

Terminal Evaluation Review form, GEF Evaluation Office, APR 2014

1. Project Data

Summary project data			
GEF project ID		81	
GEF Agency project ID		4647	
GEF Replenishment Phase		Pilot Phase	
Lead GEF Agency (include all for joint projects)		World Bank	
Project name		Promotion of Electricity Energy Efficiency	
Country/Countries		Thailand	
Region		Asia	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		Operational Program 5: <i>Climate Change: Removing barriers to energy conservation and energy efficiency</i>	
Executing agencies involved		Electricity Generating Authority of Thailand's (EGAT) Demand-Side Management Office (DSMO)	
NGOs/CBOs involvement		None identified.	
Private sector involvement		One of the beneficiaries: private sector energy services companies (ESCOs).	
CEO Endorsement (FSP) /Approval date (MSP)		12/1/1991	
Effectiveness date / project start		August 15, 1993	
Expected date of project completion (at start)		December 31, 1998	
Actual date of project completion		June 30, 2000	
Project Financing			
		At Endorsement (US \$M)	At Completion (US \$M)
Project Preparation Grant	GEF funding	.595	0.595
	Co-financing		
GEF Project Grant		\$9.5	\$9.7 (trustee dataset)
Co-financing	IA own		
	Government	\$148.5	NA
	Other multi- /bi-laterals	\$31	NA
	Private sector		
	NGOs/CSOs		
Total GEF funding		10.095	10.295
Total Co-financing		\$179.5	\$49.56
Total project funding (GEF grant(s) + co-financing)		\$189.595	\$59.855
Terminal evaluation/review information			
TE completion date		December 28, 2000	
TE submission date		NA	
Author of TE		Adam Hinge (Consultant) and Jas Singh	
TER completion date		February 2015	
TER prepared by		Erika Hernandez	
TER peer review by (if GEF EO review)		Shanna Edberg	

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF EO Review
Project Outcomes	NA	HS	NA	S
Sustainability of Outcomes	NA	L	NA	ML
M&E Design	NA	NA	NA	MU
M&E Implementation	NA	NA	NA	MS
Quality of Implementation	NA	S	NA	MS
Quality of Execution	NA	S	NA	MS
Quality of the Terminal Evaluation Report	NA	NA	NA	MS

3. Project Objectives

3.1 Global Environmental Objectives of the project:

According to the TE, the Project’s Global Environmental Objectives are to reduce emissions of CO₂ that contribute to climate change. This project aims to improve energy efficiency and reduce carbon emissions in Thailand - one of the world’s fastest growing economies. It seeks to ensure an adequate level of electrical supply that is environmentally sustainable. As stated in the PD, the project seeks to “demonstrate on a large scale, and within a reasonable time frame, first, the potential for electricity savings to replace substantial fossil fuel power generation, thereby avoiding additional CO₂ (NO_x and SO₂) emissions; and, second, the capacity of the electric power sector and other relevant agencies, public and private, to achieve those savings.” The project aims to reduce CO₂ emissions by 1.16 million tons per year during project implementation. The project also seeks to provide a replicable mode, “to generate among utilities in other developing countries a similar commitment to undertake large scale demand-side management programs,” [p. 3, TE].

3.2 Development Objectives of the project:

The project has two overall **development objectives** [p. 2, PD]:

- (a) To build efficient institutional capability in the Thai electric power sector and the energy-related private sector to deliver cost-effective energy services throughout the economy; and,
- (b) To pursue policies and actions that would lead to the development, manufacture and adoption of energy efficient equipment and processes within the country.

The project also contains six **immediate objectives** (Technical Annex of the Project Document, p. 33-35):

- (1) To improve and expand the distribution system of the Metropolitan Electricity Authority (MEA) in order to meet the expected rapid increase in demand;
- (2) To sustain the efficiency of MEA’s operations in the face of a rapid increase in the scope and complexity of its business;
- (3) To strengthen the utility’s financial and management information systems;
- (4) To investigate opportunities for privatization of some of its activities;

- (5) To incorporate increased levels of safety and environmental acceptability in the utility's design and operation practices; and,
- (6) To introduce demand-side management (DSM) including the promotion of electricity energy efficiency in the Thai power sector.

The project will be composed by the following components:

Component (a): Creation of an organizational unit within EGAT (DSO) to plan develop and implement a broad menu of DSM programs across all sectors, along with providing for the required staff training and capability building;

Component (b): Development and implementation of technological and market intervention strategies in the Residential, Commercial and Industrial sectors of the economy;

Component (c): Development of funding and financial mechanism to assure market adoption of the various energy efficiency programs;

Component (d): Development and promulgation of necessary Codes and Standards to support higher levels of equipment efficiency in all sectors;

Component (e): Establishment of Testing Laboratories and the associated processes of equipment testing and rating;

Component (f): Development of Project Evaluation and Monitoring Systems including sector-specific Evaluation and Monitoring protocols;

Component (g): Development and training of Energy Service Companies and DSM Program Contractors in the public and private sectors;

Component (h): Integration of Supply-side and Demand-side planning and incorporation of environmental externalities in the electricity planning process;

Component (i): Development of a Direct Utility Load Control Program; and,

Component (j): Undertaking Special Studies as needed to maintain cognizance of emerging technologies with relevance to the Thailand environment.

3.3 Were there any **changes** in the Global Environmental Objectives, Development Objectives, or other activities during implementation?

Global Environmental and Development Objectives did not change. However, the TE states that program priorities and strategies were modified at the implementation period in order to adapt the program operations to the Thai context [p. 4, TE].

4. GEF EO assessment of Outcomes and Sustainability

Please refer to the GEF Terminal Evaluation Review Guidelines for detail on the criteria for ratings.

Relevance can receive either a Satisfactory or Unsatisfactory rating. For Effectiveness and Cost efficiency, a six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess. Sustainability ratings are assessed on a four-point scale: Likely=no or negligible risk; Moderately Likely=low risk; Moderately Unlikely=substantial risks; Unlikely=high risk. In assessing a Sustainability rating please note if, and to what degree, sustainability of project outcomes is threatened by financial, sociopolitical, institutional/governance, or environmental factors.

Please justify ratings in the space below each box.

4.1 Relevance	Rating: Satisfactory
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The TE does not give a rating for this section. The project is relevant to both the GEF and to the Government of Thailand. Hence, this TER gives a *satisfactory* rating. As stated in the project document, the project’s goals are in accordance with Thailand’s goals for (i) increasing power sector investments; (ii) accelerate the pace of privatization of the power supply industry; (iii) make a strong thrust towards energy conservation; and, (iv) emphasizing environmentally sound and sustainable development [p. 1, TE]. The adoption of the National Environmental Act mandated the reorganization of the Office of the National Environment Board (NEB), the head public environmental agency, gaining a cabinet-level committee status. As part of its reorganization, it is implementing the National Environmental Action Plan, with the help of the World Bank. As for the GEF, relevance in this project can be confirmed through carrying out the work of the Operational Area 5 – *Climate Change: Removing barriers to energy conservation and energy efficiency*. Hence, the project would help to reduce the emission of green-house gases by avoiding the need to construct fossil fuel-fired power plants [p. 7, PD].

4.2 Effectiveness	Rating: Satisfactory
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The TE rated this section as *highly satisfactory*, which the TE refers to as overall assessment for project outputs [p. 6, TE]. Based on the information provided by the Terminal Evaluation, this TER rates effectiveness as *satisfactory*. Although the majority of the project components were achieved, some important environment-specific components were not carried out. The Demand-Side Management Office (DSMO) of the Thailand Electricity Generating Authority was not able to fully develop the Integrate Resource Planning (IRP) program. Market adoption of energy efficiency programs under Component (c) is not assessed in the TE, nor is the project’s private sector component (g), training to the Energy Service Company (ESCO) program. However, Component (b), creating DSM programs in the Residential, Commercial and Industrial sectors outperformed the targets in that energy savings per year which more than doubled for the first five programs. The TE states that despite the project having pursued very ambitious goals, it managed to successfully achieve its objectives, “introducing changes in the power sector, the private sector, and consumer purchasing practices,” [p. 5, TE]. The Memorandum of the Director (MOD or DSMO’s Director) had initially designed an overly ambitious implementation schedule. However, this situation was corrected by the Electricity Generating Authority of Thailand (EGAT) by revising its timetable, with the Bank’s agreement. [p. 5, TE]. TE states that EGAT developed one of the most successful Demand-Side Management (DSM) projects, even in comparison with smaller DSM programs in Jamaica, Mexico and Sri Lanka [p. 6, TE]. Moreover, the original GE objectives were of reducing CO₂ tons by 1.16 million per year during the project implementation. The project surpassed

GE objectives in that a total of 2.32 million tons of CO₂ emissions per year were reduced by the end of the project, although TE does not state whether these were direct reductions, indirect reductions, or a combination of the two [p. 6, TE].

Progress towards achievements of project objectives is detailed further below along each of the project components. The results were registered after the World Bank's mission to the project site during October 2000 [p. 29-30, TE]:

- **Component (a) – Satisfactory.** A Demand-Side Management Office (DSMO) was established within the EGAT in 1993 with 40 staff. 176 DSM staff was trained along with 166 temporary contractors that worked on DSM activities in 2 divisions.
- **Component (b) – Highly Satisfactory.** The Demand-Side Management (DSM) has designed and started 19 DSM programs in the Residential, Commercial and Industrial sectors of the economy. The first five programs resulted in a 566 MW reduction in peak demand and energy savings of 3,140 GWh/year, which was more than double the original target (238MW and 1,427 GWh/year) [p. 6, TE]. The Residential sector programs are considered to be very successful; the commercial/industrial sector was not as successful since there was a lack of viable financing.
- **Component (c) – Moderately Unsatisfactory.** The National Energy Policy Office (NEPO) allowed EGAT to recover expenses through an automatic tariff adjustment scheme (F₁) from 1993 until the end of the project. Information about market adoption by all of the energy efficiency programs is not provided.
- **Component (d) – Satisfactory.** A commercial building code was adopted in 1995 and an industrial code in 1997. NEPO has adopted minimum equipment standards for 5 end-uses, which have been approved and are to be mandatory in 3-4 years.
- **Component (e) – Satisfactory.** Throughout the project, EGAT has worked closely with the Thai Industrial Standards Institute (TISI) in developing testing capabilities and protocol; it has tested several appliances and lighting equipment and offered financial support to expand their AC testing capabilities. EGAT disbursed funds to Metropolitan Electricity Authority (MEA) to establish a testing lab for its motor programs.
- **Component (f) – Satisfactory.** The DSMO created a program evaluation department to monitor and evaluate Demand-Side Management measures. The group developed an assessment of “initial conservation and load management programs; began a system-wide load research end-use profiles and supported MEA’s end-user load research, helping to identify consumer patterns and identify future priorities; and, establish the architecture for a comprehensive tracking database system for monitoring efforts.”
- **Component (g) – Moderately Unsatisfactory.** DSMO launched an industrial pilot Energy Service Company (ESCO) program and helped with creating 4 investment packages for the first performance contracts in the country. The DSMO has broadly used local contractors to conduct market surveys, begin public campaigns, carry out evaluation functions as well as end-use metering and support other functions. The TE does not state whether training of Energy Service Companies was provided as stated in the original component. No information was found on the set up of sector-specific M&E protocols.
- **Component (h) – Moderately Unsatisfactory.** DSMO was not able to fully develop the Integrate Resource Planning (IRP) program given the restructuring period that EGAT experienced. Instead, it developed an extensive “demand-side inventory of programs, savings potential, cost and

benefits profiles and technical assessments” for interventions in the future. Incorporation of environmental externalities seems not to have taken place.

- **Component (i) – Moderately Satisfactory.** DSMO employed a load management system in commercial buildings and constructed a pilot thermal storage facility. Although voluntary load control programs were established with EGAT, MEA and Provincial Electricity Authority (PEA), they have not been yet implemented as a result of the financial crisis.
- **Component (j) – Satisfactory.** Several studies have been conducted by EGAT, through a number of potential technologies that could support DSM efforts such as “new buildings end-use and envelope measures, heat pipe technologies, stand-by energy consumption, and renewable energy study.”

4.3 Efficiency	Rating: Satisfactory
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The TE rated “project outputs” as *highly satisfactory* based on a three-point scale rating. Based on the information provided by the Terminal Evaluation, this TER rates efficiency as *satisfactory* because the project experienced some implementation delays. The efficiency assessment is also supported on having the project met and exceeded its global environmental (GE) objectives [p. 6, TE]. To start, the project experienced delays as a product of adapting Demand-Side Management (DSM) strategies to the Thai local context. This caused initial implementation delays [p 4, TE]. However, after appropriate adaptations were made by EGAT, project implementation proceeded smoothly [p. 4, TE]. Issues such as start-up delays affected the project to undergo two extensions. The first project extension was on March 18, 1998 and the second extension date was October 12, 1999. (The original project end date was December 31, 1998, [p. 4, TE]). Other issues that caused delay in project implementation are related to the lack of coordination between Electricity Generating Authority of Thailand (EGAT) and Department of Energy Development and Promotion (DEDP) and problems related to the DEDP’s audit program [p. 10, TE].

As for cost-effectiveness, the TE points out that the program demonstrated “substantial electricity savings” on a large scale, including having been effectively delivered by local utilities and other agencies/firms [p. 6, TE]. Accordingly, the EGAT has substantially exceeded its energy savings. Evaluation figures show savings of 3,140 MWh, more than the original expected savings of 1,427 MWh [p. 19, Annex 1, TE]. A Total Resource Cost (TRC) analysis methodology that was conducted identified a benefit-cost ratio of 1.7, signaling that the project was “economically attractive.” The net present value savings of all the programs was of over \$144 million. When CO₂ emissions are taken into account, considering a cost of \$50/ton, the net present savings goes up to US\$763 million. For the TE, the results are conservative given that the total amount of savings would increase if all of the programs had been evaluated. (These numbers come from the 5 initial programs that were evaluated, [p. 8, TE.]) More importantly, the project operated during the 1997 Asian Financial Crisis and, even with financial constraints and reduced equipment sales, DSMO management was able to maintain “forward progress during this difficult period, and accomplish the level of savings that has been documented, is remarkable” [p. 9-10, TE].

4.4 Sustainability	Rating: Moderately Likely
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The TE gives a *Likely* rating. The rating given by this TER is *Moderately Likely* given that consumers are now aware of energy efficiency issues and financial sustainability is supported by the ECF. Sustainability is considered *moderately likely* because the national regulatory commission that would administer the power pool is not yet operational and coordination issues are possible if activities per agency are not defined. The following lines describe sub-ratings per factor:

- **Financial sustainability – Likely.** The TE considers that financial sustainability is likely given that the Thai Energy Conservation Promotion Fund (ECF) is expected to support future DSM operations, despite the depletion of GEF funds. The TE foresees DSM programs to be sustained and that new programs will be launched as a result. This TER concurs with this assessment based on the fact that funding from the Thai Government is feasible and does not seem to highly rely upon external funding.
- **Sociopolitical sustainability – Likely.** As for this tier, an aggressive public awareness and marketing campaign were conducted to transform “targeted end-use markets to higher efficiency models, as well as bulk distribution of high efficiency products,” [p. 4, TE]. This significantly increased consumer awareness in energy efficiency [p. 9, TE]. A survey demonstrated that 87% of respondents were aware of energy efficiency issues [p. 42, TE]. The project received substantial support from EGAT, but not from the Metropolitan Electricity Authority (MEA) and the Provincial Electricity Authority (PEA). No information was found on citizen support.
- **Institutional framework and governance – Moderately Likely.** In the medium term, the National Energy Policy Office (NEPO) has agreed to support EGAT’s DSM efforts through the ECF during the Five-Year DSM Plan period of 2001-2005. DSMO is to remain under EGAT until the commissioning of the power pool in 2004. MEA’s DSM business units are expected to remain functional until they can “spun-off as non-core business groups,” [p. 12, TE]. However, once the power pool becomes operational, government energy policy officials and the national regulatory commission, that are yet to be created, will need to determine long-term arrangements. It is suggested that the DSMO be converted into an independent service provider and implement programs on a fee basis [p. 12-13, TE]. If activities per energy agency are not defined, then it is possible that the lack of coordination between them could continue producing unnecessary delays [p. 10, TE]. No other regulatory frameworks were identified.
- **Environmental sustainability – Unable to Assess.** No environmental risks affecting sustainability were identified in the TE.

5. Processes and factors affecting attainment of project outcomes

5.1 Co-financing. To what extent was the reported co-financing essential to the achievement of GEF objectives? If there was a difference in the level of expected co-financing and actual co-financing, then what were the reasons for it? Did the extent of materialization of co-financing affect project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

This TER was unable to assess the effect of co-financing on the achievement of GEF objectives, project outcomes and sustainability. The TE did not elaborate on project co-financing. There was a significant difference in the expected level of co-financing and actual co-financing. Co-financing was originally expected to be \$179.50 million. At the end of the project, co-financing decreased down to \$49.56 million. The TE explains that this change was due to cut back in consulting services (less consultants were hired) that were replaced by including "training tasks to all major consulting assignments" [p. 20, Annex 2, TE]. The effects of lower than expected co-financing are not known.

5.2 Project extensions and/or delays. If there were delays in project implementation and completion, then what were the reasons for it? Did the delay affect the project's outcomes and/or sustainability? If so, in what ways and through what causal linkages?

The project experienced delays as a result of adapting Demand-Side Management (DSM) strategies to the Thai local context [p 4, TE]. However, after appropriate adaptations were made by EGAT, the project implementation proceeded smoothly [p. 4, TE]. Issues such as start-up delays made the project to undergo two extensions. The first project extension was on March 18, 1998 and the second extension date was October 12, 1999. (The original project end date was December 31, 1998, [p. 4, TE]). Other issues that caused delay in project implementation are related to the lack of coordination between Electricity Generating Authority of Thailand (EGAT) and Department of Energy Development and Promotion (DEDP) and problems related to the DEDP's audit program [p. 10, TE]. In summary, project delays led to a one-and-a-half year project extension.

5.3 Country ownership. Assess the extent to which country ownership has affected project outcomes and sustainability? Describe the ways in which it affected outcomes and sustainability, highlighting the causal links:

The TE rated Thai Government Performance as *satisfactory* as it offered considerable support to the project. Although some agencies were not committed to the energy efficiency change like the Metropolitan Electricity Authority (MEA) or the Provincial Electricity Authority (PEA), EGAT provided is seen has having provided support to the preparation of activities [p. 14, TE]. As part of the positive impact of the government's ownership, it created a Demand-Side Management (DSM) Sub-committee to coordinate activities, provided funds through the Ft-tariffs, and helped in the development of energy efficiency commercial and industrial building codes and equipment standards. One negative observation is that the government/EGAT generally disregarded the long-term sustainability of DSMO. However, commitment by the National Energy Policy Office (NEPO) indicates that it will ensure that DSM operations continue [p. 14, TE].

6. Assessment of project's Monitoring and Evaluation system

Ratings are assessed on a six point scale: Highly Satisfactory=no shortcomings in this M&E component; Satisfactory=minor shortcomings in this M&E component; Moderately Satisfactory=moderate shortcomings in this M&E component; Moderately Unsatisfactory=significant shortcomings in this M&E component; Unsatisfactory=major shortcomings in this M&E component; Highly Unsatisfactory=there were no project M&E systems.

Please justify ratings in the space below each box.

6.1 M&E Design at entry	Rating: Moderately Unsatisfactory
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The TE did not rate M&E design at entry. This TER gives the rating of *moderately unsatisfactory* based on the design presented in the PD. The TE states that “due to poor baseline data, program monitoring and a lack of confidence by EGAT and the IMEA in the load management evaluation (...), impact figures for the Green Buildings Program were not reported” [p. 19, Annex 1, TE]. The PD called for a mid-term review and states that the DSM program would be supported by a monitoring system that would report progress “towards meeting programmatic goals” on an annual basis [p. 3 & 5, Technical Annex, PD]. The PD does not include a logical framework matrix with indicators or baseline data. However, the PD does include a set of activities in accordance with the project components. The project’s efficiency and demand-side management programs are expected to save 1,427 GWh per year, resulting in an associated emissions reduction of around \$49/ton of CO₂ abatement. An Independent Program Monitoring and Evaluation unit composed by international experts will be established and will have a \$0.5 million budget. In its Schedule A [p. 1], the TE provides a dedicated budget for M&E of \$8.1 million to be carried out by the DSMO and a \$0.5 million by the Independent Consultants.

6.2 M&E Implementation	Rating: Moderately Satisfactory
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The TE does not rate this section. This TER rates this section as *moderately satisfactory* based on the evidence presented in the TE. The TE states that the program had poor monitoring and a lack of confidence by EGAT and the IMEA in the evaluation consultants’ conclusions. However, the TE states that an Independent monitoring and Evaluation Agency (IMEA) was established that reviewed evaluation methods, carried out independent metering and evaluation surveys, verified reported impact figures and provided guidance on evaluation efforts. The TE questions the value of IMEA given that it reported to EGAT instead of reporting to the GEF, the World Bank and the DSM Sub-Committee [p. 5, TE]. Because the project was based on previous experience in North America, it had to be adapted during its implementation periods. The MOD had suggested an ambitious and unrealistic schedule expecting the DSMO to launch different programs simultaneously, developing new program plans, baseline scenarios, evaluation plans, among others. For this, EGAT and the Bank revised its implementation timetable in able to meet the goals [p. 5, TE]. (See p. 30, Annex 1, TE.)

7. Assessment of project implementation and execution

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in performing its roles and responsibilities. In both instances, the focus is upon factors that are largely

within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

7.1 Quality of Project Implementation	Rating: Moderately Satisfactory
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The TE rates this section as *satisfactory*. This TER rates quality of project implementation as *moderately satisfactory*, largely because of shortcomings in the project design. The project experienced several delays. The project design at entry was not sufficiently adapted to the Thai environment and, so, the Demand-Side Management (DSM) strategies had to be adapted, which caused initial implementation delays [p 4, TE]. This is because the project had originally been exported from an implementation experience in North America. The World Bank was supportive on this adaptation and was appropriately modified. After the corresponding adaptations made by the Electricity Generating Authority of Thailand (EGAT), the pace of project implementation proceeded smoothly [p. 4, TE]. According to the TE, the Bank provided “intensive” supervision, sending 1-2 missions per year throughout the seven years of the project. The WB also provided technical support and guidance to the DSMO, and “supervision resources were more than expected at project appraisal.” During the WB missions, key recommendations were issued on expediting implementation of low-loss ballast and high-efficiency motor programs. However, TE states that the WB team did not make sufficient efforts in ensuring that these recommendations were acted upon [p. 13, TE]. In general, the TE praises the project design in that, given that it was the first time that a DSM project of that kind was implemented in the developing world, it considered that the project design was “comprehensive and well-formulated” [p. 4, TE]. The project did not include a logical framework matrix nor baseline data. The PD, however, does include a set of activities in accordance with the project components as well as indicators. The project had an overall target for saving electricity production (total savings of about \$49 per every ton of CO₂ emissions; saving 1,427 GWh per year, p. 7, TE) and a set of project components.

7.2 Quality of Project Execution	Rating: Moderately Satisfactory
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The TE rates government performance as *satisfactory*. This TER rates this tier as *moderately satisfactory* because EGAT’s (Electricity Generating Authority of Thailand) substantial support compensated for the lack of support by other government agencies. However, EGAT’s performance also faced operational obstacles given a frequent change of DSM’s Director. The TE states that EGAT met its program objectives by enhancing institutional capability in the Demand-Side Management (DSM). As a consequence, it was able to design, implement and evaluate programs and to achieve greater supply and adoption of high-efficiency equipment, and evolved from 40 staff members to over 200 specialized staff [p. 5, TE]. The Demand-Side Management Office (DSMO) managed to insert itself in the national context through advancing public/private partnerships with manufacturers, DSM contractors, ESCOs and electricity consumers that supported program efforts. DSMO became widely recognized in Asia and worldwide for its innovative operations [p. 5, TE]. However, one of the WB missions found that the DSMO’s Director had changed four times in the last years, which cautioned about the success of EGAT’s future operations. Although EGAT provided important support to the project execution, other agencies, including MEA and PEA, did not provide similar levels of support. The government introduced a DSM

Sub-Committee to oversee and improve coordination between the Thai agencies. Although the report assesses that it had a strong commitment, it considers that a formal establishment would have helped to better EGAT's access to the Energy Conservation Promotion Fund (ECF) [p. 5, TE]. Other forms of support were providing funding through the Ft (tariff implementation) and parallel activities like the development of energy efficiency codes and equipment standards [p. 14, TE]. EGAT's support for the project appears to have been important given its proactivity in engaging in public campaigns and voluntary agreements with manufacturers. Its support to DSM was crucial particularly in view of the regional financial crisis.

8. Assessment of Project Impacts

Note - In instances where information on any impact related topic is not provided in the terminal evaluations, the reviewer should indicate in the relevant sections below that this is indeed the case and identify the information gaps. When providing information on topics related to impact, please cite the page number of the terminal evaluation from where the information is sourced.

8.1 Environmental Change. Describe the changes in environmental stress and environmental status that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

The first five EGAT program have resulted in a 566 MW reduction in peak demand and energy savings of 3,140 GWh per year. A total of 2.32 million tons of CO₂ were reduced by the project's end [p. 6, TE].

8.2 Socioeconomic change. Describe any changes in human well-being (income, education, health, community relationships, etc.) that occurred by the end of the project. Include both quantitative and qualitative changes documented, sources of information for these changes, and how project activities contributed to or hindered these changes. Also include how contextual factors have contributed to or hindered these changes.

No socioeconomic changes were documented in the TE.

8.3 Capacity and governance changes. Describe notable changes in capacities and governance that can lead to large-scale action (both mass and legislative) bringing about positive environmental change. "Capacities" include awareness, knowledge, skills, infrastructure, and environmental monitoring systems, among others. "Governance" refers to decision-making processes, structures and systems, including access to and use of information, and thus would include laws, administrative bodies, trust-building and conflict resolution processes, information-sharing systems, etc. Indicate how project

activities contributed to/ hindered these changes, as well as how contextual factors have influenced these changes.

a) Capacities

An aggressive public awareness and marketing campaign was conducted to help transform manufacturer awareness and capability for higher efficiency models [p. 4, 9, TE]. Other awareness campaigns that were carried were related to increasing energy conservation. A survey yielded that 87% of the respondents were aware of energy efficiency issues, particularly for the Green Learning Room initiative at schools [p. 18, TE]. EGAT also included training tasks under each consulting assignment, which allowed DSMO staff to have practical training. Other capacity building training includes support from the Bank's Asia Alternative Energy Program (ASTAE), a utility DSM training program by which four DSMO staff worked with two U.S. utilities for three months. Training on end-use metering and data analysis was provided for the End-Use Load Research consulting assignment [p. 16, TE]. As per component (f), the project sought to develop monitoring and evaluation capacities which meant creating a program evaluation department that initiated load research to determine electricity consumption patterns and program impacts [p. 30, TE]. Monitoring potential program impacts could help in making structures, trainings and systems adapt to the future environmental reality.

b) Governance

One relevant system of governance that was established was the Demand-Side Management Office (DSMO). Its future continuance and long-term impacts in improving energy efficiency are probable given that the Thai Energy Conservation Promotion Fund (ECF) is expected to support future DSM operations. Hence, DSM programs are expected to be sustained and that new programs will be launched as a result. DSMO has been able to ensure governance changes through creating key informational databases, like end-use profiles from EGAT, end-user profiles from MEA, a five-year IRP review of sector-specific DSM measures and their relative potentials and costs, and an integrated tracking database system, [p. 8, TE]. The TE states that "the institutional development impact of this project has been significant. A very strong institutional capacity has been developed within the DSMO, probably the strongest in any region outside of North America," [p. 9, TE]. However, no legislation or regulations were passed as a result.

8.4 Unintended impacts. Describe any impacts not targeted by the project, whether positive or negative, affecting either ecological or social aspects. Indicate the factors that contributed to these unintended impacts occurring.

No unintended impacts were found in the TE.

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end.

Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project activities and other contextual factors contributed to these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

No similar initiatives were reported elsewhere in the region by the TE.

9. Lessons and recommendations

9.1 Briefly describe the key lessons, good practices, or approaches mentioned in the terminal evaluation report that could have application for other GEF projects.

The key lessons that this project learned were the following:

- DSM programs should be designed with due consideration of local cultural realities to ensure high consumer acceptance and participation and to achieve meaningful impacts (*Sections 3.4, 4.1, 7.6*).
- Mechanisms for transfer of competency and skills should be carefully assessed to determine appropriate use of consultants and consider short as well as longer term assignments to maximize effectiveness (*Sections 3.4, 4.5*).
- Project designs should carefully consider the need for independent evaluation and, if necessary, develop suitable contractual and reporting arrangements from the start (*Section 3.4*).
- DSM efforts should be linked with financing facilities to ensure that utility efforts, largely in the industrial and commercial sectors, can be followed-up with meaningful investments (*Sections 3.4, 4.2, 5.2, 5.3, 7.5, 7.6*).
- Strong Bank support and flexibility are particularly critical elements for ensuring new types of projects are successful (*Sections 3.4, 7.2*).
- Where multiple government energy efficiency programs including DSM exist, appropriate linkages should be developed to improve coordination and minimize potential overlaps (*Sections 3.4, 5.2, 7.5*).
- Supportive government policies and agencies and proactive DSM cells are critical to the success of such activities (*Sections 4.1, 6.1*). DSM programs should be established in the context of reforms to ensure sustainability, taking into account proposed institutional structures, pricing reforms, appropriate regulation and oversight, incentive and funding schemes, established customer relationships, etc. (*Sections 4.1, 6.1, 6.2*).
- Well-designed and extensive DSM marketing can help programs achieve significant savings impacts at relatively low costs (*Sections 4.2, 4.3, 4.5*). Where public purpose DSM programs have unquantifiable benefits, efforts should be made at the project design stage to determine appropriate measures for monitoring and assessment (*Section 4.3*). Utility management should seek measures to better insulate DSM operations from ongoing staffing and institutional changes to ensure that operations, funding and strategic directions are maintained (*Section 5.3*).

9.2 Briefly describe the recommendations given in the terminal evaluation.

The TE does not provide specific recommendations but some of them can be found in the “Lessons Learned” section (above).

10. Quality of the Terminal Evaluation Report

A six point rating scale is used for each sub-criteria and overall rating of the terminal evaluation report (Highly Satisfactory to Highly Unsatisfactory)

Criteria	GEF EO comments	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?	<i>The report provides a very general assessment of relevant outcomes at the beginning. Assessment of components is clearer in the WB ICR Mission (Annex 8). Impact assessment is provided on its institutional development but not on socioeconomic or environmental impacts.</i>	MS
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	<i>The report is internally consistent but more evidence could have been useful regarding on project implementer and executor.</i>	S
To what extent does the report properly assess project sustainability and/or project exit strategy?	<i>The project provides information for financial and sociopolitical sustainability but not for environmental or institutional sustainability.</i>	MS
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	<i>Lessons learned appear to be substantiated by the evidence provided in the TE. Some lessons are also derived from the project’s positive action in adapting the DSM to the local context.</i>	S
Does the report include the actual project costs (total and per activity) and actual co-financing used?	<i>Project costs, total and per activity, are included. Co-financing breakdown is not included.</i>	MU
Assess the quality of the report’s evaluation of project M&E systems:	<i>The TE did not provide enough information about M&E systems. It did not address the outcomes produced by the Independent Monitoring Evaluation Agency (IMEA).</i>	U
Overall TE Rating		MS

Overall TE rating: $(0.3*(4+5)) + (0.1 * (4+5+3+2)) = 4.1 = MS$

11. Note any additional sources of information used in the preparation of the terminal evaluation report (excluding PIRs, TEs, and PADs).

The project’s PD and TE were used to write this TER.