in Tokyo due to the Great East Japan Earthquake, including the results of measures implemented by ECCJ and in his home.

(8) Q&As

<1> What is the ASEAN Energy Management Service? -> Because this question was asked after the initial PROMEEC introduction, a specific introduction to the contents had not yet been given, and the purpose was explained by Ms. Maureen Balamiento.

(9) Breakdown of Participants: At the initial lecture of Mr. Yutaka Ogura, when we asked for details about the parent organizations of the approximately 30 perticipants, we were told there were 3 persons from industry, 1 person from building, many people from universities and institutes, 3 persons from consulting, and 5 persons from government ministries. Details were clarified later to the following.

<1> National University-related persons: 18 persons from 11 universities

<2> Public Works Dept., Ministry of Works: 7 persons from 5 locations

<3> ESCO Companies: 3 persons from 3 companies
<4> Manufacturer (Semi-conductors): 1 person
<5> Hotel persons: 1 person
<6> Consultants: 3 persons
<7> Ministry of Energy, Green Technology and Water: 7 persons
<8> ACE: 1 person
<9> ECCJ: 2 persons

(10) Responses and Issues at the ISW, etc.

<1> While the preparations and implementation were excellent, we were surprised that more than half of the participants were university-related. Apparently, the high-priority promotion of energy management starting from government-related buildings resulted in the dispatch of persons from major universities, who listened to the lectures with interest.
<2> When the participants were questioned before the first lecture by ECCJ, it was found that they had almost no knowledge of the projects and the vocabulary used in each of the PROMEEC Projects, EMHB, MTPEC, 5S, and benchmarks.
<3> Note that because the persons related to the former PTM (currently the GreenTech Center) were attending an AEMAS Training Course on this day, they could not attend the Seminar. (When we visited the GreenTech Center on the third day, we found that AEMAS Training had indeed been implemented for around 30 persons.)

2. Training of Utilizing the Energy Management Handbook

As described previously, this was the first seminar to be held since the host organization was changed from the former PTM to the Ministry of Energy, Green Technology and Water (MEGTW, or KeTTHA in the Malay language), and in addition, some of the participants were taking part for the first time. However, all participants enthusiastically and earnestly listened to the lecture. The participants on the second day were also basically the same persons as on the first day. The number of participants (excluding the persons from ECCJ, ACE, and the six persons from the host organization Ministry of Energy, Green Technology and Water (KeTTHA)) was 31 persons. By the number of participants, three groups were formed for the Group Work activities on this day.
As with the previously described Myanmar activity, the contents of the second day were as follows.

<1> In the morning, the explanation of the In-house Database and Technical Directory that was formerly carried out was omitted (since a summary explanation was given during the seminar on the first day), and this time was given over to an explanation of the Energy Management Handbook.
<2> Formerly, the Energy Management Handbook was explained almost page-by-page, but because this book can be downloaded from the ACE and ECCJ websites, the explanation was given by PowerPoint slides showing the key points.
<3> The afternoon was mainly spent for Group Work, and the Group Work that was formerly carried out on the first day was discontinued and unified to the Group Work on the second day.

Recently in Malaysia the drafting of a new EE&C Law has started, but according to the Electrical Energy Regulations that were previously established in 2008, buildings and factories consuming more than a fixed amount of energy (3 million kWh in consecutive six months) must appoint an Electrical Energy Manager. Government buildings have been targeted first (with the meaning of showing an

example?), and next many national universities will become subject to the regulations. This is the reason why many university and government-related persons participated this time. The next-largest numbers of participants were from ESCO companies and consultants. In other words, this was the first time for most of the participants to take part in the Training. Accordingly, in consideration of the following points, explanations of the Energy Management Handbook and Group Work were implemented.

<1> Recognizing that there were people hearing the Energy Management Handbook explanation for the first time, we restricted ourselves to carefully explain the basic items (including past developments).

<2> Among the items, we explained in detail about the core Key Step Approach methodology. Further, in consideration of the timing, it was necessary to allocate enough time for giving a comparison with ISO 50001.

<3> The two cases for the Group Work were quickly decided and copies were prepared. In addition, an opportunity was given to enable the participants to study the materials in advance.

<4> A considerable number of participants took part in the Group Work, and sufficiently active training in the discussions and summarizing was realized.

Although the characteristics of the current fiscal year are as described above, the details (Program) of the Training that was actually implemented are shown in Attached Materials III-2-2-2.
The following describes the results of implementing each item on the day.

(1) Lecture: A lecture was given relating to the overview and characteristics of the Energy Management Handbook and its detailed contents and key guidelines by Mr. Ogawa.
All participants enthusiastically listened to the explanation. In particular, regarding the Key Step Approach, a sheet of schematic figure was separately distributed and a detailed description was given. The Q&A immediately afterwards was as follows.

Question: “Although I am working in a university, the appointment of an Energy Manager following the New EE&C Act in future will not suit the situations. In these cases, the activities afterwards will become difficult.”

Answer: (Given by Mr. Zaini Abdul Wahab of KeTTHA)
“The government and laws only determine the fundamental policies. The actual methods used afterwards should be determined using the own policies of individual institutions. The appointment of Energy Managers is carried out by the newly established SEDA (Sustainable Energy Development Authority of Malaysia), but if you have any opinions regarding this, if you can submit them by document I will handle them.”

(2) Workshop (Group Activities): Group Activity Guidance (Mr. Fumio Ogawa)

<1> Introduction to the energy conservation activities incorporated in the case studies of the following two companies.

1) Green Energy Office (GEO) (Best Practice case from Malaysia)
2) Glaxo Wellcome Manufacturing Pte. (GWM) (Factory Best Practice case from Singapore)
Regarding both these cases, the moderator Mr. Zaini Abdul Wahab kindly gave summary explanations.

<2> Group Work Experience
At the start of the Group Work, an explanation was given by ECCJ of the basic facts. The

analysis and assessment of cases were to use the Energy Management Handbook for the standards as far as possible, and discussions were held regarding whether the necessary items had been implemented without omissions.

Discussions were summarized and the following items were finally presented (as in the past).

1) Good points of the energy conservation activities based on the contents introduced above, and
2) Advice for improvement plans that could be implemented in the future.

The participants were divided into three groups according to the number of participants. The number of persons in each group and the selected cases were as follows. The division into groups was carried out by KeTTHA following the method of mixing people with different backgrounds.

Group No.	No. of Persons	Selected Case
1	12 persons	GEO
2	10 persons	GEO
3	9 persons	GWM

Although the time for discussions was only one and half hours, each group discussed the main points well, and prepared the summary and presentation. All the groups used a PC to adequately summarize the key points in PowerPoint and give the presentation. We could appreciate the high capabilities of the participants. The presenter of each group was as shown below.

Group 1 Mr. Ghazali Talib (ESCO)
Group 2 Mr. Dain Saian (University)
Group 3 Mr. Faiz Bin Fadzil (KeTTHA)

Each group faithfully followed the Key Step Approach of the Energy Management Handbook to arrange the contents of each case study, which was highly outstanding. However, Group 1 presentation had insufficient distinction between the good points and the advice for the future parts, so guidance and instructions were given to them.

<3> Comments from ECCJ Experts

The comments from ECCJ are summarized as follows.

- We were deeply impressed by the substantial discussions with participation by all members and the appropriateness of the content summarizing and presentation. Although the time was also limited, the fact that the participants skillfully incorporated the content into PowerPoint materials was very good.
- We were highly encouraged to be able to confirm that the EM Handbook methodology, particularly of the Key Step Approach which was explained in the morning on the day, had been well assimilated and was in a condition where it could be utilized.
- Although the participants on the day were mainly persons from government agencies and universities, each person will eventually reach a position of giving guidance to the private sectors in the future. We hope that participants will be able to spread this methodology to realize good results. Concerning the SGA, we believe that it will be effective if the participants can hold this type of Workshop and give guidance in Group Work.

(3) Comments from ACE

Comments were given including thanks by Ms. Maureen Balamiento.

(4) Comments from Host Country

The following comments were received from Mr. Zaini Abdul Wahab.

- All the participants were specially selected. Concerning the mailing of announcement of these activities, the order of priority was considered. Although we approached government-building related persons, university-related persons, and additionally persons from general companies, we were forced to close the applications partway, due to limit of number of participants acceptable.
- In any event, it is necessary to implement the capacity building approach. The holding of the activities this time is one part of this.
- In the future, KeTTHA intends to continue to provide assistance for EE&C promotion. We will strive hard to implement activities.

(5) Comments by Participants

Although the contents of the activities in the two-day period were good this time, if I may express a wish I believe we could have gained a deeper understanding if we had been given the opportunity to read the Energy Management Handbook beforehand.

(6) Awarding of Certificates

Because time was pressing due to limitations caused by the time of the flights for the faraway participants to return home, the certificates were handed to the participants as they left the venue.

(7) Closing Remarks by Mr. Anbalagank

Finally, remarks were given by Mr. Anbalagank (Undersecretary, International Relations Division, KeTTHA) representing the host, to close the entire Seminar. The detailed contents are as described below.

- I am pleased that such a highly substantial Program could be accomplished thanks to METI, ECCJ, ACE, and all the participants today.
- The various tools of the ASEAN EM System, consisting of the TD, IHDB, EM Handbook and ASEAN Energy Management System, are highly effective items. I think that all the participants well understood the Seminar and Training held this time.
- Regarding the SGA Group Work, I was pleased to see how very well all the participants did.
- In Malaysia, activities including the EE&C legislation are anticipated in the future. I hope that the lessons learned today can be fully applied.

(8) Breakdown of Participants

The details of the 31 participants are as shown below. Participants related to government agencies and from universities were the majority. Further, out of the seven persons from the host organization side (KeTTHA) this time, only Mr. Faiz Bin Fadzil participated in the Group Work.

<1> Ministry of Works, Public Work Department	7 persons
<2> Universities (11 universities)	16 persons
<3> ESCO	3 persons
<4> Consultants	3 persons
<5> Hotel	1 person

<6> Industry (Semiconductors) 1 person

4. Company Visits

Based on the Intensive Seminar-Workshop and the Training regarding the usage of the Energy Management Handbook held this time, three companies and organizations were selected as the companies wishing to utilize the tools including the Energy Management Handbook in their factory and building energy management activities and energy conservation promotion. However, in the end the supporting person in MOF described as (3) below suddenly became unavailable on the day in question, so that the two companies (1) and (2) were visited and interchanges were carried out on November 2. For details, refer to the Attached Materials- III-2-2-3.

(1) Green Tech Malaysia/Green Energy Office Building (Former PTM Company)
(2) Diamond Building
(3) Ministry of Finance

Attached Materials III-2-2-1: Agenda of Malaysia Intensive Seminar-Workshop

AGENDA: Intensive Seminar-Workshop
Promotion Of Energy Efficiency And Conservation (PROMEEC) - Energy Management
Under The SOME-METI Work Programme 2011-2012

Corus Hotel, **31 October 2011**

08:30 – 09:00	Registration
09:00 – 09:10	Welcome Remarks by Host country Mr. Badaruddin Mahyudin, Deputy Secretary General (Energy) Ministry of Energy, Green Technology and Water
09:10 – 09:20	Opening Statement by The Energy Conservation Center, Japan (Mr. Y. OGURA, ECCJ) Mr. Yutaka Ogura, General Manager, Energy Conservation Center, Japan
09:20 – 09:30	Opening Statement by Ms. Maureen Balamiento, Representative, ASEAN Centre for Energy
09.30 – 09:45	*COFFEE BREAK & GROUP PHOTO SESSION*
09:45 – 11:15	Session 1: PROMEEC Projects / PROMEEC EM Project: Outline & Achievements
09:45 – 10:45	Presentation by ACE & ECCJ 1) Outline and Achievements of PROMEEC Project (ACE) 2) Outline and Plan of PROMEEC (Energy Management) Project (ECCJ)
10:45 – 11:15	Presentation by Host country (Mr. Zaini Abdul Wahab) Realized Activities / Outstanding Improvement through PROMEEC Projects
11:15 – 15:30	Session 2: "ASEAN Energy Management System": Functions & Program
11:15 – 11:45	Presentation by ECCJ; Outline of Updated "ASEAN Energy Management System" (ECCJ)
11:45 – 12:30	Presentation by ECCJ and ACE Specific Functions and Program 1) ASEAN Award System of Best Practices in E.M. for Industry and Building - Outline, Results of 5th ASEAN Awards for 2010-2011 and Plan for 2011-2012 (ACE) 2) Information System - Information System to Disseminate Awarded Cases (ECCJ)
12:30 – 13:30	*LUNCH*
13:30 – 15:30	2) Information System (Continued) - Introduction of JASE-World (ECCJ) 3) Energy Management Tools - Energy Management Handbook and other tools (ECCJ) - In-house Database for Industries and Buildings (ACE) - Technical Directory for Industries and Buildings (ACE) - ASEAN Energy Management Service to Utilize The Existing Implementing Organizations (ACE) - Harmonization of ISO 50001 and EMHB (ECCJ)
15:30 – 15:45	Q&A
15:45 – 16:00	*COFFEE BREAK*
16:00 – 17:45	Session 3 : Awareness
16:00 – 16:15	1) Financial Support System in ASEAN (ACE)
16:15 – 16:45	2) Situation of Awareness Raising and Financial Support System in Japan (ECCJ)
16:45 – 17:00	3) Japanese Experience of Energy Saving after huge Disaster (ECCJ)
17:00 – 17:30	Q&A
	End of Intensive Seminar-Workshop

Attached Materials III-2-2-2: Agenda of Malaysia Training in EMHB

AGENDA

Training: Utilization of "Energy Management Handbook and Tools for ASEAN"

Promotion of Energy Efficiency and Conservation (PROMEEC) - Energy Management

Under The SOME-METI Work Programme 2011-2012

Corus Hotel, **01 November 2011**

09:00 – 12:30	Session 1: Seminar by ECCJ
09:00 – 10:30	Explanation by ECCJ: Outline of Energy Management Handbook for ASEAN (part 1) (ECCJ)
10.30 - 10:45	*COFFEE BREAK*
10:45 – 12:15	Outline of Energy Management Handbook for ASEAN (part 2) (ECCJ)
12:15 – 12:30	Q&A
12:30 – 13:30	*LUNCH*
13:30 – 17:10	Session 2: Workshop (Training for Small Group Activities) by KeTTHA/ECCJ
13:30 – 13:45	Guidance for Group Work by(ECCJ)
13:45 – 14:00	(Experience of Dissemination of ASEAN Award Best Practices of EM) Brief Introduction of Best Practices/EM in Building by KeTTHA (Case 1) GREEN ENERGY OFFICE (GEO), GREENTECH MALAYSIA, MALAYSIA
14:00 – 14:15	Brief Introduction of Best Practices/EM in Industry by KeTTHA (Case 2) GLAXO WELLCOME MANUFACTURING PTE LTD, SINGAPORE>
14:15 – 15:45	Group Work Based on Cases Studies 1 & 2 by ECCJ - Preparation for Group Work - Discussion by Groups: Guideline and Basic Plan to Improve Using "Energy Management Handbook"
15.45 - 16:00	*COFFEE BREAK*
16:00 – 16:30	Presentation by Participants: Results of Group Work for Cases Studies 1 & 2 (Participants)
16:30 – 16:45	Comments by ECCJ Experts and KeTTHA
16:45 – 17:00	Discussion on Plan of EM Training in Host Country moderated by FP
17:00 – 17:10	Closing Remarks by KeTTHA
	COMPLETION OF TRAINING

PROMEEC (Energy Management) Related Organization Visit: Malaysia (No.1)
Visit to GreenTech Malaysia/Green Energy Office

No.	Item	Details
1	Date and Time	November 2 (Wednesday) 10:00-12:45
2	Company visited	GEO (Green Energy Office), GreenTech Malaysia
3	Persons met	Mr. Muhammad Fendi Mustafa: Research Officer, Energy, Manufacturing, Building & ICT
4	Accompanied Persons (MEGTW)	- Mr. Mohd Quyyum Bin Ab Rahman: Assistant Secretary, Sustainable Energy Division, Energy Sector - Mr. Faiz Bin Fadzil: Principal Assistant Secretary, Sustainable Energy Division, Energy Sector
5	Visitors (ACE, ECCJ)	- Ms. Maureen Balamiento (ACE, IT Expert) - Mr. Yutaka Ogura (ECCJ, Technical Cooperation Department, General Manager) - Mr. Fumio Ogawa (ECCJ, Technical Cooperation Department, Technical Expert)

6. Overview of Visited Company

(1) Although GEO was awarded 2nd Runner-up in the Small & Medium Building category at the 5th ASEAN Award of Best Practice in Energy Management for Industries and Buildings in the 2010-2011, it had once again requested this Advisory Visit, so the company was visited.

(2) GEO uses the building that was formerly the PTM (Malaysian Energy Center), which was previously known as the ZEO (Zero Energy Office) building. Although the intention was that power generation using PV (Photo Voltaic) would offset the energy consumption amount and make it zero, the initially anticipated energy consumption amount of 35kWh/m^2/year was not obtained. This was revised to 65kWh/m^2/year, after V power generation is subtracted, which means the energy consumption is changed to 30-35kWh/m^2/year. In July 2009, it became Malaysia's first Green Building.

(3) This former PTM building was also used as the venue for the PROMEEC EM Project Intensive Seminar-Workshop and Training Course held two years ago, so ECCJ was visiting for the first time for two years. During the visit, AEMAS training was being held, and the lecturer was Dr. Zainuddin Manan (UTM: Malaysia Technical University), the Malaysian representative member of the BOJ for the ASEAN Awards EM, who has frequently visited Japan for the Research Forum. We were also informed that the Smart Community Forum, jointly held by Malaysia and NEDO and the Smart Community Association of Japan, is carried out in this building.

7. Hearing and Discussion Details

(1) Hearing Details

<1> A detailed explanation was given of the energy conservation technologies, facilities, and structure as a zero energy building model.

<2> During daytime, natural lighting is used as far as possible by utilizing reflective panels and white walls so that artificial lighting is hardly used. In addition, T5 is used for the fluorescent lighting, and many LED task lights (exclusive desktop lamps) are incorporated.

<3> Cooling by floor slab cooling and chilled water thermal energy storage is implemented, and present sensors are installed. Four types of solar panels are installed on the roof. Three of the solar panel types are made by Japanese companies (Mitsubishi Electric, Sharp, and Kaneka). In

addition, BEMS had also been introduced, but it was a Scandinavian-made system called TAC.

<4> In the future they intend to install fuel cells in the Control Room and an electric automobile battery charger in the parking lot.

(2) Explanations, Opinions, and Proposals made by ECCJ, including the On-site Inspections

<1> As this is a model building, many types of enterprising technologies and equipment have been introduced and are proving effective. However, it was felt that there may still be room for improvement in the activities and results from an energy management point of view. Apparently there were 60 people working in this office, but rather than conducting activities only for researchers, we felt there was a need to implement energy conservation activities that involve all the employees.

<2> Particularly since the building is specifically claiming to be a Green Energy Office, we suggested that PR should be carried out such as by showing the electric power consumption and power generation amount current values and recent data on a monitor screen in a location just inside the entrance.

(3) Response of Visited Company

<1> Apart from greetings from two old acquaintances, support was provided only by Mr. Muhammad Fendi Mustafa, but apparently the company was also carrying out training activities at the same time.

8. Overview of On-site Inspection

<1> In the working zones inside the building, there was no problem with the illumination provided by the natural light, even using little artificial lighting. We could exchange greetings at the office with Mr. Zairin and Mr. Hishamudin our acquaintances who are from the time when the company was known as PTM. We could also confirm the present sensors on the stairs and in the toilets, and the PV solar panels on the roof.

PROMEEC (Energy Management) Related Organization Visit: Malaysia (No.2)

Visit to Energy Commission / Diamond Building

No.	Item	Details
1	Date and Time	November 2 (Wednesday) 14:00-16:00
2	Company visited	Suruhanjaya Tenaga (Energy Commission)/Diamond Building (Type of government institution established for the purpose of energy conservation promotion)
3	Persons met	- Ms. Hamidah binti Abdul Rashid (Head Administration & Facilities Management, Energy Commission) - Mr. Zulkhibri, (Staff, Administration & Facilities Management, EC) - Mr. Johari Jenon (Building Management Manager, Putra Perdana Development Sdn Bhd)
4	Accompanying Persons (MEGTW)	- Mr. Faiz Bin Fadzil (Principal Assistant Secretary, Sustainable Energy Division, Energy Sector) - Mr. Mohd Quyyum B. Ab Rahman (Assistant Secretary, Sustainable Energy Division, Energy Sector)
5	Visitors (ACE, ECCJ)	- Ms. Maureen Balamiento (ACE, IT Specialist) - Mr. Yutaka Ogura (ECCJ, Technical Cooperation Department, General Manager) - Mr. Fumio Ogawa (ECCJ, Technical Cooperation Department, Technical Expert)

6. Overview of Visited Company

The visited company was the diamond-shaped building known as the Diamond Building which is being used exclusively by the Suruhanjaya Tenaga (Energy Commission).

First we watched a corporate video in the small theater-type lecture hall called the Theatrette. According to this video, the overview of the Energy Commission and the building were as follows.

(1) Energy Commission

In 2001, the Energy Commission Act was established and the Energy Commission was created as the government institution undertaking the role of energy conservation promotion. Actual activities started from January 2002. The Commission promotes awareness of EE&C among energy consuming companies. In addition to energy, the Commission is also in charge of water conservation and environmental considerations.

(2) Diamond Building

This building also undertakes the role of a showcase. As for BEI (Building Energy Index), buildings in Malaysia commonly have values around 210 kWh/m^2/yr, but this building was planned with a target of 85 kWh/m^2/yr. The actual result including the photovoltaic power generation realizes 65 kWh/m^2/yr. (The value excluding photovoltaic power generation is around 75 kWh/m^2/yr, which is still lower than the target.) The main data is as follows.

- Construction Start September 2007
- Completion July 2010
- Gross Floor Area 14,230 m^2
- Net Floor Area 11,473 m^2 (Floor Occupancy 75%)
- Air Conditioned Area 3,600 m^2
- No. of People Working 151 (Capacity 250)
- No. of Stories 1.5 + 8
- Windows Single glazing

- PV Power Generation 10,000 kWh
- Construction Cost RM 64.6 million (USD 20.56 million)

7. Hearing and Discussion Details

(1) Hearing Details

This building is also one of the demonstration projects of the Malaysian EE&C activities. The planning and construction took place after the LEO (Low Energy Office、BEI Target 100) and GEO (Green Energy Office, Target BEI 65), and different from the preceding two buildings, various factors were determined with consideration to cost performance as an actual office building model. It has a meaning of a showcase of low-carbon building. (However, numerical CO_2 reduction was achieved through energy conservation and was not the initial concern.) Because the building was completed using greenification concepts, it is sometimes praised as "A Gem in Putrajaya".

Energy consumption in the building is managed by the BAS (Building Automation System). (For example, the air conditioner setting temperature is 24°C, but temperature distribution is being generated inside the building.) In addition, although various devices are applied, the following Seven Green Key Factors are named as the seven items making up the characteristics of this building.

- Photovoltaic Electricity Generation

  The capacity is 71.4 kW. The solar panels are made by Solar Phoenix of the US using cadmium telluride as the material. (These are different from the products made by Japanese companies which use silicon.)

  (In a difference from the case of the GEO building, there is no need to carry out regular cleaning, due to the self-cleaning function.)
- Rooftop Trough

  Rainwater falling on the roof is collected using the gutters.
- Insulated Concrete Floor

  There is a 100 mm thick insulation layer below the roof concrete and in the ceilings.
- Floor Slab Cooling

  Chilled water is passed through piping in the concrete parts of each floor to carry out cooling. This chilled water is supplied commonly to this district only during daytime (10:00-18:00) from the Putrajaya Service Center, Gas District Company (GDC)
- Rainwater Harvesting

  The rainwater collected by the gutters as described above is stored in four tanks (Total capacity 10,000 L) and effectively utilized.
- Greenery on the Roof

  Short grass is being grown on the roof, and the people in charge inspect and maintain it when necessary.
- Dome for Daylight

  The core of the building has an atrium-like construction that allows the natural light entering from above to pass through the central part and be utilized for lighting each floor.

  While around 80% of the building's heat is accumulated in the floor concrete on each storey due to the utilization of the floor slab cooling method described above, the air conditioning in each room is carried out using Air Handling Units (AHU) which utilize pre-cooled air at approximately 20°C that is taken in from the roof.

In addition, education is also being carried out to enhance the awareness of employees.

Because defectswere found after the start of use, efforts were initially made to enable these problem places to be normally used. For example, although light sensors were arranged in order to automatically switch on lighting when the illumination by natural light was insufficient, they did not work as intended. It is planned to reconsider the sensor installation locations. (Motion sensors for detecting the movement of people have not yet been installed.)

(2) Explanations, Opinions, and Proposals made by ECCJ, including the On-site Inspections

ECCJ recommended the company to make a submission to the ASEAN Energy Awards. The current situation is depending on new and highly effective facilities to achieve energy conservation actual results. However, in order to receive an ASEAN Energy Award it will be necessary also to implement various activities from the viewpoint of energy management, and we advised the company that it would be better to make the submission after accumulating results from this point of view.

(3) Response of Visited Company

Based on the discussions this time, the company is also considering applying for the ASEAN Energy Awards.

8. Overview of the On-site Inspections

We toured the site. Only two of the four elevators were working. The ceilings are quite low. The room temperatures and energy usage amounts measured using the BAS were displayed on panels on the walls on the corridor on each floor. (This is very good from the point of view of sharing information and raising awareness.)

The exterior walls of the building are overhanging rather than being vertical, in a structure that allows the sunlight entering from the windows to contribute to the lighting while enabling the heat to escape to the upper part of the room. On the other hand, regarding the lighting from the central dome area, a blind (shade) is provided in the upper part for use when the weather is sunny. (When we visited it was rainy, so the blind was fully open.)

Additionally, between last year and this year the building received awards from many organizations, including the Green Building Index, BCA Awards, and Green Mark Singapore, which are displayed on the first floor.

III-2-3. Lao PDR

This time, following a proposal by Lao PDR at the Inception Workshop, The Seminar-Workshop and Training were held in Savannakhet City, which lies on the Mekong River sandwiched between Thailand and Vietnam in the central part of Lao PDR. The Phonepaseud Hotel in Savannakhet was the venue, while the Lam Plastic Manufacturing Company in this citywas visited for the Advisory Visit. The Focal Point, Mr. Bouathep Malaykham (Director of Electric Power Management Division, Department of Electricity, Ministry of Energy and Mines) and his subordinates, Mr. Viengsay Chantha and Mr. Thammanoune Nakhavith, drove for six hours by car from the capital, Vientiane, to join us at the location. Note that Savannakhet is reached by propeller plane from Bangkok, Thailand, in one and half hours. (The flight complement is 60 persons, but on both the back and forth journeys there were 15-20 passengers.) Although Savannakhet is ostensibly an international airport, it was an unusually local type of international airport. This area forms the pivot of the east-west economic corridor linking Vietnam, Lao PDR, Thailand and Myanmar, so it is expected to realize large economic growth in the future.

2. Intensive Seminar-Workshop

The program of the Intensive Seminar-Workshop on the first day is shown in Attached Materials III-2-3-1.

(1) Welcoming remarks: Welcoming addresses were made to the cooperating organizations by Mr. Poukhong Nammachack, Director of Energy and Mines Department in Savannakhet Province, Mr. Christpher Zamora of ACE, and Mr. Yutaka Ogura of ECCJ, and the significance of energy conservation promotion and the PROMEEC/EM projects and their activities and developments in the future were introduced. An overview of each greeting is shown below.

<1> Mr. Poukhong Nammachack: Although the greeting was given in Laotian without interpretation so that the detailed content is not known, we understand that he expressed thanks for the financial and technical support from Japan, as well as speaking on the importance of tackling energy conservation due to the expected higher level of growth in the future in Savannakhet Province, which has the largest area in Lao PDR and the largest population, and also includes many industries and factories.

<2> In the ECCJ greeting, thanks were given particularly for the aid given by each country for the Great East Japan Earthquake and tidal wave which had occurred earlier in the year. Mention was made that introductions would be made later to points learned from the response to the electricity shortage caused by the nuclear power station accident this time. In addition, in this eighth year of the PROMEEC EM, although Lao PDR was continuing activities after a two-year break, a request was made for them to implement the Phase-3 activities using a more independent framework.

<3> ACE expressed thanks for the support from METI and the cooperation of ECCJ, together with the cooperation of the FP in Lao PDR and related persons in Savannakhet. The speaker emphasized the importance of determining targets, promoting energy efficiency, and developing energy management tools in order to make energy security sustainable, and mentioned that the current year’s EM project had already been implemented in Myanmar and Malaysia, and would be carried out in Lao PDR this time and in Thailand the following week.

(2) Session 1: PROMEEC Projects/PROMEEC EM Project: Outline & Achievements; Introduction to the overall PROMEEC Project and the EM (Energy Management System

Improvement) Project

<1> Outline and Achievements of PROMEEC Project (Mr. Zamora, ACE): Introduction to the EE&C activities in the APAEC 2010-2015 Program, to the activity situation and number of participants until now in the three PROMEEC Projects, and to the activities in the current year.

<2> Outline and Plan of PROMEEC (Energy Management) Project (Mr. Yutaka Ogura, ECCJ): Introduction to the EM Project in current year project plan

<3> Realized Activities/Outstanding Improvement through PROMEEC Projects in Lao PDR (Mr. Bouathep, MEM): Explanation of the actual results of implementing the three PROMEEC projects and the situation of energy conservation promotion.

(3) Session 2: Introductions to the Functions and Programs of the ASEAN Energy Management System

<1> Outline of Updated "ASEAN Energy Management System" (Mr. Yutaka Ogura, ECCJ): Introduction to the issues and items to be implemented in the system in the current fiscal year, together with requests for the application and provision of information data.

<2> Specific Functions and Program

A) ASEAN Award System of Best Practices in EM for Industry and Building

- Outline, Results of ASEAN Awards for 2010-2011 and Plan for 2011-2012 (Mr. Zamora, ACE): Introduction to the details and judging results by the BOJ of the 24 applications submitted in the EM sector this year, together with details of future issues in the Buildings sector.

B) Information System

- Information Analyses to Ease Dissemination of Awarded Cases (Mr. Takashi Sato, ECCJ): Explanation of plan to extract and share characteristics that can be read from the current year's application contents, and introduction to characteristics of Best Practice cases in the three sectors.

- Introduction of JASE-World (Mr. Yutaka Ogura, ECCJ): In relation to the e-Directory for Technologies & Equipment, introduction to JASE-World and to the methods of utilizing the technical directory.

C) Energy Management Tools

- Energy Management Handbook (EMHB) and Other Tools (Mr. Yutaka Ogura, ECCJ): Introduction to the EMHB and the related thermal and electrical technical handbooks, together with the versions in each country, and the EE&C Manuals that are being prepared in each ASEAN country.

- Updates on the Development of PROMEEC EM Tools:

A. Technical Directory (TD) for Industries and Buildings

B. In-house Database (IHDB) for Industries and Buildings

C. ASEAN Energy Management Service to Utilize The Existing Implementing Organizations (Mr. Zamora, ACE): Introduction to the TD types and examples, access methods, IHDB by industry and building types and activity situation, revised and corrected case studies, introduction to the ASEAN Energy Management Service and request for participation and usage, and introduction to registrations which currently comprise 17 institutions registered as implementing organizations.

(4) Session 3: Awareness and Financing

<1> Financial Support System in ASEAN (Mr. Zamora, ACE): Introduction using tables of the potential funding sources in the main ASEAN countries.

Note that regarding the following contents planned for the first day, but Laotian interpreting from the English language materials took twice time as much as usual explanation. In addition, due to the circumstances in Lao PDR the activities had to be completed by 4 pm. Even making efforts to give explanations in the most effective ways, it was not possible to finish by 4 pm, and for the following activities we requested the participants to refer to the distributed materials.

Session 2: Introductions to the Functions and Programs of the ASEAN Energy Management System

<1> Harmonization of ISO 50001 and EMHB (Mr. Yutaka Ogura, ECCJ)

Session 3: Awareness and Financing；

<1> Situation of Environmental Awareness and Financial Support System in Japan (Mr. Yutaka Ogura, ECCJ)

<2> Japanese Experience of Energy Saving after Huge Disaster (Mr. Yutaka Ogura, ECCJ)

(11) Breakdown of Participants

<1> Ministry of Energy and Mines: 3 persons
<2> Department of Energy and Mines in Savannakhet Province: 5 persons
<3> Department of Agriculture and Forest in Savannakhet Province: 1 person
<4> Department of Transportation in Savannakhet Province: 1 person
<5> Department of Post in Savannakhet Province: 1 person
<6> Department of Planning and Investment in Savannakhet Province: 1 person
<7> Department of Finance in Savannakhet Province: 1 person
<8> Justice in Savannakhet Province: 1 person
<9> EDL (Electricite Du Laos), Head Office in Vientiane: 3 persons
<10> EDL (Electricite Du Laos) in Savannakhet Province: 1 person
<11> Electrical Construction and Installation (ECI, State Company): 1 person
<12> Electricity Defence in Savannakhet: 1 person
<13> Savanhkham Electrical Company: 1 person
<14> Doung Deaune Electrical Installation Company: 1 person
<15> KPS Electrical Installation Company., Ltd.: 1 person
<16> Savannakhet University: 1 person
<17> Teacher University in Savannakhet Province: 1 person
<18> Vocational School in Savannakhet Province: 1 person
<19> Savannakhet Hospital: 2 persons
<20> Daosavanh Hotel: 1 person
<21> Roungthip Hotel: 1 person
<22> Lao Steel: 1 person
<23> Biomass Factory: 1 person
<24> Ice and Drinking Water Factory: 1 person
<25> Nail Factory: 1 person
<26> Salt Produce Factory: 1 person
<27> Sugar Factory: 2 persons

<28> Plastic Bag Company: 1 persons
<29> Craft Industry Co. Ltd: 1 person
<30> SNP Factory: 1 person
<31> Kolao Company: 1 person
<32> ACE: 1 person
<33> ECCJ: 3 persons

(12) Responses and Issues at the ISW, etc.

<1> Although initially the FP said that 50 people would gather for the ISW, when we arrived at Savannakhet the way from the airport to the hotel and hotel area was quite rural, and we could not see any factories or industry in the vicinity. We were therefore concerned whether so many people would attend, but in fact 45 persons including the organizing party gathered for the ISW. When ECCJ confirmed the breakdown of the participants before giving our initial explanation, we found there were 11 people related to industry and factories, 12 people from buildings, hotels and commercial facilities, no persons related to engineering, consultant or ESCO companies, 12 persons from government, local and public institutions, and other persons related to electric power. As can be seen from the details above, an extremely wide range of people had gathered. When we asked why, we found that Savannakhet has an important place in the east-west economic corridor linking Vietnam, Lao PDR, Thailand, and Myanmar, and is an important city that is expected to develop in the future.

<2> This was the first time to hold the PROMEEC/EM in Savannakhet, and when we confirmed with the participants, we found that no-one knew anything about the PROMEEC Projects, ACE, the ASEAN Awards, or SGA. Although one person indicated that they knew something of energy audits and one knew about energy management, it appeared that there were people who would not raise their hands even if they did know. PDCA also initially said that none of the participants knew about the subjects, but afterwards they found that when speaking in Laotian quite a few of the participants had some knowledge. Although all the participants kindly listened with great enthusiasm, unfortunately there was insufficient time to hold Q&As. Even though the participants may not have adequate experience or knowledge of energy conservation, it is thought that the holding of this type of seminar in major regional cities together with the FP will have great significance for the dissemination of the activities.

<3> However, few participants could understand English. Although the explanations by ECCJ and ACE were alternately interpreted by Mr. Bouathep and Mr. Viengsay, it is believed that if possible the English materials should be translated to Laotian beforehand and distributed to the participants to make the ISW more effective. Note that the Laotian version of the Energy Management Handbook has already been completed, and support was provided to allow its distribution to each participant this time.

2. Training of Utilizing the Energy Management Handbook

The number of participants on the first day was 45 persons including the people from the host organization, and the participants on the second day were also basically the same persons as on the first day. All the participants enthusiastically and earnestly listened to the lecture. The number of participants (excluding the persons from ECCJ, ACE, and the three persons from the host organization Department of Energy and Mines) was 33 persons. By grouping the participants, three groups were formed for the Group Work activities on this day.

As with the previously described Myanmar and Malaysia activity details, the contents of the second day were as follows.

<1> In the morning, the explanation of the In-house Database and Technical Directory that was formerly carried out was omitted (since a summary explanation was given during the seminar on the first day), and an explanation of the Energy Management Handbook was given.

<2> Formerly, the Energy Management Handbook was explained almost page-by-page, but the Laotian version of this book was distributed to the participants for use as materials. Further, because the book can be downloaded from the ACE and ECCJ websites, the explanation was given by PowerPoint slides showing the key points.

<3> The afternoon was mainly spent for Group Work, and the Group Work that was formerly carried out on the first day was discontinued and unified to the Group Work on the second day.

In the Lao PDR, this was the first time for a PROMEEC Seminar to be held in a region administered by the local office of the Department of Energy and Mines, and for most of the participants this was their first time to participate in the Training. Accordingly, the Energy Management Handbook was explained and Group Work was implemented while giving consideration to the following points.

<1> Recognizing that there were people hearing the Energy Handbook explanation for the first time, we restricted ourselves to carefully explain the basic items (including past developments).

<2> Among the items, we explained in detail about the core Key Step Approach methodology. Further, in consideration of the timing, it was necessary to allocate enough time for giving a comparison with ISO 50001.

<3> The two cases for the Group Work were quickly decided and copies were prepared, and additionally a summary explanation of the contents was given to the participants just before.

<4> A considerable number of participants took part in the Group Work, and sufficiently active training in discussions and the summary was realized.

Although the characteristics of the current fiscal year are as described above, the details (Program) of the Training that was actually implemented is shown in Attached Materials III-2-3-2.

The following describes the results of each item on the day.

(1) Lecture: A lecture was given relating to the overview and characteristics of the Energy Management Handbook and its detailed contents and key guidelines. (Mr. Fumio Ogawa ECCJ) All participants enthusiastically listened to the explanation. In particular, regarding the Key Step Approach, a detailed description was given referring to a figure from the Laotian version of the Handbook which had been distributed.

(2) Workshop (Group Activities): Explanation of methods of conducting Group Activities (Mr. Takashi Sato, ECCJ)

<1> Introduction of the energy conservation activities in the case studies of following two

companies.

A) MMLDC Foundation (Small-scale building Best Practice case study of a training company from the Philippines)

B) Toshiba Information Equipment (TIP) (Factory Best Practice case study from the Philippines)

Regarding both these cases, Mr. Christopher Zamora of ACE kindly gave summary explanations.

<2> Group Work

At the start of the Group Work, an explanation was given by ECCJ of the basic facts. The analysis and assessment of cases were to use the Energy Management Handbook for the standards as far as possible, and discussions were held regarding whether the necessary items had been implemented without omissions.

Discussions were summarized and the following items were finally presented (as in the past).

A) Good points of the energy conservation activities based on the contents introduced above, and

B) Advice for improvement plans that could be implemented in the future.

The participants were divided into three groups. The number of persons in each group and the selected cases were as follows.

The division into groups was carried out by Mr. Bouathep following the method of mixing people with different backgrounds.

Group No.	No. of Persons	Selected Case	Group Name
1	11 persons	MMLDC	Arian
2	10 persons	TIP	Green
3	10 persons	TIP	Energy Efficiency

Although the time for discussions was only one and half hours, each group discussed the main points well, and prepared the summary and presentation. Further, the host organization had several persons who had experience of previously participating in Training courses such as MTPEC, and these persons gave advice to each Group discussion in Laotian. The explanation was given while referring to the Key Step Approach pages in the Laotian version of the Energy Management Handbook. Each of the groups well summarized the key points on a large sheet of white paper for giving their presentations.

The presentations were given in Laotian, and the key points were explained in English by Mr. Bouathep. Each group faithfully followed the Key Step Approach of the Energy Management Handbook to arrange the contents of each case study. However, there were differences by group in comments to the points for improvement.

<3> Comments from ECCJ Experts

A summary of the comments from ECCJ is as follows.

- Although the Group (Small Group) Activities were carried out mostly by participants with no previous experience, the discussions, summarizing, and presentations were carried out appropriately as though it was not their first time.
- We were highly encouraged to confirm the fact that the EM Handbook methodology, particularly of the Key Step Approach which was explained in the morning on the day, had been well assimilated and was in a condition where it could be utilized.
- We believe that the participants on the day could experience the Group Activities and could appreciate for themselves the effectiveness of the activities. After all the participants return to their workplaces, we hope they will incorporate SGA activities into their workplaces. Further,

we hope they will hold research forums in their workplaces and act as lecturers to teach others.

(3) Comments from ACE

Comments were given including thanks by Mr. Zamora.

(4) Comments from Host Country

Similarly, comments were given including thanks by Mr. Bouathep.

(5) Breakdown of participants

The breakdown of the 33 participants was as described below, and included various persons related to ministries and agencies, factories, buildings, and universities. Further, none of the three persons from the host organization participated in the Group Work, but instead they provided advice and instruction.

<1> Department of Energy and Mines/Savannakhet	5 persons
<2> Other Related Departments in Savannakhet	6 persons
<3> EDL (Lao PDR Electric Power Public Corporation, HQ and Branches)	4 persons
<4> Electric Power Company-related	4 persons
<5> University and School-related	3 persons
<6> Hotel and Hospital-related	3 persons
<7> Industry	8 persons

5. Company Visit

Based on the Intensive Seminar-Workshop and the Training regarding the usage of the Energy Management Handbook held this time, the Lam Plastic Manufacturing Company was selected as a company wishing to utilize the tools including the Energy Management Handbook in its factory and building energy management activities and energy conservation promotion, and this company was visited and interchanges were carried out on January 13. For details, refer to Attached Materials III-2-3-3.

Attached Materials III-2-3-1: Agenda of Lao PDR Intensive Seminar-Workshop

AGENDA
Intensive Seminar-Workshop
Promotion Of Energy Efficiency And Conservation (PROMEEC) - Energy Management
Under The SOME-METI Work Programme 2011-2012
Savannakhet, Lao PDR, January 11, 2012

08:30 – 08:50	Registration
08:50 – 09:00	Welcome Remarks by Mr. Poukhong Nammachack, Director, Savannakhet Province
09:00 – 09:10	Opening Statement by Mr. Ogura, The Energy Conservation Center, Japan (ECCJ)
09:10 – 09:20	Opening Statement by Mr. Zamora, ASEAN Centre for Energy (ACE)
09.20 – 09:58	*COFFEE BREAK & GROUP PHOTO SESSION*
09:58 – 11:24	Session 1: PROMEEC Projects / PROMEEC EM Project : Outline & Achievements
09:58 – 11:08	Presentation by ACE & ECCJ 1) Outline and Achievements of PROMEEC Project (ACE) 2) Outline and Plan of PROMEEC (Energy Management) Project (ECCJ)
11:08 – 11:24	Presentation by Host country Realized Activities / Outstanding Improvement through PROMEEC Projects
11:24 – 15:50	Session 2: "ASEAN Energy Management System": Functions & Program
11:24 – 11:50	Presentation by ECCJ Outline of Updated "ASEAN Energy Management System" (ECCJ)
12:00 – 13:00	*LUNCH*
13:05 – 14:55	Presentation by ECCJ and ACE Specific Functions and Program 1) ASEAN Award System of Best Practices in E.M. for Industry and Building - Outline, Results of 5th ASEAN Awards for 2010-2011 and Plan for 2011-2012 (ACE) 2) Information System - Information System to Disseminate Awarded Cases (ECCJ) - Introduction of JASE-World (ECCJ)
14:55 – 15:15	*COFFEE BREAK*
15:15 – 15:50	Presentation by ECCJ, and ACE 3) Energy Management Tools - Energy Management Handbook and other tools (ECCJ) - In-house Database for Industries and Buildings (ACE) - Technical Directory for Industries and Buildings (ACE) - ASEAN Energy Management Service to Utilize The Existing Implementing Organizations (ACE)
15:50 – 15:57	Session 3: Awareness & Finance
15:50 – 15:57	1) Financial Support System in ASEAN (ACE)
16:00	End of Intensive Seminar-Workshop
	- Harmonization of ISO 50001 and EMHB (ECCJ)
	2) Situation of Awareness Raising and Financial Support System in Japan (ECCJ)
	3) Japanese Experience of Energy Saving after huge Disaster (ECCJ)

Attached materials III-2-3-2: Agenda of Lao PDR Training in EMHB

AGENDA

Training : Utilization of "Energy Management Handbook and Tools for ASEAN"

Promotion of Energy Efficiency and Conservation (PROMEEC) - Energy Management

Under The SOME-METI Work Programme 2011-2012

Savannakhet, Lao PDR, January 12, 2012

08:40 – 12:00	Session 1: Seminar by ECCJ
08:40 – 10:00	Explanation by ECCJ: Outline of Energy Management Handbook for ASEAN (part 1) (ECCJ)
10.00 - 10:25	*COFFEE BREAK*
10:25 – 11:40	Outline of Energy Management Handbook for ASEAN (part 2) (ECCJ)
11:40 – 12:00	Guidance for Group Work by(ECCJ)
12:00 – 13:00	*LUNCH*
13:00 – 16:00	Session 2: Workshop (Training for Small Group Activities) by Host Country/ECCJ
13:00 – 13:20	(Experience of Dissemination of ASEAN Award Best Practices of EM) Brief Introduction of Best Practices /EM in Building by Host Country (Case 1) <2010-11 Best Practices/EM in Industry, XXX> (ACE)
13:20 – 13:40	Brief Introduction of Best Practices /EM in Industry by Host Country (Case 2) <2010-11Best Practices/EM in Building, XXX > (ACE)
13:40 – 15:10	Group Work Based on Cases Studies 1 & 2 by Host Country/ECCJ - Preparation for Group Work - Discussion by Groups: Guideline and Basic Plan to Improve Using "Energy Management Handbook"
15.10 - 15:24	*COFFEE BREAK*
15:24 – 16:00	Presentation by Participants: Results of Group Work for Cases Studies 1 & 2 (Participants)
16:00 – 16:05	Comments by ECCJ Experts and Host Country
16:05 – 16:10	Closing Remarks by Host Country
	COMPLETION OF TRAINING

PROMEEC (Energy Management) Related Organization Visit: Lao PDR
Visit to Lam Plastic Manufacturing Company

No.	Item	Details
1	Date and Time	January 13 (Friday) 08:45-11:00
2	Visited Company	Lam Plastic Manufacturing Company
3	Persons met	- Mr. Khan Soundara (Marketing Manager) - Mr. Phavong Louonghraltha
4	Accompanied Persons (MEM)	- Mr. Bouathep Malaykham (Director of Division, Electric Power Management Division, Department of Electricity, MEM) - Mr. Viengsay Chanta (Electrical Engineer, EPM Division, Dept of Electricity, MEM) - Mr. Thammanoune Nakhavith (EPM Division, Dept of Electricity, MEM) - Mr. Bounta Chimmala (Department of Energy and Mines, Savannakhet Province)
5	Visitors (ACE, ECCJ)	- Mr. Christopher Zamora (ACE, Manager) - Mr. Yutaka Ogura (ECCJ, Technical Cooperation Department, General Manager) - Mr. Fumio Ogawa (ECCJ, Technical Cooperation Department, Technical Expert) - Mr. Takashi Sato (ECCJ, Technical Cooperation Department, Technical Expert)

6. Overview of Visited Company

The Lam Plastic Manufacturing Company carries out a wide range of businesses including plastic bags, drinking water, ice, straws, plastic cord, and plastic reuse, and according to Marketing Manager Mr. Khan their business condition is apparently favorable. The company was established 17 years ago. Although their ice-making machines and tap water purification filters are new, their plastic bag manufacturing line has old machines and a large number of young women in a labor-intensive work place. Almost all of the 180 employees work on the plastic bag production line. In addition, a different office is also producing salt. The factory is operating 7 days a week, and the employees are working from 07:30 to 17:00. During normal periods, 20 tons of ice is manufactured each day, but in times of high demand more is produced. The PET bottle for water is divided into 350 ml (1 dozen bottles 12,000 Kip), 500 ml (1 dozen bottles 4,000 Kip), 2000 ml (1 dozen bottles 3,000 Kip), and 20 liters (1 bottle 1,500 Kip). For ice, 1 kg costs 500 Kip. The filling of bottles with water and adding ice to bags is carried out by people who are not wearing masks and have sandals on their feet, so the concept of hygiene is somewhat lacking. The structure is such that rats and insects such as cockroaches will be able to freely enter the premises at nighttime. The water used as the raw material is tap water which undergoes filtering two times, and Public Health conducts checks once every two months. Although the factory electricity cost is 60-70 million Kip per month, Mr. Bouathep expressed doubt that this may only be the electricity cost of the ice or water.

7. Hearing and Discussion Details

First Mr. Yutaka Ogura, General Manager of ECCJ, expressed thanks to Mr. Khan for attending the two-day Seminar and Workshop, and for accepting the Advisory Visit.

(1) Energy Conservation Activity Details

The factory was not collecting data that would allow summarization of the Energy Index. Energy

conservation had been implemented six or seven years ago, and at that time the energy use was slightly reduced by tuning the machines. In particular, the top management is satisfied with the current situation and there are no actions being implemented to improve the factory. Only the top management is aware of how much energy is being used and where it is being used. The technical staff (two persons who did not attend the meeting) should take more actions to collect and analyze the data on a daily basis. We also advised that the EMHB and the materials used in the Seminar should be shown to the top management to deepen understanding of energy conservation.

(2) Explanations, Opinions, and Proposals made by ECCJ, including the On-site Inspections

There was a location around the freezers where part was not being cooled. The area surrounding the factory is being used as a garbage dump. The inside of the factory is not being kept neat and orderly. We proposed that SGA should be introduced to the factory to improve the working environment and enable the holding of discussions on energy conservation to raise the levels. In addition, from a safety point of view, since most of the rotating parts did not have covers, we advised that they should be covered to avoid the risk of becoming caught in the machines.

(3) Response of Visited Company

Although Mr. Khan is a Sales Manager and not a technical staff member, he thoroughly showed us round the factory. Regarding the factory, it will be necessary to first make approaches to the top management to promote energy conservation, and we felt that it would be necessary to form a unified and cooperative relationship between the top management and the technical staff.

III-2-4. Thailand

Recently in Thailand, the PROMEEC EM Project is being implemented every two years. Each time, activities are being carried out using a format known as a Focused Group Meeting, and this time is the third time the Meeting has been held. It was initially intended to carry out the activities in combination with those in Lao PDR in November of the previous year, but due to the effect of the great flooding in Bangkok in the autumn, the area still had not recovered by November. We therefore decided to postpone the activities together with those of Lao PDR until January of this year. It was intended to hold the Focused Group Meeting in Thailand on the first day and then hold a Seminar on the second day that would combine an introduction to Japanese high-efficiency energy conservation technology and products with an introduction to Thai Best Practice cases. The former introduction was to have been attended by member companies of JASE-W. However, when we confirmed the recovery situation in Thailand close to the end of last year, we found that the companies who were supposed to attend the seminar were still occupied with the recovery work and would apparently be unable to attend. In addition, we found that the supporting contact organization, the Ministry of Energy (DEDE), was also very busy with the recovery work so we decided to cancel the Seminar on the second day. Instead, we visited the Ministry of Industry (DIP) to carry out a hearing concerning the second judging results of Awards system, reflected the usage of the four handbooks, and the plans for the future.

2. Focused Group Meeting (FGM): January 16

The FGM this time took place in the 11th floor main conference room of the DEDE building. Apart from the DEDE members, there were persons related to ECCT and FTI, consultants, and ESCO companies. Apart from ECCJ and ACE members, 20 persons had gathered for the Meeting. Although the implemented contents are given in the Agenda in Attached Materials III-2-4-1, they are specifically explained below.

(1) Greetings and Self-introductions: DEDE's Mr. Danai Egkamd kindly gave the greetings and acted as moderator for the first half. DEDE's Mr. Sarat introduced the fact that the gathered members would be divided into three groups consisting of DEDE, the consultant company, and ESCO company members. Note that after giving explanations in English, Mr. Sarat supplemented his explanation in Thai, as apparently some participants were not proficient in English.

(2) Participants:

<1> DEDE: Mr. Danai Egkamd; Director, Bureau of Energy Regulation and Conservation (BERC)
(Mr. Prasert Sinsukprasert, Director of Energy Regulation Division (Greetings only))
Ms. Amaraporn Achavangkool; Senior Scientist, BERC
Mr. Sarat Prakobchart, Senior Engineer, BERC
Mr. Manaswee Hakeme, Bureau of Energy Human Resource Development and others totaling 10 persons

<2> Consultant: Mr. Phongjaroon Srisovanna, Executive Director, ECCT (Energy Conservation Center, Thailand)
Mr. Hin Navawongse; Vice Chairman Executive Committee of FTI (Federation of Thailand Industry)
Mr. Daecha Tunmeesuk, Lecturer, Thai-Nichi Institute of Technology, and others totaling 6 persons

<3> ESCO: Mr. Phisist Chang Outis, Attain Engineering & Energy Co., Ltd.
Mr. Phong Luangsangthong, BTM Engineering Co., Ltd.

Ms. Angsumon Fakcharoenphol, Energy Quality Service Co., Ltd., and others totaling 4 persons

<4> ACE: Mr. Christopher Zamora, Manager
Mr. Junianto M, IT Specialist

<5> ECCJ: Mr. Yutaka Ogura, Mr. Fumio Ogawa, Mr. Takashi Sato

(3) Lecture 1: Outline of Updated ASEAN Energy Management System 2011-2012 (ECCJ, Mr. Yutaka Ogura): Used the same version that was used in Lao PDR. Extracts are explained.

<1> Q&A-1: The contents of the three types of handbooks (TEM, TEEI, and EEH) are slightly old. Based on the experiences in the DEDE Training Center, revisions were made. (ECCT, DEDE) -> If you can provide us with the details, we would like to translate them into English and revise the handbooks. (ECCJ)

<2> Q&A-2: Does your request to further increase the numbers of applications for the ASEAN Awards also apply to Thailand? (FTI) -> Because Thailand is submitting a sufficient number of applications compared to other countries, we are saying “more” to the other countries.

<3> Q&A-3: No Cost/Low Cost Best Practices are significant for the dissemination of Best Practice technologies. In contrast to large companies with ample funds, it will be necessary for small and medium companies to be able to purchase high-efficiency technologies at low cost (FTI) -> Manufacturers of high-efficiency technologies and equipment including Japanese companies well understand the market needs. Efforts will be required to provide products that match the specifications of small and medium companies.

<4> Q&A-4: Although data collection is alsoimportant, it will be effective to show more basic knowledge of the EMHB such as PDCA and QCC, and to show problem examples. Explanation of the KAIZEN System would also be good. Although there are many small and medium enterprises (SME), because they have little funds and small budgets, more support will be required from this point of view. (Thai-Nichi Institute) -> This could certainly be carried out in the PROMEEC EM Project, but because it can be implemented in Thailand itself, we are not carrying it out. Further, regarding the basic knowledge tools, if we include detailed descriptions in the EMHB, the book will become thicker and harder to use. So the introduction is limited to a certain extent and documents, and training courses are separately prepared for persons wishing to learn more. (ECCJ) -> In Thailand, the National Guideline of EM has been created. Although large companies are subject to the EC Act, the treatment of SMEs is still insufficient. It will be necessary to become more focused. (DEDE)

<5> Q&A-5: While large companies have adequate investment budgets and staff, SMEs also have a 20% subsidy system (ESCO). In DEDE Training courses, e-learning is provided for SMEs (DEDE) -> In India also, an EC Act called DC (designated consumers) is regulating large companies, but this does not cover SMEs. There is a request from the Indian government, BEE (Bureau of Energy Efficiency), regarding the introduction of SGA/TEM to support SMEs, which we are currently assisting. (ECCJ)

<6> Q&A-6: In the ASEAN Award submissions, there have been none for Industries (in S&M category) for two years. How should we encourage submissions? (FTI) -> Regarding the promotion of submissions, DEDE is conducting discussions, so we request their assistance. (ECCJ) -> SMEs do not have much time or budget for preparing submissions. We would like to dispatch persons to SMEs to offer assistance. (DEDE) -> Couldn’t the Awards be divided into more categories and levels to make it easier for SMEs to participate? -> We have this intention, and we have already made more categories. (DEDE, ECCJ)

(4) Lecture 2: Updates on the Development of PROMEEC Energy Management Tools (ACE, Mr. Junianto) The same version was used as in Lao PDR, and extracts were explained.

<1> Q&A-7: Is there a large demand for the ASEAN EM Service? (DEDE) -> There are requests for Energy Services to be made available in each country. (ACE)

<2> Q&A-8: Is the ASEAN EM Service already finished? (DEDE) -> We are currently waiting for feedback. It is being prepared offline. When completed, it will be put online. (ACE)

<3> Q&A-9: What are the benefits of registering in the ASEAN EM Service? -> Promotion of image in the ASEAN region, and feedback to your business. (ACE)

(5) Lecture 3: Information Analysis to Ease Dissemination of Awarded Cases from ASEAN Energy Awards (ECCJ, Takashi Sato) The same version was used as in Lao PDR, and extracts were explained.

<1> Q&A-10: Although we know about QCC and KAIZEN, what is “Mottainai”? (ECCT) -> In Thai, “Mottainai” (“What a waste!”) would be “shiadai”, and an example would be eating everything without leaving any waste at all. It is a movement advocated by Ms. Wangari Maathai in Africa, who was awarded a Nobel Peace Prize for it.

<2> Q&A-11: In the Best Practice case analysis results, are there any recommendations for Thailand? (DEDE) -> Although there are no particular recommendations for Thailand, the dissemination of energy conservation among SMEs (small and medium enterprises) is an issue in Japan too. Because each country seems to be in the same situation, it would be good for countries to refer to theBest Practice cases in small and medium enterprises.

<3> Q&A-12: Regarding the energy conservation measures implemented in TIP (Toshiba Information Philippines), how many years will be required to recover the investment? (DEDE) -> Although it is not described in this material, it will be about four years at the longest. -> Four years would be no problem. (DEDE)

<4> Q&A-13: How should energy conservation be carried out in an automatic line (in a solvent cleaning process)? (Consultant) -> For the energy conservation in individual production lines, it will be important to observe the actual situation of the production line together with the workers. It is normal to first carry out energy conservation for the utility facilities before the production facilities.

(6) Lecture 4: Energy Management Handbook and other Tools (ECCJ, Mr. Yutaka Ogura) The same version was used as in Lao PDR, and extracts were explained.

(7) Lecture 5: Harmonization of ISO 50001 and EMHB (ECCJ, Mr. Yutaka Ogura) The same version was used as in Lao PDR, so extracts are explained.

<1> Q&A-14: In Thailand, there is also a move to implement ISO 50001. DEDE is working on the AEMAS Energy Manager system , and Ms. Amaraporn received training and examinations the other day. (DEDE)

(8) Lecture 6: Japanese Experience of Energy Saving after Huge Disaster (ECCJ, Mr. Yutaka Ogura) The same version was used as in Lao PDR, and extracts were explained.

<1> Q&A-15: For the electric power shorttage countermeasures, isn’t renewable energy being urgently utilized? (DEDE) -> Although renewable energy in Japan was formerly only utilized for 1% of the total, there is a plan to increase this by gradually shifting from nuclear power in the future. -> We heard that Japan has a plan to utilize solar power from space. (DEDE) -> We have no knowledge of that. -> How about the utilization of clean coal technology? (DEDE) -> Japan is placing emphasis on clean coal technology development, and there is a pilot plant, but no working plant yet. Technical cooperation is also being carried out overseas.

<2> Q&A-16: The various types of electricity-saving measures devised in Japan may also be useful in Thailand following the flooding disaster, so we would like to investigate the measures. (DEDE)

(9) Discussion 1: Discussion on the Utilization of PROMEEC EM Tools; Initially, time was allotted separately, but there were many Q&As following the lectures each time. Some of these covered the contents that we had planned to speak about, so the time that would have been spent discussing these points again was discontinued. The questions for each explanation have already been introduced above.

(10) Discussion 2: An exchange of opinions was carried out between two persons from DEDE (Ms. Amaraporn and Mr. Sarat), ACE and ECCJ concerning future cooperation and the directions of the PROMEEC Project

<1> Improve Enhancement Implementation Program: Some countries are advanced and should assist other countries. Interactive involvement of ASEAN countries. The non-advanced countries are Brunei Darussalam, Cambodia, Lao PDR, Myanmar and Vietnam, while others are advanced, but there is some sensitivity. Could there also be a dispatch of experts from Thailand? (ACE)

<2> New segment of PROMEEC: Even though there are requests for assistance in promoting energy conservation in the transportation sector, the cooperation of METI/ECCJ was negative. (ACE)

<3> How about EE&C in the Power sector? Couldn't ACE, ECCJ and experts from ASEAN countries carry out energy conservation audits in the power generation sector? (ACE)

<4> Summary & Post WS: Because this Workshop will be held on March 7-8, we would like to have discussions on the next day, March 9, regarding the future PROMEEC Program, so could you investigate this? (ACE)

<5> Will you also consider the promotion of participation of SMEs in ASEAN Award Applications?

<6> The cooperation of Thailand is essential to realize the ASEAN EM Service trial operation, the building of the e-Directory, and the collection of data such as EC handbooks. Although this is an extremely busy time for Thailand, we hope very much that you will carry out promotions so that we can aim to achieve a certain amount of completion in the current fiscal year. (ECCJ)

<7> It will be necessary also to consider incorporating Japanese energy conservation technology and product business developments. (ACE)

<8> Until now we have concentrated mainly on general technology, but from now on shouldn't you consider specific technology capacity building? (DEDE)

<9> There was a request for "Problem Solving", so could you also investigate this? -> Because this resolving method is indicated by the Key Step Approach in the EMHB, we don't think it will be necessary to newly consider this. (ECCJ)

<10> In Thailand, DEDE members committed themselves to creating the original version of the EMHB. Since there are EM Standards, ISO 50001, and AEMAS, how are these four items being positioned? (ECCJ) -> It is planned to integrate EMS with ISO 50001 in the future. Eventually we would like to integrate the four into one standard. (DEDE)

Attached materials III-2-4-1: Agenda of Thailand Focused Group Meeting



AGENDA

Focused Group Meeting
on
"Promoting the Utilization of PROMEEC Energy Management Tools"
under
PROMOTION OF ENERGY EFFICIENCY AND CONSERVATION (PROMEEC) Project in Energy Management
January, 16th 2012
Meeting Room Floor.11th , Building 7,
Department of Alternative Energy Development and Efficiency (DEDE)

Objective:
1. To promote the utilization of PROMEEC energy management tools among local agencies
2. To collect feedback and recommendation from local Stakeholders

08.30	-	09.00	Registration
09.00	-	09.15	Greeting and Introduction
09.15	-	09.45	Outline of Updated ASEAN Energy Management System 2011-2012 Presented By Energy Conservation Center of Japan (ECCJ
09.45	-	10.15	Updates on the Development of PROMEEC Energy Management Tools, Presented By ACE
10.15	-	10.45	Information Analysis to Ease Dissemination of Awarded Cases from ASEAN Energy Awards, Presented By ECCJ
10.45	-	11.00	Harmonization of ISO 50001 and ASEAN Energy Management Handbook, Presented By ECCJ
11.00	-	11.45	Discussion on the utilization of PROMEEC Energy Management Tools - Comment and recommendation from local agencies - Contribution to be delivered - Proposal of new initiatives
11.45	-	12.00	Japanese Experience of Energy Saving after Hugh Disaster Presented By ECCJ
12.00	-	12.15	Wrap-up / Closing

III-3. Activity Results in Each Country and Outcomes

III-3-1. Summary of Results of Implementing Intensive Seminar-Workshops, Training, Company Visits and Research Forums

As a result of implementing the activities described above in each country, it was possible to achieve the following key major results contributing to constructing the ASEAN Energy Management System.

(1) As shown in Table III-3-1-1, many participants took part, totaling 128 people. Regarding the activities in this project and the ASEAN Energy Management System functions and programs, participants could gain a wide understanding and be interested in the contents. In addition, participants could also gain understanding of the usefulness of the energy management tools that have been prepared in the system, such as through experiencing Group Work.

(2) As shown in Table III-3-1-2, 105 persons in the three countries participated in the Training for utilizing the Energy Management Handbook, including persons related to pioneer companies introducing and using the Energy Management Handbook. Participants gained understanding of methods of using contents including the Energy Management Handbook, activity policies, and tools such as the In-house Database through the Workshops which provided experience of Group Work for implementing case study based on improvement activity cases of pioneering companies.

(3) In addition to the above, visits were made to four factories, buildings, and related institutions in three countries, where introductions were given to this project's activity contents, their meaning, and to the ASEAN Energy Management System and its functions, programs and tools. At the same time, opinions were exchanged and advice was given relating to issues concerning energy conservation in factories through visiting factories and buildings, and requests were made for support in the future at the same time. In the majority of the companies and organizations visited, support was provided by persons who had participated in the Intensive Seminar-Workshops and Training.

(4) By carrying out the above activities, the participants in the Workshops and the visited companies gained interest in participating in the project activities, so that the number of companies prepared to cooperate in the future has been further increased.

(5) As a result of the above, the Network of Cooperators among companies, organizations, and related people in the ASEAN countries further increased. Particularly as shown in Table III-3-3, we would like to emphasize the point that a total of 121 government institutions, implementing organizations, and companies have been visited in the eight years since the start of this project in 2004, gaining many cooperators.

(6) In addition, the Research Forum in Japan was not carried out in the current fiscal year. Although this was influenced by budgetary reductions, in the future we will consider the implementation as required.

Country Visited	No. of Participants
Myanmar	31
Malaysia	36
Lao PDR	41
Thailand	20
Total No.	128

Table III-3-1-1: Number of Participants in Intensive Seminar -Workshops according to Country

Visited Country	No. of Participants
Myanmar	32
Malaysia	37
Lao PDR	36
Total No.	105

Table III-3-1-2: Number of Participants in Training Utilizing Energy Management Handbook according to Country

	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam	Total
Government Ministries and Agencies-related	3	1	2	1	2	1	3	1	2	3	19
Government-related Organizations (Electric Power Companies and State-run Companies)	0	3	2	1	0	1	1	0	0	1	9
Implementing Organizations	0	0	3	0	4	0	2	0	2	5	16
Industry Groups Education and Research Institutions including Universities	1	2	0	0	0	0	1	1	0	1	6
NGOs / NPOs	0	0	1	0	0	0	0	0	0	0	1
Companies (Factories and Buildings) and ESCO Companies	12	7	11	11	4	1	7	0	8	9	70
Total	16	13	19	13	10	3	14	2	12	19	
										Grand Total	121

Table III-3-1-3: Classification and Accumulated Totals of Visited Companies and Organizations

III-3-2. Activities relating to the Dissemination of the Energy Management Handbook

Through promoting the following activities in the current fiscal year in a continuation of the previous year, Training was implemented based on the introduction and dissemination of the finalized ASEAN version Energy Management Handbook. Regarding the revisions required to match the conditions and requirements in each country including the translation to each country's language, translations to local languages in Myanmar and Cambodia were promoted in the current fiscal year. Further, even in Myanmar, which was implementing this project for the second time in a continuation from the previous fiscal year, it is believed that interest in participating and supporting was gained and more related persons could understand the Handbook contents through the Training.

1. Training relating to the Energy Management Handbook

As described in III-2 above, in this fiscal year, Training relating to the Energy Management Handbook was implemented in the three countries of Myanmar, Malaysia, and Lao PDR. In this Training, highly detailed explanations were given regarding the particularly important point of the Key Step Approach concepts, and guidance was given including the practicality of developing these as SGA (Small Group Activities).

The Training is a one-day course. The contents related to how to use the Energy Management Handbook, and the course included detailed lectures on these utilization methods. As already reported, the basic program was as the following.

(1) Lecture: Lecture on detailed contents and important guidelines of the Energy Management Handbook

(2) Workshop (Group Activities): One case study from each country was selected in each of the industry and building sectors in the current year's ASEAN Award Best Practice cases beforehand. Copies were made for distribution on the day, and the following activities were implemented.
   (a) Introduction of case study summaries
   (b) Based on the contents introduced above, participants learned activity contents through evaluation according to the Key Step Approach management method introduced in the Energy Management Handbook. Group Work was experienced relating to the abstraction of the good points and advice of further improvements.

2. Myanmar

Continuing from the previous year, activities were again held in the political capital, Nay Pyi Taw, and the majority of the participants were government-related. The English version of the Energy Management Handbook was distributed to all the participants, and after giving an explanation, utilization of the handbook was encouraged. The English version proved to be no problem for the participants, but as expected, a Myanmar language version will be necessary to achieve dissemination, so translation to the local languagehas been accomplished with trial printing by March 2012.

3. Malaysia

In Malaysia, this was the first time to hold the activities since the Focal Point contact organization had changed from the former Malaysia Energy Center (PTM) to the Ministry of Energy, Green Technology and Water. However, mainly consisted of persons related to ministries, public institutions, and universities who were highly interested in energy management, participants enthusiastically listened to

the lectures and participated in Group Activities.

4. Lao PDR

In Lao PDR, the activities were held in the local city Savannakhet where the project had never been implemented before, but the Training on the second day was particularly favorable due to the printing and distribution of the Energy Management Handbook which had already been translated to Laotian. Further, in the Training using ASEAN Award Best Practice case studies, several persons who had experience of activities conducted previously in the project and in the Japanese MTPEC (Multi-Country Training for Promotion of Energy Conservation) kindly participated in each group as advisors. It can be said that a framework has been created that will allow activities to be carried out independently.

5. Cambodia

Although no local activities relating to the project were carried out in the current fiscal year, requests continue to be received to provide a version of the Energy Management Handbook translated to the local language. However, in spite of this, sufficient budget could not be found and the condition has not progressed as expected, so support for translation has been actually started and finished by March 2012.

IV. Development of Functions to be equipped in the ASEAN Energy Management System and its Operation

IV-1. Overview

Setting the goal of establishing and operating the basic functions of the ASEAN Energy Management System by fiscal year 2009, the completion of the Step-1 System was targeted, but actually there has been a slight delay and the system has not yet been finished. Possessing the basic functions, the Step-1 System is focusing on information supply functions, having the main items described below.

(1) Best Practices of Energy Management (Industries and Buildings)
(2) Completed Energy Management Tools
(3) Information System for Implementing Organization and Customer Registration Search

In order to gather and provide the information described above, the following programs and tools have been additionally developed and are actually operating. The current development situation is shown in Table IV-1-1.

(1) Collection and dissemination of the Best Practices in Energy Management for Industries and Buildings
    1) Planning, development and actual operation of the ASEAN Award of Best Practices in Energy Management for Industries and Buildings
    2) Preparation and operation of an official website to introduce award-winning practices (within the website of the ASEAN Centre for Energy)
(2) Energy Management Tools
    1) ASEAN Energy Management Handbook (Finalized in fiscal year 2008)
    2) In-house Database and Technical Directory (currently being improved and developed by Major Industries and Buildings Projects)
    3) Methods of utilizing the tools described above
(3) Information System for Implementing Organization and Customer Registration Search
    1) ASEAN Energy Management Service (Implementing Organization and Customer Registration Search System)
    Currently, 17 companies from eight countries have been registered as implementing organizations, and promotion of additional registration to each implementing organizations is being carried through the Focal Points in each country.

With the exception of the actual operation of the ASEAN Energy Management Service, the items described above have been completed and are already in actual operation. Regarding the ASEAN Energy Management Service, registration of 17 organizations from eight countries has been completed up till now. Although it is difficult for countries in which there are no applicable organizations, it will be necessary to create an environment of easy use for the customers, and countries that do have these organizations should promote as many as registration as possible.

In addition, investigation of the functions that should be added to the Step-2 System, and investigation of additional programs and tools that should be added to improve and complete the Step-1 System are being carried out.

Specifically, it was confirmed that the requirements for the Step-2 System major additional functions should be the installation of service provision functions supporting the implementation of energy conservation, and the establishing of a “One Stop to System” that aims to improve the ease of use for ASEAN Energy Management System users.

Regarding the energy conservation implementation support service, investigation is being carried out concerning the development of an “Advisory Service System” that would allow the provision of

specific advice. This should be developed by encouraging the registration of specialists in the ASEAN region and Japan and allowing them to provide advice and answer questions from users on a voluntary basis.

Concerning these two functions, as considerable effort and costs will be required for their construction, priority will be placed on the completion of the Step-1 functions.

Further, in order to complete the tools, the collection and preparation of English versions of technical handbooks (including thermal energy efficiency improvement handbooks and electrical energy efficiency improvement handbooks), and the supply of information including the collection of basic data from the information supplying system of manufacturers of energy conservation technology and equipment and ESCO companies (e-Directory: Voluntary registration by manufacturers using the Internet) is continuing to be investigated.

PROMEEC (Energy Management)

ASEAN Energy Management System: Functions and Programs /Tools

Functions / Programs and Tools	1. Sharing Information	2. Service Provision	3. Rule / Scheme and Conditions for 1&2
1. PROGRAMS			
1-1. Award System of EM Best Practices (Collection and Dissemination of Best Practices)	Done/ Improvement		National Competition (Depends on Countries)
1-2. Registration of ASEAN-Japan Experts (Advisory Services)		Under Study	Under Study (Voluntary Self-Registration)
1-3. Expansion of Network ASEAN Cooperators' Network (Cooperation to Activities and Information Sources)	On-going		Voluntary Based on Individual Conditions
2. SUB-SYSTEMS and TOOLS			
2-1. Information System to Disseminate (ACE / ECCJ Web.)			No Rules and Conditions
(1) Best Practices in Energy Management	Done / Improvement	Website with Accesses	
(2) ASEAN Energy Management Handbook	Done / More Translation	Seminar-Workshop	
(3) In-house Database (Standardized Data Files)	Developing (Partially Done	Training	
(4) Technical Directory	Developing (Partially Done)		
2-2. Handbooks			
(1) ASEAN Energy Management Handbook	Done / More Translation	One-day Training *	* Training : Actual Use
(2) Thermal Energy Efficiency Improvement handbook	Finalized		
(3) Electrical Energy Efficiency Improvement Handbook	Finalized		
2-3. ASEAN Energy Management Service to Use Implement. C (Bridging Implementing Organizations and Customer	Ready for Trial (Registration in System)	Bridging Stakeholders in ASEAN	Security / National Rule (Depends on Organization)
2-3. Directories			
(1) Directory of ESCOs	Under Preparation	Website with Accesses	Under Study
(2) Directory of Suppliers (Equipment & Tech.)	Under Preparation	(Bridging with Customers)	(Volunary Self-Registration)

Table IV-1-1: Functions, Programs and Tools of the Energy Management System

IV-2. Operation of the Award System of Best Practices in Energy Management for Industries and Buildings

Operation of the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings first began in the latter half of fiscal year 2006, and in the current fiscal year the 5th Awards were completed in September 2011. Based on the actual results and analysis of the award-winning practices in the 5th Awards, the call for submissions for the 6th Awards is being carried out from January 2012.

IV-2-1. Results of the 5th Awards

1. The 5th Meeting of the Board of Judges (BOJ-EM) for the ASEAN Best Practices Competition for Energy Management

Regarding the applications in the ASEAN Award System of Best Practices in Energy Management for Industries and Buildings that were sent in to the ACE Secretariat by each country's Focal Point by the beginning of May 2011, a total of 12 persons gathered in Singapore on May 23 and 24,was and carried out judgement. The 12 persons consisted of the seven members of the Board of Judges of the ASEAN Award System of Best Practice in Energy Management for Industries and Buildings (BOJ-EM) from the various ASEAN countries except Brunei Darussalam and the Philippines, ECCJ observers and three persons from the ACE Secretariat.

The current fiscal year marked the 5th Awards, and submissions from the seven countries of the Philippines, Thailand, Indonesia, Vietnam, Singapore, Malaysia and Brunei Darussalam were received, consisting of 12 cases in the Buildings sector, 8 cases in the Industries sector, and 4 cases in the Special Submissions sector. As a result of the judging over the two-day period, one case study from each of the Large-scale Buildings sector and Large-scale Industries sector, and from the Small and Medium-scale Buildings sector were selected as the winning Awards, and three cases were additionally set as winning Awards in the Special Submissions. As for the countries of winners, 2 cases were from Thailand and 4 from the Philippines. In addition, Indonesia, Malaysia Philippines and Thailand were selected as Best Practice cases in the Buildings sector, and Singapore and Thailand were selected in the Industries sector. Due to a revision of the judging methods this time, the awarding of multiple winners in the same sector which had been carried out last year was discontinued. Further, although classification of the Industries field according to the scope of the annual energy consumption had been carried out from the previous fiscal year in both the Industries and Buildings sectors in order to broaden the opportunities for small and medium scale companies to receive awards, there were no applications for small and medium scale businesses in the Industries sector.

(1) Details of Applications

Buildings Sector (9 Case Studies)	
Small and Medium Scale Buildings (Annual electricity usage amount less than 2000 MWh) (6 case studies)	
Indonesia	Adhi Graha
	PT. Kaltim Prima Coal building
Malaysia	Green Energy Office
Philippines	Meralco Management and Leadership Development Center (MMLDC)
Vietnam	Ho Chi Minh TV
	RMIT International University
Large Scale Buildings (Annual electricity usage amount 2000 MWh or more) (6 case studies)	
Brunei	Brunei Shell Petroleum
Philippines	JP Morgan Chase & Co.

	Tower One and Exchange Plaza
Thailand	Central World
	National Electronics and Computer Technology Center
Vietnam	Big C Hypermarket
Industries Sector (8 case studies)	
Small and Medium Scale Factories (Annual fuel consumption amount less than 10 million MJ): No entries	
Large Scale Factories (Annual fuel consumption amount 10 million MJ or more)	
Indonesia	PT. Semen Baturaja (Cement plant)
Philippines	TI Philippines Inc. Bagio (IT equipment plant)
	Toshiba Information Equipment (Phils), Inc. (IT equipment plant)
Singapore	Glaxo Welcome Manufacturing Pte. Ltd. (Chemicals plant (Pharmaceuticals))
	Pfizer Asia Pacific Pte Ltd. (Chemicals plant (Pharmaceuticals))
Thailand	Charoen Pokphand Foods Public Co. (Frozen foods plant)
	NOK Precision Component (Thailand) Ltd. (Electronic precision parts plant)
Vietnam	Goshi Thang Long Auto Part Limited Liability Company (Automobile parts plant)
Special Submissions Sector	
Indonesia	PT Semen Tonasa
Philippines	Toshiba Information Equipment (Phil.) Inc.
	UP Ayala TechnoHub.
Thailand	Toyota Motor Thailand Co. Ltd.

(2) Details of Awarded Cases

Buildings Sector		
Small and Medium Scale Buildings (Annual electricity usage amount less than 2000 MWh)		
Winner	**Meralco Management and Leadership Development Center (MMLDC), Philippines** This is a training facility that includes accommodation functions. Concerning the energy conservation and resource-saving carried out using unique activities, targets are being established and many improvements are being promoted. Regarding energy conservation, a reduction of 23% was realized over a five-year period.	Score
1st Runner-Up	**PT. Kaltim Prima Coal building, Indonesia** This is a successful example of office building energy management. Due to energy conservation promotion activities including energy conservation promotion campaigns, creation of standard operating procedures (SOP), introduction of equipment including wattmeters, light sensors and timers, and the switching to high efficiency air conditioning (split type) and high efficiency lamps, energy saving of 12.5% was realized in less than one year.	Score
2nd Runner-Up	**Green Energy Office, Malaysia** Originally this was designed as a Zero Energy building, but even when considering that PV (photovoltaic generation) is being used, the BEI could only realize 60 kWh/m^2. (The supply from the photovoltaic generation was a maximum of 35 kWh/m^2/year.) Using energy management, various types of energy conservation improvements are being carried out to achieve the target of 30 kWh/m^2/year.	Score
Large Scale Buildings (Annual electricity usage amount of 2000 MWh or more)		
Winner	**Central World, Thailand** This is a successful example of energy management in a large-scale shopping mall having a total floor area of 500,000 m^2. By improving the air conditioning system, introducing inverters, using high-efficiency lighting, and improving the roof thermal insulation performance, energy conservation of 9.2% was realized in a two-year period. There is also a complete plan for realizing energy conservation improvements in the future.	Score
1st Runner-Up	**JP Morgan Chase & Co. Philippines** Energy management in a 23-story office building where 6800 people work. In 2009, a 20% energy conservation target over 5 years was established, and the "Kill-a-Watt" Program (derived from "kilowatt") is being implemented. Energy conservation of 2.5% was	Score

	realized in the first fiscal year. Items such as the participation of all employees, high-efficiency operation of air conditioning, introduction of LEDs, and improvement of lighting equipment is being implemented.	
2nd Runner-Up	**National Electronics and Computer Technology Center, Thailand** This is a successful case study of energy management in a research building. Due to large numbers of small-scale improvements in the education of personnel, equipment operation management, air conditioning, lighting, and elevator facilities, energy conservation of 6.5% was realized over a two-year period.	Score
Industries Sector (Large Scale: Annual energy consumption amount of 10 million MJ or more)		
Winner	**Toshiba Information Equipment (Phil.) Inc., Philippines (Electronics plant (Hard disc manufacturing))** Due to the improvement of the plant chillers, introduction of adsorption chillers which utilize waste heat recovered from the generators, and introduction of LED lighting, energy conservation of 23.28% (intensity) was realized in a one-year period. The plant is implementing Japanese-style energy management.	Score
1st Runner-Up	**Glaxo Wellcome Manufacturing Pte. Ltd., Singapore** (Chemicals plant (Pharmaceuticals)) Due to energy conservation activities linking the manufacturing sites with the Administration Division, many improvement proposals have been implemented (including improvement of the air conditioners, acquisition/analysis/reporting of detailed energy data, and the introduction of other high-efficiency equipment), and energy conservation (consumption amount) of 20% has been realized over a three-year period.	Score
2nd Runner-Up	**NOK Precision Component (Thailand) Ltd., Thailand** (Electronic precision parts plant) Due to Small Group Activities (including TEM, 5S, Kaizen, QCC, and TMP), many energy conservation improvement proposals have been implemented, and energy conservation of 17% (intensity) was realized in a seven-year period. The plant is implementing Japanese-style energy management, and training of employees is also being fully implemented.	Score
Special Submissions Sector		
Winner	**Toshiba Information Equipment (Phil.) Inc., Philippines** Cogeneration by an adsorption chiller utilizing waste heat from the generator.	Yes- , No-
	UP Ayala TechnoHub., Philippines High efficiency local heating supply system supporting 10 blocks of buildings by controlling the number of operating units for eight chillers.	Yes- , No-
	Toyota Motor Thailand Co. Ltd., Thailand (Automobile manufacturing) Due to operation improvements in the oven system of the painting process, an energy conservation effect of 8.19% was achieved.	Yes- , No-

(*) Each member of the Board of Judges evaluated cases out of 100 points. Each of these point numbers was then normalized to a maximum of 20 points, and the total of the points became the score. Because the eight judges were not allowed to evaluate the case studies from their own countries, the maximum score was 140 points (20 points x 7 persons). However, since there were also entries this time from countries (the Philippines and Brunei Darussalam) whose Board of Judges members did not attend, in these cases eight judges carried out the evaluation, making a maximum number of 160 points. Accordingly, the rank was determined by the average points (maximum of 20 points). Further, in the Special Submissions sector, the Board of Judges gave a Yes or No evaluation regarding whether the proposed technology would be applicable in the ASEAN region and would give improved results. When two-thirds or more of the judges give a Yes evaluation, the case is awarded as the winner. In addition, each judge was not allowed to

give an evaluation vote for their own country's case study.

Note that the detailed application materials for the 24 cases described above are stored in the Technical Cooperation Department of International Cooperation Division, ECCJ .

(3) Comments by the Board of Judges

<1> Increase in the Number of Submitted Case Studies
This is the fifth time that the Awards competition has been held (one time each year), and the number of cases submitted this time was 24, a comparatively large increase over the previous 4 Awards. The various ASEAN countries are appreciating the importance of energy management, and some countries are implementing similar competitions domestically, showing the favorable influence of the Awards.

<2> Contents of the Documents Submitted in the Applications
Concerning the contents described in the submitted cases, all of the judges expressed the opinion that there had been a great improvement, partly due to the effect of the improvement measures in the Research Forum that was held in Japan in November 2010. In addition, with regard to energy management, the judges had the impression that on average the level is improving.

<3> Production of Documents based on the Fill-in Instruction
Some of the aaplocations are not being based on thefill-in instruction, and we would request each of the Focal Points to clearly indicate to persons making applications that their submissions should be based on the fill-in instruction. In particular, some entries insufficiently described the long-term plans for energy conservation promotion and the actual methods being used to realize energy conservation.

<4> Improvement of Evaluation Methods
The number of entries in the current fiscal year was 24, so that in order to carry out assessment in one and half day, each case had to be completely understood and evaluated in 20 minutes. However, some judges commented that 20 minutes was still too short and 30 minutes would be required. Further, to allow more precise assessment, it was confirmed that improvement of the explanation methods (such as explaining the transition of energy efficiency by using tables), improvement of the scoring methods, and improvement of the guidelines for carrying out the assessment would be necessary. These opinions had also been indicated at previous meetings of the Board of Judges, and although improvements can be seen each year, even more improvement was required.

<5>Publicize the Award System throughout the ASEAN Region
Because some ASEAN countries are implementing this system in their own countries, and since dissemination activities for this system are being carried out in the PROMEEC Project activities, public knowledge of this system is continuing to grow. However, regarding the countries that did not make submissions this time, the Focal Points should make more efforts topublicize this system. In addition, even from a meaning of providing an incentive to send in submissions to this system, couldn't we also consider establishing a system in the future in which awarded cases would receive favorable financing?

<6> Implementation of Awards Systems in Each Country

Some countries such as the Philippines and Thailand have already introduced this system, and Singapore also began using this system from this year. We confirmed that implementing this Awards system domestically in each ASEAN country would result in raising the level of the ASEAN Awards system.

2. Results of Analyzing the Best Practice Cases

Regarding the 24 cases submitted in the Buildings sector and Industries sector for the 5th ASEAN Best Practices Competition for Energy Management, analysis was carried out from the following viewpoints concerning the included improvement factors.

(1) Project activities
(2) Main improvement points
(3) Amount of energy conserved and the resulting economic efficiency
(4) Investment amount
(5) Possibility of dissemination

Each submitted case includes several improvement measures, and by creating a practical effect by these measures, a large energy conservation effect is obtained. Accordingly, by analyzing these points, it was possible to discover effective dissemination methods and additionally help to encourage submissions of applications and improve the evaluation guidelines. The results were introduced at the Intensive Seminar-Workshops and Focused Group Meeting held in four countries.

The details of the analysis results are shown in Tables IV-2-1, IV-2-2, and IV-2-3.

Among the applications submitted this time, some companies were actually visited to carry out exchanges of opinions and give advice, and the companies that gave cooperation in the energy audit actually tried to make improvements and kindly provided the results as cases. It is hoped that these kinds of companies will increase in the future.

Table IV-2-1: Analysis of Submitted Case Studies (1) (Industries Sector 1)

Country	Name of Company (Outline of Company)	Sub-Industry	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Others
					Saved Energy	Economy			
Indonesia	PT Semen Baturaja (PERSERO) Number of employees: 565 Annual Electric Consumption : 85,935,000 kWh/y (2008)	Cement Manufacture	(Name of Project) Energy Management for Productivity and Improvement in PT Semen Baturaja (Outline) The commitment for energy efficiency and environment protection is as follows: * Establishment of Management Energy Committee, energy efficiency program, cost reduction program * Power management * Human resources development * Increase production and use alternative raw materials * Add new cement mill and packing plant to increase capacity * Complete cement plant Production cost decreased by 4.4% (389,000 US$) The company carries out TPM (Total Productive Maintenance) convention to appreciate TPM circles that finished their program.	1) Total productive maintenance 2) Change the operation procedures at raw mill by stopping equipment on peak load time 3) Variable speed drive(VSD) at cooler exhaust fan switching of electricity from diesel power plant to PLN 4) Install additional equipment to facilitate the 3rd component of cement mixture 5) Improved the overall equipment effectiveness Short and long-term Plans includes: 1) Installation of recording system for power distribution, VSD for fan grate cooler and dust collector, power transformer 2) Cost reduction program program by reducing clinker factor in dement to 80% 3) Optimization of electrical consumption for 3 plants 4) Use alternative raw material and fuel	Cost saving (US$) 3) 52,000 4) 1,500,000	Payback period (year) 3) 0.6 4) 0.02	Investment cost (US$) 3) 33,465 4) 37,176		
Philippines	TI Philippines Inc. - Baguio Number of employees: 2094 Electricity : 233,381,314 kWh/y	Semiconductor	(Name of Project) Energy Management Program - Mitigate the Climate change/ TI Philippines Inc. - Baguio (Outline) TIPI is continuously innovating its product and implementing programs to mitigate environmental aspect brought by the manufacturing of IC. TIPI adpoted the TPM, Kaizen Blitz, 5S concept for improvement, upgrade and replacement of inefficient machinery. With the company's active energy conservation program, consumption (kWhr/NUM) decreased by 11.3% from 2008 to 2010. 20.4% reduction of energy consumption was realized in 2010. Short and long-term plans are as follows * Vacuum conversion of SPA tools * Manufacturing tester CDA auto shutoff during hith temperature * CDA main line up-grade to reduce pressure drop	1) Automatic (ATE) secondary controller elimination 2) Replacement of high specific power nitrogen plant 3) Compressed dry air (CDA) piping modification 4) Electro De-Ionization (EDI) pretreatment upgrade 5) Lighting diffuser upgrade 6) Purge conversion for test machine cold testing 7) Containment of tester heat dissipation 8) Merging of exhaust main ducting 9) Tester migration 10) Installation of variable speed drive (VSD) compressor 11) Utilization of zero purge driver 12) Grinding DI reduction for Back grind machine 13) Elimination of forming gas waste for copper bonding 14) Eliminiation of secondary pump for back grin waste	Energy/Cost saving (kWhr/US$) 1) 234,416/11,394 2) 2,334,816/ 114,639 3) 1,857,995/ 91,228 4) 12,867/ 631.7 5) 51,120/ 2,510 6) 3,110,400/ 152,720.6 7) 95,040/ 4,666 8) 170,352/ 8,364 9) 4,087,661/ 200,704 10) 1,805,330/ 88,462 11) 662,400/ 32,524 12) 1,463/ 72 13) 1,475,139/ 178,389 14) 12,000/ 589	Payback (year) 1) 0.01 3) 6.8 4) 4.3 5) 1.0 6) 1.0 7) 6.9 8) 0.012 10) 2.5 11) 2.3 13) 0.17 14) 0.20	Project cost (US$) 1) 100 3) 120,000.00 4) 2,700.00 5) 2,400.00 6) 160,000.00 7) 32,000.00 8) 100.00 10) 220,000.00 11) 75,000.00 13) 30,000.00 14) 120		

Table IV-2-1: Analysis of Submitted Case Studies (1) (Industries Sector 2)

Country	Name of Company (Outline of Company)	Sub-Industry	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Others
					Saved Energy	Economy			
Philippines	Toshiba Information Equipment (Phils.) Inc. Number of employees: 7,600 Annual Electric Consumption : 136,426,162 kWhr (2010)	Manufacturing	(Name of Project) Toshiba Information Equipment (Phils.) Inc. Energy Management Practices (Outline) TIP is the largest Toshiba hard disk drive manufacturer in the world, implementing energy programs to improve production energy efficiency. These include: * activity to maintain equipment efficiency * elimination and utilization of wasted energy * production process modification * total redesign of chilled water system, power plant heat recovery * efficiency improvement for lighting and AC The measures resulted in a production energy rate reduction of 23.28% even with an increase of 42% production volume. Short and long term plans includes: * Chiller central control system/ Vacuum pump conversion/ R22 AC conversion to RS44 regrigerant/ LED installation * Solar power supply/ New heat run equipment/ Micro hydro power	Investment measures **(1) Chilled water system redesign** **(2) Renewable energy** (2)-1 Powerplant heat recovery system (2)-2 Water treatment plant discharge reuse **(3) Equipment conversion** (3)-1 Compressed air system dryer conversion (3)-2 Vacuum pump conversion **(4) Lighting system improvement** (4)-1 High efficiency lighting installation (4)-2 Pull switch control **(5) HVAC efficiency improvement** (5)-1AC efficiency improvement (5)-2 AD regregerant conversion (5)-3 Exhaust inverter installation Non-Investment measures (1) HDD test process optimization (2) Production computer reduction	Annual energy saving **(1) 12,284,006** **(2) 5,304,960** (2)-1 4,268,160 (2)-2 1,036,800 **(3) 673,920** (3)-1435,456 (3)-2 238,464 **(4) 52,272** (4)-141,472 (4)-2 10,800 **(5) 175,224** (5)-1 31,316 (5)-2 110,592 (5)-3 33,316 Non-Investment measures (1) 313,140 (2) 3,583,008	ROI (year) (1) 2.9 (2)-1 3.83 (2)-2 0.04 (3)-1 1.88 (3)-2 2.74 (4)-1 2.76 (4)-2 1.52 (5)-1 0.78 (5)-2 0.52 (5)-3 2.46	Investment cost (US$) (1) 4.4 million (2)-1 2M (2)-2 4,500 (3)-1 100,000 (3)-2 80,000 (4)-1 14,000 (4)-2 2,000 (5)-1 3,000 (5)-2 7,000 (5)-3 10,000		Winner
Singapore	Glaxo Wellcome Manufacturing Pte Ltd Number of employees: 454 Annual Electric Consumption : kWhr	Pharmaceutical Manufacturing	(Name of Project) Excellence in Energy Management at Glaxo Wellcome Manufacturing Pte Ltd (Outline) From 2007, energy usage is reduced annually more than 5%. (5.2% for 2010). 293 energy projects were complete from 2002- 2010. The categories of projects are as follows: - Optimization & modification of ACMV system - Efficiency improvement of process cooling system - Replacement of hot & cold insulation - Installation of high efficiency lighting system/motor /variable speed drives - Replacement of equipment with high efficiency types - Installation of solar photovoltaic panel to harness renewable energy - Usage of waste solvent for incinereator fuel - Solvent waste recovery	Specific measures 1) Recirculation of air in hazardous area 2) Installation of energy management system 3) Heat recovery for dehumidifier 4) Mist spray by condensate water The framework for energy management includes: * Site leadership team (SLT): set energy reduction target * Cross functional energy management team: - monitor performance - identify and evaluate energy efficiency technologies - plan and execute energy improvement projects - organize campaigns to educate employees * Engineering department: responsible for project implementation, energy performance	Energy saving (MWh)/ Cost saving (US$) (1) 519/ 109,000 (2) 12,581/ 2.9M (3) 683/ 143,000 (4) 1,125/ -	Payback (years) (1) 2.5 (2) - (3) 2.7 (4) 0.76	Investment (S$) (1) 272,000 (2) - (3) 390,000 (4) 178,400		1st runner-up

Table IV-2-1: Analysis of Submitted Case Studies (1) (Industries Sector 3)

Country	Name of Company (Outline of Company)	Sub-Industry	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Others
					Saved Energy	Economy			
Singapore	Pfizer Asia Pacific Pte Ltd Number of employees: 250 Annual Electric Consumption : kWhr	Pharmaceutical	(Name of Project) Energy Efficiency and Conservation Programme atPfizer Asia Pacific Pte Ltd (Outline) Since 2005, the company has achieved an annual energy reduction of 5-10%. Key elements of the energy management program are - management support/ site energy team/ energy performance goal/ energy monitoring, analysis & reporting/ energy assessments/ utilities master planning/ benchmarking/ energy conservation process/ proactive load management/ employee goals/ training/ raising energy awareness/ project implementation support/ capital project review/ new facilities/ innovative e energy technologies/ regulatory awareness/ maintain energy efficiency	Measures 1) Installation of tri-generation plant to improve energy efficiency 2) Installation of solar adsorption system 3) Recovery of exhaust cool air for AHUs 4) Optimization of chilled water system 5) Installation of cooling tower fan with high efficiency blade 6) Installation of LED lights Management stategy - Promote energy saving ideas, technologies and innovations :CI program, RFT project & awareness communicaton - Share strategies & tools of energy efforts - Advocate the use of Green Building/ Energy & Climate change principles - Apply latest technologies: Tri-generation, solar renewable, LED - Partnership with governmen agencies: external energy audit/ benchmarking - Increase recognition & communication of energy achievements	Annual energy saving (MWh)/ cost saving (S$) (1) - / 1M (2) 696/ 208,800 (3) 223/ 28,929 (4) 789/ 110,486 (5) 235/ 42,000 (6) 62/ 16,000				
Thailand	Charoen Pokphand Foods PCL. (Nakhon Ratchasima) Number of employees: 5053 Annual Electric Consumption : 39,777,783/ 32,820,964 (kWhr)	Agro & food	(Name of Project) Energy Conservation in Charoen Pokphand Foods PCL. (Nakhon Ratchasima) (Outline) The company's accomplishment can be concluded in 5 steps as follows: 1) Considers 3 beneficiaries from business opertion: nation, people and company 2) Maintains growth level and leadership in agro-industry and food industry 3) Focuses on innovative and environmental-friendly construction. 4) Offers processed chicken meat produced by advance and quality certificaiont technology 5) Rules of organization culture: embrace change, master learnign & sharing, innovation, etc. The company uses 115kV, and helps save 86.38% of total energy cost, 66.22% and 20.16% of refrigeration and machines used in production process. Plans for the future include installation and introduction of economizer steam boiler/ VSD chill water plate pump/ flash tank steam boiler/ VSD air compressor/ bio gass wastewater plant/ bio mass boiler	(2008)non-investment 1) Intake air controller 2) AC contoller 3) Hot water pump controller (2008)investment 1) Steam, thermal oil tube insulation 2) Automatic fan lairage area 3) Conveyer inverter 4) Automatic water chil filling 5) Condensate return (2009)non-investment 1) Load air and water chiller centralization 2) Reduced pressure air 3) Adjust air dryer sequence 4) Evaporative condensor fan controlled 5) Reduce air leakage (2009)investment 1)Thermal pump insulsation 2) Auto Drian (air compressor) 3) Drum motor for conveyor (2010)non-investment 1) Turn off mixer motor 2) Turn off mixer motor (neautralization tank) 3) Stean boiler efficiency improvement by lean six sigma (2010)investment 1) Step dimiming controller 2) Vacuum pump centralization 3) Temp. controller for knifes tank 4) Steam tube insulation 5) Reduce puller size for clarifier air compressor	energy saving (kWh)/ cost saving (baht) (2008)- non-investment 1) 194,000/ 534,600 2) 1,140,480/ 3,136,320 3) 458,640/1,226,180 -investment 2) 19,754/ 54,298 3) 3456/ 9504 4) 84,618/ 232,700 (2009)- non-investment 1) 439,200/ 1,212,192 2) 770,560/ 194,746 3) 40,320/ 111,293 4) 126,144/ 348,157 5) 177,072/ 455,075 - investment 2) 5423/ 14,967 3)1824/ 5034 (2010)- non-investment 1) 23,652/ 71,666 2)11,826/ 35,833 - investment 1) 3240/ 9821 2) 59,400/ 179,982 5) 87,600/	Payback (years) (2008)-investment 1) 0.2 2) 0.37 3) 4.73 4) 0.08 5) 0.35 (2009)- investment 1) 0.17 3) 7.95 (2010)- investment 1) 1.88 2) 0.89 3) 1.62 4) 2.25 5) 0.03	Investment (baht) (2008)-investment 1) 66,060 2) 20,000 3) 45,000 4) 18,000 5) 439,053 (2009)-investment 1) 17,460 3) 40,000 (2010)-investment 1) 18,450 2) 160,000 3) 137,901 4)94,160 5) 8,990		

Table IV-2-1: Analysis of Submitted Case Studies (1) (Industries Sector 4)

Country	Name of Company (Outline of Company)	Sub-Industry	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Others
					Saved Energy	Economy			
Thailand	NOK Precision Component (Thailand) Ltd. In Thailand Number of employees: 1893 Annual Electric Consumption : 20,758,360 kWhr	Electronic precision part	(Name of Project) Energy Conservation in NOK Precision Component (Thailand) Ltd. In Thailand (Outline) Energy management program is implemented since 2004. Small Group Activities (SGA) includes 5S, Kaizen, QCC, TEM, TPM, etc.. SGA emphasizes awareness and performance level for optimizen resources, utilization and sustanable energy consumption. At 2010, production amount increased 386% compared to 2003, as energy consumption growth was 246% due to TEM programs (111projects and 55 measures). Energy saving programs for 7 years reflects to 17% of total energy consumption or 397 thousand USD$. <Knowledge management measures> * install plastic curtain at warehouse * install chimney at condensing unit * reduce electrical energy for AC - waste heat recovery from oven C-Sun - install partition for separated heat zone - reduce blower speed, AHU	(2008)non-investment 1) reduce lighting 2) opening-closing AD 3) turn off lighting (2008)investment 1) auto lighting at toilet 2) plastic curtain 3) waste heat recovery 4) window film 5) timer 6) VSD 7) insulation (2009)non-investment 1) program for disabled lift 2) shut off dozing pump/ air dryer/ AHU/ cooling tower 3) raise chilled water temp. 4) reduce compressed air 5) extend period of back wash 6) reduce lighting (2009)investment 1) change to switch power supply/ refrigerent of AC 2) install timer of AC and DI water system/ pull switch (2010) investment 1) reduce blower speed 2) install partition for separated heat zone/ AC 3) epair exhaust duct and valve (2011- planned) investment 1) VSD for chiller pump 2) heat reduction for chiller 3) auto lighting 4) change AC chiller of AHU The company invested 3.4 M bahts from 2004 to 2010 and payback period less than 2 years. Total Energy Management Committee has been authorized to consider for special budget by 1) found energy & resources lost 2) should not affect health, safety and environments 3) related to company activity such as TPM 4) conform with new law and regulations	energy saving (kWh)/ cost saving (baht) (2008)non-investment: 62,159/ 186,477 investment: 96,335/ 285,595 (2009)non-investment: 909,359/ 2,726,295 investment: 36,708/ 110,125 (2010) investment: 695,042/ 2,085,125 (2011) 182,200/ 546,602	Payback (year) (2008) 0.71 (2009) 0.002 (2010) 0.25	Investment (baht) (2008) 333,566 (2009) 6,734 (2010) 519,170 (2011) 718,500		2nd runner-up
Vietnam	Goshi Thang Long Auto Part Limited Liability Company Number of employees: 1150 Annual Electric Consumption : 12,060,600.00 kWhr	Motorbike & auto parts	(Name of Project) Understanding and awareness of saving and using energy efficiency (Outline) The energy consumption per product decreased from 52,259.64 kJ (2008) to 47,719.21 kJ (2009). The target is to reduce the rate (kWh/set) by 10% per year. The implemenetation of 5S creates the best working environment for employees and equipment, improving awareness on best operations of equipment Genaral electricity-saving equipment, Enerkeeper, was installed to balance the phase of electrical network in factory. It saves about 8% power consumption, equivalent to 960,000 kWh/year.	(2008) 1) reduce boiler pressure 2) inspection & regular maintenance for machinery 3) regulation of electrical devices 4) specified temperature of AC 5) management of power consumption 6) separate illuminator roads 7) improve water supply system 8) replace bulbs 9) improve ventilation system 10) install inverter for motor (2009) 1) check of air, CO2, pipe system 2) reduce unnecessary bulbs 3) change working hours 4) reduce pressure of air compressor 5) improve vessel control system 6) improve water supply system 7) improve lighting system 8) insulate steam piping system 9) install power monitoring system 10) install "Enerkeeper"	Energy saving (kWh) (2008) 3) 417,000 6) 2,157 7) 1,295 8) 10,383 9) 67,392 10) 57,708 (2009) 2) 10,782.72 4) 20,800 5) 21,475 6) 85,587.8 7) 540 10) 960,000	Payback period (year) (2008) (VND) 6) 0.82 7) 0.16 8) 0.8 9) 0.26 10) 3.03 (2009) 5) 0.07 6) 0.11 7) 4.26 8) 0.3 10) 5.6	(2008) (VND) 6) 1,540,000 7) 185,000 8) 6,864,000 9) 15,000,000 10) 152,000,000 (2009) 5) 1,320,000 6) 8,528,000 7) 2,000,000 8) 21,500,000 9) 2,695,200,000 10) 4,705,993,000		

Table IV-2-1: Analysis of Submitted Case Studies (1) (Industries Sector Special Submissions 1)

Country	Name of Company (Outline of Company)	Sub-Industry	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Others
					Saved Energy	Economy			
Indonesia	PT Sement Tonasa Number of employees: Annual Electric Consumption : kWhr	Cement	(Name of Project) Mangement Energy by Making Automation Lamps in the Sub Station Room based on ATmega8 - 16L Microcontroller (Outline) The management formed an energy management team to implement power management to get maximum results and suitable production of CBP. Automation offlighting lamps is one of the development programs.	Automation of lighting Lighting control system is a method to extend lamp life and to reduce electrical energy consumption. Motion detectors turn on and off the lamps automatically. The feature of the system is as follows: * use hardware design consisting of microcontroller, the sensor system as teh information unit, and relay system that will function like a switch * use design software * implement the system in the sub station	cost saving (IDR): 67,308,670	Payback (year): 2 months	Investment (IDR): 105,000,000		
Philippines	Toshiba Information Equipment (Phils.) Inc. Number of employees: 7,600 Annual Electric Consumption : 136,426,162 kWhr (2010)	Manufacturing	(Name of Project) Toshiba Information Equipment (Phils.) Inc. Adsorption Chiller - Heat Recovery Systems (Outline) Wasted heat on producing power and other utilities is recognized as an altenative enrgy source for production expansion requirement. TIP installed heat recovery equipment to recover the heat from the diesel engine power plant to procure chilled water using adsoprtion chillers which is supplied to the factory cooling systems. Another activity is the recovery for the heat of the water treatment plant's effluent to serve as a pre-cooling media for air handling unit.	Heat recovery energy reduction measures 1) diesel engine power plant heat recovery For the diesel engine system, adsorption chillers is used to produce chilled water. 2) water treatment plant heat recovery At water treatment plants, energy is used to support cooling systems for HDD process. TIP installed pre-cooling coils on the air handling units to pre-cool the return air using the effluent.	energy saving (kWHR-year) (1) 4,268,160 (2) 1,036,800	payback (year) (1) 3.83 (2) 0.04	Investment (US$) (1) 2,000,000 (2) 4,500		Winner
Philippines	UP Alaya Land TechnoHUB Number of employees: 5000 Annual Electric Consumption : kWhr	Leasing and real estate	(Name of Project) District Cooling System (Outline) The District Cooling System (DCS) is designed to maximize the utilization of the chiller plant. The centralized system of chiller plant and chilled water source allowed flexibility in actual cooling load. The use of this system reduces energy consumption for chilled water distribution by 33%. The qualitive advantages of the system are better comfort, reliability and maximized. Economic benefits are reduced capital costs, maintenance costs and substantial energy reduction.	District Cooling System (DCS) DCS produces chilled water at the central plant and distributes the energy through underground pipes to 10 buldings connected to the system. The water is returned to the central plant to be re-chilled and dre-circulated through closed-loop piping system. Energy efficiency index: AC area: 309.68 kWh/m2/year	annual saving (kWHR/ US$): 6,288,796.8/ 1,118,008.31				1st runner-up
Thailand	Toyota Motor Thailand Co., Ltd. (Banpho plant) Number of employees: 2779 Annual Electric Consumption : kWhr	Automotive	(Name of Project) Reduce Natural gas and Electric consumption in Oven system (Outline) "Oven system" is one of the painting process. It uses 2.6 million per month, equivalent to 30.16% of energy consumption of painting process. The target is to reduce energy consumption by 7% as well as to support activities to reduce production costs.	3 causes and measures of excessive energy consumption 1) oven heat loss during the system shut down - turn on fresh air to let cool air into oven - open exhaust damper to ventilate hot air to outside - collection fan draw out hot air and release outside 2) oven uses only a single signal to start all ovens 3) temporary stop system using only one reset signal - install hardware which is "analog to digital" - set program to calculate heat up time efficiency	1) gas reduction: 267.76 MMBTU × 317.8 Baht= 84,458 Baht/month electricity reduction: 2,827 kW × 2.3 Baht= 6,502 Baht/month 2)& 3) gas reduction: 385.66 MMBTU × 317.8 Baht= 122,562.748 Baht/month total energy reduction: 213,522.74 Baht/month (equal to 8.19%)	payback (year) (1) 3.83 (2) 0.04	Investment (US$) (1) 2,000,000 (2) 4,500		2nd runner-up

Table IV-2-1: Analysis of Submitted Case Studies (2) (Large Buildings Sector 1)

Country	Name of Company (Outline of Company)	Category	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Status
					Saved Energy	Economy			
Brunei	Brunei Shell Petroleum Company Sdn. Bhd. Number of employees: 3300 Annual Electric Consumption : 4,178,755kWh/y	Petroleum	(Name of Project) Onshore and offshore exploration for, and production of oil and gas with all supporting facilities (Outline) The main energy conservation policies are as follows: 1) Implementation of short and long-term plans 2) Capacity building 3) Participation in projects and events related to energy conservation 4) Training of staff The Energy Conservation Team takes an important role in these activities. The team : * represents every faucet of the business * is formed by members from different background to get innovative and fresh ideas * shortens the period of project materialization	(1) Upgrade lifts (2) Reduce number of chillers (3) Decreasecondenser pumps (4) Decrease canteen AC (5) Upgrade desktop monitors (6) Switch-off initiative (7) Reduce printers (8) Hot Desk in KacaLima (9) Projects to disseminate energy conservation (Energy Week, Tree planting initiative, Heart of Borneo project, etc.)	GWh/y, % (1) 55953-39593, 29 (2) 2928083-165249, 94 (3) 2743632, 2354688, 14 (4) 23741-16758, 29 (5) 314346-196466, 38 (6) 45977, 73 (canteen) 2560511, 76 (lighting)	4,178,755 kWh/y, 98 kWh/m2/y	N.A.		
Philippines	JP Morgan Chase Bank, N.A. - Philippine Global Service Number of employees: 6800 Annual Electric Consumption : 15,847,771kWh (2010)	Office building	(Name of Project) JP Morgan Chase & Co. Goes Green (Outline) The target of electricity consumption is 20% reduction across 5-years from 2009. For the first year, 2.5% reduction (406,353 kWh) was realized. The approach to achieve environmental protection and energy management programs is: 1) Set vision, goals and commitments 2) Create and energy management team and monitoring process 3) Prepare and establish strategic and operating plans 4) Implement sustainble processes and control: short-term: set up energy team/ utility benchmarking/ operation rationalization/ replace conventional lights medium-term: system audit/ predictive maintenance long-term: application of new technologies (LED, green power, solar)/ implementation of "time of use(TOU)" 5) Capacity building/ broadcast program to increase awareness of employess	Go Greeen Program 1) "KILL-A-WATT"Program: monitor utilities, turn off monitors, etc 2) AC operation rationalization: operation per floor, adjust operation hours with work, deploy EnerCon staff 3) "SPARTEC"installation at AC motors to minimize "inductive loss": reduction of electrical energy waste 4) "LED type bulbs" installation 5) Reduction of flourescent light bulbs and installation of "mirrorized reflectors" 6) Switch off lights of hallway and pantry 7) SPARTEC installation phase 2 8) LED installation phase 2 9) Monitor sensor adjustment 10) Solar power AC 11) Energy recovery vetilator	kWh reduction/ US$ 1) 685,284/ 116,810 2) 1,213,290/ 206,811 3) 241,920/ 41,236 4) 221,798/ 37,806 5) 311,040/ 53,018 7) 332,028/ 73,785 8) 136,200/ 21,186 9) 170,176/ 26,472 10) 10,483/ 1,630 11) 16,450/ 2,559	Payback period 3) 3 months 4) 1 month 5) 2 months 7) 3 months 8) 3.5years 10) 2.5years 11) 2.5years	Investment (US$) 3) 9091 4) 3957 5) 8864 7) 22,890 8) 80,177 10) 4075 11) 5118		1st runner-up

Table IV-2-1: Analysis of Submitted Case Studies (2) (Large Buildings Sector 2)

Country	Name of Company (Outline of Company)	Category	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Status
					Saved Energy	Economy			
Philippines	Tower One and Exchange Plaza Number of employees: 133 Annual Electric Consumption : 15,015,000 kWh/y	Office and trading building	(Name of Project) Energy Management for Tower One and Exchange Plaza (Outline) The company promotes leading-edge technologies through R&D, and implements best practices for enegy conservation, as well as training for employees. Some of the measures are: 1) Predictive maintenance of condition based maintenance of equipment 2) Regular preventive maintenance 3) Insulation tape and aluminum cladding for chilled water pipes 4) Annual preventive maintenance of electrical system 5) Manual operating procedural signage 6) Annual breaker ampere reading	(1) Lighting retrofit at 35th floor (2) Lighting retrofit at stairwell (3) Motor controller soft starter (4) Chiller replacement program (5) Rehabilitation of the heat exchangers Earlier technological improvements are: 1) Building management system (BMS): computer-based monitoring system for AC and ventilation system 2) Variable speed drives (VSD)	kWh/y/ US$ (1) 38,570/ 6230 (2) 16,430/ 2650 (3) 205,720/ 33,170 (4) 1,042,860/ 168,190 (5) 957,140/ 154,360	Payback period (1) 5 months (2) 5 months (3) 1 year, 9 months (4) 2 years (5) 1 month	US$ (1) 2430 (2) 1040 (3) 57,580 (4) 338,670 (5) 17,280		
Thailand	Central World Company Limited Number of employees: 365 Annual Electric Consumption : 84,174,452 kWh (2010)	Commercial building	(Name of Project) Central World Green World Project (Outline) CW is an upscale super shopping complex with gross area of 498,799m2. It is committed to energy conservation in order to reduce the burden of national supply of energy as well as emphasis on social responsiibility. Guidelines for energy conservation are as follows: 1) Energy conservation is part of CW operations 2) CW shall continuously improve the efficiency of energy use 3) CW aims to communicate with all employess for good compliance 4) Energy conservation shall be responsibility of employees at all levels 5) CW shall support energy conservation activities 6) CW shall review and improve policies annually 7) CW shall promote and dissiminate all activities widely From 2008 to 2010, CW reduced energy consumption by 9.2%. "Working Parties on Energy Management" functions as a leader to materialize energy conservation policies as follows:	(2008) Install VSD for CHP/CDP pump (2009) High efficiency chiller (2010) 1) Renovate lighting system 2) Replace fluorescent lamp 3) Spray "PU Foam" on the roof Short and long-term Plan (2011) 1) Adjust the flowing rate of chillers under variable primary flow 2) Install VSD at condenser water pump 3) Install VSD at air handling unit 4) Install cleaning device for condenser tube of chillers 5) Install PV Solar cell 6) Replace halogen lamp with LED tube (2012) 1) Install VSD at condenser water pump 2) Set-up circuits within the office for proper operation of work 3) Replace the filling of cooling tower (2013) 1) Install wastewater treatment system in the cooling tower 2) Install automatic sensor on computer screen 3) Separate the lighting circuits	kWh/ B (2008) 1,852,730/6,484,555 (2009) 6,503,612/22,762,624 (2010) 1) 14,584/52,502 2) 1,612/5,803 3) 125,218/394,437 target: kWh/y, B/y (2011) 1) 811,985/2,557,752 2) 352,119/1,109,175 3) 107,000/337,050 4) 861,352/2,713,260 5) 146,000/459,900 6) 49,144/154,802 (2012) 1) 591,600/1,774,800 2) 3,480/10,440 3) 34,800/104,400 (2013) 2) 6,960/20,880 3) 3,480/10,440	unit: year (2008) 0.7 (2009) 3.4 (2010) 1) 1 2) 4.1 3) 13.4 Plan (unit: B) (2011) 1) 3.26 2) 3.25 3) 5.19 4) 2.41 5) 45.74 6) 2.11 (2012) 1) 0.67 3) 0.96 (2013) 2) 0.96	unit: B (2008) 4,450,391 (2009) 77,617,169 (2010) 1) 50,000 2) 23,626 3) 5,266,800 Plan (unit: B) (2011) 1) 8,350,000 2) 3,600,000 3) 1,750,000 4) 6,530,000 5) 21,035,000 6) 326,400 (2012) 1) 1,190,000 3) 100,000 (2013) 2) 20,000		Winner

Table IV-2-1: Analysis of Submitted Case Studies (2) (Large Buildings Sector 3)

Country	Name of Company (Outline of Company)	Category	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Status
					Saved Energy	Economy			
Thailand	National Electronics and Computer Technology Center Number of employees: 560 Annual Electric Consumption : 8,993,440 kWh/y	Building	(Name of Project) Using Energy Management to Green an Organization (Outline) The Center launched the NECTEC Go Green campaign to operate under unified energy and environmental conservation policies and practices. During the past 3 years (2008-2010), the Center has focused on employess awareness and energy conservation. Energy consumption is analyzed every month so that the results can be used for the most effective measures. Any meaure worthy of investment is presented for approval by upper management. As a result, total power cosumption reduced by 6.46%. Part of short and long term plans will continue as follows: *Organize Energy Saving Champion activity *Employee camgaign to turn off switches *Install automatic pump control timer *Replace a single server room	***(2008)non-investment*** 1) Operate only one elevator 2) Campaign to turn off swithces for lunch time, use stairs, turn off emergency line lighting 3) Adjust point of chiller operation 4) Reduce chiller's operating time 5) Clean split-type AC for better performance 6) Split electric control circuits to lighting and passage-way 8) Turn on lights on demand ***(2008)investment*** 1) Pull switch for lamps 2) Replace fluorescent bulbs for lighting 3) Filter film for glass windows 4) Cooling pad system for chiller 5) Mini cooling pad system for control rooom ***(2009)non-investment*** 1) Security guards to check unused lights 2) Turn off exhaust fan in water closets 3) Reduce number of light bulbs and chiller's working hours 4) Raise temperature of data center 5) Split electric control circuit of reception ***(2009)investment*** : installation of: 1) lamp pull swiches 2) motion sensors in water closet 3) 4 systems of VSD for AHU 4) water sprinkler system to reduce heat ***(2010)non-investment*** 1) Energy saving champion activity 2) Friday Earth Hour activity 3) Reduce chiller's working hours and number of light bulbs 4) Split electric control circuit of passageway 5) Turn on lights on demand ***(2010)investment*** 1) Change flourescent light bulbs to LED 2) Heat insulators for glass windows 3) water spray for condensi	kWh/ TB (1) 2008: 235,722.72/ 825,029.52 (2) 2009: 141,525.30/ 495,338.55 (3) 2010: 120,969.60/ 423,393.60	***Payback period (year)*** ***(2008)investment*** 1) 0.75 3) 0.65 4) 3.89 5) 0.72 ***(2009)investment*** 1) 0.75 2) 0.58 3) 3.91 4) 0.10 ***(2010) Investment*** 1) 0.78 2) 1.02 3) 1.02	***(2008)investment (TB)*** 1) 38,500.00 3) 14,400.00 4) 380,000.00 5) 2,000.00 ***(2009)investment*** 1) 30,800.00 2) 16,830.00 3) 185,000.00 4) 4,500.00 ***(2010)investment*** 1) 3,850.00 2) 7,500.00 3) 85,000.00	***successful case of R&D establishments***	2nd runner-up
Vietnam	Big C Viet Nam Hypermarket Number of employees: 4000 Annual Electric Consumption : 60,747,986 kWh/y	Trade Center	(Name of Project) Use energy efficiently, increase business efficiency, low price for everyone (Outline) The company has implemented 3 projects related to energy management. By these projects, the energy consumption decreased to 4.5% of the whole system of the company's total energy consumption, and the energy efficiency index in 2010 decreased 22% compared with 2009. The company organizes many trainings for staffs, specialized in using energy efficiently. The company proposes 2 projects to use energy efficiently: 1) For operation of hypermarkets: study and improve major energy consuming equipments 2) New construction of hypermarkets: apply rules, regulations of Vietnam on energy efficiency in buildings	1) Energy audit hypermarket system (done in 2009) 2) Install energy monitoring & management system 3) Replace fluorescent lighting from T8 to T5 : save 30% energy consumption for lighting, reduce electricity cost 4) Cold storage tank system for central AC system: save electricity cost, increase safety for equipment system <Short and long-term Plan> * Green technology: environmental friendly materials for building * Applicable building codes QCXDVN09 * Installation of "Power Boss" escalator system * Complete installation of cold storage tank system for central AC	kWh/ US$ 2) 715,563/ 40,000 3) 6,082,230/ 350,000 4) 141,292/ 88,064	Payback period (year) 2) 5 3) 1.14 4) 3.65	Investment cost (US$) 2) 20,000 3) 400,000 4) 350,000	***cold storage tank system for central AC***	

Table IV-2-1: Analysis of Submitted Case Studies (2) (Small and Medium Buildings Sector 1)

Country	Name of Company (Outline of Company)	Category	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Status
					Saved Energy	Economy			
Indonesia	Building Management PPKP Adhi Graha Number of employees: 45 Total Electricity Consumption in 2010: 122.08 kWh/m2/y	Commercial Office Condominium	(Name of Project) Energy Management based on Awarenewess (Outline) The company devevloped Energy Saving Program (ESP) since 2007 The activites undertaken are: * Data collection of electrical equipment building * Determine average energy consumption of 12 months * Develop a program based on energy conservation awareness * Conduct in-house training for employees * Record progress of energy saving regularly * Regular consultation with government agency * Create operation room for energy management	A. Non-Investment Project (1) Change the operating hours of HVAC chiiler, AHU, cooling tower, and FCU (2) Turn off lights and water faucets when not in use (3) Change the temperature setting when the weather is HVAC / rain. (4) Record electricity consumption in the aoutomatic Read Meters (5) Replace conventional ballast with energy efficient ballasts for general lighting (6) Conduct trainings for all employees to raise awareness	613,120kWh/y (85,497.807Rp/y) (US$10,058.57/y)	No payback period	No investment		
Indonesia	PT Kaltim Prima Coal Number of employees: 5175 Annual Electric Consumption in 2009 : 3,650,000kWh/y;	Coal Mining	(Name of Project) Electricity Improvement through Energy Management (Outline) The focus of energy conservation is to increase employee awareness about energy saving, energy consumption records, eliminating unnecessary energy use, installing control systems, making energy efficiency a criterion in procurement / design of energy utilization equipment, making the SOP, and investment for energy saving programs Average electricity consumption decreased from 38,880 kWh/day to 34,033 kWh/day, which is equivalent to 12.47% saving.	A. Short and Long-term Plans: (1) Upgrade the lights with new and more efficient tehnology electricity (2) Replace the window with the air conditioner split air conditioner (3) Monitor the state of power consumption and eliminate waste electrical energy (4) Ensure that new equipment fulfills energy-saving standard, and existing systems support enrgy efficiency program (5) Pursue objective, target and programs that include health, safety, and environment KPC electricity saving program B. Long-term Plans: (1) Re-evaluate the power consumption in the KPC system after the upgrade of Fixed Plant which is currently the largest energy user (2) Re-evaluate the possibility of using LED lighting (3) Evaluate the use of hot water heater air conditioner compressors for residential and camp employees	(1) 7000kWh/y (2254US$/y) for lighting control (2) 438,000kWh/y (141,000US$/y) for centralized air conditioner (3) 150,000kWh/y (48,300US$/y) for automatic photocell swtich (4) 30,000kWh/y (96,600US$/y) to TLD lamp	(1) Payback 19 days (2) Payback 11 days (3) Payback 1049 days (4) Payback 179 days	(1) 2400US$ for lighting control (2) 3900US$ for centralized air conditioner (3) @500US$ for replacement of AC (4) @5US$for replacement to TLD lamp	***replicable to office buildings***	1st Runner-Up
Malaysia	Malaysian Green Technology Corporation (GreenTech Malaysia) Number of employees: 55 Current building energy index(BEI) : Average 65***kWh/m2/y***	Office building	(Name of Project) The Energy Management of the Green Energy Office (GEO Buildnig), GreenTech Malaysia (Outline) Efforts to reduce BEI started in 2008 and completed in March, 2009. The BEI was brought down from 95kWh/m2/y to 65kWh/m2/y (or net 30 kWh-m2/year inclusive of photovoltaics power generation). The target is 30kWh/m2/y. Besides technical improvement of the building's system, energy management at the organization level was initiated and plays a vital role.	Programme for a new lower BEI value: (1) Install 150RT energy efficient cooling tower to improve the heat rejection (2) Install 5HP Fand Coil Units (FCUs) at seminar rooms to improve cooking distribution (3) Install additional bypass chilled water pipe within the heat exchangers of the Phase Change Materials (4) Install motorised valves at teh chilled water and condenser water pipes near the chillers (5) Switch off secondary condenser water pumps (6) Increase the cooling ration of the air conditioning and floor slab radiant cooling system (7) Revise and monitor the schedule of the chiller, Air Handling Unit and Radian Cooling Floor Slabs operations	95,250 kWh/y RM 37,814/y	N.A.	N.A.		2nd Runner-Up

Table IV-2-1: Analysis of Submitted Case Studies (2) (Small and Medium Buildings Sector 2)

Country	Name of Company (Outline of Company)	Category	Name of Project / Activity	Key Improvements	Annual Effect		Investment	Possibility to Disseminate	Status
					Saved Energy	Economy			
Philippines	Meralco Management and Leadership Development Center Foundation, Inc. Number of employees: 49 Annual Electric Consumption in 2010 : 1,670,710 kW/hour	Training Center with Hotel operation	(Name of Project) The MMLDC Way to a Sustainable Energy Management Program (Outline) Through Energy Conservation (ENERCON) program, the company has constructed a framework to use resources efficiently. It provides partners and stakeholders with a template for efficient energy consumption and conservation that can be replicated in their own offices. ENERCON program is an offshoot of practical need to reduce expendidture on utilities and to realize advocacy of environmental management. By adopting new technology and modifying its infrastructure and policies of resource conservation, MMLDC reduced annual electrical utilization per pax rate by 23% from 2006 to 2010.	**Non-investment** A. Education & Training (1) Conduct of Annual QuESH Fair (2) ESH Caravan for public schools (3) Lakbay Karunungan (4) Lakbay Kalikasan B. People & Practices (1) MMLDC Hour Program (2) Strict Monitoring of ACU & Lighting Usage (3) Color-coding of ligh switches (4) Regular 1 PM & 4 PM swiching-off of key tag switch (5) Cluster guest rooms during low occupancy (6) Participatino during Earth Hour/Conduct of Earth Day (7) Posting of Energy conservation signages (8) Preventive Maintenance of lighting & equipment (9) Sharing of Best practices C. Infrastructure (1) Optimization of Split-type air conditioning (2) Use of large windows (3) Use of skylights along hallways (4) Open air dining D. Technology (1) Enclosure of AC temperature controls (2) Energy key tag switch (3) LED lighting (4) Nutec Fluorescent lighting ballasts (5) Compact Fluorescent lighting (6) Energy-efficient AC refrigerants (7) Laptop computers (8) Solar shades (9) Solar power (for streets) (10) Electric jeep	**Annual savings (energy: kW/h)/(monetary: US$)** A. Education & Training (1) 6480/1281 (2) 702/139 (3) 324/64 (4) 864/171 B. People & Practices (1) 13560/2680 (2) 253,859/50,181(3) 20,620/4076 (4) 25,208/4983 (5)22,710/4489 (6) 1100/217 (7) 5565/1100 (8) 3529/698 (9) 540/107 C. Infrastructure (1) 11,516/2276 (2) 2196/434 (3) 5096/1007 (4) 20,216/3996 D. Technology (1) 3708/733 (2) 34,144/6749 (3) 41,639/8231 (4) 7892/1560 (5) 5679/1123 (6) 221/44 (7) 786/155 (8) 3612/714 (9) 3513/694 (10) 6990/1382	Payback period (year)C. Infrastructure (3) 2 D. Technology (1) 0.75 (2) 1.5 (3) 3 (4) 0.5 (5) 0.75 (6) 1 (7) 2 (8) 2.5 (9) 15 (10) 5	C. Infrastructure (US$) (3) 2014 D. Technology (1) 551 (2) 10,125 (3) 24,693 (4) 780 (5) 842 (6) 44 (7) 310 (8) 1,785 (9) 10,410 (10) 6,910	***(1) QuESH procedures in resource conservation: ENERCON matrix and prodecures for all electrical equipment*** ***(2) Use of solar power for street lighting***	Winner
Vietnam	Hochiminh City Te levision Building Number of employees: Annual Electricity consumption	Television tower	(Name of Project) Energy management for Television Tower (Outline) The energy policiy of the compnay is: * Implement The National Target Program of energy efficiency usage * Improve awareness of employees in using energy * Search solutions in electricity usage * Collect efficiency ideas from employees * Check and analyze data and reports, and offer energy management solutions The company uses software to monitor energy consumption and activitiy status of equipments, etc.. The energy consumption/revenue decreased 40% in 2010.	Short-term and long-term plans (1) Maintenance of coling towers, FCU, AHU, Air conditioners (3) Maintenance of water chiller system, cooling water pump and chilled water pump (4) Check the indicator of cooling and chilled water, utilize chemical to improve the quality of water (5) Install inverters for chilled water pump and fan of cooling tower (6) Training of efficient electricity use for all staff (7) Introduce LED lights (8) Reward evaluated ideas and departments in energy efficiency usage (9) Improve the BMS system and fresh air supply system (10) Install back-up AC for film studio (11) Replace old monitor of computer (12) Move cooling tower to ground floor (13) Implement solar energy project (14) Contact univirsities to organaze traning courses	469,104.5 Wh/y	Payback period: 10 months	382,440,000 VN dong		

Table IV-2-2: Applicable Energy Conservation Technologies
(From Entry Form for ASEAN Awarding System 2010-2011)

Investment Category	Typical Measures	Remarks (Applied by)	Field to be applicable	
			Industry	Building
A. Non-Investment (Housekeeping)	1) Load air & water chiller centralization	Charoen	○	
	2) Air Leakage and air pressure reduction	Charoen	○	
	3) Operating Condition Adjustment (Chiller operating hours)	National Electro., JP Morgan, Adri Graha	○	○
	4) Record electricity consumption in the automatic read meters	Adhi Graha		○
	5) Monitor the schedule of chiller	Malaysian Green Tec.		○
	6) Shortening of operation time of Air conditioner	JP Morgan, Brunei Shell, etc.	○	○
	7) Raise chilled water temperature	NOK	○	
	8) Turning off & Reduction for Lighting, using sunlight	Many Applicants	○	○
	9) **Regular switching off of key tag switch**	**MMLDC**		○
	10) Setting standard of Room temp.& proper control of fresh air	Many Applicants	○	○
	11) Split electric control circuit of passageway	National Electro.		○
B. Low Investment (<0.05 Million $)	1) Improvement of Lighting system (replace to LED lighting)	Many Applicants	○	○
	2) Improvement of AC efficiency	Toshiba Info.	○	
	3) Install Electric Ballast	Adhi Graha		○
	4) Water treatment plant discharge use	Toshiba Info.	○	
	5) Exhaust inverter installation	Toshiba Info.	○	
	6) Install soft starter	PT Semen	○	
	7) Installation of fan coil units (FCUs) & motorized valves	Malaysian Green Tec.		○
	8) Upgrade desktop monitors	Hochiminh City, Brunei Shell		○
	9) Power saver to minimize inductive loss	JP Morgan		○
	10) Installation & improvement of BMS	Tower one, Hochiminh City		○
C. Medium Investment	1) Heat Recovery system (for dehumidifier)	Toshiba Info., Glaxo, NOK	○	○
	2) Installation Variable Speed Drivers (VSD)	Tower one		○
	3) - cooler exhaust	PT Semen		○
	4) - condenser water pump	Central World		○
	5) - air handling unit	Central World		○
	6) Waste water treatment system	Central World, RMIT		○
	7) Installation of cooling tower	Malaysian Green Tec.		○
	8) Roof Insulation ("PU foam" on roof)	Central world		○
(0.05~1.5 Million $)	9) Compressed dry air (CDA) piping modification	TI Phillip	○	
	10) Use of laptop computers instead of desktop PC	MMLDC		○
	11) Energy monitoring & management system	BigC, Goshi	○	○
	12) Air recirculation in hazardous area	Glaxo	○	
	13) Combined heat & power system (Tri-generation plant)	Pfizer	○	
	14) Water spray for condensing unit	National Electro.		○
	15) Cold storage tank system	BigC		○
	16) Solar & Wind Energy Usage	MMLDC, RMIT, JP Morgan	○	○
	17) Install partition for separatedd heat zone	NOK	○	
D. High Investment (>1.5Million $)	1) Building Automatino System (BAS)	RMIT		○
	2) Diesel engine power plant heat recovery	Toshiba Info.	○	
	3) High efficiency chiller	Central World		○
	4) Cooling pad system for chiller	National Electro.		○
	5) Redesign of chilled water system	Toshiba Info.	○	
	6) Insulation for thermal pump & steam tube	Charoen, Goshi	○	
	7) Reduce blower speed	NOK	○	

Table IV-2-3: Energy Management Activities
(From Entry Form for ASEAN Awarding System 2010-2011)

Activities Category	Typical Activities	Remarks(Applied by)	Field to be applicable	
			Industry	Building
A. Company Policy				
	1) 3R strategy (Reduce, Reuse, Recycle)	Centralworld, PT Semen, TI Phil	○	○
	2) Company policy focusing on efficiency, economy and environment	MMLDC		○
	3) Improve efficiency of energy use	Centralworld, TI Phil	○	○
	4) Sustainable Environmental Protection	MMLDC, RMIT, Brunei Shell, JP Morgan	○	○
	5) Reduce energy intensity/ energy costs/ energy consumption	Many Applicants	○	○
	6) Elimination and utilization of wasted energy	Toshiba Info.	○	
	7) Introduction of alternative raw materials	PT Semen	○	
	8) Maintain low cost for energy resources	Many Applicants	○	○
	9) Reduction of CO2 and Greenhouse gas	Many Applicants	○	○
	10) Environmental protection	Centralworld, TI Phil	○	○
	11) Leading-edge techologies through R&D/ Best practice activities	RMIT, Towerone, Pfizer	○	○
	12) Quality, Environment, Safety & Health (QuESH policy)	MMLDC PT Semen	○	○
	13) 5S activities	NECTEC TIPhili		○
	14) Innovative green designs/ New green technologies	Tower one		○
	15) Kaizen, "Mottainai" program	TI Phil., Toshiba Info	○	○
	16) Introduce modern & energy-saving equipment	Hochiminh City, Cetralworld		○
B. Organization	1) ENERCON Program	MMLDC		○
	2) Posting of energy conservation signages	MMLDC		○
	3) Energy Management Committee & team (company-wide), EMS(energy management system)	Many Applicants	○	○
	4) 5S activities	TI Phil., NECTEC	○	○
	5) Go Green Program (sustainable energy management)	JP Morgan		○
	6) Reward evaluated ideas of EC	Hochiminh City		○
	7) Company's Awarding System	JP Morgan		○
	8) CLAM (cost less all materials) team	TI Phil.	○	
	9) "Green World" concept (participation/ technology/ community)	Centralworld		○
	10) Human resources development	PT Semen	○	
	11) 6) Raise Awareness of employees	Many Applicants	○	○
	12) 7) Information Sharing (ig. best practices)	MMLDC, TI Phil, Glaxo	○	○
	13) "Communitiy of practices"	NECTEC		○
C.Standard/Manual	1) PDCA cycle and keeping standardization	MMLDC		○
	2) Benchmarking	MMLDC, Pfizer, Toshiba Info	○	○
	3) Change the setting of Room Temp.	Adhi		○
	4) CEMS (Continous emission monitoring system)	PT Semen	○	
	5) Develop implementation guidelines	Adhi		○
D. Training	1) Educational Training (Internal& External training)	Many Applicants	○	○
	2) Send staff to seminars	JP Morgan, BigC		○
	3) Energy ambassador	Centralworld		○
	4) Campaign for Energy conservation / climate change	Adhi, PT Katlim, Towerone, Glaxo	○	○
	5) Brochure, Posters, Stickers	PT Katlim, JP Morgan, NECTEC, TI Phil	○	○
	6) Dissemination of energy-saving knowledge (ig. Factory tour, film	BigC, Toshiba Info	○	○
D. Others	1) Collect efficiency ideas from employees (ig. Idea box)	Hochiminh City, Centralworld	○	○
	2) Company-wide Energy week, Energy Conservation Initiative Competition	Brunei Shell		○
	3) Organize Energy Exhibitions & seminars	NECTEC		○
	4) Go Green campaign	NECTEC		○
	5) Technology transfer (ig. Forums, conferences)	Toshiba Info	○	

IV-2-2. Analysis of Information Provision Methods for Disseminating Best Practices in Energy Management

Award winner cases are uploaded on the website of the ASEAN Centre for Energy in order to disseminate the information as much as possible.

Additionally, the Best Practices including those submitted by each country are widely utilized as case study materials in the Seminar-Workshops and the Energy Management Handbook Training that are held in each country. This type of method makes it possible to deepen understanding of energy management through analyzing the case study contents, and although the number of target people each time may not always be large, this method prioritizes the key points and is highly effective. In particular, case study which combines award winner practices with other cases submitted by the countries that were left out in the final selection is effective.

A new category specifically for collecting and awarding single improvement practices or improvement projects has been also implemented from fiscal 2010.

IV-2-3. Points to be Improved in the Future, and the Latest Plan

Based on the opinions of the members of the Board of Judges of the 5th Awards that were successfully completed in May of the current fiscal year, together with analysis of the applications and Best Practices in Japan and the current situation reports on the promotion and implementation of the Awards system in each country, discussions were carried out concerning improvements aiming to operate the Awards system more effectively, including improvement of the evaluation guidelines. Details of the discussions are as described previously.

The revised key points for submitting applications are indicated on the ASEAN Centre for Energy website.

The 6th Awards submission, judging, and awarding schedules are tentatively considered as below.

(1) Deadline for Submissions

Each country deadline guideline:	Late April 2012 (Schedule to be determined by each country)
ASEAN deadline:	Early May 2012 (ACE submission)
(2) ASEAN Award-winners Determination	Between late May and early June 2012 (Holding of BOJ-EM)
(3) Official Announcement and Awards Ceremony	Approx. July 2012 (AMEM - ASEAN Energy Minister Meeting)
(4) Disclosureof Awarded Best Practices	Approx. September 2012

IV-3. Building of a System for Utilizing Existing Implementing Organizations (ASEAN Energy Management Service)

IV-3-1. Progress Situation and Issues in the System Building

Although this system was established in the current fiscal year, in order to develop improvement, promotions were carried out to increase the registrations of implementing organizations, but the system has not reached the stage of actual trial use by customers.

This system is a type of information system that aims to provide access for customers in the various ASEAN countries who require services such as energy audits or training to directly contact the existing implementing organizations inside the ASEAN region who are providing such services. Specifically, this system has the following types of functions.

(1) Information Database of Customers

This stores registered information including the contents, scope, basic specifications and conditions of the service that the customer actually requires, combined with the customer's corporate outline. However, discussion was made regarding whether or not storage of these contents is really necessary, and it was considered that storage was not necessarily required.

(2) Information Database of Existing Implementing Organizations

This stores the registered information, including the contents, basic specifications, scope, and conditions of the services that an existing implementing organization actually provides, together with the outline of the company or implementing organization.

(3) Registration Search System between Customer and Existing Implementing Organization (ASEAN Energy Management Service)

This compares information from the customer side and the implementing organization side, and searches and presents results where the conditions between the customer and the implementing organizations match or almost match. It also allows access to detailed information of the counterpart.

After gaining the necessary information using this system, customers and implementing organizations that are mutually interested directly contact each other and start individual negotiations regarding detailed service provision conditions, and proceed with contract matters. Provision of information and services for individual negotiations is not handled by this system.

The registration and search system and the display screens described above were prepared offline first, and then preparation for the next stage of trial operation was completed. Registration is proceeding following reconfirmation of the local implementing organizations by the Focal Points in each country, and the registration processes are currently being advanced.

More time was required for the initial registration of the implementing organizations than expected, causing a delay from the initial plan.

Up till now, 17 organizations from eight countries have been registered, and their details are shown in Table IV-3-1. Because the yellow-colored areas in the table indicate places where the details of the supplied technical services are insufficient, information is continuing to be requested. Investigation is currently being carried out regarding whether registration of ESCO-related companies should be carried out as well.

Table IV-3-1: ASEAN Energy Management Service Registered Institutions

No	Country	Registered Organization	Operation		Business / Services					
			Gov.	Private	E.Audit	Training	Education	Consult	ESCO	Others
1	Brunei	OGDC(Oil & Gas Discovery Center)		○	○					
	Cambodia									
2	Indonesia	Narama Mandiri, PT		○	○	○		○		
3		Energy Technology Center	○		○	○		○		
4		Education & Training Center for Energy & Electricity (ETCEE)								
5		KONEBA/Energy Management Indonesia(EMI)								
6		Chazaro Gerbang International, PT(CGI)								
	Lao PDR									
7	Malaysia	ISI Ventures Sdn.Bhd.		○						
8		Process Systems Engineering Centre (PROSPECT)	○		○	○	○	○		○
9		Malaysia GreenTech (former PTM)								
10	Myanmar	Myanmar Engineering Society		○						○
11	Philippines	Department of Energy (DOE) Philippines, Energy Efficiency & Conservation Division	○		○	○		○		
12	Singapore	G-Energy Global Pte.Ltd.		○	○	○		○		
13	Thailand	ATT Consultants Co.,Ltd		○	○	○				○
14		Cool House Co.,Ltd.		○						
15		Direction Plan Co.,Ltd (DP)		○	○	○	○	○		○
16		The Energy Conservation Center of Thailand (ECCT)	○		○	○		○		
17	Vietnam	Energy Conservation Center of Hanoi (ECC-Hanoi)	○		○	○	○			

IV-3-2. Latest Plan

Time was required for discussions and investigations regarding the problem points described above, and also for the registration work. Even though a call was made for increases in the number of implementing organization registrations in fiscal year 2011, increases were not obtained. Further, trial operation has notstarted.

Because customer registration is not necessarily required, we made strong requests to the Focal Points in each country also at the Post Workshops to further increase the number of implementing organization registrations in each country, to raise interest among the customers and make it easier for them to make specific contact. In addition, we requested that trial approaches should be made to candidate customers.

IV-4. Development and Dissemination of Tools for Energy Management

The Energy Management System entered the Step-2 stage in fiscal year 2011. Many tools have been developed, including the Energy Management Handbook, In-house Database, Technical Directory (Industries and Buildings), and other Technical Handbooks, and it is aimed to utilize these comprehensively to realize the most effective energy management. The overall plans and issues of these tools are shown in the previously described Table IV-1-1. An explanation is given below regarding each item.

IV-4-1. Dissemination of the Energy Management Handbook

The latest edition of the Energy Management Handbook ASEAN Version (in English) is on the Energy Conservation Center, Japan and the ACE websites, from where it can be easily downloaded. This fact is emphasized repeatedly at the Intensive Seminar-Workshops to realize dissemination. For further dissemination, we advised countries requiring versions in their own language to create their own language versions. However, due to the problem of budgetary constraints in each country, this situation meant that promotion was not carried out as much as expected, and specific support was provided in Myanmar and Cambodia.

1. Translation to local language and binding of the Handbook

In Vietnam, although the Handbook has already been translated with cooperation of a pioneer company, apparently Vietnamese government-related persons required time from a budget processing point of view so that printing and distribution have not been carried out. However, at the Summary Workshop there was a report that the Handbook had been printed and bound, so we plan to confirm the actual progress.

In the countries that were visited during the current fiscal year, Myanmar made a request for aid in translating the Handbook to the local language, while Lao PDR made a request for aid in printing and binding, and assistance was provided for these requests in order to allow use of the Handbook at the seminars. Regarding the translation and binding in Myanmar and Cambodia, requests for assistance were strongly raised and finally supports for those were decided and accomplished in this year.

2. Preparation Condition in Each Country

Country	Activities for disseminating the Energy Management Handbook
Brunei Darussalam	Based on the Handbook, a compact Energy Management Guide has been created for domestic use, and is being disseminated.
Cambodia	The Handbook has been translated to the local language. Need support also for printing.
Indonesia	Translation to the local language will be finished in next year.
Lao PDR	The Handbook has been translated to the local language by a pioneer company, and is being disseminated as a joint English-Laotian version.
Malaysia	Dissemination of the English version has no problems
Myanmar	Translation to the local language and printing hasbeen finished.
Philippines	Although the dissemination of the English version has no problems, there are requests for translation to the local language.
Singapore	Dissemination of the English version has no problems
Thailand	Because parts of this Handbook have been edited from the Thai TEM Handbook, and since Thailand has its own Energy Management Standards, the English version is used.
Vietnam	Although the Handbook has been translated to the local language by a pioneer company, the situation regarding the binding and dissemination is unknown. Need more support for dissemination.

IV-4-2. Dissemination of In-house Database and Technical Directory (Industries and Buildings)

1. Dissemination of In-house Database (Industries and Buildings)

At the Intensive Seminar-Workshops held in four countries during the current fiscal year, introductions to the In-house Database described above were given by ACE.

In both the Buildings and Industries teams, the actual use of the In-House Data Base (IHDB) was strongly promoted by carrying out OJT energy conservation audits, and in addition, usage of this tool was once again strongly recommended to these energy management teams as one of the management tools.

2. Dissemination of Technical Directory (Industries and Buildings)

The information collected until now has been compiled by ACE under the guidance of ECCJ experts, and currently 149 cases in the Industries sector and 66 cases in the Buildings sector have been included.

However, in order to make this more effective function, investigation is currently being carried out regarding the following improvements in which the Industries and Buildings teams are to work jointly with ACE to more widely disseminate technologies linked with the ASEAN Award cases in the future.

(1) Basic Policy concerning the TD

The TD should not aim to build a technical data base, but should rather be set as a system that compiles and utilizes the technical items obtained from the PROMEEC activities as a directory.

(2) Data Sources

The applications selected in <1> Energy Efficiency Buildings and <2> Energy Management/Best Practices Building & Industries in the ASEAN Energy Awards should be used as the TD basic data.

(3) System to be Used

The TD should be linked with the Awards website as a system in which the applicable materials of the Awards website can be opened from the TD to provide users with theapplications.

IV-4-3. Development of Technical Handbooks

While the Energy Management Handbook presents activity guidelines in energy management from the practical and administrative viewpoints, the creation of additional handbooks providing comprehensible improvement guidelines concerning technologies will enable the provision of energy management guidelines for implementing integrated energy conservation promotion activities.

Through a bilateral cooperation between Japan and Thailand, an English version of the Thermal Energy Efficiency Improvement Handbook has already been completed. In addition, the English version of the Electrical Energy Efficiency Improvement Handbook was first completed during the current fiscal year, and was uploaded to the ECCJ website. These handbooks were provided at opportunities such as the Intensive Seminar-Workshops in the current fiscal year. Further, the electronic data of various energy management handbooks and energy conservation audit handbooks and manuals that are being prepared in each country should be collected, and we are calling on the Focal Points in each country to provide the electronic data as common reference tools so that they would be available on ACE website. The related handbook and manual preparation conditions of each country that we confirmed until now is shown in the following figure, and we believe that there are many other related handbooks and manuals.

	Brunei Darussalam	Cambodia	Indonesia	Lao PDR	Malaysia	Myanmar	Philippines	Singapore	Thailand	Vietnam
EC Handbooks	EM Reference for Building & Industry				EE&C Guidelines for Thermal & Electricity				TEEI (Thermal), EEH (Eletrical)	
Energy Audit Handbooks	Basic Guide to Building Energy Audit			Guidelines on EA for Buildings & Factories (from Thai)					Guidelines on EA for Buildings & Factories	EA for Industry & Building
EC Tips	(Preparing)	EC Tips for Households		EC Tips for Industry, Building and Household						
Others									TEM HB	Training Textbook for Energy Manager

Fig. IV-4-3-1: Energy Conservation Handbooks and Manuals in the Various ASEAN Countries

IV-5. Investigation of Building other Information System (e-Directory)

In addition to the use of the tools and information described previously, the provision of information on ESCO businesses and companies offering energy conservation technologies and equipment will be effective for companies and related persons in the ASEAN region to promote energy conservation. In this plan, the following items are to be prepared with the intention of collecting and arranging the names of subject companies and the names of companies that possess energy conservation equipment and technologies in each country. Calls for cooperation have been made to the Focal Points at the Inception Workshops, during local activities, and even at the Summary & Post Workshops.

(1) Directory of ESCO businesses in each country

(2) Directory of companies offering energy conservation technologies and equipment in each country

Note that regarding item (2), the JASE-World technology collection including accessable website, which summarizes the representative Japanese energy conservation technology was introduced at each occaision in this fiscal year.

In order that related information can be supplied through each country's Focal Points in the future, a prescribed format was created and sent out by ACE in the current fiscal year with the intention of preparing a summary during this fiscal year. However, the data has not yet been submitted by each country. Part of the format is shown below, and it is planned to include information about the supporting supplier outside the right hand column.

Large Category	Medium Category	Small Category	Equipment & Device
1. Manufacturing			
1.1. General Manufacturing	1. Combustion Equipment	(1) Air Ratio Improvement	1) O2 (Oxygen) Analyzer
1.1.1. Food Processing			2) Fuel & Air Ratio Set & Adjustment Device
1.1.2. Beverage, Tobacco, Fodder			3) Automatic Combustion Control Equip.
1.1.3. Textile, Garment			4) High Air Ratio Control Device
1.1.4. Wood, Furniture		(2) Thermal Efficiency Improvement	1) Preheater for Combustion Air
1.1.5. Printing			2) Variable Volume Control Blower for Combustion Air
1.1.6. Rubber, Leather, Fur			3) Waste Heat Recovery Type Combustion System
1.1.7. Ceramic, Bricks			4) Order Combustion Control Device
1.1.8. Non-Ferrous Metal			5) Steam Atomize & Gas Atomize
1.1.9. Metal Product			6) Ceramic Radiant Tube Burner
1.1.10. General Machinery			7) Oxygen (Rich) Combustion Burner
1.1.11. Electric Machinery			8) Catalytic Combustion Burner
1.1.12. Information Communication Machinery			9) Flammable Wastage & Flammable Exhast Gas Mixed Combustion Equip.
1.1.13. Electronic Device			10) Submerged Combustion Burner
1.1.14. Transportation Machinery			11) High Efficiency Dipping Tube Burner
1.1.15. Precision Machinery			12) Immersion Heater
1.1.16. Other Manufacturing			13) Fluidized Bed Combustion Device
			14) High Efficiency Oxygen Separation Device

Fig. IV-4-3-2: Proposed Format to collect data of Other Information System (e-Directory)

V. Results of Discussions at the Summary Workshop

On March 7, 8 and 9, 2012, the Focal Points of the ASEAN countries gathered together to hold the Summary and Post Workshop in Siem Reap, Cambodia in order to share information and carry out discussions between the 10 counties through confirming and assessing the results and outcomes of the activities in the three projects and holding talks concerning the future plans. At the Summary Workshop, participants carried out discussion of the evaluation and results in the current fiscal year relating to the energy management project and confirmed the finalization of the current project within this fiscal year, together with the requirement and discussion for new PROMEEC Projectfor fiscal year 2012 and onward. The program of the Summary and Post Workshop is shown in the Attached Materials V-1-1.

V-1. Summary of the Project Implementation Results and Outcomes in FY2011

The activities in the current fiscal year were also developed according to plan. The preparation of various tools and systems on the whole actually made satisfactory progress, and the activities in the Awards for the Best Practices of energy management was smoothly implemented. As a result, the previously described Step-1 System of the ASEAN Energy Management System has been nearly completed and operations were started.

Based on the above, part of the Step-2 System has been also started, and the activities from fiscal year 2011 could be smoothly started.

The following indicates the results and outcomes of the projects in the current fiscal year.

1. As well as disseminating the various programs and tools of the ASEAN Energy Management System through implementing Intensive Seminar-Workshops (ISW), Energy Management Handbook Training, and visits to factories and buildings in four of the ASEAN countries, the network of cooperating companies and organizations was expanded. In the activities in Myanmar that continued from the previous year, the English version of the EM Handbook was distributed to all the participants, while in Lao PDR the Laotian version was provided to everyone taking part. During the Group Work in the Training in countries including Malaysia, we could confirm that the foundations for independent activities are favorably taking shape as for the points that the local Focal Points and other instructors gave advice and guidance. In addition, in Cambodia, Lao PDR, and Myanmar, strong requests were also made for support in translating the Handbook to the local language and partly for the binding, so afterwards support for translating the Handbook to the local language was started and finished in Cambodia and Myanmar.

2. Concerning the ASEAN Energy Management System, the Step-1 System consisting of the basic functions and related programs and tools has nearly been completed.

1) The Award system for the collection and dissemination of the Best Practice cases in energy management was smoothly implemented, and proposals for further improvements were presented based on the results of discussions held among the Board of Judges.
2) Trial use of the ASEAN Energy Management Service that is used for existing implementing organization and customer searching is currently under preparation. Seventeen registrations were completed in the existing implementing organization registration, and the system was awaiting registration of customers. In consideration of the current situation where the trial use was not proceeding as expected, it was decided to further increase the registrations of implementing organizations in each country, while putting off the registration of customers which is not always required. In addition, we encouraged interested parties in each country to carry out trial use.
3) Regarding the investigation and preparation of measures for the STEP-2 System functions and programs, it was determined to proceed after certain progress of the Step-1 System described above, and the priority was lowered for the time being.

3. The Network of Cooperators was expanded through implementing local activities. 1,260 persons have participated in the Intensive Seminar-Workshops since fiscal year 2006 while 658 people have attended the Training Sessions since fiscal year 2007. In addition, teams of experts have visited a total of 121 companies and organizations since fiscal year 2004 in a plan to expand the network through giving guidance including popularizing the activity results.

4. Report and proposal from ECCJ (on Energy Management Issue)
Report was presented by ECCJ, focussed on the local activity result and status of ASEAN Energy Management System Development. Translation of Energy Management Handbook into own language was done both in Myanmar and Cambodia in this fiscal year. Although all planned system and tools have not completed yet, through eight years PROMEEC EM activity result, basic energy management infrastructure has been established, current energy management project is declared to be finalized in this fiscal year, however, strong requirements are confirmed from every focal point for evaluating useful and continuous support on energy management tools. As the establishment and operation of energy management system and tools are very important core project in a capacity building, linking with ESCO, private sectors and Energy Efficiency & Conservation Equipment information, it should be more focussed to develop and establish for ASEAN Energy Management Service, and e-Directory (ESCO) and e-Directory (EE&C Technology and Equipment Suppliers) for more development of Business Matching.

添付資料Ⅴ－１－１：Summary & PostWorkshop の Agenda




FINAL AGENDA
SUMMARY AND POST WORKSHOP
PROMOTION OF ENERGY EFFICIENCY AND CONSERVATION (PROMEEC)
(MAJOR INDUSTRY, BUILDING AND ENERGY MANAGEMENT)
SOME-METI WORK PROGRAMME 2011-2012
7-9 March 2012, Siem Reap, Cambodia

Day 1: 7 March 2012

				Remarks
08:00	-	08:30	REGISTRATION	
08:30	-	09:15	Opening Session	
08:30	-	08:35	- Statement from the Host Country	
08:35	-	08:40	- Opening Statement from EE&C-SSN Coordinator	
08:40	-	08:45	- Opening Statement from ACE	
08:45	-	08:50	- Opening Speech by ECCJ	
08:50	-	09:15	Election of Co-Chairs & Rapporteur, Adoption of the Agenda & Photo Session	
			SUMMARY WORKSHOP	
SESSION 1			PROMEEC – ENERGY MANAGEMENT	
09:45	-	11:45	1. Evaluation of Local Activities by Focal Points - Expectation and Actual Results and Achievements - Points to be Improved and Achievements to be Shared with Other Countries	
09:45	-	10:15	Presentation by Lao PDR	Outcomes & Recommendations of PROMEEC Activities: 1. Seminar-Workshop; 2. Training on EMHB; 3. EMHB Introduction
10:15		10-45	Presentation by Malaysia	Outcomes & Recommendations of PROMEEC Activities: 1. Seminar-Workshop; 2. Training on EMHB; 3. EMHB Introduction
10:45		11:15	Presentation by Myanmar	Outcomes & Recommendations of PROMEEC Activities: 1. Seminar-Workshop; 2. Training on EMHB; 3. EMHB Introduction
11:15	-	11:45	Presentation by Thailand	
11:45		12:00	2. Status and Evaluation of Progress in Award System for E.M. / Preparation of ASEAN E.M. System (Step-2) / ASEAN Energy Management Service for Implementing Organizations – Customer by ACE	AEA Presentation AEMS development
12:00	-	13:30	Lunch	
13:30	-	14:00	3. Summary and Evaluation of Activities (ECCJ) - Results : Main Activities in 4 Countries - Evaluation of Achievements and Results of	

			Local Activities **- Evaluation of Progress in Preparation of Programs and Systems to Establish "ASEAN Energy Management System"** **- Overall Evaluation and Required Improvements toward Phase -3**	
SESSION 2			**PROMEEC – Major Industry**	
14:00	**-**	**15:00**	**1. Evaluation of Local Activities by Focal Points** **- Expectation and Actual Results and Achievements** **- Points to be Improved and Achievements to be Shared with Other Countries**	
15:00	**-**	**15:30**	**Presentation by Indonesia**	**Outcomes & Recommendations of PROMEEC Activities: 1. Energy Audit; 2. OJT; 3. Seminar-Workshop**
14:40	**-**	**15:00**	**Presentation by Philippines**	**Outcomes & Recommendations of PROMEEC Activities: 1. Energy Audit; 2. OJT; 3. Seminar-Workshop**
15:00	**-**	**15:35**	**2. Status and Evaluation of Progress in Preparation of Technical Directory and Dissemination of In-house Database by ACE**	
15:30	**-**	**15:40**	**Coffee Break**	
15:45	**-**	**16:30**	**3. Summary and Evaluation of Activities (ECCJ)** **- Results : Main Activities in Indonesia / Philippines** **- Evaluation of Achievements and Results of Local OJT Activities** **- Evaluation of Progress in Improving Technical Directory and Developing In-house Database including Dissemination** **- Overall Evaluation and Required Improvements toward Phase-3**	**TD Industry development** **IHD Industry development**
16:30	**-**	**17:00**	Q & A and Overall Discussion	
			End of Session for Day 1	
18:30			**Reception Dinner**	

Day 2: 8 March 2012

SESSION 3			**PROMEEC – Building**	
09:00	**-**	**10:20**	**1. Evaluation of Local Activities by Focal Points** **- Expectation and Actual Results and Achievements** **- Points to be Improved and Achievements to be Shared with Other Countries**	
09:00	**-**	**09:30**	**Presentation by Brunei Darussalam**	**Outcomes & Recommendations of PROMEEC Activities: 1. Energy Audit; 2. OJT; 3. Seminar-Workshop**
09:30	**-**	**10:00**	**Presentation by Cambodia**	**Outcomes & Recommendations of**

				PROMEEC Activities: 1. Energy Audit; 2. OJT; 3. Seminar-Workshop
10:00	**-**	**10:30**	**Presentation by Vietnam**	**Outcomes & Recommendations of PROMEEC Activities: 1. Energy Audit; 2. OJT; 3. Seminar-Workshop**
10:30	**-**	**11:00**	**2. Status and Evaluation of Progress in Award System for E.M. / Preparation of ASEAN E.M. System (Step-2) / ASEAN Energy Management Service for Implementing Organizations – Customer by ACE**	
11:00	**-**	**11:30**	**3. Summary and Evaluation of Activities (ECCJ)** **- Results : Main Activities in Brunei / Cambodia / Vietnam** **- Evaluation of Achievements / Results of Local OJT Activities** **- Evaluation of Progress in Improving Technical Directory and In-house Database including Dissemination** **- Overall Evaluation and Required Improvements toward Phase-3**	
11:30	**-**	**12:00**	Q&A and Overall Discussion	
12:00	**-**	**13:30**	**Lunch**	
SESSION 4			**POST-WORKSHOP**	
13:30	**-**	**15:00**	**Discussion on PROMEEC Enhancement and Improvement** **1.Presentation by all ASEAN Focal Points** **- Improvements to be made in the design and implementation strategies and activities of 3 PROMEEC sub-projects** **a. How to make the sub-projects more meaningful and relevant to the needs and priorities your Country?** **b. How do the scope and implementation arrangements could encourage greater interaction and sharing of expertise by the ASEAN Member States?** **c. How could the private sector and other relevant sectors be encouraged to participate in the PROMEEC activities?** **d. What should be done to further promote and disseminate PROMEEC tools and results of activities?** **e. What should be done to ensure effective promotion and dissemination of audit results?** **f. How to sustain the skills / knowledge acquired by trainees on conducting energy auditing? Are their skills enough? Can they prepare independent audit reports? How to link energy audits in overall EE&C programmes? Can we synergize it with other programmes? What should be the end-results?** **- New Activities** **a. Country needs** **b. Implementation strategies** **c. Deliverables / Output**	
15:00	**-**	**15:15**	**Coffee Break**	
15:15	**-**	**16:30**	**Request for New PROMEEC Projects and Activities by all ASEAN Focal Points**	
16:30	**-**	**17:00**	**Request for New PROMEEC Projects and Activities by ACE**	
			End of Session for Day 2	

Day 3: 9 March 2012

SESSION 4			POST-WORKSHOP
9:00		10:15	Discussion of New PROMEEC Projects and Activities by ECCJ
10:15	-	10:30	Coffee Break
10:30	-	11:30	Discussion of New PROMEEC Projects and Activities by all Participants
11:30	-	12:00	Summary of New PROMEEC Project Plan by ACE & ECCJ
12:00	-	12:30	Closing Statements by 1. Chairperson of EE&C-SSN 2. ECCJ 3. ACE
12:30	-	14:00	Lunch
			End of Session 4 for Day 3
14:00	-	17:00	Summary of Meeting of New PROMEEC Project Plan between ACE & ECCJ
			End of Meeting

V-2. Latest Plan of the ASEAN Energy Management System based on the Implementation Results

With the exception of the ASEAN Energy Management Service, the Step-1 System has almost been completed according to plan and operation has begun. Based also on this issue, investigation has been carried out for additional functions required for the Step-2 System and the programs and tools to be included in the Step-1/Step-2 Systems.

Incorporating this point, the plan for the Step-2 System was newly developed, including the continuous improvement of the Step-1 System.

Specifically, to make the ASEAN Energy Management System a stable and sustainable system, it will be necessary to establish an infrastructure that systematically implements maintenance and expansion of the system.

This plan is described in Fig. V-2-1.

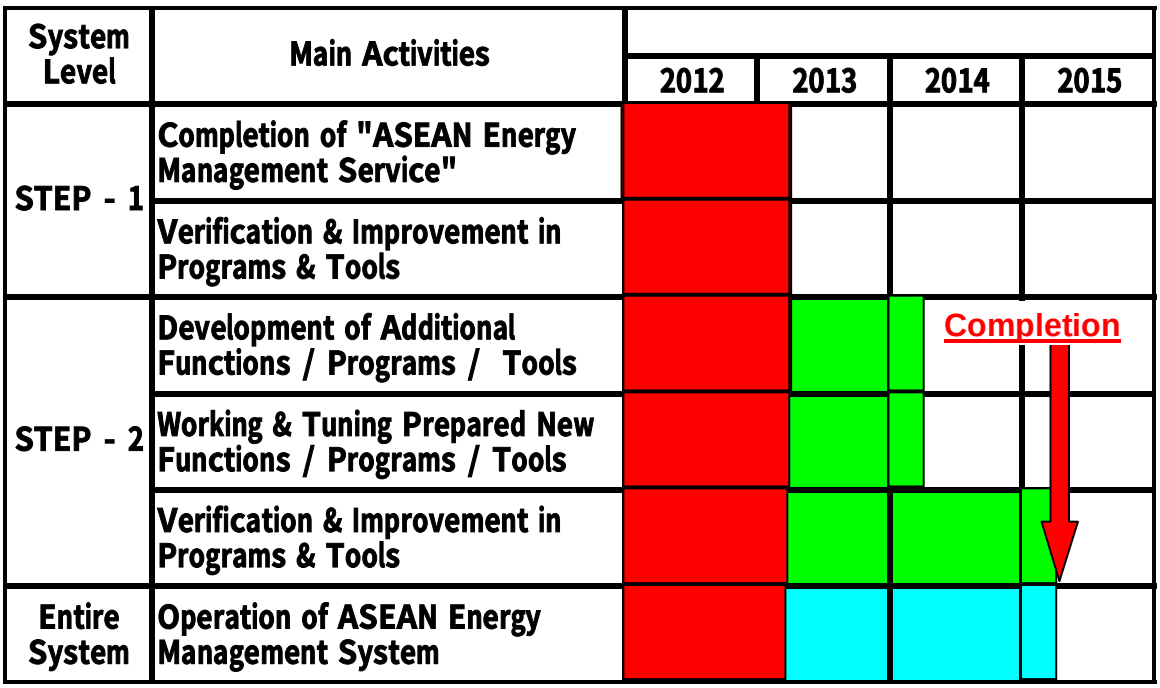

Fig. V-2-1: ASEAN Energy Management System Establishment Program

At the same time, it will also be necessary to properly establish and operate a network of related organizations, corporations and people in the ASEAN region who are the users and the cooperators of this system.

In addition, because the PROMEEC Project has currently entered Phase-3, it is important that the ASEAN Energy Management System should continue to function and be used as an effective tool for building a foundation for secure implementation and dissemination based on further voluntary efforts in the ASEAN region.

In recognition of the course of action described above, it is planned to firmly implement the following activities. Among the three items described below, items 1 and 2 relate to the improvement of the Step-1 System, while item 3 concerns the development and preparation of the Step-2 System.

1. Improvement of Functions and Programs Currently being Operated

(1) System for collecting and disseminating Best Practices in Energy Management

Improvements should be planned from a viewpoint of operations of the ASEAN Award System of Best Practices in Energy Management for Industries and Building, whose policies were determined at a Research Forum held in Japan. This will make it possible to collect energy conservation promotion cases that achieve better and more useful energy management improvements, while at the same time developing an environment that allows all 10 countries to actively submit applications to the awards.

1) Follow-up the review of the Awards categories

- Awards classified into large-scale or small and medium-scale depending on the amount of the energy consumption of factory and building

- Awards for single improvement cases (to be added to the existing factory and building awards)

2) Review of the classification standard values and definitions for the items described above.

2. Completion of Functions and Programs under Development and Start of Operations

(1) Establishment and dissemination of energy management basic tools

Continue activities including giving instruction in usage methods using simple one-day Training to disseminate the completed Energy Management Handbook together with the In-house Database and Technical Directory as the "basic tools of energy management".

(2) Speed up the increase in implementing organization registration numbers and trial operation of "customer and implementing organization registration search system" (ASEAN Energy Management Service), which has the purpose of utilizing existing implementing organizations for carrying out energy audits and training.

3. Functions and Programs that are Planned to be Newly Developed and Constructed

(1) Preparation and introduction of new tools

In addition to the energy management basic tools described above, supplementary handbooks on technical aspects will be prepared.

Specifically, the English versions of the Thermal Energy Efficiency Improvement (TEEI) Handbook and Electrical Energy Efficiency Improvement (EEH) Handbook, which were prepared in a cooperation based on the Green Partnership Program (GPP) policy dialogue between Thailand and Japan have been completed for use in the ASEAN nations, and both have been uploaded to the ECCJ website where they can be downloaded by anyone.

In addition to these handbooks, we are currently requesting the supply of information from each ASEAN country to collect energy audit manuals and energy conservation handbooks possessed by each country. If required, these can be translated into English and posted on the ACE website to allow utilization by each ASEAN country.

(2) Preparation of an information system (e-Directory) relating to energy conservation businesses

To provide access to companies offering energy conservation technologies and equipment, develop a directory to introduce ESCOs (Energy Service Companies), enterprises providing energy conservation technologies and equipment, and contact persons. A basic investigation will be carried out for developing this directory for application as an "e-Directory" using the website of the ASEAN Centre for Energy (ACE). For this, detailed introductions were given in the current fiscal year, including the website that allows access to the JASE-World technical directory which collects Japanese energy conservation technologies. Other than this, since it is likely that similar information will be available in each ASEAN country, investigation was started to integrate them.

(3) Improvement of the ASEAN Energy Management System to facilitate use

(3)-1 Establishment of "One Stop to System" functions

Although there is an aim to improve the accessibility to the information required by users, more time and budget are required for carrying out the investigations, and this will be started when the items (1) and (2) described above have progressed further.

(3)-2 Establishment of an Advisory Service function

For cases when "One Stop to System" cannot provide advice, or when more specialized advice is required, it is planned to set a function in which technical experts voluntarily register themselves and appropriate experts give advice to users. However, there were many issues including the registration of experts from the ASEAN region so it was decided that this item will also be started when the items (1) and (2) described above have progressed further.

V-3. Discussion on the Direction for New Project after 2012-2013

New PROMEEC Project Idea was discussed and summarized as follows.

[Overall Scheme]

(1) Human Resources Development and Information Sharing: OJT Energy Audit, Seminar-Workshop

(2) Promotion of EC Technology and Business Matching: Seminar-Workshop, Exhibition, Business Talk

(3) Development and Dissemination of Energy Management System and Tools:

- ASEAN Energy Award
- In-house Database
- Technical Directory
- ASEAN Enerfy Management Service
- e-Directory of EC Technology and Equipment Suppliers

- Energy Management Handbook
- Energy Audit Manual
- ASEAN Expert Databank
- Pamphlet of PROMEEC Project Activity Reports
- Webite for PROMEEC
- Others

(4) MTPEC (Multi-lateral Countries Training Course of Promotion of Energy Conservation): Level up of project contents, enrichment, development of tools to enlarge scope; smart-community, smart grid, low carbon society, ESCO,etc.

Details of above (1) through (4) are shown as follows.

(1) Human Resources Development and Information Sharing: Human Resource Development is to be accomplished through OJT of Energy Audit

The purpose is not only capacity building of Energy Conservation for government officers and energy management staffs in objective factories and buildings, but also for establishment of infrastructure on ESCO project promotion. It is also expected to have the development of ESCO project and dissemination of high efficient Energy Conservation Equipment.

- OJT will be done for core group with 10-12 members. This core group is also composed of one to two ASEAN engineers from EC advanced ASEAN countries, and approved by AMSs (ASEAN Member States), ACE and ECCJ. ACE will contract with this group, and support cost. Japanese experts will join in this OJT as advisers.
- Participants for core group are to be given certificates as authorized energy auditor signed with AMSs, ACE and ECCJ.
- Core group (OJT participants) makes Reports, and Workshop is held with ESCO proposal based upon the report result. Investors, ESCO and EC Equipment Suppliers with private sector companies are requested to participate in this workshop.
- Each country should select the objective factories and buildings for energy audit with high potential of energy conservation and realizing ESCO project.
- Three days lecture and three days practical energy audit, then issue the certificate of energy auditors.

(2) Promotion of EC Technology and Business Matching: Seminar-Workshop for Promotion of EC Technology and Business Matching is to be held

- Seminar including introducing ASEAN Energy Award is held together with the event of EC Exhibition and Conference, etc. in ASEAN to disseminate energy management system and tools, and to introduce Japanese State of the Art EC Technologies. Exhibition with Sales Talk with co-operation of JASE-World is also planned in future.
- Introduction of Successful Cases in Demonstration Project in ASEAN by Japanese Cooperation through NEDO, JICA, etc. is also planned.
- Workshop of ASEAN-Japan Best Practices on EC Equipment Standard and Labeling is also to be held for the purpose of EC Information Sharing in ASEAN.

(3) Development and Dissemination of Energy Management System and Tools: Existing EM System and tools which have been developed in PROMEEC Project should be improved and disseminated, and those system and tools are to be disseminated through OJT Energy Audit and Seminar-Workshop.

- Dissemination of necessary tools to promote ESCO project in ASEAN such as EM Handbook, EA Manuals, etc.
- More promotion of participation of Japanese companies to the Information Supply Toola such as Techinical Directory, e-Directory, ASEAN EM Service, is planned, and Japanese State of the Art EC Technologies information shall be sent from the platform of this project.
- Task Force Team is requested to conduct this in ASEAN countries.

(4) MTPEC (Multi-lateral Countries Training Course of Promotion of Energy Conservation): Training in Japan; Although existing MTPEC Training Course in Japan is considered as a continuous program for policy training, this opportunity should be also utilized as for tools to the level up and achieve the purpose of this project content, therefore, it should also contain some elements which have been conducted in the Research Forum in EM Project. Participants should be limited to relevant to this project, and requested to have the approval of AMSs, ACE and ECCJ.

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