

Terminal Evaluation Review form, GEF Independent Evaluation Office, APR 2018

1. Project Data

Summary project data			
GEF project ID		3908	
GEF Agency project ID		103042	
GEF Replenishment Phase		GEF-4	
Lead GEF Agency (include all for joint projects)		UNIDO	
Project name		Industrial Energy Efficiency for Malaysian Manufacturing Sector (IEEMMS)	
Country/Countries		Malaysia	
Region		EAP	
Focal area		Climate Change, CC-4	
Operational Program or Strategic Priorities/Objectives		SO 2: Promotion of energy efficient technologies and practices in industrial production and manufacturing processes to tackle climate change.	
Executing agencies involved		Ministry of International Trade & Industry (MITI); Ministry of Energy, Green Technology & Water (KeTTHE); Department of Standards Malaysia; Federation of Malaysian Manufacturers (FMM); Ministry of Natural Resources and Environment (MNRE), SME Corp. under the supervision of MITI as a local implementor.	
NGOs/CBOs involvement		N/A	
Private sector involvement		Industry and Green Technology Financing Scheme as a co-financer	
CEO Endorsement (FSP) / Approval date (MSP)		May 13, 2011	
Effectiveness date / project start		June 29, 2011	
Expected date of project completion (at start)		June 30, 2016	
Actual date of project completion		April 30, 2017	
Project Financing			
		At Endorsement (Million US\$)	At Completion (Millions US\$)
Project Preparation Grant	GEF funding	0.075	N/A
	Co-financing	0.150	N/A
GEF Project Grant		4.20	3.690,978
Co-financing	IA own	-	-
	Government	2.75	0.9
	Other multi- /bi-laterals	-	-
	Private sector	13.92	18.207
	NGOs/CSOs	-	-
Total GEF funding		4.275	3.690,978
Total Co-financing		16.820	19.107
Total project funding (GEF grant(s) + co-financing)		21.095	22.797,978
Terminal evaluation/review information			
TE completion date		May 2018	
Author of TE		Brahmanand Mohanty (International Evaluation Consultant), and Ali Askar Sher Mohamad (National Evaluation Consultant)	

TER completion date	11/13/2018
TER prepared by	Yuliya Gosnell
TER peer review by (if GEF IEO review)	Spandana Battula

2. Summary of Project Ratings

Criteria	Final PIR	IA Terminal Evaluation	IA Evaluation Office Review	GEF IEO Review
Project Outcomes	S	S	-	S
Sustainability of Outcomes		ML	-	ML
M&E Design		S	-	S
M&E Implementation		S	-	S
Quality of Implementation		S	-	S
Quality of Execution		MS	-	MS
Quality of the Terminal Evaluation Report		S ¹	-	S

3. Project Objectives

3.1 Global Environmental Objectives of the project:

The Global Environment Objective is to reduce “greenhouse gas (GHG) emissions by establishing a policy environment that both enables and supports the adoption of sustainable, energy efficient technologies and managerial methodologies as an integral part of industries’ business practices”

3.2 Development Objectives of the project:

The Development Objective is to “promote energy efficiency (EE) improvements in the Malaysian manufacturing sector through the development of a national energy management standard and the implementation of systems optimization” (TE p viii). The project intended to achieve its objectives through the following outcomes:

1. Enhanced regulatory framework facilitating increased implementation of energy efficiency (EE) in the industrial sector in both large and medium industries;
2. Widespread awareness amongst SMEs and larger industries of the benefits of EE;
3. Availability of a cadre of highly specialized energy management experts from the public and private sectors; and
4. SMEs and large industries have coordinated access to technical and financial assistance for implementing EE projects, including systems optimizations.

¹ Alamo, Silvia, *Checklist on evaluation report quality*, average score of five points.

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

The project implementation phase witnessed no major changes to objectives, but a number of implementation activities had to deviate from the original plan. Specifically, UNIDO overtook the activities of a national executing agency – Ministry of International Trade and Industry – largely unable and unwilling to execute the project as committed. The change, while necessary for the achievement of the project's objectives, reduced the participation of the national government in the project and, thus, the country's ownership of the project, which inhibited the development of promoting energy efficiency policies and the creation of a supporting policy environment.

4. GEF IEO 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 rated relevance as satisfactory. The project was complimentary to the efforts of the government of Malaysia to promote energy efficiency in industrial production at the time of increasing energy prices, as it planned to gradually remove energy subsidies, which were becoming a considerable burden on the national budget.

Additionally, the project is relevant to the country's strategic objectives as improved energy efficiency was likely to increase the productivity of the manufacturing sector in an environment, in which the country's productivity was growing slower than that of its regional and global competitors. The growth of Malaysian economy relied on manufacturing, an energy intensive sector with overall consumption of 42.6 percent of the country's total generated energy. The rate of the sector's energy demand was growing at a rate higher than the rate of the nation's GDP growth, and thus, making the sector more energy efficient would allow the country to become more competitive (TE, pp. 4-5).

Furthermore, the project was to assist the government in reduction of CO₂ emissions, one of the goals of the Millennium Development Goals-Plus agenda the country committed to achieving in its Tenth Malaysia Plan (2011-2015) (TE, p.5). The present at the time of the project inception level of emissions in the country was the result of the energy generation sector's reliance predominately on coal, underutilization of renewable energy, energy subsidies and subsequent low energy-saving awareness and poor uptake of energy-efficient technologies (TE, p. 5-6).

The project is relevant to GEF strategic programs as it assists in “Promoting Energy Efficiency in the Industrial Sector”, SP#2 (CEO Endorsement Request, p. 10). The project is a second manufacturing energy efficiency improvement project in the country aimed to sustain the accomplishments of the first one by addressing remaining challenges: “lack of corporate decision-making and management of energy use in industrial establishments, limited knowledge and experience in implementing energy management standards and systems optimization, and the absence of clear industrial environmental efficiency policy and action plan.” (TE, p. ix)

4.2 Effectiveness	Rating: Satisfactory
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The TE rated effectiveness as satisfactory. According to its design, the project was to achieve five outcomes. Three of the five outcomes were achieved relatively successfully:

- A cadre of highly specialized energy management experts from the public and private sectors became available as a long-term technical resource to industry and the country.
- A cadre of highly specialized systems optimization experts from the public and private sectors became available as a long-term technical resource to industry and the country.

The project succeeded in creating a cadre of trained energy efficiency professionals in several spheres: industrial facilities, suppliers of technology, and experts in the public and private sectors relevant to energy efficiency. The cadre of professionals began providing services to EnMS and optimization of industrial systems, which led to participating factories opt for ISO50001 certification or to adopt ISO50001 compatible energy management plans, and to optimize the systems providing energy services in the industry, such as steam, compressed air, pumps and fan systems. Training assessments and meetings held during evaluation with the involved stakeholders demonstrate very high levels of satisfaction with the training provided by the experts mobilized by the project, however, in some cases, training targets (in terms of numbers of participants to be trained) were not met (TE, p. 18).

- Widespread awareness on the benefits of energy efficiency was raised among SMEs and larger enterprises; strong interest in energy management, systems optimization and energy efficient equipment and services was generated among manufacturers.

In terms of interest by the industry in energy management and realized benefits, the TE states that “Factories that have adopted ISO50001 and implemented concrete [energy efficiency] measures appreciate the monetary savings accrued for their actions. Electricity saving measures through compressed air, pump and fan systems adopted by 49 factories have resulted in annual electricity savings of about 4.865 million MWh which is equivalent to about RM51.6 million and 3.37 million tons of CO2 reduction. Likewise, the annual thermal energy savings through steam system optimization amount to 0.95 million GJ which is equivalent to over 53 thousand tons of CO2 reduction. Financial analyses show that the capital investment made for reducing the electricity bills can be recovered in 3.8 years.” (TE, p.18). Furthermore, “The peer-to-peer network [among industry

specialists was] established, and the various innovative approaches adopted to enhance communication among national experts, international consultants and the project team are very effective for information dissemination and awareness creation. Other supporting tools for creating awareness included workshops, information pamphlets, brochures, project case studies, etc. The project team has been very conscious to ensure that the awareness programs geographically are well spread out over the whole country, with support from both government agencies and business associations.” (TE, p.18)

Two of the five project outcomes were not achieved:

- SMEs and the larger industries have coordinated access to technical and financial assistance for implementing energy efficiency projects, including system optimization.

The project team made efforts to create awareness and build the capacity of financing institutions on [industrial energy efficiency] financing, however “the response has been quite low: against a set target of mobilizing 200-300 people for the consultation on financial mechanisms to support [industrial energy efficiency], only about 70 persons from factories, financial institutions and ESCOs could be mobilized. In spite of the efforts made by the project team and local [industrial energy efficiency] financing experts to propose innovative mechanism for financing medium-sized factories, the evaluation found that SME Corp was not convinced to adopt any specific measures to support investments in [industrial energy efficiency] by making changes to the existing tools (e.g. SME Competitive Rating for Enhancement or SCORE and Business Accelerator Program or BAP) employed for enhancing capabilities of SMEs through business advisory and financial support.” (TE, p.18)

- Enhanced regulatory framework facilitating increased implementation of energy efficiency in the industrial sector.

This outcome was not achieved “due to the lack of active engagement and contribution of the Project’s institutional partners”. (TE, p. 18) The government entities expected to participate set low energy efficiency targets (6 percent electricity only (and not other forms of energy) savings to be achieved over a 10-year period), did not create a system for tracking and reporting data on energy use, and did not develop an action plan for energy efficiency implementation by the industry.

Thus, while the project was effective in achieving some of its training targets, raising awareness on the issues of energy efficiency and GHG emissions, building a network of industry specialists, and the adoption of energy-efficient technologies at several facilities, it has not created a supporting energy efficiency regulatory environment, and it did not establish channels for technical and financial assistance for replication of energy efficiency improvements.

4.3 Efficiency	Rating: Satisfactory
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The TE rated efficiency as satisfactory. The project preparation stage went as expected, with the timeline and budget remaining on track. The implementation phase, however, was slightly longer than originally intended (six years instead of five), and it incurred additional 2.5 million dollars in costs (10 percent of total), supplied by the country's private sector. To improve the efficiency of the project, the project implementation unit made a considerable effort to coordinate the actions of the Ministry of Energy, Green Technology and Water (KeTTHA) and the Economic Planning Unit (EPU), both of which worked on promotion of energy efficiency and renewable energy. Furthermore, an information exchange network established to facilitate the exchange of best practices and resources among industry experts, mobilization of international specialists, and enhanced training opportunities for industry experts were among the factors improving the project's efficiency. Other factors, such as insufficient interest of the principal project executing agency – Ministry of International Trade and Industry (MITI) – and the agencies MITI oversaw, for which energy efficiency was not in the mandate, hindered efficiency of the project. It would have been beneficial to involve other government agencies, which did have a mandate to promote energy efficiency, more actively. Additionally, envisioned by the project steering committee training center dedicated to sharing expertise on energy and water efficiency did not materialize, and as a result, the project management unit had to organize and manage a training program on its own – a divergence of resources and time (TE, p. 32-33). Overall, however, project delays and cost overruns did not influence the project efficiency significantly and were necessary to accomplish project goals.

4.4 Sustainability	Rating: Moderately Likely
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The TE rated sustainability as moderately likely, and this TER rates sustainability as moderately likely as well. A number of institutional, financial, socio-economic, and environmental risks can affect the sustainability of this project.

Institutional risks, substantial: Government agencies have not shown significant interest in the implementation of the project despite recognizing that improvement of industrial energy efficiency is one of the country's strategic priorities. Energy efficiency in the most energy intensive, but receiving energy subsidies, sector had the potential to relieve pressure on the national budget at the time of growing energy prices, and make the country's industrial production more competitive in the international market. Yet, since the agencies selected to implement the project had a limited mandate on energy efficiency (electricity only), the project did not gain momentum, and the necessary policy framework encompassing energy efficiency incentives, implementation plan, meaningful targets and their enforcement mechanisms, was not created. In addition, the national government did not contribute the amount of co-financing it had committed at the time of the project endorsement, which confirms the lack of government interest in improving energy efficiency (TE, p. 33). The difference in co-financing, and coverage for cost-overruns came from the private sector. Still, the government has allocated funds for the National Energy Efficiency Plan with a goal of further promotion of industrial energy efficiency. The government has also created the National Energy Efficiency Action Plan, which states the intention to improve energy management through implementation and monitoring of energy efficiency practices.

Financial risks, low: Continued energy subsidies for industrial production present the most significant financial risk. In the absence of financial (and/or regulatory) incentive, manufacturers are less likely to

prioritize energy efficiency. Furthermore, since banks and financial institutions did not show robust involvement in evaluation of industrial energy efficiency capacity and viability of commercial financing of energy efficiency projects during the implementation phase of the project, reliable diverse channels for financing did not get established. However, SME Corp. reported that despite of harmonized criteria for techno-economic evaluation of industrial energy efficiency projects not being developed as envisioned by the project, SME Corp. had two other evaluation systems already in place (SCORE and BAP), which could be used for obtaining debt financing. The Green Technology Finance Scheme, a private sector financier, also had its own evaluation criteria in place. Thus, commercial financing for energy efficiency projects, albeit not widely available, can be secured in Malaysia, as long they are financially viable in an environment with subsidized energy prices. And finally, the Malaysian government created a non-private sector source of financing for industrial efficiency projects through its National Energy Efficiency Plan.

“Financing itself does not appear to be an issue; what is lacking is a targeted allocation of funds to support action needed to move from project outcomes to the intended impacts...” (TE, p. 40).

Socio-economic risks, low: The stakeholders among which the project intended to raise energy efficiency awareness included the government, private sector industrial manufacturers, and banks and financial institutions. Among the involved stakeholders, the private sector showed the most interest – by initiating an exchange of best practices through a dedicated network, demonstrating energy efficiency improvements at participating facilities, and providing the co-financing necessary to complete the project. The private sector alone, however, may face challenges in implementing energy efficiency initiatives without a supporting environment, both regulatory and financial. Another driver of demand in reduction of industrial emissions could be the population of the country. The project did not set a goal to raise awareness on the issue among the general population, which could have created pressure on both the government and the industrial manufacturers and improve the sustainability of the results of the project.

Environmental, no risk: Sustainability of the project outcomes does not face known environmental risks. On the opposite, the key goal of the project is to reduce GHG emissions and improve the environment.

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?

Co-financing played an important role in achieving the objectives of this project. At the project preparation stage, co-financing amounted to slightly less than one half of total preparation costs, with US\$75,000 provided by GEF, and \$67,231 through co-financing. At the implementation stage, the amount of co-financing from the national government and the national private sector at endorsement totaled US\$16.67 million (cash and in-kind), or about three quarters of expected costs. The actual costs exceeded the budget by additional US\$2.5 million, necessary to complete the project. The national government, however, did not contribute the amount committed at endorsement share, particularly the in-kind contribution of staff involvement, largely because of an alleged shortage of staff with adequate knowledge on the subject (TE, p.37). The private sector stepped in to compensate for the shortage and to finance project cost overruns.

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 preparation stage was completed on time and efficiently. The implementation stage, however, lasted approximately a year longer than originally planned, and the delay was necessary to start the operations of the Project Management Unit, which faced recruitment challenges, and to initiate cooperation between participating in the project partners and the beneficiaries, also experiencing staffing and turnover challenges. Thus, the delays allowed time to organize and bring together involved stakeholders and contributed to a satisfactory completion of the project.

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:

As the project was relevant the country's sectoral and development priorities, and during the preparation stage, was designed in consultation with key institutional stakeholders, the national government originally exhibited high interest in the project. During the implementation stage of the project, however, most institutional partners did not demonstrate significant involvement. The Ministry of International Trade and Industry, having oversight of industrial production in the country, was selected as an executing agency for the project. The Ministry, however, had a limited mandate over energy efficiency (it only applied to electricity), and over the period of the project implementation, the agency did not participate in project activities, develop appropriate policies, set meaningful energy efficiency targets, or contribute the committed staff labor hours. There was an instance, in which the agency prioritized a deliverable on another project (supported by UNDP) in lieu of developing a database to collect data on GHG emissions by large manufacturers envisioned by the project. While the project was successful in reducing emissions at participating and adopting the ISO 50001 standard facilities, MITI did not develop a specific action plan for implementing a wide-spread post-project industrial energy efficiency program in the country (TE, p.37). This threatens sustainability of project outcomes.

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: Satisfactory
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The TE rated M&E design at entry as satisfactory, as does this TER. The M&E design adhered to UNIDO's standard M&E procedures and GEF guidance on project monitoring. The project document took into consideration lessons learned of the first energy efficiency project in Malaysia (MEEEEIP) and identified new objectives to be accomplished and deliverables to be undertaken to monitor results and track

progress towards achieving the objectives: semi-annual and annual reviews, an independent mid-term and a terminal evaluation. The project results framework selected indicators to estimate direct and indirect reduction of emissions, and the effects of emission reduction. The framework, however, did not include indicators to monitor the progress of the project towards project outcomes. (TE, p.35)

6.2 M&E Implementation	Rating: Satisfactory
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The TE rated M&E implementation as satisfactory, as does this TER. M&E implementation followed the project design. All monitoring reports were prepared on schedule, and in addition to them, monthly and quarterly progress reports were prepared (TE, p. 35). M&E activities, including the organization of inception workshop, measuring indicators, and conducting midterm and final evaluations were carried out on budget as allocated during the preparation stage of the project. The allocation, however, specified budget at outcomes level, not at specific activity level.

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: Satisfactory
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The TE rated quality of project implementation as satisfactory. UNIDO, as the project implementing agency, “provided continuous support for the smooth execution of the project...” (TE, p.39). The agency released the necessary financing in time for undertaken activities and mobilized experienced specialists to train and build capacity of involved stakeholders. Either the UNIDO Project Manager or Director of Bangkok’s UNIDO country office represented UNIDO in four of the six the Project Steering Committee meetings, and the Project Manager was present and available when necessary during key initiatives. The two meetings were missed due to the last-minute schedule changes on the Malaysian side (TE, p. 39).

UNIDO coordinated effectively with the Project Management Unit (PMU). UNIDO assistance in recruiting qualified personnel for PMU allowed to achieve satisfactory project results despite limited support from key government stakeholders. Subsequently, PMU made considerable efforts to carry out training and capacity building activities throughout Malaysia and had frequent field missions along with international and national specialists to ensure effectiveness and continuity of results (TE, p. 39).

7.2 Quality of Project Execution

Rating: Moderately Satisfactory

The TE rated quality of project implementation as moderately satisfactory. The project executing agency, the Ministry of International Trade and Industry, did not get involved in the project as expected (as described in section 5.3, Country Ownership). As a result, UNIDO took over the Ministry's executing responsibilities through the PMU – a necessary action but one which reduced the level of national ownership in the project and affecting the sustainability of results measure. The TE states that availability of qualified specialists appeared to be the main challenge in project execution. The shortage of knowledgeable and interested in the subject personnel seemed evident at every participating institution. As a result, the Project Steering Committee faced frequent changes of nominated representatives, which inhibited cooperation and progress towards project goals. In this situation, UNIDO exhibited hands on involvement in managing many aspects of the project, including, for example, renting a storage space for testing equipment acquired for training activities, also coordinated by UNIDO (TE, p. 40).

In evaluation of quality of UNIDO and PMU execution, the TE states: "The enterprises interviewed during the TE showed their genuine appreciation for the type of support provided by UNIDO in mobilizing highly competent and experienced trainers for capacity building and the hard work and dedication of the PMU in reaching out to them and addressing their specific needs. This was mainly possible because of the deep commitment and involvement of 2 key players in the PMU complimenting each other. The [National Project Manager] NPM retained by UNIDO has long years of professional experience and very good understanding of how the Project's institutional partners function. The Assistant Project Manager ably supported the NPM thanks to her technical capacity and personal dynamism and was able create an excellent relationship with the local beneficiaries (participating experts and industries)." (TE, p.41)

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 TE states that during the implementation stage of the project, 49 medium and large enterprises improved and optimized their energy management systems. The resulting from the action annual savings in electricity amounted to 4,865 GWh, as well as savings of 949,701 GJ of thermal energy. These energy savings can be translated to reduction of close to 3.4 million tons of CO₂ (TE, p. 46).

Furthermore, at the end of the implementation phase of the project, additional 20 enterprises began implementing energy efficiency measures, which could result in further electricity savings of 14,126 MWh and 9.8 tons reduction of CO₂ emissions (TE, p. 18).

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.

Education and Awareness: The project organized fourteen training sessions on energy management systems, which benefitted 534 participants. In addition, 1,061 participants from both public and private sectors took part in 31 training sessions on compressed air, pump, fan and steam systems optimization. At project completion, 51 engineers employed at industrial facilities received the necessary expertise to advise manufacturers on adoption of energy management systems. Another 88 professionals were certified as System Optimization (SO) experts and became able to assist in the optimization of compressed air, pump, fan and steam systems. The Standards and Industrial Research Institute of Malaysia Quality Assurance System (SIRIM QAS) – a national accreditation body – actively participated in the training sessions, and as a result, strengthened its certification capacity. At project completion, SIRIM QAS had certified close to 20 facilities in ISO 50001 compliance (TE, p.46).

In addition, the project organized ten information and consultation events on availability of financing for energy efficiency projects attended by 200-300 people.

Income: With the total investment of RM 27.55 million in energy efficiency measures, industrial facilities reported savings of RM 51.6 million in annual electricity expenses. Thus, investment into energy efficiency could be recovered in less than a year, but conservative financial estimates allow 3.8 years for full investment recovery (TE, p.46).

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

The project aimed to build capacity of among several national government agencies, industrial engineers and managers, equipment suppliers and distributors, and energy professionals and service companies. The project accomplished this goal through a series of training events discussed in section 8.2 *Socio-economic Change*.

In addition, the project has established an information exchange network and communication platform for sharing best practices and case studies with experts and industrial representatives (TE, p.46).

b) Governance

“The Project was successful in ... [providing] training to personnel of SIRIM (the ISO 50001 accreditation body) which ...[began] certifying a growing number of industrial facilities.” (TE, p. 34)

During the implementation phase of the project, the Malaysian government developed its National Energy Efficiency Action Plan (NEEAP), and although the ISO 50001 energy management standard is not explicitly in it, “the document specifies that energy management systems will be improved for continuously implementation and tracking the ...[energy efficiency] measures and practices.” (TE, p. 34)

- 1.4 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.

The Terminal Evaluation report does not describe unintended impacts, either positive or negative.

- 1.5 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.

In addition to the 49 facilities having participated in the project and improved their energy efficiency, at the end of the implementation phase of the project, additional 20 enterprises began implementing energy efficiency measures. Given the newly established by the project SIRIM QAS capacity to certify factories in ISO 50001, the intension of the national government to improve industrial energy efficiency measures and practices through NEEAP, the availability of financing for energy efficiency projects from private financial institutions (such as Green Technology Finance Scheme) and the National Energy Efficiency Plan, and the awareness raised on energy efficiency among sector experts, there is a likelihood that industrial energy efficiency improvements will continue taking place after the completion of the project. Without

supporting policies, meaningful targets, and in the environment of continuing energy subsidies, however, wide-spread scaling up of energy efficiency measures is difficult to envision.

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.

Lesson 1: During project development, it is essential to define solid performance indicators and benchmarks to facilitate monitoring of results and comparison of progress towards intended impacts across industries.

Without specific industrial energy efficiency targets or benchmarks set, manufacturers utilize the lowest efficiency standards, or the so-called “low-hanging fruits” and forgo significant but possible and beneficial improvements. Without such targets, a competitive environment, in which manufacturers can compare their efforts with those of their direct competitors both domestically and internationally, energy efficiency momentum is unlikely to take place.

Lesson 2: To reap long-term energy efficiency benefits, governments should prioritize mobilization of resources for the development of human capital rather than provision of capital subsidies.

Industry representatives state that they are willing to pay for training of their personnel and for capacity building activities when they can receive high quality training, and that the opinion of receiving training experts increases their confidence in making capital investments. As this project has shown, the 49 participating facilities were more inclined to invest in energy efficiency improvements when they received expert advice than when they received subsidies to undergo energy audits.

Lesson 3: During the implementation of a project, it is important to focus on satisfactory execution of the project without sacrificing the sustainability of its outcomes.

While faced with uncooperating executing the project national agencies, it is important to ensure that the project accomplishes its goals, but rather than doing so by completely taking on all implementation activities, an implementing agency should find ways to catalyze participation of the national government. This will enlarge the capacity of the government and ensure sustainability of project outcomes after the project is completed.

Lesson 4: Co-financing is important not only for mobilization of additional resources for the achievement of GEF objectives; it demonstrates country ownership.

Had UNIDO insisted on provision of in-kind resources committed by the national government at project endorsement, the government would have become more involved in the project, have trained its participating staff, and likely have become committed to sustaining industrial energy efficiency improvements. (TE, pp. 49-50)

9.2 Briefly describe the recommendations given in the terminal evaluation.

Recommendation 1 (Malaysian Government): Appoint an entity with a mandate to coordinate energy-efficiency efforts to facilitate cooperation of institutions. The entity that could be hosted by the Economic Planning Unit (EPU) under the Prime Minister's Department.

Energy efficiency is not currently not in the mandate of any government agency. This makes cooperation of stakeholders challenging. The EPU under the Prime Minister's Department is a suitable for the mission agency as it is formed to manage the country's socio-economic development.

Recommendation 2 (Malaysian Government): The Malaysian government should sustain the outcomes of the IEEMMS Project through sectoral benchmarking and by setting sectoral energy performance targets.

In the environment of underdeveloped energy efficiency supporting regulation, long-term sustainability of the project outcomes will be improved with development of sectoral energy efficiency benchmarks. The benchmarks should be developed post cost-benefit analysis of targets each sector can feasibly achieve.

Recommendation 3 (Malaysian Government): Eliminate the ambiguity behind the term "energy".

Defining "energy" will reduce confusion in understanding of the term by stakeholders. Presently, the Economic Planning Unit, the Ministry of Energy, Green Technology and Water, and the Energy Commission understand "energy" as "electricity", generated by fossils or renewables. Thermal energy is not included in the definition. As a result, policy documents, such as the Malaysia Energy Efficiency Action Plan, refer to energy efficiency as a reduction in the consumption of fossil fuel or renewably generated electricity. No efforts are made towards efficiency in the use of thermal energy, commonly used in buildings and industrial production. Thermal energy efficiency should become an integrated part of energy efficiency efforts.

Recommendation 4 (UNIDO): A GEF-funded project's outcome- and output-wise delivery and financial aspects should be monitored simultaneously so that appropriate corrective measures can be taken if deviations/discrepancies are found.

Due to unavailability of detailed funding disbursements per outcome, it is impossible to determine if the two project outcomes not accomplished satisfactorily were not achieved because of not fully disbursed funding.

Recommendation 5 (UNIDO): For GEF-funded projects, ensure that the project's institutional partners understand that apart from contributing additional resources to achieve GEF objectives, co-financing also demonstrates country ownership.

Co-financing increases participation of the national government in the project and improves the country's ownership of the project, which is likely to lead to sustainability of achieved results (TE, p. 47-49).

Lessons should be based on the project's actual experience. Action may or may not lead to a specific action. They may also come up with a recommendation that is not very useful.

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 IEO 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?	The assessment of relevant outcomes, impacts, and achievements of objectives is both thorough and consistent with the project design, although some sections have overlapping information, and thus, the structure of the report could be improved.	S
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	The report is consistent and presents convincing evidence.	S
To what extent does the report properly assess project sustainability and/or project exit strategy?	The report properly describes risks to sustainability, however, given the identified risks, sustainability rating appears to be too optimistic.	S
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	Lessons learned are comprehensive and are well supported by evidence.	S
Does the report include the actual project costs (total and per activity) and actual co-financing used?	The project includes actual total project costs and states that per activity cost information was not available. The actual co-financing amounts, however, are inconsistent throughout the report.	MS
Assess the quality of the report's evaluation of project M&E systems:	The report's evaluation of project M&E is rather brief and general and would benefit from additional details.	MS
Overall TE Rating		S

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

No additional sources were used in the preparation of this TER.