Independent mid-term review

MALAYSIA

Industrial Energy Efficiency for the Malaysian Manufacturing Sector (IEMMS)

UNIDO project No.: **GF/MAL/11/002**
UNIDO SAP ID: **103042**
GEF ID: **3908**

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This report has been prepared for UNIDO for the Mid-term Review of the UNIDO GEF Project "Industrial Energy Efficiency for the Malaysian Manufacturing Sector (IEEMMS)"

Evaluation team: Mr. Roland Wong (international consultant; team leader)
Ms. Bee Hong Yeo (national consultant)

REQUIRED PROJECT IDENTIFICATION AND FINANCIAL DATA

Project Title	**Industrial Energy Efficiency for the Malaysian Manufacturing Sector (IEEMMS)**
GEF ID	**3908**
UNIDO project No. (SAP ID)	**GF/MAL/11/002** **103042**
Region	**EAP**
Country(ies)	**Malaysia**
GEF Focal area(s) and operational programme	**Climate Change, CC-4**
GEF Agencies (implementing agency)	**UNIDO**
Co-implementing agency(ies)	**None**
Project executing partners	**Ministry of International Trade and Industry (MITI); Ministry of Energy, Green Technology and Water (KeTTHA); Department of Standards Malaysia; Federation of Malaysian Manufacturers; Ministry of Natural Resources and Environment**
Project size (FSP, MSP, EA)	**FSP**
Project CEO endorsement/Approval date	**13 May 2011**
Project implementation start date (PAD issuance date)	**29 June 2011**
Original expected implementation end date (indicated in CEO endorsement document)	**30 June 2016**
Revised expected implementation end date (if any)	**31 December 2016**
Project duration (months)	**60**
GEF Grant (USD)	**4,200,000**
GEF PPG (USD) (if any)	**75,000**
UNIDO inputs (USD)	**67,231**[1]
Co-financing (USD) at CEO Endorsement	**16,670,000 (cash+in-kind)**
Total project cost (USD) (GEF Grant + Co-financing at CEO Endorsement)	**20,937,231**
Mid-term review date	**November 2015**
Planned terminal evaluation date	**December 2016**
Agency fee (USD)	**427,500**

[1] EUR 61,449

As well as the Milestone	Expected Date	Actual Date
Project CEO endorsement/ approval date	April 2011	13 May 2011
Project implementation start date (PAD issuance date)	July 2011	29 June 2012
Original expected implementation end date (indicated in CEO endorsement/approval document)	June 2016	29 June 2016
Revised expected implementation end date (if any)		31 December 2016

Project Framework - Financing

Project component	Activity type	GEF Financing (in USD)		Co-financing (in USD)	
		Approved	Actual[2]	Promised	Actual
1. Development of a national industrial energy efficiency policy and plans	Technical assistance	373,480	n/a	700,000	680,000
2. Awareness creation on energy management and systems optimization	Technical assistance	340,450	n/a	950,000	950,000
3. Energy management systems	Technical assistance	1,211,755	n/a	4,620,000	4,586,000
4. Systems optimization	Technical assistance	1,500,295	n/a	9,500,000	9,500,000
5. Access to finance for industrial EE improvement	Technical assistance	358,270	n/a	450,000	400,000
6. Project management	Technical assistance	415,750	n/a	450,000	450,000
Total		**4,200,000**	**3,690,978**	**16,670,000**	**16,566,000**

Project Co-financing

		Project preparation		Project implementation		Total	
Source of co-financing	Type	Expected	Actual	Expected	Actual	Expected	Actual
Host gov't contribution	In-kind	40,000	20,000	2,750,000	1,500,000	2,790,000	1,520,000
GEF Agency(-ies)	Cash	100,000	65,560		66,000	100,000	131,560
	In-kind		34,440				34,440
Bilateral aid agency(ies)							
Multilateral agency(ies)							
Private sector	Cash	10,000	30,000	11,390,000	15,000,000	11,400,000	15,030,000
	In-kind			1,530,000		1,530,000	
NGO	In-kind			1,000,000		1,000,000	
Other	In-kind						
Total co-financing		**150,000**	**150,000**	**16,670,000**	**16,566,000**	**16,820,000**	**16,716,000**

[2] As UNIDO did not transition to an enterprise resource planning system (SAP) and Output-based Budgeting until 2012/13, actual Project expenditures were not fully applied across the output-based budget until late 2014. By that time, budget reports by Output for the whole project period could not able to be extracted.

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ABBREVIATIONS

ASEAN	Association of South East Asian Nations
AWP	Annual work plan
BSEEP	UNDP-GEF Building Sector Energy Efficiency Project
CDM	Clean development mechanism
CTA	Chief technical advisor
EC	Energy Commission
EE	Energy efficiency
EMS	Environmental management system
EnMS	Energy management system
EOP	End of project
EPU	Economic Planning Unit
ESCO	Energy service company
FiT	Feed in tariff
FMM	Federation of Malaysian Manufacturers
FSP	Full Scale Proposal
GDP	Gross domestic product
GEF	Global Environment Facility
GHG	Greenhouse gas
GJ	Gigajoules
GoM	Government of Malaysia
GTFS	Green Technology Financing Scheme
HQ	Headquarters
IEE	Industrial energy efficiency
IEEMMS	Industrial Energy Efficiency for the Malaysian Manufacturing Sector Project
IFC	International Finance Corporation
IP	Intellectual property
ISO	International Standard Organization
KeTTHA	Ministry of Energy, Green Technology and Water
M&E	Monitoring and evaluation
MIDA	Malaysian Investment Development Authority
MIEEIP	Malaysian Industrial Energy Efficiency Improvement Project
MITI	Ministry of International Trade and Industry
MPO	Malaysia Productivity Organization
MTE	Mid-term evaluation
MW	Megawatt
NEEAP	National Energy Efficiency Action Plan
NEEMP	National Energy Efficiency Management Plan
NEWEC	National Energy and Water Efficiency Centre
PC	Project Coordinator
PIF	Project identification form
PIR	Project Implementation Report
PMU	Project management unit
PPG	Project preparation Grant

PRF	Project results framework
PSC	Project Steering Committee
QAS	quality assurance systems
RE	renewable energy
RM	Malaysian ringgit
SEC	Specific energy consumption
SEDA	Sustainable Energy Development Authority
SIRIM	Standards and Industrial Research Institute of Malaysia
SMART	Specific, measurable, achievable, relevant and time-bound
SME	Small to medium enterprises
SNC	Second National Communication
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework on Climate Change Convention
UNIDO	United Nations Industrial Development Organization
UNITEN	Universiti Tenaga Nasional
WB	World Bank
WWF	World Wildlife Fund

EXECUTIVE SUMMARY

An independent Mid-Term Evaluation (MTE) was conducted for the UNIDO-GEF project entitled "Industrial Energy Efficiency for Malaysian Manufacturing Sector" (herein referred to as the "IEEMMS" or the "Project") during the November 2015 to January 2016 period by Mr. Roland Wong and Ms. Bee Hong Yeo. The MTE field mission to Kuala Lumpur was carried out from November 23 to December 1, 2015.

The IEEMMS Project was approved by the GEF on May 13, 2011 and commenced operations on July 1, 2011, and has a set terminal date of 31 December 2016 (5.5 years after GEF approval). The MTE time frame for this report is May 2011 to November 2015.

The purpose of the MTE for this Project was to evaluate the progress towards attainment of global environmental objectives, Project objectives and outcomes, capturing lessons learned and suggesting recommendations on major improvements. The MTE serves as an agent of change and plays a critical role in supporting accountability.

This MTE was conducted using a participatory approach through interviewing selected key stakeholders of the Project, and keeping them informed and regularly consulted throughout the evaluation period. In addition, the evaluation team undertook analysis of all available evidence from desk studies, literature reviews, direct observations and interviews with key stakeholders. This has enabled the evaluation to assess causality and provide reasons for the actual outcomes. This is in accordance with UNIDO Evaluation Policy and the Terms of Reference (ToRs) as included in Appendix 1.

Project Background

As one of the key member states of ASEAN, Malaysia has experienced healthy economic growth and social development over the past two decades; the average GDP growth of Malaysia between 1990 and 2013 has been 5.8%. The use of electricity, however, has grown from 19,945 GW hours in 1990 to 127,359 GW hours in 2013, a growth rate of 8.4% that exceeds the 5.8% GDP growth rate. While the Government of Malaysia (GoM) has made many attempts since 2000 to promote energy efficiency, the uptake of energy efficiency especially by the industrial sector has been poor. This has been primarily due to the subsidized rate of electricity and energy. Following the spike in energy prices in 2008, the GoM's fiscal burden of energy subsidies had risen dramatically. Moreover, the level of energy subsidies were reaching levels that were unsustainable and subtracting from other developmental budgetary allocations. The GoM views energy efficiency as a key strategy towards a gradual removal of energy subsidies.

The objective of the IEEMMS Project is the promotion of energy efficiency improvements in Malaysian manufacturing sector through the development of a national energy management standard and the application of system optimization. To achieve this objective, IEEMMS was designed to achieve 5 outcomes as follows:

1. Enhanced regulatory framework facilitating increased implementation of energy efficiency (EE) in the industrial sector in both large and small to medium enterprise (SME) industries;
2. Widespread awareness amongst SMEs and larger industries of the benefits of energy efficiency;

3. Availability of a cadre of highly specialized energy management experts from the public and private sectors;
4. Availability of a cadre of highly specialized systems optimization experts from the public and private sectors;
5. SMEs and larger industries have coordinated access to technical and financial assistance for implementing energy efficiency projects.

Project Strengths and Weaknesses

- The Project has provided the GoM with activities that are consistent to the stated measures for promoting energy efficiency in the 11th Malaysia Plan. This has:
    - provided exposure to government personnel on EnMS resulting in government promotion of ISO 50001;
    - raised awareness and interest amongst manufacturing stakeholders and government personnel in an ISO 50001 framework on which to approach the implementation of EE measures;
    - led to new and effective approaches in the evaluation of EE investments by many large industries that has resulted in actual EE investments;

- The Project has been managed in a satisfactory manner to achieve all intended outcomes with the exception of access to financial assistance for SME EE projects. A primary reason for not achieving this outcome has been the extensive effort required to get buy in of industrial enterprises to EE investments and the training of national experts on EnMS and specific topics on systems optimization;

- MITI, being the principal executing agency, is not focused on EE although it supports the Government's green growth agenda. MITI's agencies MIDA and SME Corp have a responsibility to assist industries in their role towards contributing to the GDP of the country. The Project has focused on engaging industrial stakeholders and training national experts. However, owing to the success of the Project's training programs that has led to raised awareness of EE amongst large industries, further dissemination of the benefits of EE to the entire manufacturing sector is still required;

- The success of the Project's training program has resulted in demand for continued technical assistance of the EnMS and systems optimization. As such, details of the continuation of the training programs after the EOP need to be resolved including who will host the training facilities and who will finance the ongoing training to bring in the best international practices;

- While the Project has focused on implementing low-hanging fruit opportunities with large industries to demonstrate the benefits of energy efficiency, the Project needs to know more about the nature of EE measures that can be undertaken by medium-sized industries, and the financing required for these measures. This information will enable the PMU to open a dialogue with the financial sector on the nature of assistance they can provide for financing EE measures with medium-sized industries.

Recommendations:

To UNIDO:

***Recommendation 1*: Project should strengthen the position of MITI and SME Corp. to mainstream energy efficiency within as support for the Government's "green growth vision" in the 11th Malaysia Plan that states that "the Government will embark on green growth to shift the paradigm of sustainability from a narrow focus on natural assets, to include consumption and production processes in all sectors and households"**. The Project should assist MITI and SME Corp. to implement the 3 strategies contained in the 11th Malaysia Plan for enabling a green growth environment:

- Strategy A1: Strengthening governance to drive transformation;
- Strategy A2: Enhancing awareness to create shared responsibility; and
- Strategy A3: Establishing sustainable financing mechanisms.

The IEEMMS Project has "softened the ground" and demonstrated real benefits to the industry players and government stakeholders. In its remaining year, the Project is now in a position to assist the mainstreaming of EE with:

- MITI who can act on Strategy A1 to strengthen governance to accelerate green growth by disseminating EE case studies and lessons learned through several subordinate MITI departments and agencies. Furthermore, MITI can consult with industry on a proposed training centre to capture the training needs of industry;
- SME Corp. to identify opportunities to incorporate EE into the SME Master Plan for 2012 to 2020 to bring it in line with the 11th Malaysia Plan (as a part of Strategy A1), and to disseminate case studies and lessons learned through SME corporate channels.

In addition, the Project should assist MITI and the SME Corp. in promoting energy efficiency with:

- Professional engineering associations and industry associations such as FMM who can act on Strategy A2 and create shared responsibility for promoting green growth;
- Large industries where the Project has successfully raised awareness of EE through their implementation and certification of EnMS. Through facilitation efforts of the Project and as a part of Strategy A2, large industries can share the responsibility of disseminating their examples of the benefits of energy efficiency;
- Greener SMEs who can be enhanced through strengthened linkages to the Asian Productivity Organization through the Malaysian Productivity Corporation (MPC). MPC, formerly known as the National Productivity Corporation, was established in 1962 as a joint project between the United Nations Special Fund and the Federal Government, with the International Labor Organization acting as its executing agency[3]; and
- Finally, lending regulators and institutions who implement Strategy A2 and Strategy A3 (sustainable financing mechanisms) where dissemination of EE case studies and lessons learned can be given to the lending regulator (Central Bank of Malaysia or Bank Negara)

[3] Since February 2008, the National Productivity Corporation (NPC) has been officially known as the Malaysia Productivity Corporation (MPC) under the MITI signed document enforcing National Productivity Corporation Act (Incorporated) (Amended) 2008. MPO's mandate is to lead, amongst other functions, in the promotion and dissemination of productivity related information and issues, and report annually to the MITI Minister on progress and problems, and making recommendations to raise productivity in commerce and industry.

and lending institutions. The Project can also engage relevant lending institutions on potential financing mechanisms to support industrial SMEs in adopting EE.

Recommendation 2: Reset targets as recommended in Table 2 of this report as well as the PRF Outcome 5 from "SME access to financial assistance" to "workable strategies to develop SME access to financial assistance." Furthermore, efforts should be extended to collect and analyse baseline SME energy consumption information to develop these workable strategies. The following are some suggestions of how the Project can develop workable strategies to develop SME access to financial assistance in 2016:

- Provide a rough design and cost estimate of EE measures that could be undertaken to reduce the energy consumption of selected industrial subsectors that can be shared with the financial sector for initial discussions on financial mechanisms;
- Conduct a series of small workshop meetings for the financial sector under the leadership of a financial specialist with exposure to best international practices for EE financing to inform the financial sector of the financial products and mechanisms available to SMEs for IEE measures (based on the rough design and cost estimates of EE measures and known energy intensity benchmarks for various industrial processes in Malaysia), and to get their feedback on the feasibility of utilizing these products and implementing mechanisms. The workshop should review all financial products as well as subsidy and incentive schemes from the past, the reasons why the schemes did not result in higher market penetration, and conceptually design new and simple financing schemes that overcome these past issues and result in higher buy-in by industrial SMEs;
- Prepare documentation by the EOP on a workable "strategy for developing sustainable financial mechanisms" for financing IEE measures that is agreed upon with participating financial sector stakeholders.

To the Government of Malaysia:

Recommendation 3 - Finalize arrangements for the post-project training arrangements before December 2016. This would include arrangements for a proposed "National Energy Efficiency and Water Efficiency Center" (NEEWEC) for Malaysia at the Universiti Tenaga Nasional (UNITEN). The GoM is requested to provide serious consideration for:

- the purpose of the centre to continue training done by the IEEMMS Project, and to allow training equipment procured by the Project to be stored within its premises. This would also include the centre's function for registration for training (with the approved bodies) as well as EnMS certification with the involvement of SIRIM;
- the UNDP BSEEP Project to use this center as a repository for building EE training materials;
- the NEEWEC to be modelled after similar and successfully set up EE centres in South Korea and Thailand; and
- funding of NEEWEC from GoM budgets as well as GEF as a part of the proposal for setting up the NEEWEC.

1. EVALUATION OBJECTIVES, METHODOLOGY AND PROCESS

This report summarizes the findings of the Mid-Term Evaluation (MTE) Mission for the UNIDO-GEF project entitled ""Industrial Energy Efficiency for Malaysian Manufacturing Sector" (herein referred to as the "IEEMMS" or the "Project") during the November 2015 to January 2016 period by Mr. Roland Wong and Ms. Bee Hong Yeo. The MTE field mission to Kuala Lumpur was carried out from November 23 to December 1, 2015.

The IEEMMS Project was approved by GEF on May 13, 2011 and commenced operations on June 29, 2011, and has a set terminal date of 31 December 2016. The MTE time frame for this report is May 2011 to October 2015.

1.1 Evaluation Information and Rationale

The purpose of the mid-term evaluation (MTE) for this Project was to *evaluate the progress towards attainment of global environmental objectives, project objectives and outcomes, capturing lessons learned and suggesting recommendations on major improvements.* The MTE serves as an agent of change and plays a critical role in supporting accountability. As such, the MTE serves to:

- Strengthen the adaptive management and monitoring functions of the Project;
- Enhance the likelihood of achievement of the IEEMMS Project and GEF objectives through analyzing Project strengths and weaknesses and suggesting measures for improvement;
- Enhance organizational and development learning;
- Enable informed decision-making;
- Create the basis for replication of successful Project outcomes achieved to date;
- Identify and validate proposed changes to the Project document to ensure achievement of all Project objectives; and
- Assess whether it is possible to achieve the objectives in the given timeframe, taking into consideration the speed, at which the Project is proceeding.

This MTE has been conducted in accordance with UNIDO Evaluation Policy and the Terms of Reference (ToRs) as included in Appendix A. This MTE was conducted using a participatory approach, and took place at the end of the 4th year of implementation (2015) in Kuala Lumpur. The MTE team consisted of Mr. Roland Wong as International Midterm Evaluation Consultant and Team Leader, and Ms. Bee Hong Yeo as National Midterm Evaluation Consultant.

1.2 Scope and Objectives of Evaluation

The scope of the MTE covers the entire IEEMMS Project and its components as well as the co-financed components of the Project. This MTE assesses Project performance taking into account the status of Project activities, outputs and the resource disbursements made up to October 31, 2015. The MTE follows guidance provided from the ToRs of this MTE (as contained in Appendix A), and is designed to enable the Government of Malaysia (GoM), the GEF, UNIDO and other stakeholders and donors to:

- verify prospects for development impact and sustainability through detailed analysis of Project performance according to evaluation parameters defined within UNIDO evaluation policy;
- enhance Project relevance, effectiveness, efficiency and sustainability by providing recommendations for activities until the scheduled end of project (EOP).

The key issues of this mid-term evaluation of the IEEMMS Project includes:

- the effectiveness and extent of outreach of Project activities in demonstrating energy savings to the industrial sector; and
- the sustainability of Project activities considering that the remaining time left of the Project is one year.

1.3 Methodology, Limitations and Validity of Findings

This independent MTE has been conducted using a participatory approach through interviewing all key stakeholders of the Project, and keeping them informed and regularly consulted throughout the evaluation period. In addition, the evaluation team has analyzed all available evidence from desk studies, literature reviews, interviews with all key stakeholders and direct observations. This has enabled the evaluation to assess causality and provide reasons for the actual outcomes. These efforts are summarized in Table 1. This MTE report provides recommendations, as appropriate, for follow-up by all relevant stakeholders.

Table 1: Summary of Efforts of the Midterm Evaluation Team

Review Tier	Key Actions
Macro level	• Review of project documents and progress reports • Review relevant policies and programs/guidelines • Courtesy calls, meetings and interview with policy makers • Meetings and interviews with project staffs • Interviews with national level key stakeholders
Meso level	• Review targets in PPM and project accomplishments • Examine capacity gaps and resources needed to meet the targets
Micro level	• Meetings and interviews with stakeholders, program partners, and industrial sector professionals, asking them if appropriate, on their satisfaction, benefits of participating in the Project and interaction with the Project team • Solicit opinions of beneficiaries and government officials whether the Project linkages are working and are relevant and timely. If not what improvements could be done

2. COUNTRY AND PROJECT BACKGROUND

2.1 Country Context

As one of the key member states of ASEAN, Malaysia has experienced healthy economic growth and social development over the past two decades; the average GDP growth of Malaysia between 1990 and 2013 has been 5.8%[4]. The use of electricity, however, has grown from 19,945 GW hours in 1990 to 127,359 GW hours in 2013, a growth rate of 8.4% that exceeds the 5.8% GDP growth rate. While the Government of Malaysia (GoM) has made many attempts since 2000 to promote energy efficiency, the uptake of energy efficiency especially by the industrial sector has been poor. This has been primarily due to the subsidized rate of electricity and energy.

Following the spike in energy prices in 2008, the GoM's fiscal burden of energy subsidies had risen dramatically. Moreover, the level of energy subsidies were reaching levels that were unsustainable and subtracting from other developmental budgetary allocations. In addition, the GoM, determined to maintain its economic growth in the foreseeable future, understands the importance of managing its growth in energy consumption to ensure optimal productivity and competitiveness in its economic activities. As such, since 2008, the GoM has undertaken the numerous policy reviews to manage and lower energy subsidies in tandem with the promotion of energy efficiency to mitigate the impact of increased energy costs to consumers. The GoM views energy efficiency is a key strategy towards a gradual removal of energy subsidies.

2.2 Sector-Specific Issues and Important Developments during Project Implementation

During implementation of the IEEMMS Project, the GoM has made strong commitments to gradual removal of energy subsidies in the form of higher tariffs for electricity as well as natural gas. During the November 2016 midterm evaluation mission to Kuala Lumpur, the GoM had announced 16% and 25% rises in the electricity and gas tariffs respectively for industrial clients to be implemented over a period of time. These announcements have only served to raise the profile and importance of industrial energy efficiency, and to lessen the government's rising burden on energy subsidies.

The main focus of "medium-sized" industrial enterprises[5] has been to maximize profitability through production efficiency, not energy efficiency. The notion of procuring more energy-efficient equipment or undertaking measures to reduce energy consumption and operational costs was in the past not a primary consideration of these enterprises. Larger industries with seemingly more technical expertise to manage energy issues, typically did not approach energy efficiency in a systematic manner but rather by trial and error. Multinational companies with head offices in developed countries generally have not offered in-depth technical knowledge on implementing energy efficiency to its Malaysian-based manufacturers. As a consequence, large multinational industries at the commencement of this Project did not have any structured approaches to energy efficiency.

[4] www.iea.org

[5] A medium enterprise is defined as having sales turnover from RM15 million to not exceeding RM50 million or full-time employees from 75 to not exceeding 200 (http://www.smebank.com.my/corporate-info/sme-definition)

2.3 Project Summary

The IEEMMS Project is designed to promote energy efficiency improvements in the Malaysian manufacturing sector through developing national industrial energy efficiency policies and plans, creating awareness on energy management systems (EnMS) and systems optimization, providing detailed training on EnMS and systems optimization, and improving access to finance for industrial EE improvements.

This Project is being directly implemented by UNIDO with the Ministry of International Trade and Industry (MITI) serving as the executing agency. SME Corp. under MITI is serving as the local executing partner. Project funding has been provided through a GEF Grant of USD 4.20 million with co-financing contributions expected from SME Corp., Standards and Industrial Research Institute of Malaysia (SIRIM), the Ministry of Energy, Green Technology and Water (KeTTHA), the Energy Commission (EC), the Economic Planning Unit (EPU), the Federation of Malaysian Manufacturers (FMM), and various private sector industrial enterprises.

While the Project was approved in May 2011, actual Project implementation commenced in January 2012 with the recruitment of the National Project Manager. The current terminal date of the IEEMMS Project is December 31, 2016. The Project was designed to be managed by an UNIDO HQ-based Project manager, with a Project Management Unit (PMU) that is housed within the offices of the SME Corporation in Kuala Lumpur. The PMU has been designed to take direction from a Project Steering Committee (PSC) that currently consists of 17 members[6].

The IEEMMS Project is managed from UNIDO HQ in Vienna by Mr. Khac Tiep Nguyen. In Kuala Lumpur, Ir. Dr K S Kannan has served as the National Project Manager for the Project since December 2011. Ms. Kaveta Chelliah was recruited in February 2012 as the Assistant Project Manager.

[6] PSC members include KeTTHA (Chair), MITI (Co-Chair), EPU, Ministry of Natural Resources and Environment, Ministry of Finance (MoF), Malaysian Investment Development Authority (MIDA), Department of Standards Malaysia, ST, Sustainable Energy Development Authority (SEDA), FMM, Malaysian Green Technology Corporation, Malaysian International Chamber of Commerce and Industry, Centre for Environment, Technology and Development Malaysia, SME Bank, SME Corp Malaysia, the PMU (Secretariat), and a UNIDO representative

3. PROJECT ASSESSMENT

3.1 Project Design

The design of the IEEMMS Project was undertaken in 2009 and 2010. Project design was undertaken:

- using recommendations and lessons learned from the completion of the UNDP MIEEIP Project in 2007. This included, amongst other recommendations and lessons:
  - the use of energy standards and labelling;
  - intensifying efforts to involve more industrial managers as well as financial institutions to become involved in energy efficiency; and
  - implementing another energy efficiency project on the proviso that the appropriate regulations and substantial government funding will be available[7];
- in consultation through outreach workshops with all major stakeholders, including relevant government agencies, industry associations, selected SMEs and the SME Bank; and
- in close collaboration with the CEO of SME Corp.

The IEEMMS Project design as provided in the 2011 Project document, is summarized under the Project Results Framework which is contained in this report in Appendix D. To achieve the IEEMMS objective of promoting energy efficiency improvements in the Malaysian manufacturing sector, the Project was designed to achieve 5 outcomes:

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

The evaluators are aware that the Project Results framework (PRF) was prepared with a level of detail commonly provided for GEF-4 projects. As such, the PRF, as provided in Appendix D does not have the level of precision in the indicators as seen on some GEF-5 PRFs. The PRF for the IEEMMS Project, however, contains a sufficient number of indicators and targets to support the Project objectives. While the wording of most of the indicators do not meet SMART criteria[8]; the "intent" of the indicators and targets set in the PRF were sufficiently clear for the Project team to plan activities. While improvements to the wording of some of the indicators could be made, the Project design has a clear focused objective to promote energy efficiency in the Malaysian manufacturing sector through enhancing the regulatory framework, raising awareness, training of EnMS and systems optimization experts, and coordinated access to technical and financial assistance to implement energy efficiency.

Considering the lack of progress on access to financial assistance, the only issue with the evaluators on the Project design is the lack of concrete indicators to increase financial access to industrial

[7] UNDP GEF Final Evaluation MIEEIP, January 2008
[8] Specific, Measurable, Attainable, Relevant and Time-bound

SMEs for EE investments. This is important if financial assistance leads to investments and increased GHG emission reductions, and the increased likelihood of meeting GHG emission reduction targets. For example, the PRF provides targets of completed information and consultation events on financial mechanisms, and assistance to SME Corp on a financial mechanism for EE projects. These indicators and targets do not necessarily lead to EE investments by SMEs since the barrier of the enabling investment conditions has not been addressed nor understood by the Project designers. The indicator "criteria for techno-economic evaluation" is too general and does not meet the "specific" criteria for SMART indicators. As an example, this indicator could have been more specific to include detailed profiling of industrial enterprises, perhaps by industrial subsector (i.e. steel, food processing) or a particular kind of equipment (i.e. compressors, pumps) that would lead to an improved understanding of the actual energy savings of a particular system or equipment, and a greater likelihood of implementing an investment.

3.2 Relevance

The relevance of the IEEMMS Project to the country's national priorities is **satisfactory.** With respect to *Malaysia's national development and environmental priorities and strategies*, this Project is strongly aligned with:

- The green growth as envisioned in the 11th Malaysia Plan. In particular, "…. the Government will embark on green growth to shift the paradigm of sustainability from a narrow focus on natural assets, to include consumption and **production processes** in all sectors and households" (11th Malaysia Plan). The Plan provides strategies to establish the enabling environment for green growth including:
  - Strategy A1: Strengthening governance to drive transformation;
  - Strategy A2: Enhancing awareness to create shared responsibility; and
  - Strategy A3: Establishing sustainable financing mechanisms;

  The IEEMMS Project provides valuable inputs into the 11th Malaysia Plan by identifying potential improvements and appropriate approaches to ensure energy efficiency in industries. One of these approaches was to mention ISO 50001 as a framework for energy management systems for industries;

- The National Energy Efficiency Action Plan (NEEAP) of 2014 that includes amongst other guiding principles, implementation of "low-hanging fruit" EE opportunities. Moreover, the IEEMMS Project provided inputs into the NEEAP by providing measures to improve energy efficiency of industries.

The IEEMMS Project is fully aligned with the *priorities identified for climate change under GEF-4 and with Strategic Objective 2 (or CC-SP2): "To promote energy efficient technologies and practices in industrial production and manufacturing processes"*. These strategic objectives place a high priority on creating enabling policy and regulatory environment that will promote investment of energy technologies. These strategic GEF objectives will lead to successful outcomes including appropriate policy, legal and regulatory frameworks adopted and enforced; sustainable financing and delivery mechanisms established and operational; and GHG emissions avoided. The design outcomes of the IEEMMS Project strongly align with these intended outcomes.

The IEEMMS Project fits within *UNIDO's mandate of industrial energy efficiency* that is aimed at reducing environmental impacts while maintaining economic growth through the promotion of

renewable energy that in the long term will reduce energy costs, GHG emissions and production costs. Furthermore, the Project fits within the core of UNIDO's priorities and mandates to provide technical assistance that support adoption of energy efficient systems and policy measures. The Project also strongly aligns with UNIDO's mandate to deliver tailor-made training tools that focus on industrial energy system optimization. UNIDO's mandate is to target all players in the industrial sector including government, regulators, industrial enterprises, service providers and equipment vendors; the design of the IEEMMS Project targets the Government, regulators, industrial enterprises and service providers. Industrial enterprises and service providers who have improved knowledge of EE designs are enabled to make informed choices of EE equipment from equipment vendors.

3.3 Progress

Progress of the IEEMMS Project has been **satisfactory**. Overall Project progress of each outcome and output is provided in detail in Table 2. Over the effective implementation period of the IEEMMS Project since January 2012, Project progress can be summarized as follows:

- The PMU employed a strategy to simultaneously implement awareness raising, expert training and strengthening of the EE regulatory framework at the commencement of the Project in early 2012. The impact of the strategy was important to the progress of the Project:
    - these activities quickly raised the importance of energy efficiency to the manufacturing sector;
    - lead time from the beginning of the Project was required to gain the trust of manufacturing enterprises on the credibility of this UNIDO project;
    - lead time was required to train EE experts. By training experts early in the Project, they were ready to train other experts in 2013, a time in the Project when manufacturing enterprises had gained trust of PMU staff;

- With the manufacturing sector engaged in the Project around 2013 or Year 2, the Project employed the strategy of implementing "low-hanging" EE opportunities which was basically the engagement of large industries with the technical capacity to invest in EE opportunities. The successful implementation of these EE measures demonstrated to other industrial stakeholders the benefits of undertaking EE measures;
- Progress on developing financial mechanisms for SME manufacturers has not yet been commenced. The evaluators have a sense that the focus on the low-hanging fruit over the past 4 years may have been justified given the lead time required to foster a trusting relationship between the Project and the participating industrial enterprises.

Table 2: Progress Towards Results Matrix (Achievement of outcomes against EOP Targets as listed in the project log frame of May 2012)

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
Objective: To promote energy efficiency improvements in the Malaysian manufacturing sector through the development of national energy management standards and application of system optimization	**Achievement Rating: Satisfactory:** Energy efficiency improvements have been successfully promoted in the Malaysian manufacturing sector through the development of national energy management standards and the application of systems optimization. Implementation of EnMS and systems optimization are being widely adopted amongst large industries; however, this has not yet occurred within medium-sized manufacturing enterprises							
	a) Direct energy savings and indirect emission reduction				o Implementation of energy management plans, system optimization and operational improvements in 604 enterprises lead to annual fuel savings of 5.92 million GJ and power savings of 794 MWh	22,300 MWh of energy savings to date		With 20 large enterprises that have been certified for ISO 50001 by SIRIM and other certification bodies in Malaysia and another estimated 30 large enterprises currently in the process of certification, the Project is assisting these enterprises in implementing EnMS. While this is below the target of 604 enterprises, the 22,300 MWh of energy saved exceeds the target of 794 MWh of annual power savings. 30 case studies are expected to be developed by the EOP. The target of 604 enterprises involved with EE improvements should be revised downwards to a realistic number less than 100 that can be achieved by the EOP.
	b) Direct and indirect emission reduction				o Cumulative direct emission reduction (associated with abovementioned energy savings) of 11,465 $ktCO_2$ o Indirect emission reduction of up to 30,950 $ktCO_2$ 44.8 (assuming a growth of 5.3% annually over 2010-2024)	-19,000 $ktCO_2$ (per year) of direct emission reductions -No estimates yet of indirect emission reductions		• To date, the annual GHG emission reductions is 19 million tonnes CO_{2eq} per year based on voluntary reporting from participating industrial enterprises and completed case studies prepared by the Project • Indirect emission reductions should be removed as an indicator of this Project. Indirect emission reductions are made by personnel on the Final Evaluation team.

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
Outcome 1: Enhanced regulatory framework facilitating increased implementation of EE in the industrial sector appraised by project experts	**Achievement Rating: 5 (Satisfactory):** Regulatory framework has been enhanced with the impact of increasing the confidence of the industrial sector in adopting energy efficiency measures							
	1. Status of policy paper on how to implement industrial policy (Output 1.1)				Proposed policy and regulation instruments to facilitate the implementation of the NEEMP and NEEAP, in particular those for the implementation of ISO 50001 accepted and implemented	Ongoing and nearly complete		• Inputs to EPU on the "11th Malaysia Plan" (2016-20) and to Energy Commission on enhancing the national energy database. • Visits to Vienna and Copenhagen on ISO energy management for government stakeholders • ISO 50001 was mentioned in the 11th Malaysia plan as a key tool to developing energy efficiency for industrial as well as the building and residential sectors • Project coordination work done by KeTTHA and EPU on long-term demand side management programs
	2. Status of M&V structure (Output 1.2)				• Systematic data recording mandatory in large industries and voluntary in SMEs • Database established	Ongoing		New database system has been proposed based on requirements of users and best practices of other countries. The Energy Commission (EC) will host the system and undertake its adoption in stages in 2016. The Project, however, will only assist in the software development and not the infrastructure investments for the database; the UNDP-GEF Building Sector EE Project has approached EC with a similar objective and will undertake the infrastructure investment for the database
	3. Status of post-project action plan (Output 1.3)				Final project report consolidating the results and lessons learned from the implementation of the project as well as post-project strategy	Ongoing		This report will be compiled in the fourth quarter of 2016 towards the terminal date of the project of December 31, 2016

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
	4. Monitoring and evaluation carried out and knowledge captured (Output 1.4)				Monitoring (quarterly and annually) Midterm and final evaluation Audit reports Number of case studies, lessons learned from international sources and number of brochures and booklets	Ongoing		All monitoring and evaluation functions being undertaken including regular issuance of PIRs, case studies, and lessons learned from international sources.
Outcome 2: Widespread awareness amongst SMEs and larger industries of the benefits of energy efficiency; strong interest by industry (and other sectors participating in EnMS such as institutional and government) in energy management, systems optimization as well as energy efficient equipment and services in general	**Achievement Rating: 5 (Satisfactory):** There is widespread awareness within the industrial sector, notably amongst larger industries but also medium sized industries in Malaysia on the benefits of energy management systems, systems optimization and energy efficiency equipment and services							
	5. Status of networking amongst industrial decision-makers (Output 2.1)				Peer-to-peer network established (to assist companies in info exchange, energy management plan design and implementation)	Target achieved		An information exchange network has been established through a regularly updated project website (www.ieemms.org), and the set up and use of a "Basecamp, GoTo Training/GoToMeeting, Skype" communication platform. The platform is well used by all Project participants where case studies and management plan designs are shared with EE experts on Basecamp.
	6. Status of national information campaign (Output 2.1)				• Number and quality of in full materials developed and type of media; • Info campaign developed on energy management, system optimization and EE in industry in general; • 150 companies are participating in recognition scheme established for participating companies; • Decision-makers are informed through 10 events (workshops, seminars, meetings) attended by at least 300 policymakers,	Ongoing		A national information campaign has been established during the Project including: • the Project website and newsletters from FMM on awareness raising workshops for EE; • ongoing information dissemination through user training sessions, pamphlets, brochures and emails • 17 awareness seminars attended by industry, consultants, energy service providers, academics, local and central government officials. Total number of attendees at the seminars exceeds 900; • Project participated in the

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
								ASEAN SME Showcase and Conference 2015 in Kuala Lumpur
	7. Improved information services (Output 2.2)				• Upgraded and interlinked website at Green Tech M. to provide integrated info on EE • Project newsletter with regular reporting on progress and results	Ongoing		• Project website is constantly being upgraded with ongoing interlinks with other websites including FMM to provide integrated info on EE; • Project newsletters for awareness raising on EE are regularly posted on Project website and the FMM website
Outcome 3: A cadre of highly specialized energy management experts from the public and private sectors is available as a long term technical resource to industry and the country	**Achievement Rating: 5 (Satisfactory):** A cadre of highly specialized energy management experts has been developed in both the public and private sector, and who are available as a resource for the industrial sector as well as government							
	8. Status of EM training materials (Output 3.1)				Training materials and software available on EM adapted to Malaysian circumstances	Target achieved		Detailed technical training material developed by UNIDO and local experts for EnMS. The training material has been adapted to the Malaysian context. This includes the procurement of energy monitoring and measurement equipment that is now heavily used by many of the participating industries
	9. Level of capacity of SIRIM and SIRI QAS (Output 3.2)				• SIRIM is acknowledged as lead auditor certification for ISO 50001 • SIRIM QAS is recognized to certify ISO 50001 compliance	Target achieved		• At the request of SIRIM, the Project provided training to SIRIM as a certification body for ISO 50001 that was adopted in Malaysia in October 2011; • SIRIM has now certified 20 large companies with another 30 companies undergoing the ISO 50001 certification process
	10. Level of expertise on EM (Output 3.3)				• 40 national experts trained • Energy managers and technical staff are trained at 15 training sessions of 500 factories • 10 follow-up training	Target achieved with ongoing activities to respond to demand		• Development of human resources for energy management (>500). Feedback by participants on training sessions has been rated as very good to excellent • 15 EnMS experts have been certified up to the end of 2014

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
					sessions for 300 factories			with another 30 experts expected to qualify in 2015. Target of 300 factory personnel to be trained through User Trainings have been achieved with total of 304 factory personnel trained by 2015. • Follow-up training in progress with 23 medium and large factories. Target of 300 factories does not appear realistic; however, given that the 50+ factories that have or are in the process of having follow-up training, the Evaluators recommend that the target of 300 factories for follow-up training be reduced to a realistic number.
	11. Level of implementation and showcasing of EM (Output 3.4)				• 300 companies implement operational improvements • 100 companies implement ISO 50001 compatible energy management plans • 30 companies reported as case studies	Target achieved with ongoing activities to respond to demand		• 13 local EnMS consultants are assisting factories in implementing ISO 50001 systems verification of energy savings • An estimated 40 companies are involved in various stages of implementing EnMS. The evaluators recommend that the target of 100 companies implementing operational improvements should be reduced to a realistic number • More than 11 case studies have been documented for reporting verification of energy savings
Outcome 4: A cadre of highly specialized systems optimization	**Achievement Rating: 5 (Satisfactory):** A cadre of highly specialized systems optimization experts have been trained within the public and private sectors, and who are available as a long-term resource to both the industrial sector and the Government							
	12. Status of				Training materials and	Target		Detailed technical training material

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
experts from the public and private sectors is available as a long term technical resource to industry and the country	EM training materials (Output 4.1)				software tools available on systems optimization	achieved		developed by UNIDO and local experts for systems optimization for fans, compressed air, pumps and steam. The training material has been adapted to the Malaysian context. This includes the procurement of energy monitoring and measurement equipment that is now heavily used by many of the participating industries
	13. Level of capacity green Tech M.(Output 3.2)				• Green Tech M is providing training at expert and factory level; • SIRIM QAS is recognized to certify ISO 50001 compliance	Target achieved		15 trainers from various regional branches of FMM have attended expert training for systems optimization who will serve as technical resources to FMM members in the future
	14. Level of expertise on systems optimization (Output 3.3)				• 50 national experts trained; • 12 training sessions for staff of 350 factories on steam, pump, motor/fan, and compressed air systems; • 12 follow-up training sessions for 150 factories; • Trained staff on process heating as needed	Ongoing		• 99 national experts trained for pumps, fans, steam and compressed air • More than 1100 attendees from 174 companies at 30 sessions for systems optimization user training for pump systems, fans systems, steam systems and compressed air systems. Feedback by participants on training sessions has been rated as very good to excellent • On-site follow-up training sessions has been conducted at 64 factories
	15. Level of info of vendors and suppliers on opportunities in systems optimization				About 4 to 5 training and info events on the market opportunities in which at least 60 vendors/suppliers participate	Target achieved		4 vendor trainings conducted for systems optimization user training that has been attended by 72 vendors and distributors
	16. Level of implementatio				• Operational improvements in 154	Ongoing		• Operational improvements for 60 companies that have had on

Project Strategy	Indicator	Baseline Level	Level in 1st PIR (self-reported)	Midterm Target	End-of-project Target	Midterm Level & Assess-ment	Achieve-ment Rating	Justification for Rating
	n and showcasing of EM (Output 3.4)				companies; • 75 completed system assessments; • 50 companies have implemented optimization activities; • 20 companies reported as case studies			site training for systems optimization; • 24 completed system assessments from the 60 companies that have implemented optimization activities • More than 11 case studies have been documented for reporting verification of energy savings
Outcome 5: **SMEs and larger industries have coordinated access to technical and financial assistance for implementing energy efficiency projects including system optimization**	Achievement Rating: 3 (Moderately Unsatisfactory): The focus of the Project efforts to date has been to promote energy efficiency in the industrial sector. As such, the Project has not had sufficient opportunity to focus on gauging the demand for financial assistance to industrial SMEs on EE investments. This includes gauging demand for financial assistance amongst medium enterprises within the industrial sector							
	17. Status on sources of IEE financing (Output 5.1)				At least 10 information and consultation events on financial mechanisms supported by the project attended by 200 to 300 people	Only one session to date has been conducted by the Project		Only 1 information consultation meeting has been conducted to date with SME Bank and 5 other banks. The consultation has only been exploratory with inputs of a financial specialist proposed for 2016 to focus the discussions; this will increase the likelihood of financial mechanisms being available to SMEs for EE investments
	18. Status of TA support to new or existing financial loan and credit guarantee schemes (Outputs 5.1 and 5.2)				• Harmonized set of criteria for techno-economic evaluation of industrial EE projects; • Assistance given to SME Corporation to provide EE related soft loans, either in setting up or supporting existing systems	No progress to date		With 1 year left on the Project, there is a high risk of not achieving these targets. The Project is currently undertaking exploratory discussions to formulate strategy for approaching SME financial assistance. This will require an understanding of SME financial needs for EE investments. A first step should be profiling of medium sized industries, their EE investments and financing needs.

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

3.4 Effectiveness

The effectiveness of the IEEMMS Project to date has been **satisfactory**. The primary reasons for this rating can be attributed to:

- Acceleration of a National EE Action Plan;
- High level of awareness of EnMS, systems optimization and EE benefits;
- Adoption by more than 70 factories, which implemented EnMS and other operational improvements;
- Training of >500 personnel on EnMS as well as >900 personnel on systems optimization that was reviewed by participants as very good to excellent;
- Training was augmented by web-based technical information exchange platforms and opportunities for networking;
- Project has yet to commence financial mechanisms for SMEs. Given the remaining time on the Project of just one year, there is a medium risk of this not being complete.

View of direct beneficiaries and project participants of IEEMMS Project:

- Government participants: the study tour was valuable in exposing how EnMS is implemented and effective in reducing energy consumption;
- Industrial participants and consultants: Training workshops are valuable, claiming there is nothing similar being offered in the country;
- Continuation of this assistance after the Project's end is a concern to them.

Outcome 1 – Enhanced regulatory framework facilitating increased implementation of EE in the industrial sector

The outputs to achieve this outcome (according to the PRF) includes the provision of support for implementation of the NEEMP, improved reporting of data on energy use and energy intensity, action plan for EE implementation for industry, and project monitoring and evaluation. The effectiveness of activities invested to deliver the outputs to achieve this outcome were **satisfactory** and can be attributed to:

- The Project's collaboration with the EPU during 2014 to provide inputs on EE approaches to the 11th Malaysia Plan (2016-2020) and the National EE Action Plan (NEEAP) that has worked towards the mainstreaming of energy efficiency within the industrial sector of Malaysia. A key contribution of the Project was the study tour for MITI, EPU and SME Corp. personnel to Vienna and Copenhagen to meet with various European-based industries that have implemented and EnMS. While this was done in 2014 (or the third year of the Project), another key contribution of the Project to have ISO 50001 mentioned in these plans was an excellent outcome;
- The contribution of the Project's international database consultant in 2014 on developing a database for energy use and energy intensity in the industrial sector within EC. This consultancy combined with a similar consultancy from the UNDP-GEF Buildings Sector EE Project (BSEEP) highlighted to the Government the need for such a database. At this stage of the Project, Project resources are proposed to be used in 2016 to finance software development of the database;
- The fact that the Project has been well-managed, including effective monitoring and evaluation activities to achieve this outcome, and the ability to adaptively meet the demands of government stakeholders on the Project; and

- The outcome of increased investment into energy efficiency in the industrial sector that is buttressed by an enhanced regulatory environment in 2015 and the gradual removal of subsidies from energy in Malaysia.

One issue where more work is required to maximize effectiveness of this component is to maximize the engagement of MITI and its subsidiary, the SME Corporation. Personnel managing this Project within MITI, as well as the SME Corp., have been recently changed, leaving current PMU personnel to expend efforts to familiarize MITI and SME Corp. management on Project activities. For the remainder of the Project in 2016, PMU personnel will need more focus on key issues to ensure maximum adoption of energy efficiency for SMEs in the industrial sector. This is further discussed in the section on Recommendations in this report.

Outcome 2 – Widespread awareness amongst SMEs and large industries of the benefits of energy efficiency in addition to strong interest by industry (and other sectors participating in EnMS such as institutions and government) in energy management, systems optimization, and energy-efficient equipment and services in general

The outputs to achieve this Outcome (according to the Project log frame) includes a developed and implemented national information dissemination and awareness creation campaign, and a strengthened information Bureau at the Energy Commission. The effectiveness of activities invested to deliver this outcome have been **satisfactory**, and can be attributed to:

- The setup of a Project website (www.ieemms.org) that serves as an information repository for EnMS, systems optimization, and upcoming project awareness workshops and events. This includes the posting of sample studies and management designs for the benefit of EE experts, industrial managers and government;
- The use of an information-dissemination platform setup by the Project to allow national experts and industrial managers to freely communicate with international UNIDO experts on various topics on systems optimization as well as EnMS. This includes the use of “Base Camp, GoToTraining/GoToMeeting and Skype as a platform for webinars that has been well received by all stakeholders including the CEOs of FMM and SME Corp.;
- Widespread EE awareness amongst FMM members that can be attributed to the Project website, FMM newsletters, ongoing information dissemination products such as pamphlets and brochures, 15 awareness training sessions throughout the Project period, and participation of project personnel in international conferences such as the ASEAN SME Showcase and Conference 2015 in Kuala Lumpur

The manner in which this component was implemented was effective. In discussions with all stakeholders, there were suggestions made for the Project to focus more on benchmarking. In the opinion of the evaluators, a benchmarking focus would have been very difficult for the Project to achieve given that this Project was open to all industries where there are a wide variety of energy-intensive activities ongoing. Some international industrial benchmarks were provided as a part of the awareness raising campaigns. However, obtaining local benchmarking information such as from the cement industry was not successful due to the lack of cooperation of local industries in providing such information for proprietary reasons. The Project focus on encouraging all participants to develop their own indicators and benchmarks was a more astute decision.

With one year remaining on this Project, the PMU will need to improve the understanding for all stakeholders, public and private, on the diversity and energy intensity of the industrial sector. For example, a listing of energy-intensive industries or energy-intensive processes (such as

refrigeration) can be disseminated that would further convince all industrial stakeholders to adopt EE measures. These are further discussed in this report under Recommendations.

Outcome 3 – A cadre of highly specialized energy management system experts from the public and private sectors is available as a long-term technical resource to industry and country

Outputs to achieve this outcome (according to the PRF) includes materials for energy management systems training, strengthened capacity of SIRIM and SIRIM QAS for certification of ISO 50001 compliance, local experts trained for energy management systems, and energy management systems implemented at the factory level. The effectiveness of activities invested to deliver this outcome have been **satisfactory**, and can be attributed to:

- The adoption of ISO 50001 as an EnMS approach for the adoption of EE by over 50 large factories in Malaysia. In addition, there were some non-industrial entities who were included in EnMS and ISO 50001 training such as the Miri City Council and hotels in Genting;
- The engagement of SIRIM to certify over 20 industrial enterprises to date for ISO 50001 with another 30 industrial enterprises in the process of obtaining this certification. SIRIM is now a provisional member of the ISO;
- About 15 EnMS experts have been certified with additional 15 to 20 experts to be certified by early 2016 certified, exceeding the target of 30 experts to be trained by the EOP. EnMS trainees from Round 1 have received certificates from MITI and UNIDO with their names together with Round 2 trainees to be posted on the EC website at the end of the Project. The dropout rate from these trainings was only 5 to 10%;
- Monthly webinars that are conducted with EnMS teams to follow-up on their progress and assist them with related issues;
- Follow-up training for EnMS for 23 large factories; and
- Positive feedback from training participants who rated the quality of training as very good to excellent.

The training offered by the IEEMMS project was an improvement over the predecessor MIEEIP Project that only offered energy audits and assessment reports; the IEEMMS Project provided audits as well as measures for reducing the energy consumption of an entire industrial process. While activities on this component have been as effective for the Project, the challenge for the Project in 2016 will to be to engage medium factories to adopt EnMS as an approach to adopting energy efficient measures. Within the SME industrial subsector, micro and small industrial enterprises (defined as having 0 to 5 workers, and between 5 and 75 workers respectively) by and large have not participated on this Project, and likely represent a very low carbon footprint within the industrial sector. An estimated 60% of the participants in the EnMS training workshops are from medium industries (defined as having between 75 and 200 workers).

Outcome 4 – A cadre of highly specialized systems optimization experts from the public and private sectors is available as a long-term technical resource to industry and the country

Outputs to achieve this Outcome (according to the PRF) includes developed systems training materials, strengthened capacity of FMM, local experts trained for systems optimization, and participation of equipment suppliers, and implemented systems optimization at the factory level.

The effectiveness of activities invested to deliver this outcome have been **satisfactory**, and can be attributed to:

- the usefulness of the systems training materials developed for fans, compressed air, pumps and steam systems. The training material was adapted for the Malaysian context which made the material very useful for national experts as well as industrial managers in Malaysia;
- the availability of systems optimization experts from FMM from 15 different regional centres within Malaysia;
- the attendance of more than 1,100 trainees to various systems optimization training sessions;
- operational improvements for more than 60 companies that have had site training for systems optimization; and
- the positive feedback from training participants who rated the systems optimization training sessions from very good to excellent.

Another indicator of the effectiveness of the systems optimization training has been the wide use of the information exchange platform on BaseCamp/GoToMeeting and Skype where participants on systems optimization training have been able to communicate with many of the international trainers on specific technical issues. The quality of the training was also improved by the response of the PMU to the feedback received from the training participants which included amongst other requests for measuring equipment and small systems models to demonstrate technical issues. For example, one training centre observed by the evaluators had a mini air compressor system in the training premises along with measuring equipment. Moreover, some of this measuring equipment such as pressure gauges and electric consumption meters were borrowed by many of the training participants which were found to be useful to the extent that the factory made their own purchase of that equipment.

In addition, the Project training assisted many of the industrial enterprises to create their own energy baselines and data collection protocols and to undertake their own regression analyses to identify EE priorities. It is important to note that the systems optimization trainings focused on reducing electricity consumption with only a small focus on thermal energy. Boiler efficiency recommendations were covered by the Project with implementation left to a new 5-year UNIDO project on solar thermal with SIRIM. A key activity for the Project in 2016 will be the migration of the Project training centres to local universities that will provide skill based training for industrial professionals.

Outcome 5 – SMEs and larger industries have limited but growing coordinated access to technical assistance for implementing energy efficiency projects including system optimization. SMEs, however, do not have any coordinated access to financial assistance for implementing IEE investments.

Outputs to achieve this Outcome include financing institutions with raised awareness and built capacity to provide IEE financing assistance, and EE project proposals and financing schemes that have been prepared to support IEE projects. The effectiveness of activities invested in delivering this outcome has been **moderately unsatisfactory**, and can be attributed to:

- *Project focus to date on training experts on EMS and systems optimization, and the setup and subsequent use of the information exchange platforms* including BaseCamp,

GoToMeeting and Skype. The PMU is currently in discussion with a number of local universities on hosting the Project's training centres after the EOP;

- *The Project focus on "low-hanging fruit" for larger industrial enterprises that have the financial resources and capacity to implement IEE investments*. As such, with the successful implementation and adoption of EE by these larger industries, there has been no need for financial mechanisms by these enterprises;
- *The lack of IEE investments by medium industrial enterprises, and the lack of understanding by the Project of the energy profiles of these enterprises*. For example, the market size for energy savings for all SME industrial enterprises in Malaysia would be useful especially in terms of their needs for financial assistance to make IEE investments. While the PMU as well as the SME Corp. have said that medium industrial enterprises would need financial assistance for IEE investments, there has been no survey conducted on the potential for energy savings within this subsector and the type of financial assistance they may require. By having this information, a dialogue can be opened with the SME Bank as well as other lending institutions on the type of financial products that can be offered to SME industrial enterprises. At this point no such dialogue has been initiated.

On November 30, the evaluation mission met with 2 development banks and 4 commercial banks, all of whom were interested in financially supporting energy efficiency in the manufacturing sector in Malaysia[9]. While all the banks acknowledged that the UNIDO project has been able to demonstrate tangible energy savings from EE measures, they acknowledged challenges exist in convincing companies to commit to loans for EE investments. Moreover, they acknowledged their need to improve their understanding of the nature of EE investments, especially those for medium sized industries. Some of the issues and initial suggestions mentioned by the stakeholders to catalyse discussions on financial mechanisms for EE investments by medium sized industries includes:

- The need for setting of minimum energy standards by the Energy Commission for various equipment such as motors. This will accelerate interest in investments to ensure compliance with standards;
- Improve the understanding of the needs of a medium-sized industry for EE measures or equipment, the energy benefits, and the required level of investment. This would include strengthening linkages between energy experts and ESCOs with financial institutions; and
- Engagement of industrial SMEs at a forum with banks to forge a common understanding of the importance of energy efficiency and the willingness of banks to provide financial mechanisms and resources for such investments in addition to financing assistance provided by the SME Bank and the Green Technology Financing Scheme (GTFS by Green Tech Malaysia).

To a large extent, the lack of progress on this component can be more attributed to its design rather than the performance of the PMU:

- There was considerable lead time required for the PMU to effectively engage industrial stakeholders with the UNIDO project. This involved overcoming initial skepticism of industrial participants within the first 2 years of the project to UNIDO's offer of free technical assistance regarding energy efficiency in their processes;

[9] This included the 4 commercial banks: UOB Bank, Hong Leong Bank, Standard Charted Bank, and Affin Bank, and the 2 development banks: the Malaysia Energy Agency (who administer the GFTS) and the SME Bank.

- Years 3 and 4 of the Project were spent raising the awareness of large industrial enterprises on IEE and assisting them in developing and implementing IEE projects with demonstrable energy savings that could be leveraged to other industrial enterprises to catalyze their interest;
- Without demonstrable energy savings, the Project would have had a difficult time opening any dialogue with financial institutions on financial assistance for IEE projects. Furthermore, and as mentioned previously in this section, the Project needs to have an improved understanding of the market for energy savings and financial assistance within the industrial sector, notably for medium sized enterprises;
- The PRF outputs for this component (EE financing institution raised awareness and the preparation of bankable EE financing proposals) will not necessarily lead to tangible financial assistance for IEE projects. The weakness of the PRF outputs for this component is the lack of understanding of SME practices in relation to energy use. It would be better to improve this understanding before any recommendations are made on financial assistance to SMEs for IEE projects.

Though not mentioned in the PRF, the Project was also supposed to increase the access of government financial mechanisms to the industrial sector. From the perspective of the financial institutions to financing IEE projects, there are a number of issues that the Project needs to address:

- The Green Technology Financing Scheme (GTFS by Green Tech Malaysia) has an energy efficiency financing scheme developed in collaboration with MIDF. The benefits of this scheme include paid detailed energy audits, third party verification of bankable proposals, and a 2% subsidy on loan interest. Participants utilizing GTFS are large industries, not medium industries who claim that participation on this scheme is cumbersome with too much paper work. This includes the need for applicants to estimate CO_2 emission reductions from these investments, many of whom do not have the skills or capacity to conduct such an estimate. Green Tech Malaysia does not have sufficient human resources to provide technical assistance to these industries, and SMEs will not hire qualified ESCOs to prepare these applications;
- The SME Bank does have financial products available to assist SMEs in IEE investments. While most commercial banks can accept loan default rates of up to 2%, the SME Bank can manage up to 10%. The issue, however, is that most SMEs do not meet loan criteria including the disclosure of sufficient collateral for loans and cash flow. In addition, SME financial products only cover 60% of the capital cost of an IEE investment leaving the SME to find financing for the remainder. This financing environment only encourages SMEs to hang onto their old energy inefficient equipment. In the past, this was not a problem considering the subsidized rates of energy and the low proportion of energy costs to the operations of the factory.

To improve the effectiveness of this component, targets may need to be reset to reflect what can be realistically achieved during the remaining period of the IEEMMS in 2016. These are further discussed in this report under Recommendations.

3.5 Efficiency

The evaluation team found that the efficiency of the activities supporting the delivery of the outcomes of this Project were **satisfactory.**

To date, USD 3,690,978 has been expended by the Project up to November 30, 2015 or 88% of the total IEEMMS Project budget of USD 4,200,000. As previously mentioned, most of the outputs of Components 1 to 4 have been delivered implying that the Project budgets have been wisely expended. However, as can be seen on Table 3, the component level expenditures for the Project are not available, despite the submission of an output-based budget to GEF in 2011. As UNIDO did not transition to an enterprise resource planning system (SAP) and Output-based Budgeting until 2012/13, actual Project expenditures were not fully applied across the output-based budget until late 2014. By that time, budget reports by Output for the whole Project period could be extracted.

Table 3: IEEMMS Project Disbursements

Outcome	Budget (from Inception Report)	2011*	2012	2013	2014	2015**	Total Disbursed	Total Remaining
Outcome 1: Enhance regulatory framework facilitating increased EE implementation in both large and small industries	373,480	n/a	n/a	n/a	n/a	n/a	0	
Outcome 2: Widespread awareness amongst SMEs and larger industries of the benefits of EE	340,450	n/a	n/a	n/a	n/a	n/a	0	
Outcome 3: Availability of a cadre of highly specialized energy management experts from the public and private sectors	1,211,755	n/a	n/a	n/a	n/a	n/a	0	
Outcome 4: Availability of a cadre of highly specialized systems optimization experts from the public and private sectors	1,500,295	n/a	n/a	n/a	n/a	n/a	0	
Outcome 5: SMEs and larger industries have coordinated access to technical and financial assistance for implementing EE projects	358,270	n/a	n/a	n/a	n/a	n/a	0	
Project Management Unit	415,750	n/a	n/a	n/a	n/a	n/a	0	
Total (Actual)	4,200,000	0	862,216	868,581	1,136,796	823,385	3,690,978	509,022
Total (Cumulative Actual)	0	0	862,216	1,730,797	2,867,593	3,690,978		
Annual Planned Disbursement (from Inception Report)	n/a	n/a	n/a	n/a	n/a	n/a		
% Expended of Planned Disbursement		**n/a**	**n/a**	**n/a**	**n/a**	**n/a**		

Remarks: * Commencing April 1, 2011. Expenditures of 2011 are included in 2012

** Up to November 30, 2015

The evaluation team observes that the IEEMMS Project with 88% of its budget spent to date, is in position to achieve most of its targets with the exception of the coordinated financial assistance targets for SME EE investments in Component 5. Project expenditures and delivery of outputs to date are somewhat justified by the considerable efforts required to engage industrial partners at the beginning of the Project (that included contacts with over 100 industrial enterprises) to overcome their considerable scepticism on the offer of free technical assistance from UNIDO.

With only 12 months left on the IEEMMS Project, less than USD 510,000 is to be expended during 2016 to the EOP. The remaining portion of the budget will likely be used to achieve targets that

have been set for improving financial assistance in Component 5. Recommendations are made in this report on these targets and the use of the remaining budget for Component 5.

3.6 Likelihood of Sustainability of Project Outcomes

Sustainability of the IEEMMS Project objectives was evaluated in the dimensions of financial resources, socio-political risks, institutional framework and governance, and environmental factors, using a simple ranking scheme:

- *4 = Likely (L):* negligible risks to sustainability;
- *3 = Moderately Likely (ML):* moderate risks to sustainability;
- *2 = Moderately Unlikely (MU):* significant risks to sustainability; and
- *1 = Unlikely (U):* severe risks to sustainability.
- *Overall rating is equivalent to the lowest sustainability ranking score of the 4 dimensions.*

The overall Project sustainability rating is moderately likely (ML). This is primarily due to:

- The need for more public sector staff to more effectively monitor and evaluate the progress of the NEEAP;
- Continued high demand for the services of EnMS and systems optimization experts from large industries and an unknown proportion of medium sized industrial enterprises;
- The need of the Project in 2016 to finalize the institution that will be hosting EnMS and systems optimization training as well as certification for ISO 50001. KeTTHA had initiated the idea of training center at University of Tenaga Nasional. The advantages of this arrangement would be improved access to university personnel and space in the university that can temporarily house the energy testing equipment procured by the Project; and
- The continued commitment of SIRIM to serve as the lead certification body for ISO 50001.

In 2016, the Project will undertake efforts to improve access to financial assistance to medium industrial enterprises from both public and commercial sources of finance. Details of sustainability ratings for the Project are provided in Table 4.

3.7 Assessment of Monitoring and Evaluation Systems

The M&E design in the Project document is adequate with a budget dedicated to ensuring successful implementation of the Project by being able to closely track and review of Project activities against indicators and targets provided by the PRF. Moreover, the M&E design in the ProDoc also lays out the general procedures for M&E including project inception, quarterly progress reporting, annual reviews, and independent evaluations. As such, the M&E design is rated **satisfactory** at entry.

Implementation of this M&E plan, has been **satisfactory**. The evaluation team has been able to verify the documents for M&E of the IEEMMS Project including the Project inception, quarterly and monthly progress reports, and PIRs. Project progress has been reported in terms of outcomes as well as the indicators and targets in the PRF.

The budgeting and funding for M&E activities has been **satisfactory.** The evaluation team has noted that even without component level project expenditures, USD 63,000 was allocated in the original ProDoc budget. In addition, the PMU had placed sufficient efforts into M&E activities of the IEEMMS Project.

Table 4: Assessment of Sustainability of Outcomes

Actual Outcomes (as of November 2015)	Assessment of Sustainability	Dimensions of Sustainability
Actual Outcome 1: Enhanced regulatory framework facilitating increased implementation of EE in the industrial sector	• *Financial Resources:* Financial resources are committed for dedicated public sector personnel (within EPU, KeTTHA and the EC) and consultants for monitoring and evaluating progress of the NEEAP and the collection of energy intensity and energy use data for the national energy database; • *Socio-Political Risks:* Socio-political risks are low given that the industrial sector are demonstrating concerns over the removal of energy subsidies, and their need to adopt energy efficiency as a means of mitigating the impact of energy subsidy removal; • *Institutional Framework and Governance:* While there is no resistance to resources to monitor and evaluate the progress of the NEEAP as well as the building of the national energy database, staffing of public sector positions may be constrained in terms of finding sufficient numbers of qualified personnel for public sector positions; • *Environmental Factors:* There are no environmental constraints to sustaining this outcome ***Overall Rating***	4 4 3 4 **3**
Actual Outcome 2: Widespread awareness amongst SMEs and large industries of the benefits of energy efficiency in addition to strong interest by industry (and other sectors participating in EnMS such as institutions and government) in energy management, systems optimization, and energy efficient equipment and services in general	• *Financial Resources:* Financial resources are available with FMM to sustain the operation of the Project website: www.ieemms.org • *Socio-Political Risks:* Discussions are currently underway with the University of Tenaga Nasional for hosting the information dissemination platform where national experts and industrial managers can freely communicate with international UNIDO experts on various topics on systems optimization and EnMS; • *Institutional Framework and Governance:* No institutional framework and governance risks identified; • *Environmental Factors:* No environmental factor risks identified. ***Overall Rating***	4 3 4 4 **3**
Actual Outcome 3: A cadre of highly specialized energy management system experts from the public and private sectors is available as a long-term technical resource to industry and country	• *Financial Resources:* Large industrial enterprises wishing to become certified in ISO 50001 will have sufficient financial resources to sustain demand for these EnMS experts. There is an issue, however, with insufficient financial resources with medium industrial enterprises to become certified in ISO 50001; • *Socio-Political Risks:* Discussions currently underway with University of	3

Table 4: Assessment of Sustainability of Outcomes

Actual Outcomes (as of November 2015)	Assessment of Sustainability	Dimensions of Sustainability
	Tenaga Nasional for hosting the training sessions for EnMS experts; • *Institutional Framework and Governance:* SIRIM is committed to continuing ISO certification services to the private sector; • *Environmental Factors:* No environmental factor risks identified. ***Overall Rating***	3 4 4 **3**
Actual Outcome 4: A cadre of highly specialized systems optimization experts from the public and private sectors is available as a long-term technical resource to industry and the country	• *Financial Resources:* Large industrial enterprises wishing to benefit from specialized knowledge on systems optimization will have sufficient financial resources to sustain demand for these systems optimization experts. There is an issue, however, with insufficient financial resources with an unknown proportion of medium industrial enterprises to benefit from specialized systems optimization knowledge; • *Socio-Political Risks:* Discussions are currently underway with the University of Tenaga Nasional for hosting the training sessions for systems optimization experts; • *Institutional Framework and Governance:* No institutional framework and governance risks identified to the sustainability of this outcome; • *Environmental Factors:* No environmental factors risks identified. ***Overall Rating***	3 3 4 4 **3**
Actual Outcome 5: SMEs and larger industries have limited but growing coordinated access to technical assistance for implementing energy efficiency projects including system optimization. SMEs, however, do not yet have any coordinated access to financial assistance for implementing IEE investments	• *Financial Resources:* financial resources for IEE projects for SMEs are available but undersubscribed with medium-sized industries for a variety of reasons including onerous paperwork, noncompliance to collateral requirements and lack of resources to recruit energy expertise for third-party verification of EE investment plan. The Project at the beginning of Year 5 is now in a position to address this topic; • *Socio-Political Risks:* The likelihood of medium industrial enterprises requiring financial assistance for IEE projects is strong. However, their specific needs for EE investments needs to be better understood so that the nature of financial and technical assistance can be formulated; • *Institutional Framework and Governance:* Current financial assistance from Green Tech Malaysia and other government sources are poorly	Unable to evaluate Unable to evaluate Unable to evaluate

Table 4: Assessment of Sustainability of Outcomes

Actual Outcomes (as of November 2015)	Assessment of Sustainability	Dimensions of Sustainability
	utilized due to cumbersome application and reporting procedures. The project is now in a position to augment the financial assistance mechanisms of Green Tech Malaysia and other government sources with financial products from commercial banks; • *Environmental Factors:* No environmental factors risks identified. ***Overall Rating***	4 **Unable to evaluate**
	Overall Rating of Project Sustainability:	**3**

3.8 Assessment of Processes affecting Achievement of Project Results

- **Preparation and readiness / Quality at entry**

Overall preparation and readiness for the IEEMMS Project can be rated as **satisfactory**. The IEEMMS Project was formulated on the basis of recommendations and lessons learned from completion of the MIEEIP Project in 2007 including:

- The need to formulate an action plan as a means to ensure there is tangible progress in implementing energy efficiency in Malaysia. This would have included the setting of energy management regulations, setting up of energy standards and labelling to facilitate implementation of EE, and the lowering of energy subsidies to change behaviour towards more efficient consumption of energy;
- The need for GoM to allocate sufficient funds to various government agencies for personnel to manage an NEEAP, and to facilitate the participation of the private sector through building their capacity to implement the NEEAP.

As such, the IEEMMS Project was prepared in full consultation with all relevant stakeholders. The Project was also prepared with the full knowledge that the 10th Malaysia Plan (2011-2016) had provisions for measures to encourage the efficient use of energy and to adopt market-based energy pricing. Since the largest challenges for buy-in to energy efficiency in the industrial sector was with SMEs, MITI was determined to be the most appropriate executing agency for the Project. In addition, the SME Corp. was to serve as an executing partner where Project office facilities were to be set up.

- **Country ownership/drivenness:**

While all the key government partners appear committed to achieving the desired outcomes of the IEEMMS Project, MITI and the SME Corp. have not yet fully taken ownership of this project. Part of the reason for this outcome can be attributed to their difficulties in recruiting sufficient staff with knowledge of the energy sector. Moreover, there have been a number of personnel changes with MITI staff who have been tasked as Project focal points; MITI personnel, however, have had limited involvement with the Project activities to date due to Project activities being focused on technical activities such as familiarizing and demonstrating to personnel from the private industrial sector the benefits of EE measures. As previously mentioned, this aspect of the Project has taken more resources than anticipated.

There has been much discussion about the number of institutions involved with this Project and why MITI as well as SME Corp. are the executing partners of this Project. Since a large part of the Project involves strengthening the regulatory framework to encourage and promote energy efficiency, the logical choice for the Project lead would have fallen to KeTTHA and possibly the Energy Commission. However, since the objective of the Project is to promote energy efficiency, MITI with its subsidiary SME Corp. would appear to be the most appropriate choice as executing partners for IEEMMS.

The Project is now entering its final phase with the benefits of EE having been demonstrated to large industrial stakeholders. MITI as well as the SME Corp. are awaiting developments on the Project where their core expertise in assisting SMEs to become more competitive can be utilized. This would include opportunities for MITI and SME Corp. to more effectively promote energy efficiency amongst all SMEs, and for this particular Project, industrial SMEs. Promotion of EE

amongst all SMEs, however, is constrained by the lack of detailed knowledge of energy consumption within the industrial sector[10]. While the demonstration of EE measures within large industries has been essential for demonstrating the benefits of EE measures, more efforts are required to understand the EE market size for SMEs, and the nature of the EE measures that they can undertake with minimal disruption to their industrial processes. This would include amongst other issues, an understanding of how much risk SMEs are willing to absorb to implement EE measures, and a quantification of the energy intensity of medium sized industries[11]. The evaluators believe that with this knowledge, MITI and SME Corp. can take a more central role on the IEEMMS Project.

- **Stakeholder involvement:**

Stakeholder involvement on the IEEMMS Project has been **satisfactory** to the extent that EE benefits have been demonstrated to large industrial stakeholders. Moreover, the Project has had the involvement of the FMM to leverage the Project's EE demonstrations to other industries, notably medium and small sized industries. As previously mentioned, the Project expended significant and appropriate efforts to engage industrial stakeholders that was required to overcome the initial skepticism of industrial stakeholders to free technical assistance from UNIDO. It has taken the Project 4 years to obtain buy-in from large and medium industrial enterprises.

Involvement of the relevant government stakeholders on this Project has also been **satisfactory.** The Project has invested significant efforts to become involved with KeTTHA, the Energy Section of the EPU, SIRIM, and the Energy Commission. All these government entities have had significant collaborations with the Project in planning and implementing overall strategies, policy formulation, energy information data and collection, and quality assurance systems such as ISO 50001. The Project also has good relationships with the executing agency MITI, and the executing partner and subsidiary of MITI, the SME Corp.

- **Financial planning:**

The evaluation team was provided with evidence of formal financial planning for the Project in the form of annual work plans (AWPs) and communications between the PMU (based in Kuala Lumpur) and UNIDO HQ in Vienna:

- AWPs are prepared jointly between the PMU and UNIDO HQ with local operational expenses including local salaries, office operation, local consultancies and workshops provided on a monthly basis;
- Selection and expenditure on international consultancies is implemented from UNIDO HQ in close consultation with the PMU to ensure the Project needs are satisfied;
- While 88% of the USD 4.2 million has been expended to date, 93% of total funding has been committed when including the PMU staff salaries, training and awareness raising workshops, some international consultants on training and database management for 2016. There are currently USD 305,000 that remains unallocated in 2016; the evaluators have made some

[10] The SME Corp with the Department of Statistics undertook a survey of SMEs using basic data from SME Corp, Suruhanjaya Syarikat Malaysia (SSM or known as the Companies Commission of Malaysia) and survey information relevant industrial associations. The mining and quarrying industrial subsectors are informal batik SMEs. One conclusion from the survey was that individual SMEs may not be energy intensive but are collectively significant.

[11] Defined as having 75 to 200 employees

recommendations on how the remaining unallocated funds can be used in 2016. All Project funds should be exhausted by December 31, 2016;

- **UNIDO's supervision and backstopping:**

Overall rating of UNIDO's supervision and backstopping is rated as **satisfactory.** This is based on:

- the presence of competent PMU staff who are responsive to the needs of all project stakeholders;
- the responsiveness of UNIDO HQ to provide competent technical experts to the project on database management, EnMS and specific systems optimization;
- stakeholder reactions to all UNIDO activities which were deemed to be useful and effective; and
- the Project delivering most of its outputs by the end of year 4 of a 5-year project.

- **Co-financing and project outcomes and likelihood of sustainability:**

Co-financing on the IEEMMS Project is likely to have exceeded the target of USD 16.67 million. The bulk of this financing is from EE investments made by large industrial enterprises. Many of these investments are documented in the key 11 case studies currently being prepared by the Project. Towards the EOP date of December 31, 2016, there is an expectation that the co-financing from industrial enterprises will be much larger given that there are already 20 large industries certified as ISO 50001 compliant and another 30 industrial enterprises undergoing the ISO 50001 certification. The interest in ISO 50001 certification and in UNIDO sponsored systems optimization workshops are indicators of the success of the Project in promoting EE in the industrial sector.

As mentioned in Section 3.6, there is a moderate likelihood of sustainability for this Project. Large industries have already demonstrated their commitment to energy efficiency through their past and planned EE investments. The likelihood of sustainability of the Project activities is somewhat lessened by the lack of co-financing of EE investments by medium sized industries. The remaining period of the Project in 2016 will need to be dedicated to ensuring appropriate promotion to medium-sized industrial enterprises.

- **Delays and project outcomes and sustainability:**

The evaluators are of the opinion that the IEEMMS Project has been implemented as efficiently as possible. The Project has required 4 years of a 5-year project to fully engage large industrial enterprises in energy efficient measures, and to train local experts in energy management systems as well as specific topics in systems optimization of industrial processes. The time required to fully engage these large industrial enterprises has led to favorable Project outcomes that will certainly be sustained with large industrial enterprises, and a risk that medium-sized industrial enterprises may not fully embrace energy efficient investments.

- **Implementation approach:**

The implementation approach of the IEEMMS Project has been assessed as **satisfactory**. The approach to promoting energy efficiency in the industrial sector was appropriate and consistent with the Malaysia Plans that advocated the implementation of "low-hanging fruit". As such the PMU pursued large industrial enterprises with the knowledge that not only would they be

interested in energy efficiency, but they would also have the capacity and financial resources to make EE investments. Concurrently, the Project also offered technical assistance and training to build the capacity and knowledge of local experts and government personnel on energy management systems and systems optimization. The building of this cadre of expertise required at least 2 years. Such an implementation approach has required perseverance and professionalism of the PMU and its training staff that has resulted in raising the credibility of the entire Project and the profile of EE in Malaysia.

The Project approach to assisting the Government in developing national EE policies and plans could not have been done until the capacity building conducted during Years 1 and 2 was completed. During Year 3, the Project sponsored a European study tour to meet with the Austrian and Danish Energy Agencies and to observe factories in implementing EnMS. This approach thus enabled Project personnel to work closely with the GoM to provide inputs to the 11th Malaysia Plan during Year 3 on mentioning EnMS, specifically ISO 50001, as measures to implement energy efficiency in Malaysia, and achieve an outcome of an enhanced regulatory framework to facilitate increased implementation of IEE.

The Project required 4 years to significantly raise the profile of energy efficiency in large industrial enterprises and to demonstrate the benefits of EE. This was justified based on the difficulties of getting buy-in from the large and smaller industrial enterprises. The difficulties comprised of visiting a critical number of factories scattered throughout Malaysia, notably those that have had benefits from the SME Corp. Moreover, a number of these factories required several visits to build trust, and to deal with the unique business nuances of all the factories[12].

The challenge for the remaining period of the Project will be to garner the interest of smaller industrial enterprises, notably medium-sized industries. An additional challenge will be to further understand the needs of medium-sized industries to invest in IEE in order to open dialogue with financial institutions on financial assistance to medium-sized industries, if at all required.

3.9 Project coordination and management

Overall IEEMMS Project management and coordination rating of this project is **satisfactory.** The PMU experienced initial difficulties implementing this Project due to the lack of PMU staff; this issue was overcome during the second year of the Project with the hiring of the Deputy Project Coordinator and other staff allowing PMU staff to make more progress. These difficulties were compounded by the initial skepticism of the industrial enterprises of the free offer for technical assistance by the project. To overcome this skepticism and their doubts on the benefits of energy efficiency, PMU staff was diligent in meeting with senior management personnel to explain the benefits of the IEEMMS Project. Their efforts were augmented through strategic partnerships with FMM, EC and WWF and holding a number of high-profile awareness raising events on energy efficiency and the environment.

The training programmes on EnMS and systems optimization were well-managed to maximize the impact of the training. By having all training participants sign a letter of agreement to share information, an environment of collaboration and generosity was created during the training sessions. An outcome of this environment was trainees forming working groups, often composed

[12] Most of these nuances are based on the sharing of proprietary information. Moreover, some CEOs did not want to immediately train staff while others had concerns that skilled workers with EE knowledge may demand more competitive salaries or move to other companies. This required considerable time to manage and build trusting relationships.

of a policy maker, a regulator and a factory level person, or with personnel from competing industries within the same working group, all sharing information to further their understanding of the technical material provided during the training sessions.

In addition, critical decisions were made by the Project Steering Committee that met once or twice per year since the Project started in 2012. As mentioned previously in Section 3.8, the PMU was also ably assisted with the backstopping of UNIDO HQ.

One issue with the management of the IEEMMS Project has been the late date of this midterm evaluation that is being conducted at the end of Year 4 of a 5-year project. As mentioned in Section 1 of this report, the purpose of the midterm evaluation is to "*evaluate the progress towards attainment of global environmental objectives, project objectives and outcomes, capturing lessons learned and suggesting recommendations on major improvements"*. If the midterm evaluation had been conducted at the scheduled date of mid-2014, the possibility of advancing some of the discussions and activities with regards to financial assistance in Component 5 may have taken place. Notwithstanding, this Project has been well-managed in achieving its outputs and outcomes to date.

3.10 Gender Mainstreaming

This Project has not yet made significant contributions to gender mainstreaming. However, it is worth noting that around 50% of the Government personnel interviewed by the evaluation team were female. The gender balance within private sector stakeholders, however, was more dominated by males. This is most likely due to the fact that the evaluation team had met factory level personnel at two factory locations as well as one training session on compressed air.

3.11 Procurement Issues

To date, the Project has procured in a timely manner equipment related to the measurement of energy consumption. No issues have been raised with the procurement procedures of these equipment as the procurement of this equipment was in response to the identification of its need by participants on the systems optimization training sessions.

4. CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

4.1 Conclusions

- The Project has provided the Government of Malaysia with activities that are consistent to the stated measures for promoting energy efficiency in the 11th Malaysia Plan. This has:
    - provided exposure to government personnel on EnMS resulting in government promotion of ISO 50001;
    - raised awareness and interest amongst manufacturing stakeholders and government personnel in an ISO 50001 framework on which to approach the implementation of EE measures;
    - led to new and effective approaches in the evaluation of EE investments by many large industries that has resulted in actual EE investments;

- The Project has been managed in a satisfactory manner to achieve all intended outcomes with the exception of access to financial assistance for SME EE projects. A primary reason for not achieving this outcome has been the extensive effort required to get buy-in of industrial enterprises to EE investments and the training of national experts on EnMS and specific topics on systems optimization;

- MITI, being the principal executing agency, is not focused on EE although it supports the Government's green growth agenda. MITI's agencies MIDA and SME Corp have a responsibility to assist industries in their role towards contributing to the GDP of the country. The Project has focused on engaging industrial stakeholders and training national experts. However, owing to the success of the Project's training programs that has led to raised awareness of EE amongst large industries, further dissemination of the benefits of EE to the entire manufacturing sector is still required;

- The success of the Project's training program has resulted in demand for continued technical assistance of the EnMS and systems optimization. As such, details of the continuation of the training programs after the EOP need to be resolved including who will host the training facilities and who will finance the ongoing training to bring in the best international practices;

- There is an absence of information on SMEs that is critical to the development of an effective SME financing mechanism to support EE investments. While the Project has focused on implementing low-hanging fruit opportunities with large industries to demonstrate the benefits of energy efficiency, the project needs to know more about the nature of EE measures that can be undertaken by medium-sized industries, and the financing required for these measures. This information will enable the PMU to open a dialogue with the financial sector on the nature of assistance they can provide for financing EE measures with medium sized industries. Central to this discussion will be how the financial mechanisms can be de-risked.

4.2 Recommendations

To UNIDO:

***Recommendation 1*: Project should strengthen the position of MITI and SME Corp. to mainstream energy efficiency within as support for the Government's "green growth vision" in the 11th Malaysia Plan that states that "the Government will embark on green growth to shift the paradigm of sustainability from a narrow focus on natural assets, to include consumption and production processes in all sectors and households"**. The project should assist MITI and SME Corp. to implement the three strategies contained in the 11th Malaysia Plan for enabling a green growth environment:

- Strategy A1: Strengthening governance to drive transformation
- Strategy A2: Enhancing awareness to create shared responsibility
- Strategy A3: Establishing sustainable financing mechanisms

The IEEMMS Project has "softened the ground" and demonstrated real benefits to the industry players and government stakeholders. In its remaining year, the Project is now in a position to assist the mainstreaming of EE with:

- MITI who can act on Strategy A1 to strengthen governance to accelerate green growth by disseminating EE case studies and lessons learned through several subordinate MITI departments and agencies. Furthermore, MITI can consult with industry on a proposed training centre to capture the training needs of industry;
- SME Corp. to identify opportunities to incorporate EE into the SME Master Plan for 2012 to 2020 to bring it in line with the 11th Malaysia Plan (as a part of Strategy A1), and to disseminate case studies and lessons learned through SME corporate channels.

In addition, the Project will assist MITI and the SME Corp. in promoting energy efficiency with:

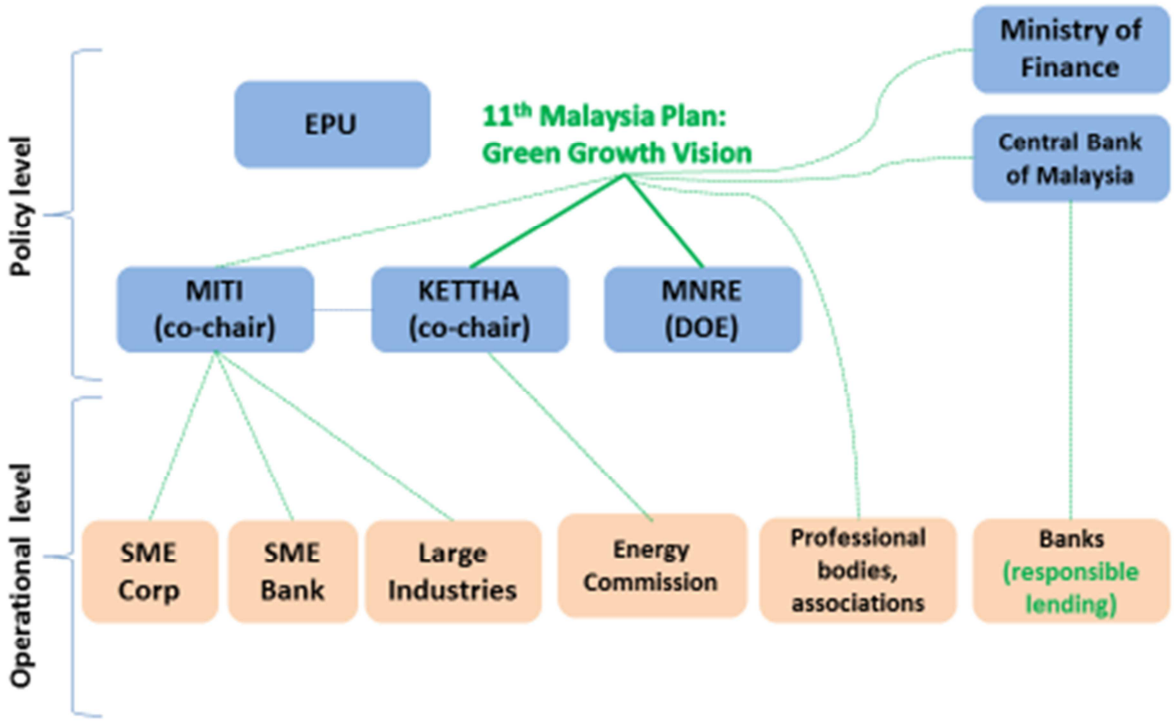
- Professional engineering associations and industry associations such as FMM who can act on Strategy A2 and create shared responsibility for promoting green growth. By reaching out to these associations, the Project can encourage ownership amongst these professional bodies to disseminate EE case studies and lessons learned. In addition, the Project can facilitate exploration of opportunities for industry representatives (through FMM) to serve as partners to ensure sustainability of the training efforts;
- Large industries where the Project has successfully raised awareness of EE through EnMS. Through facilitation efforts of the Project and as a part of Strategy A2, large industries can share in the responsibility of disseminating their examples of the benefits of energy efficiency. They can further serve as examples of EnMS that becomes embedded in company policies and becomes a major part of the company's organization where EE is a facet of operations in every department of a factory;
- Greener SMEs can be enhanced through strengthened linkages to the Asian Productivity Organization through the Malaysian Productivity Corporation (MPC), which was formerly known as the National Productivity Corporation was established in 1962 as a joint project between the United Nations Special Fund and the Federal Government, with the International Labor Organization acting as its executing agency[13]; and

[13] Since February 2008, the National Productivity Corporation (NPC) has been officially known as the Malaysia Productivity Corporation (MPC) under the MITI signed document enforcing National Productivity Corporation Act (Incorporated)

- Finally, lending regulators and institutions who implement Strategy A2 and Strategy A3 (sustainable financing mechanisms) where dissemination of EE case studies and lessons learned can be given to the lending regulator (Central Bank of Malaysia or Bank Negara) and lending institutions. The Project can also engage relevant lending institutions on potential financing mechanisms to support industrial SMEs in adopting EE.

The relationship of the Green Growth Vision of the 11th Malaysia Plan with the policy level government entities and the public and private sector entities implementing policies is illustrated on Figure 1.

Figure 1: Institutional arrangements for promoting energy efficiency within the 11th Malaysia plan



Recommendation 2: Reset targets as recommended in Table 2 as well as the PRF Outcome 5 from "SME access to financial assistance" to "workable strategies to develop SME access to financial assistance". Furthermore, efforts should be extended to collect and analyse baseline SME energy consumption information to develop these workable strategies. Since it is highly doubtful that any SMEs in Malaysia have the capacity or willingness to invest in EE, efforts are required in 2016 to develop strategies for sustainable financing mechanisms for SME investment in EE. With a wide variance in the characteristics of SMEs, the design of a financial mechanism to cover all SMEs may be too complex. In addition, there has not

(Amended) 2008. MPO's mandate is to lead, amongst other functions, in the promotion and dissemination of productivity related information and issues, and report annually to the MITI Minister on progress and problems, and making recommendations to raise productivity in commerce and industry.

been sufficient dialogue with the financial sector in Malaysia on the financial products they could offer on a sustainable financial mechanism for IEE investments. The following are some suggestions on how the Project can develop workable strategies to develop SME access to financial assistance in 2016:

- Provide a rough design and cost estimate of EE measures that could be undertaken to reduce the energy consumption of selected industrial subsectors that can be shared with the financial sector for initial discussions on financial mechanisms;
- Conduct a series of small workshop meetings for the financial sector under the leadership of a financial specialist with exposure to best international practices for EE financing to inform the financial sector of the financial products and mechanisms available to SMEs for IEE measures (based on the rough design and cost estimates of EE measures and known energy intensity benchmarks for various industrial processes in Malaysia), and to get their feedback on the feasibility of utilizing these products and implementing mechanisms. The workshop should review all financial products as well as subsidy and incentive schemes from the past, the reasons why the schemes did not result in higher market penetration, and conceptually design new and simple financing schemes that overcome these past issues and result in higher buy-in by industrial SMEs;;
- Prepare documentation by the EOP on a workable "strategy for developing sustainable financial mechanisms" for financing IEE measures that is agreed upon with participating financial sector stakeholders.

To the Government of Malaysia:

Recommendation 3 - Finalize arrangements for the post-project training arrangements before December 2016. This would include arrangements for a proposed "National Energy and Water Efficiency Center" (NEEWEC) for Malaysia at the Universiti Tenaga Nasional (UNITEN). The GoM is requested to provide serious consideration for:

- the purpose of the centre to continue training done by the IEEMMS Project, and to allow training equipment procured by the Project to be stored within its premises. This would also include a function for registration for training as well as EnMS certification with the involvement of SIRIM;
- the UNDP BSEEP Project to use this center as a repository for building EE training materials;
- the NEWEC to be modelled after similar and successfully set up EE centres in South Korea and Thailand; and
- funding of NEEWEC from GoM budgets as well as GEF as a part of the proposal for setting up the NEEWEC.

4.3 Lessons Learned

- In the demonstration of energy efficiency, large industries and well-organized industry associations can serve as important leaders in disseminating information on energy efficiency. In the case of the IEEMMS Project, the strategy to implement "low-hanging fruit opportunities" was mainly with large industries with the backing of FMM. Large industries, at least in Malaysia, not only had the financing and human capacity to implement EE measures but was also willing to share its EE experiences with the entire industrial sector

for the purposes of learning. This approach has been a key to the success of the IEEMMS Project;

- Training effectiveness can be maximized through:
  - the setup and use of neutral training centres where industry players, government agencies and regulators can closely interact and collaborate. In the case of the IEEMMS Project, training participants were required to sign an agreement to share information on specific technical issues as case studies that may otherwise be considered proprietary. This has resulted in a collaborative working environment within the IEEMMS training sessions where case studies of real factory operations were used for the purposes of learning and implementing energy efficient measures;
  - acting on participant suggestions for simulation models and measuring equipment at the training centre. Early feedback on the training sessions from the participants included suggestions of simulation models that provided more effective training tools. The evaluators observed at one training centre in Seremban the setup of a small compressed air system that proved to be very useful to the participants in terms of visualizing the technical concepts being provided by the international trainers;

- The presence of technically strong Project personnel (international and national) throughout the entire Project duration is important as a means of sustaining project progress. The IEEMMS Project had the benefit of a strong local Project coordinator for the entire IEEMMS duration as well as a deputy Project coordinator who also served on the Project for the last 3 years. Both persons were technically competent to guide activities of the Project towards the Project goal of achieving GHG emission reduction targets.

4.4 Ratings

These are summarized on Table 5.

Table 5: MTE Ratings & Achievement Summary Table for Project

Measure	MTE Rating	Achievement Description
	Objective: To promote energy efficiency improvements in the Malaysian manufacturing sector through the development of national energy management standards and application of system optimization. **Achievement Rating: 5 (Satisfactory)**	Energy efficiency improvements have been successfully promoted in the Malaysian manufacturing sector through the development of national energy management standards and the application of systems optimization. Implementation of EnMS and systems optimization are being widely adopted amongst large industries; however, this has not yet occurred within medium-sized manufacturing enterprises.
	Outcome 1: Enhanced regulatory framework facilitating increased implementation of EE in the industrial sector appraised by project experts **Achievement Rating: 5 (Satisfactory)**	Regulatory framework has been enhanced with the impact of increasing the confidence of the industrial sector in adopting energy efficiency measures
	Outcome 2:Widespread awareness amongst SMEs and larger industries of the benefits of energy efficiency; strong	There is widespread awareness within the industrial sector, notably amongst larger industries but also medium sized industries in Malaysia on the benefits of energy management systems, systems optimization and energy efficiency equipment

	interest by industry (and other sectors participating in EnMS such as institutional and government) in energy management, systems optimization as well as energy efficient equipment and services in general **Achievement Rating: 5 (Satisfactory)**	and services
	Outcome 3: A cadre of highly specialized energy management experts from the public and private sectors is available as a long term technical resource to industry and the country. **Achievement Rating: 5 (Satisfactory)**	A cadre of highly specialized energy management experts has been developed in both the public and private sector, and who are available as a resource for the industrial sector as well as government
	Outcome 4: A cadre of highly specialized systems optimization experts from the public and private sectors is available as a long term technical resource to industry and the country. **Achievement Rating: 5 (Satisfactory)**	A cadre of highly specialized systems optimization experts have been trained within the public and private sectors, and who are available as a long-term resource to both the industrial sector and the Government
	Outcome 5: SMEs and larger industries have coordinated access to technical and financial assistance for implementing energy efficiency projects including system optimization. **Achievement Rating: 3 (Moderately Unsatisfactory)**	The focus of Project efforts to date has been to promote energy efficiency in the industrial sector. As such, the Project has not had sufficient opportunity to focus on gauging the demand for financial assistance to industrial SMEs on EE investments. This includes gauging demand for financial assistance amongst medium enterprises within the industrial sector.
Project Implementation approach	**Achievement Rating: 5 (Satisfactory)**	The implementation approach was appropriate and consistent with the Malaysia plans that advocated the implementation of “low-hanging fruit” opportunities with large industrial enterprises. In addition, the Project also trained national experts and industrial personnel prior to assist the Government in developing national EE policies and plans which could not have been done until capacity building of relevant government agencies had been completed.
Project M&E design	**Achievement Rating: 5 (Satisfactory)**	M&E design in the ProDoc lays out the general procedures for M&E including project inception, progress reporting, annual reviews and independent evaluations
Implementation of Project M&E plan	**Achievement Rating: 5 (Satisfactory)**	The PMU has produced timely quarterly and monthly progress reports as well as a project inception report and PIRs that have all been reported in terms of outcomes, indicators and targets
Budgeting of M&E activities	**Achievement Rating: 5 (Satisfactory)**	Despite the lack of component level expenditures of the project which did not allow for tracking of M&E budgets, the quality of M&E activities on the Project was satisfactory
Sustainability	**3 (Moderately likely)**	The primary sustainability issue is finalization of the training venues after the EOP. While there is availability of financial assistance to SMEs, much of the government supported financial mechanisms are undersubscribed. The PMU is now in a position to formulate workable strategies that can be implemented by MITI and SME Corp. to increase access to financial assistance that will lead to an outcome of increased EE investments by medium industries.

APPENDIX A – MISSION TERMS OF REFERENCE

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Independent Mid-Term Evaluation of the UNIDO Project:

UNIDO SAP ID: 103042
GEF Project Number: 3908

Industrial Energy Efficiency for Malaysian Manufacturing Sector (IEEMMS)

MARCH 2015

PROJECT BACKGROUND AND OVERVIEW

Project Summary

The rate of industrialization in Malaysia is reflected in rapid growth of the manufacturing sector and increased energy consumption. Malaysia has been recording an impressive real GDP growth rate (approximately 5.5% over the period 2000-2007). The share of the manufacturing sector has been hovering around 31-32% of GDP. In terms of energy use, the industrial sector (of manufacturing, construction and mining) used the most energy (42.6%) followed closely by transport (36.5%).

Final industrial energy use has increased from 11,406 ktoe in 2000 to 19,116 ktoe in 2007. The final consumption of commercial energy in the Malaysian industrial sector registered an average annual growth rate of 5.7% during the 8th Malaysia Plan (2000-2005) and the average annual growth rate is expected to increase to 6.4% during the 9th Malaysia Plan period (2006-2010). The thrust of the Ninth Development Plan (2006-2010) has been to intensify the development of the resource-based industries. In industry, small and medium-sized industries (SMIs) account for more than 96% of the total manufacturing establishments in Malaysia, of which 88% are small-scale industries and 12% are medium-sized. The SMIs contribute 14% to total output and 17.4% to employment. Being the largest energy-consuming sector in the country, the potentials for energy savings and at the same time GHG emissions reduction are high, in which the focus should not only be on large (energy-intensive) industries, but on the numerous smaller industrial establishments as well to have a significant energy conservation impact.

Energy efficiency has always been a low priority of the industry due to low energy prices supported by subsidies, although subsidies will be lowered on the longer term. Given this culture of lack of regard for energy conservation, there exist numerous related barriers that stand in the way of financing and implementing energy efficiency options. The following table presents an overview of these barriers and the action needed and proposed to be co-financed with GEF support and how the project supplements and builds on the previous MIEEP project.

The project seeks to address some of the existing barriers to industrial energy efficiency in the Malaysian manufacturing sector (IEEMMS), to deliver measurable results and to make an impact on how Malaysian industries manage energy through an integrated approach that combines capacity building and technical assistance interventions at the policy and energy efficiency project level. Primary target groups of the project are industrial decision-makers (managers), engineers, vendors and other professionals and industrial energy efficiency (IEE) policy-making and/or implementing institutions. The project will provide technical assistance to develop and help establish market oriented policy instruments needed to support sustainable progression of Malaysian manufacturing industries toward international best energy performance and to stimulate the creation of a market for IEE products and services. The project will build knowledge and in-depth technical capacity for IEE, with an emphasis on system optimization and ISO 50001 Energy Management in industry, energy professionals and relevant Malaysian institutions. The project will provide technical assistance, including energy audits and support a limited number of pilot IEE projects with high replication and/ or energy savings potential in the key industrial sectors to reach implementation.

The project's ultimate goal is to reduce greenhouse gas emissions by establishing a policy environment that enables and supports sustainable adoption of energy efficient technologies and management as an integral part of industries' business practices; an environment in which a cadre of well-trained and equipped experts in system optimisation and energy management assists industries in developing and implementing energy efficiency improvement projects.

Project Objective
To promote energy efficiency improvements in the Malaysian manufacturing sector through the development of National Energy Management standard and application of system optimization.

Project Implementation Arrangements
Overall responsibility for project implementation will lie with Ministry of International Trade and Industry (MITI). The Investment Policy and Trade Facilitation Division of MITI will have specific responsibility for overseeing the current UNIDO/GEF project. The local implementing agency will be SME Corp. and will host the Project Management Unit.

Coordination among government agencies will be achieved through a Project Steering Committee (PSC) which will be chaired by the Ministry of Energy, Green Technology and Water (KeTTHA), with MITI as Co-Chair. The PSC will provide strategic guidance and oversight to project implementation The PSC will meet every six months and could invite experts for specific meetings, as needed. If necessary, the Chairs could also call for ad-hoc meeting.

UNIDO is entrusted by the Government of Malaysia, represented by the MITI, and by the GEF with the mandate to implement the project to achieve its objective, its outcomes and outputs and within its budget and time frame as approved in this project document. UNIDO is accountable to the GEF for the funds of this project and will in close consultation with SME Corp implement the project according to the established UNIDO's rules and regulations and applicable GEF requirements. This means that UNIDO will maintain the oversight on the project implementation, manage the overall project budget, procure all services required, monitor the project implementation, timely prepare financial and progress report and submit them to the GEF and the Project Steering Committee, as well as organize mandatory and non-mandatory evaluations. Furthermore, it will support the Project Management Unit in co-ordination and networking with the other 4 projects of the South-East Asia Programmatic Framework. UNIDO will fulfil this responsibility by appointing a Project Manager and mobilizing services of its other technical, administrative and financial branches at UNIDO Headquarters and the UNIDO Regional Office in Bangkok.

A National Project Director, NPD will be appointed by MITI to act as the Government representative to work closely with the PMU to ensure that the daily management of the project implementation is fully in line with the Government priorities, rules and regulations, and that all local inputs and participation in the project implementation are in time and adequate. The NPD shall have adequate authority and knowledge within the Government to get necessary support from all the local project partners to perform his/her duties under this Project, in particular to ensure that the Project is supporting Malaysian efforts.
Prior to completion of UNIDO/GEF assistance to the project, the Government and the UNIDO shall consult as to the disposition of all project equipment provided from the UNIDO/GEF funds. Title to such equipment shall normally be transferred to the Government or to any entity nominated by the Government, when it is required for continued operation of the project or for activities following directly there from. In the case of this project, the title of the equipment will be passed on to SIRIM at the end of the project. The UNIDO, however, at its discretion may retain title to all or part of such equipment.

The **Project Management Unit** (PMU) is responsible for the daily management of the project implementation, and will be also the Project Steering Committee secretariat. It will provide guidance/advice in the implementation of each project component, in accordance to the project document. The Project Management Unit will comprise of National Project Manager (PM) – (fulltime, paid for from the GEF budget); Administrative Assistant – (fulltime, paid for from the GEF budget); and Technical Advisors

The National Project Manager (NPM) is the Head of the PMU will report to the UNIDO Project Manager and the NPD be responsible to:

- Coordinate the management and implementation activities of the project as set out in the project document
- Provide assistance to the National Steering Committee (NSC) to ensure that project activities conform to the agreed project document
- Coordinate with the other institutions/agencies involved in the project execution
- Assist the UNIDO PM in preparing JDs and TORs for project team including consultants and contracting/subcontracting agencies
- Organize PSC meetings, and preparing required documentations
- Organize Tripartite review meetings as per UNIDO procedures
- Prepare Annual Project reports (APR) and other relevant reports for submission to UNIDO
- Chair the Technical Advisory Committee (TAC) monthly meetings
- Provide guidance to the Technical Advisory Committee for execution and adhering to the planned milestones
- Coordinate and supervise the work carried out by consultants/contractors (international & national) who will be involved in the project.
- Reviewing consultant's reports, and all other administrative arrangements required as per MITI and UNIDO procedures
- Preparing the annual work plan and budget of the project and its timely submission
- Submitting regular progress reports to the National Steering Committee, MITI and UNIDO

Budget Information:

a) Overall cost and financing (including co-financing):

Project Components/ Outcomes	*Co-financing ($)*	*GEF ($)*	Total ($)
Component 1: Development of a national industrial energy efficiency policy and plans **Outcome 1:** Enhanced regulatory framework facilitating increased implementation of EE in the industrial sector, in both large as smaller industries.	700,000	373,480	1,073,480
Component 2: Awareness creation on energy management and systems optimization **Outcome 2**: Widespread awareness among SMEs and larger industries of the benefits of energy efficiency;	950,000	340,450	1,290,450
Component 3: Energy management systems **Outcome 3:** A cadre of highly specialized energy management experts from the public and private sectors available	4,620,000	1,211,755	5,831,755
Component 4: Systems optimization **Outcome 4:** A cadre of highly specialized systems optimization experts from the public and private sectors available	9,500,000	1,500,295	11,000,295
Component 5: Access to finance for industrial EE improvement **Outcome 5:** SMEs and larger industries have coordinated access to technical and financial assistance for implementing energy efficiency projects	450,000	358,270	808,270
Project Management	450,000	415,750	865,750
Total	**16,670,000**	**4,200,000**	**20,870,000**

b) UNIDO budget execution (GEF funding excluding agency support cost in USD):

Budget line	Item	EXECUTED BUDGET in 2013	EXECUTED BUDGET in 2014	EXECUTED BUDGET in 2015[14]	Total Expenditure (2012-present)
1100	International Experts	264,409.92	438,584.32	259,889.47	1,259,976.90
1500	Project Travel	155,480.15	41,174.86	3,989.21	283,084.13
1700	National Experts	146,674.07	198,337.31	150,523.16	629,832.81
2100	Subcontracts	120,094.35	379,934.34	188,210.63	688,239.32
3000	Study Tours/ In-Service Training	94,740.12	76,750	6,717.35	295,721.98
4500	Equipment	39,789.25	1,769.92		267,648.40
5100	Sundries	25,393.09	1,245.72	38,222.54	100,705.89

Scope and Purpose of the Evaluation

The mid-term evaluation will cover the duration of the project from its starting date in June 2011 to the estimated mid-term evaluation date in December 2015. It will assess project performance and progress against the evaluation criteria: relevance, effectiveness, efficiency, sustainability and impact.

The evaluation team should provide an analysis of the attainment of the main objective and specific objectives under the five (5) core project components. Through its assessments, the evaluation team should enable the Government, counterparts, the GEF, UNIDO and other stakeholders and donors to:

(a) Verify prospects for development impact and sustainability, providing an analysis of the attainment of global environmental objectives, project objectives, delivery and completion of project outputs/activities, and outcomes/impacts based on indicators. The assessment includes re-examination of the relevance of the objectives and other elements of project design according to the project evaluation parameters defined in chapter VI.
(b) Enhance project relevance, effectiveness, efficiency and sustainability by proposing a set of recommendations with a view to ongoing and future activities until the end of project implementation.

The key question of the mid-term evaluation is to what extent the project is achieving the expected results at the time of the mid-term evaluation, i.e. to what extent the project has promoted energy efficiency improvements in the Malaysian manufacturing sector through the development of National Energy Management standard and application of system optimization.

Evaluation Approach and Methodology

The mid-term evaluation will be conducted in accordance with the UNIDO Evaluation Policy, the UNIDO Guidelines for the Technical Cooperation Programmes and Projects, the GEF's 2008 Guidelines for Implementing and Executing Agencies to Conduct Terminal Evaluations, the GEF

[14] as of Mar. 31, 2015

Monitoring and Evaluation Policy from 2010 and the Recommended Minimum Fiduciary Standards for GEF Implementing and Executing Agencies.

It will be carried out as an independent in-depth evaluation using a participatory approach whereby all key parties associated with the project are kept informed and regularly consulted throughout the evaluation. The evaluation team leader will liaise with the Project Manager on the conduct of the evaluation and methodological issues.

The evaluation team will be required to use different methods to ensure that data gathering and analysis deliver evidence-based qualitative and quantitative information, based on diverse sources: desk studies and literature review, statistical analysis, individual interviews, focus group meetings, surveys and direct observation. This approach will not only enable the evaluation to assess causality through quantitative means but also to provide reasons for why certain results were achieved or not and to triangulate information for higher reliability of findings. The concrete mixed methodological approach will be described in the inception report.

The evaluation team will develop interview guidelines. Field interviews can take place either in the form of focus-group discussions or one-to-one consultations. The methodology will be based on the following:

1. A desk review of project documents including, but not limited to:
   (a) The original project document, monitoring reports (such as progress and financial reports to UNIDO and GEF annual Project Implementation Review (PIR) reports), output reports (case studies, action plans, sub-regional strategies, etc.) and relevant correspondence.
   (b) Notes from the meetings of committees involved in the project (e.g. approval and steering committees).
   (c) Other project-related material produced by the project.
2. The evaluation team will use available models of (or reconstruct if necessary) theory of change for the different types of intervention (enabling, capacity, investment, demonstration). The validity of the theory of change will be examined through specific questions in interviews and possibly through a survey of stakeholders.
3. Counterfactual information: In those cases where baseline information for relevant indicators is not available the evaluation team will aim at establishing a proxy-baseline through recall and secondary information.
4. Interviews with project management and technical support including staff and management at UNIDO HQ and in the field and – if necessary - staff associated with the project's financial administration and procurement.
5. Interviews with project partners including Government counterparts, GEF focal points and partners that have been selected for co-financing as shown in the corresponding sections of the project documents.
6. On-site observation of results achieved in demonstration projects, including interviews of actual and potential beneficiaries of improved technologies.
7. Interviews and telephone interviews with intended users for the project outputs and other stakeholders involved with this project. The evaluator shall determine whether to seek additional information and opinions from representatives of any donor agencies or other organizations.
8. Interviews with the relevant UNIDO Field Office and the project's management and Project Steering Committee (PSC) members and the various national and sub-regional authorities dealing with project activities as necessary. If deemed necessary, the evaluator shall also gain broader perspectives from discussions with relevant GEF Secretariat staff.

9. Other interviews, surveys or document reviews as deemed necessary by the evaluator and/or UNIDO Office for Independent Evaluation.
10. The inception report will provide details on the methodology used by the evaluation team and include an evaluation matrix.

Evaluation Team Composition

The evaluation team will be composed of one international evaluation consultant acting as a team leader and one national evaluation consultant.

The evaluation team should be able to provide information relevant for follow-up studies, including evaluation verification on request to the GEF partnership up to two years after completion of the evaluation.

Both consultants will be contracted by UNIDO. The tasks of each team member are specified in the job descriptions attached to these terms of reference.

Members of the evaluation team must not have been directly involved in the design and/or implementation of the programme/projects.

The Project Manager at UNIDO and the **Ministry of International Trade and Industry (MITI)** will support the evaluation team. The UNIDO GEF Coordinator will be briefed on the evaluation and equally provide support to its conduct. The UNIDO GEF Coordinator will be briefed on the evaluation.

Time Schedule and Deliverables

The mid-term evaluation is scheduled to take place in the period from October 2015 to December 2015. The field mission is planned for December 2015. At the end of the field mission, there will be a presentation of the preliminary findings for all stakeholders involved in this project in Malaysia.

After the field mission, the evaluation team leader will come to UNIDO HQ for a debriefing. The draft mid-term evaluation report will be submitted 4-6 weeks after the end of the mission.

Project Evaluation Parameters

The evaluation team will rate the projects. The ***ratings for the parameters described in the following sub-chapters A to J will be presented in the form of a table*** with each of the categories rated separately and with **brief justifications for the rating** based on the findings of the main analysis. An overall rating for the project should also be given. The rating system to be applied is specified in Annexes 1 and 2.

A. Project design

The evaluation will examine the extent to which:

- The project's design is adequate to address the problems at hand;
- A participatory project identification process was instrumental in selecting problem areas and national counterparts;
- The project has a clear thematically focused development objective, the attainment of which can be determined by a set of verifiable indicators;
- The project was formulated based on the logical framework (project results framework) approach;

- The project was formulated with the participation of national counterpart and/or target beneficiaries; and
- Relevant country representatives (from government, industries and civil society) have been appropriately involved and were participating in the identification of critical problem areas and the development of technical cooperation strategies.

B. Project relevance

The evaluation will examine the extent to which the project is relevant to the:

- National development and environmental priorities and strategies of the Government and population of Malaysia, and regional and international agreements. See possible evaluation questions under "Country ownership/drivenness" below.
- Target groups: relevance of the project's objectives, outcomes and outputs to the different target groups of the interventions (e.g. companies, civil society, beneficiaries of capacity building and training, etc.).
- The GEF's focal areas/operational programme strategies: In retrospect, were the project's outcomes consistent with the focal areas in Climate Change/operational program strategies of the GEF CC - SP2 – Promoting Energy Efficiency in the Industrial Sector? Ascertain the likely nature and significance of the contribution of the project outcomes to the wider portfolio of GEF's Focal area and Operational Program. Furthermore, the compliance with the parent program/umbrella project: "Reducing industry's carbon footprint in South East Asia through compliance with an energy management system (ISO 50001)" should be assessed.
- UNIDO's thematic priorities: were they in line with UNIDO's mandate, objectives and outcomes defined in the Programme & Budget and core competencies?
- Does the project remain relevant taking into account the changing environment? Is there a need to reformulate the project

C. Effectiveness: objectives and planned final results at the end of the project

- The evaluation will assess to what extent results at various levels, including outcomes, have been achieved. In detail, the following issues will be assessed: to what extent have the expected outputs, outcomes and long-term objectives been achieved or are likely to be achieved? Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects?
- Are the project outcomes commensurate with the original or modified project objectives? If the original or modified expected results are merely outputs/inputs, the evaluators should assess if there were any real outcomes of the project and, if there were, determine whether these are commensurate with realistic expectations from the project.
- How do the stakeholders perceive the quality of outputs? Were the targeted beneficiary groups actually reached?
- What outputs and outcomes has the project achieved so far (both qualitative and quantitative results)? Has the project generated any results that could lead to changes of the assisted institutions? Have there been any unplanned effects?
- Identify actual and/or potential longer-term impacts or at least indicate the steps taken to assess these (see also below "monitoring of long term changes"). Wherever possible, evaluators should indicate how findings on impacts will be reported in future.
- Describe any catalytic or replication effects: the evaluation will describe any catalytic or replication effect both within and outside the project. If no effects are identified, the evaluation will describe the catalytic or replication actions that the project carried out. No ratings are requested for the project's catalytic role.

D. Efficiency

The extent to which:

- The project cost was effective? Was the project using the least cost options?
- Has the project produced results (outputs and outcomes) within the expected time frame? Was project implementation delayed, and, if it was, did that affect cost effectiveness or results? Wherever possible, the evaluator should also compare the costs incurred and the time taken to achieve outcomes with that for similar projects. Are the project's activities in line with the schedule of activities as defined by the project team and annual work plans? Are the disbursements and project expenditures in line with budgets?
- Have the inputs from the donor, UNIDO and Government/counterpart been provided as planned, and were they adequate to meet requirements? Was the quality of UNIDO inputs and services as planned and timely?
- Was there coordination with other UNIDO and other donors' projects, and did possible synergy effects happen?

E. Assessment of sustainability of project outcomes

Sustainability is understood as the likelihood of continued benefits after the GEF project ends. Assessment of sustainability of outcomes will be given special attention but also technical, financial and organizational sustainability will be reviewed. This assessment should explain how the risks to project outcomes will affect continuation of benefits after the GEF project ends. It will include both exogenous and endogenous risks. The following four dimensions or aspects of risks to sustainability will be addressed:

- **Financial risks.** Are there any financial risks that may jeopardize sustainability of project outcomes? What is the likelihood of financial and economic resources not being available once GEF assistance ends? (Such resources can be from multiple sources, such as the public and private sectors or income-generating activities; these can also include trends that indicate the likelihood that, in future, there will be adequate financial resources for sustaining project outcomes.) Was the project successful in identifying and leveraging co-financing?
- **Sociopolitical risks.** Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that project benefits continue to flow? Is there sufficient public/stakeholder awareness in support of the project's long-term objectives?
- **Institutional framework and governance risks.** Do the legal frameworks, policies, and governance structures and processes within which the project operates pose risks that may jeopardize sustainability of project benefits? Are requisite systems for accountability and transparency, and required technical know-how, in place?
- **Environmental risks.** Are there any environmental risks that may jeopardize sustainability of project outcomes? Are there any environmental factors, positive or negative, that can influence the future flow of project benefits? Are there any project outputs or higher level results that are likely to affect the environment, which, in turn, might affect sustainability of project benefits? The evaluation should assess whether certain activities will pose a threat to the sustainability of the project outcomes.

F. Assessment of monitoring and evaluation systems

- **M&E design.** Did the project have an M&E plan to monitor results and track progress towards achieving project objectives? The Evaluation will assess whether the project met the minimum requirements for the application of the Project M&E plan (see Annex 3).

- **M&E plan implementation.** The evaluation should verify that an M&E system was in place and facilitated timely tracking of progress toward project objectives by collecting information on chosen indicators continually throughout the project implementation period; annual project reports were complete and accurate, with well-justified ratings; the information provided by the M&E system was used during the project to improve performance and to adapt to changing needs; and the project had an M&E system in place with proper training for parties responsible for M&E activities to ensure that data will continue to be collected and used after project closure. Were monitoring and self-evaluation carried out effectively, based on indicators for outputs, outcomes and impacts? Are there any annual work plans? Was any steering or advisory mechanism put in place? Did reporting and performance reviews take place regularly?
- **Budgeting and Funding for M&E activities.** In addition to incorporating information on funding for M&E while assessing M&E design, the evaluators will determine whether M&E was sufficiently budgeted for at the project planning stage and whether M&E was adequately funded and in a timely manner during implementation.

G. Monitoring of long-term changes

The monitoring and evaluation of long-term changes is often incorporated in GEF-supported projects as a separate component and may include determination of environmental baselines; specification of indicators; and provisioning of equipment and capacity building for data gathering, analysis, and use. This section of the evaluation report will describe project actions and accomplishments toward establishing a long-term monitoring system. The review will address the following questions:

a. Did this project contribute to the establishment of a long-term monitoring system? If it did not, should the project have included such a component?
b. What were the accomplishments and shortcomings in establishment of this system?
c. Is the system sustainable—that is, is it embedded in a proper institutional structure and does it have financing? How likely is it that this system continues operating upon project completion?
d. Is the information generated by this system being used as originally intended?

H. Assessment of processes affecting achievement of project results

Among other factors, when relevant, the evaluation will consider a number of issues affecting project implementation and attainment of project results. The assessment of these issues can be integrated into the analyses of project design, relevance, effectiveness, efficiency, sustainability and management as the evaluators find them fit (it is not necessary, however it is possible to have a separate chapter on these aspects in the evaluation report). The evaluation will consider, but need not be limited to, the following issues that may have affected project implementation and achievement of project results:

- **Preparation and readiness / Quality at entry.** Were the project's objectives and components clear, practicable, and feasible within its time frame? Were counterpart resources (funding, staff, and facilities), and adequate project management arrangements in place at project entry? Were the capacities of the executing institution and counterparts properly considered when the project was designed? Were lessons from other relevant projects properly incorporated in the project design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval?
- **Country ownership/drivenness.** Was the project concept in line with the sectoral and development priorities and plans of the country—or of participating countries, in the case of multi-country projects? Are project outcomes contributing to national development priorities and plans? Were the relevant country representatives from government and civil society involved in the project? Did the recipient government maintain its financial commitment to the project? Has the government—or governments in the case of multi-country projects—approved policies or regulatory frameworks in line with the project's objectives?

- **Stakeholder involvement.** Did the project involve the relevant stakeholders through information sharing and consultation? Did the project implement appropriate outreach and public awareness campaigns? Were the relevant vulnerable groups and powerful supporters and opponents of the processes properly involved? Which stakeholders were involved in the project (i.e. NGOs, private sector, other UN Agencies etc.) and what were their immediate tasks? Did the project consult with and make use of the skills, experience, and knowledge of the appropriate government entities, nongovernmental organizations, community groups, private sector entities, local governments, and academic institutions in the design, implementation, and evaluation of project activities? Were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process taken into account while taking decisions? Were the relevant vulnerable groups and the powerful, the supporters and the opponents, of the processes properly involved?
- **Financial planning.** Did the project have appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allowed for timely flow of funds? Was there due diligence in the management of funds and financial audits? Did promised co-financing materialize? Specifically, the evaluation should also include a breakdown of final actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co- financing.
- **UNIDO's supervision and backstopping.** Did UNIDO staff identify problems in a timely fashion and accurately estimate their seriousness? Did UNIDO staff provide quality support and advice to the project, approve modifications in time, and restructure the project when needed? Did UNIDO provide the right staffing levels, continuity, skill mix, and frequency of field visits for the project?
- **Cofinancing and project outcomes and sustainability.** If there was a difference in the level of expected co-financing and the cofinancing actually realized, what were the reasons for the variance? Did the extent of materialization of cofinancing affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages?
- **Delays and project outcomes and sustainability.** If there were delays in project implementation and completion, what were the reasons? Did the delays affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages?
- **Implementation approach**[15]**.** Is the implementation approach chosen different from other implementation approaches applied by UNIDO and other agencies? Does the approach comply with the principles of the Paris Declaration? Does the approach promote local ownership and capacity building? Does the approach involve significant risks?

The evaluation team will rate the project performance as required by the GEF. The ratings will be given to four criteria: Project Results, Sustainability, Monitoring and Evaluation, and UNIDO related issues as specified in Annex 2. The ratings will be presented in a table with each of the categories rated separately and with brief justifications for the rating based on the findings of the main analysis. An overall rating for the project should also be given. The rating system to be applied is specified in the same annex. As per the GEF's requirements, the report should also provide information on project identification, time frame, actual expenditures, and co-financing in the format in Annex 4, which is modeled after the GEF's project identification form (PIF).

I. Project coordination and management

[15] Implementation approach refers to the concrete manifestation of cooperation between UNIDO, Government counterparts and local implementing partners. Usually POPs projects apply a combination of agency execution (direct provision of services by UNIDO) with elements of national execution through sub-contracts.

The extent to which:

- The national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up on agreed/corrective actions)?
- The UNIDO HQ and Field Office based management, coordination, monitoring, quality control and technical inputs have been efficient, timely and effective (problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?
- The national management and overall coordination mechanisms were efficient and effective? Did each partner have specific roles and responsibilities from the beginning till the end? Did each partner fulfill its role and responsibilities (e.g. providing strategic support, monitoring and reviewing performance, allocating funds, providing technical support, following up on agreed/corrective actions)? Were the UNIDO HQ based management, coordination, quality control and technical inputs efficient, timely and effective (problems identified timely and accurately; quality support provided timely and effectively; right staffing levels, continuity, skill mix and frequency of field visits)?

J. Assessment of gender mainstreaming

The evaluation will consider, but need not be limited to, the following issues that may have affected gender mainstreaming in the project:

- To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions?
- To what extent were gender focal points/relevant CSOs involved in the development and implementation of project activities?
- To what extent did the project actively incorporate gender mainstreaming into project development and implementation?

K. Procurement issues

The following evaluation questions that will feed in the Thematic Evaluation on Procurement have been developed and would be included as applicable in all projects (for reference, please see Annex 7 of the ToR: UNIDO Procurement Process):

- To what extent does the process provide adequate treatment to different types of procurement (e.g. by value, by category, by exception…)
- Was the procurement timely? How long the procurement process takes (e.g. by value, by category, by exception, etc.)
- Did the good/item(s) arrive as planned or scheduled? If no, how long were the times gained or delays. If delay, what was the reason(s)?
- Were the procured good(s) acquired at a reasonable price?
- To what extent were the procured goods of the expected/needed quality and quantity?
- Were the transportation costs reasonable and within budget. If no, pleased elaborate.
- Was the freight forwarding timely and within budget? If no, pleased elaborate.
- Who was responsible for the customs clearance? UNIDO FO? UNDP? Government? Other?
- Was the customs clearance handled professionally and in a timely manner? How many days did it take?
- How long time did it take to get approval from the government on import duty exemption?
- Which were the main bottlenecks / issues in the procurement process?
- Which good practices have been identified?

- To what extent roles and responsibilities of the different stakeholders in the different procurement stages are established, adequate and clear?
- To what extent there is an adequate segregation of duties across the procurement process and between the different roles and stakeholders?

Reporting

Inception report

This Terms of Reference provides some information on the evaluation methodology but this should not be regarded as exhaustive. After reviewing the project documentation and initial interviews with the project manager, the International Evaluation Consultant will prepare, in collaboration with the national consultant, a short inception report that will operationalize the ToR relating to the evaluation questions and provide information on what type of and how the evidence will be collected (methodology). The Inception Report will focus on the following elements: preliminary project theory model(s); elaboration of evaluation methodology including quantitative and qualitative approaches through an evaluation framework ("evaluation matrix"); division of work between the International Evaluation Consultant and National Consultant; mission plan, including places to be visited, people to be interviewed and possible surveys to be conducted and a debriefing and reporting timetable[16].

Evaluation report format and review procedures

The draft report will be delivered to UNIDO Office for Independent Evaluation (the suggested report outline is in Annex 1) and circulated to UNIDO staff and national stakeholders associated with the project for factual validation and comments. Any comments or responses, or feedback on any errors of fact to the draft report provided by the stakeholders will be sent to the Project Manager for collation and onward transmission to the project evaluation team who will be advised of any necessary revisions. On the basis of this feedback, and taking into consideration the comments received, the evaluation team will prepare the final version of the mid-term evaluation report.

The evaluation team will present its preliminary findings to the local stakeholders at the end of the field visit and take into account their feed-back in preparing the evaluation report. A presentation of preliminary findings will take place in Kuala Lumpur and at HQ after the field mission.

The mid-term evaluation report should be brief, to the point and easy to understand. It must explain the purpose of the evaluation, exactly what was evaluated, and the methods used. The report must highlight any methodological limitations, identify key concerns and present evidence-based findings, consequent conclusions, recommendations and lessons. The report should provide information on when the evaluation took place, the places visited, who was involved and be presented in a way that makes the information accessible and comprehensible. The report should include an executive summary that encapsulates the essence of the information contained in the report to facilitate dissemination and distillation of lessons.

Findings, conclusions and recommendations should be presented in a complete, logical and balanced manner. The evaluation report shall be written in English and follow the outline given in Annex 1.

[16] The evaluator will be provided with a Guide on how to prepare an evaluation inception report prepared by the UNIDO Office for Independent Evaluation.

Evaluation Work Plan

The "Evaluation Work Plan" includes the following main products:

1. Desk review, briefing by project manager and development of methodology: Following the receipt of all relevant documents, and consultation with the Project Manager about the documentation, including reaching an agreement on the Methodology, the desk review could be completed.
2. Inception report: At the time for departure to the field mission, the complete package of received materials have been reviewed and consolidated into the Inception report.
3. Field mission: The principal responsibility for managing this evaluation lies with UNIDO. It will be responsible for liaising with the project team to set up the stakeholder interviews, arrange the field missions, coordinate with the Government. At the end of the field mission, there will be a presentation of preliminary findings to the key stakeholders in the country where the project was implemented.
4. Preliminary findings from the field mission: Following the field mission, the main findings, conclusions and recommendations would be prepared and presented in the field and at UNIDO Headquarters.
5. A draft Mid-term evaluation report will be forwarded electronically to the Project Manager, who will forward the same to the UNIDO Office for Independent Evaluation and circulated to main stakeholders.
6. A final Mid-term evaluation report will incorporate comments received.

Quality Assurance

The Project Manager (PM) will be responsible for managing the evaluation, preparing the terms of reference (TOR) and the job description (JD) of the evaluation consultant(s) on the basis of guidance of UNIDO Office for Independent Evaluation (ODG/EVA). The PM will forward drafts and final reports to ODG/EVA for review, distribute drafts and final reports to stakeholders (upon review by ODG/EVA), and organize presentations of preliminary evaluation findings which serve to generate feedback on and discussion of evaluation findings and recommendations at UNIDO HQ. Finally, the PM will be responsible for the submission of the final Mid-Term Evaluation Report.

ANNEX 1 - OUTLINE OF AN IN-DEPTH PROJECT EVALUATION REPORT

Executive summary

- Must provide a synopsis of the storyline which includes the main evaluation findings and recommendations
- Must present strengths and weaknesses of the project
- Must be self-explanatory and should be 3-4 pages in length

Evaluation objectives, methodology and process

- Information on the evaluation: why, when, by whom, etc.
- Scope and objectives of the evaluation, main questions to be addressed
- Information sources and availability of information
- Methodological remarks, limitations encountered and validity of the findings

Countries and project background

- Brief countries context: an overview of the economy, the environment, institutional development, demographic and other data of relevance to the project
- Sector-specific issues of concern to the project[17] and important developments during the project implementation period
- Project summary:
  - Fact sheet of the project: including project objectives and structure, donors and counterparts, project timing and duration, project costs and co-financing
  - Brief description including history and previous cooperation
  - Project implementation arrangements and implementation modalities, institutions involved, major changes to project implementation
  - Positioning of the UNIDO project (other initiatives of government, other donors, private sector, etc.)
  - Counterpart organization(s)

Project assessment

This is the key chapter of the report and should address all evaluation criteria and questions outlined in the TOR (see section VI Project Evaluation Parameters). Assessment must be based on factual evidence collected and analyzed from different sources. The evaluators' assessment can be broken into the following sections:

A. Design
B. Relevance (Report on the relevance of project towards countries and beneficiaries)
C. Effectiveness (The extent to which the development intervention's objectives and deliverables were achieved, or are expected to be achieved, taking into account their relative importance**)**
D. Efficiency (Report on the overall cost-benefit of the project and partner Countries contribution to the achievement of project objectives)
E. Sustainability of Project Outcomes (Report on the risks and vulnerability of the project, considering the likely effects of sociopolitical and institutional changes in partner countries, and its impact on continuation of benefits after the GEF project ends, specifically the financial, sociopolitical, institutional framework and governance, and environmental risks)
F. Assessment of monitoring and evaluation systems (Report on M&E design, M&E plan implementation, and Budgeting and funding for M&E activities, Project Management)

[17] Explicit and implicit assumptions in the logical framework of the project can provide insights into key-issues of concern (e.g. relevant legislation, enforcement capacities, government initiatives, etc.)

G. Monitoring of long-term changes
H. Assessment of processes affecting achievement of project results (Report on preparation and readiness / quality at entry, country ownership, stakeholder involvement, financial planning, UNIDO support, cofinancing and project outcomes and sustainability, delays of project outcomes and sustainability, and implementation approach)
I. Project coordination and management (Report project management conditions and achievements, and partner countries commitment)
J. Gender mainstreaming
K. Procurement issues

At the end of this chapter, an overall project achievement rating should be developed as required in Annex 2. The overall rating table required by the GEF should be presented here.

Conclusions, Recommendations and Lessons Learned

This chapter can be divided into three sections:

A. Conclusions

This section should include a storyline of the main evaluation conclusions related to the project's achievements and shortfalls. It is important to avoid providing a summary based on each and every evaluation criterion. The main conclusions should be cross-referenced to relevant sections of the evaluation report.

B. Recommendations

This section should be succinct and contain few key recommendations. They should:

- Be based on evaluation findings
- Realistic and feasible within a project context
- Indicate institution(s) responsible for implementation (addressed to a specific officer, group or entity who can act on it) and have a proposed timeline for implementation if possible
- Be commensurate with the available capacities of project team and partners
- Take resource requirements into account.

Recommendations should be structured by addressees:

- UNIDO
- Government and/or Counterpart Organizations
- Donor

C. Lessons Learned

- Lessons learned must be of wider applicability beyond the evaluated project but must be based on findings and conclusions of the evaluation
- For each lesson the context from which they are derived should be briefly stated

Annexes should include the evaluation TOR, list of interviewees, documents reviewed, a summary of project identification and financial data, and other detailed quantitative information. Dissident views or management responses to the evaluation findings may later be appended in an annex.

ANNEX 2 – OVERALL RATINGS TABLE

Criterion	Evaluator's Summary Comments	Evaluator's Rating
Attainment of project objectives and results (overall rating) **Sub criteria (below)**		
Design		
Effectiveness		
Relevance		
Efficiency		
Sustainability of Project outcomes (overall rating) **Sub criteria (below)**		
Sociopolitical risks		
Institutional framework and governance risks		
Environmental risks		
Monitoring and Evaluation (overall rating) **Sub criteria (below)**		
M&E Design		
M&E Plan Implementation (use for adaptive management)		
Budgeting and Funding for M&E activities		
Project Management		
UNIDO specific ratings		
Quality at entry / Preparation and readiness		
Implementation approach		
UNIDO Supervision and backstopping		
Overall Rating		

Rating of project objectives and results:

- Highly Satisfactory (HS): The project had no shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Satisfactory (S): The project had minor shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Moderately Satisfactory (MS): The project had moderate shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Moderately Unsatisfactory (MU): The project had significant shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.
- Unsatisfactory (U) The project had major shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

- Highly Unsatisfactory (HU): The project had severe shortcomings in the achievement of its objectives, in terms of relevance, effectiveness or efficiency.

Please note: Relevance and effectiveness will be considered as critical criteria. The overall rating of the project for achievement of objectives and results **may not be higher** than the lowest rating on either of these two criteria. Thus, to have an overall satisfactory rating for outcomes a project must have at least satisfactory ratings on both relevance and effectiveness.

Ratings on sustainability

Sustainability will be understood as the probability of continued long-term outcomes and impacts after the GEF project funding ends. The evaluation will identify and assess the key conditions or factors that are likely to contribute or undermine the persistence of benefits beyond project completion. Some of these factors might be outcomes of the project, i.e. stronger institutional capacities, legal frameworks, socio-economic incentives /or public awareness. Other factors will include contextual circumstances or developments that are not outcomes of the project but that are relevant to the sustainability of outcomes.

Rating system for sustainability sub-criteria

On each of the dimensions of sustainability of the project outcomes will be rated as follows.
- Likely (L): There are no risks affecting this dimension of sustainability.
- Moderately Likely (ML). There are moderate risks that affect this dimension of sustainability.
- Moderately Unlikely (MU): There are significant risks that affect this dimension of sustainability.
- Unlikely (U): There are severe risks that affect this dimension of sustainability.

All the risk dimensions of sustainability are critical. Therefore, overall rating for sustainability will not be higher than the rating of the dimension with lowest ratings. For example, if a project has an Unlikely rating in either of the dimensions then its overall rating cannot be higher than Unlikely, regardless of whether higher ratings in other dimensions of sustainability produce a higher average.

Ratings of Project M&E

Monitoring is a continuing function that uses systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing project with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds. Evaluation is the systematic and objective assessment of an on-going or completed project, its design, implementation and results. Project evaluation may involve the definition of appropriate standards, the examination of performance against those standards, and an assessment of actual and expected results.

The Project monitoring and evaluation system will be rated on ‘M&E Design’, ‘M&E Plan Implementation’ and ‘Budgeting and Funding for M&E activities’ as follows:
- Highly Satisfactory (HS): There were no shortcomings in the project M&E system.
- Satisfactory(S): There were minor shortcomings in the project M&E system.
- Moderately Satisfactory (MS): There were moderate shortcomings in the project M&E system.
- Moderately Unsatisfactory (MU): There were significant shortcomings in the project M&E system.
- Unsatisfactory (U): There were major shortcomings in the project M&E system.
- Highly Unsatisfactory (HU): The Project had no M&E system.

“M&E plan implementation” will be considered a critical parameter for the overall assessment of the M&E system. The overall rating for the M&E systems will not be higher than the rating on “M&E plan implementation.”

All other ratings will be on the GEF six point scale:

HS	= Highly Satisfactory	Excellent
S	= Satisfactory	Well above average
MS	= Moderately Satisfactory	Average
MU	= Moderately Unsatisfactory	Below Average
U	= Unsatisfactory	Poor
HU	= Highly Unsatisfactory	Very poor (Appalling)

ANNEX 3 - GEF MINIMUM REQUIREMENTS FOR M&E[18]

Minimum Requirement 1: Project Design of M&E

All projects will include a concrete and fully budgeted monitoring and evaluation plan by the time of work program entry for full-sized projects and CEO approval for medium-sized projects. This monitoring and evaluation plan will contain as a minimum:

- SMART indicators for project implementation, or, if no indicators are identified, an alternative plan for monitoring that will deliver reliable and valid information to management;
- SMART indicators for results (outcomes and, if applicable, impacts), and, where appropriate, indicators identified at the corporate level;
- Baseline for the project, with a description of the problem to be addressed, with indicator data, or, if major baseline indicators are not identified, an alternative plan for addressing this within one year of implementation;
- Identification of reviews and evaluations that will be undertaken, such as mid-term reviews or evaluations of activities; and
- Organizational set-up and budgets for monitoring and evaluation.

Minimum Requirement 2: Application of Project M&E

Project monitoring and supervision will include implementation of the M&E plan, comprising:

- SMART indicators for implementation are actively used, or if not, a reasonable explanation is provided;
- SMART indicators for results are actively used, or if not, a reasonable explanation is provided;
- The baseline for the project is fully established and data compiled to review progress reviews, and evaluations are undertaken as planned; and
- The organizational set-up for M&E is operational and budgets are spent as planned.

[18] http://www.thegef.org/gef/sites/thegef.org/files/documents/ME_Policy_2010.pdf

ANNEX 4 – REQUIRED PROJECT IDENTIFICATION AND FINANCIAL DATA

The evaluation report should provide information on project identification, time frame, actual expenditures, and co-financing in the following format, which is modeled after the project identification form (PIF).

I. Project general information:

Project Title	
GEF ID Number	
UNIDO ID (SAP Number)	
Region	
Country(ies)	
GEF Focal Area and Operational Program:	
Co-Implementing Agency(ies)	
GEF Agencies (Implementing Agency)	
Project Executing Partners	
Project Size (FSP, MSP, EA)	
Project CEO Endorsement/Approval Date	
Project Implementation Start Date (PAD Issuance Date)	
Original Expected Implementation End Date (indicated in CEO Endorsement/Approval document)	
Revised Expected Implementation End Date (if any)	
Project Duration (Months)	
GEF Grant (USD)	
GEF PPG (USD) (if any)	
Co-financing (USD) at CEO Endorsement	
Total Project Cost (USD) (GEF Grant + Co-financing at CEO Endorsement)	
Agency Fee (USD)	

II. Dates

Milestone	Expected Date	Actual Date
Project CEO Endorsement/Approval Date		
Project Implementation Start Date (PAD Issuance Date)		
Original Expected Implementation End Date (indicated in CEO Endorsement/Approval document)		
Revised Expected Implementation End Date (if any)		
Mid-term evaluation completion		
Planned Tracking Tool Date		

III. Project Framework

Project Component	Activity Type	GEF Financing (in $)		Cofinancing (in $)	
		Approved	Actual	Promised	Actual
1.					
2.					
3.					
4.					
5.					
6. Project Management					
Total					

Activity types are:

a) Experts, researches hired
b) Technical assistance, Workshop, Meetings or experts consultation scientific and technical analysis, experts researches hired
c) Promised co-financing refers to the amount indicated on endorsement/approval.

IV. Co-financing

		Project preparation		Project implementation		Total	
Source of cofinancing	Type	Expected	Actual	Expected	Actual	Expected	Actual
Host gov't contribution							
GEF Agency (ies)							
Bilateral aid agency (ies)							
Multilateral agency (ies)							
Private sector							
NGO							
Other							
Total cofinancing							

Expected amounts are those submitted by the GEF Agencies in the original project appraisal document. Co-financing types are grant, soft loan, hard loan, guarantee, in kind, or cash.

APPENDIX B – MISSION ITINERARY (FOR NOVEMBER 23 TO DECEMBER 1, 2015)

The mid-term review mission was conducted by Mr. Roland Wong, International Consultant and Ms. Bee Hong Yeo, National Consultant in accordance with the objectives of the midterm review and obtained data relevant for making judgments regarding Project success and lessons learned.

#	Activity	Stakeholder involved	Place
November 22, 2015 *(Sunday)*			
	Arrival of Mr. Roland Wong		Kuala Lumpur
November 23, 2015 *(Monday)*			
1	Meeting with Ir. Dr. K. S. Kannan, National Project Manager, IEEMMS	PMU	Kuala Lumpur
2	Meeting with Datuk Wong Seng Foo, Senior Director, Multilateral Trade Policy and Negotiations (MTPN), Mr. Zahari Mohd Ali, Assistant Director, MTPN, Ms. Nur Adani Mohd Hasran, Assistant Director, MTPN, Ms. Alia Md Salleh, Assistant Director, Policy Sector, Mr. Joshua Xlgooi, Investment Policy and Trade	Ministry of International Trade and Industry (MITI)	Kuala Lumpur
November 24, 2015 *(Tuesday)*			
3	Meeting with Dato' Dr. Nadzri Bin Yahaya, Deputy Secretary General, Ms. Falisya Binti Noor Azam, Principal Assistant Secretary, Sustainable Energy Division Energy Sector	Ministry of Energy, Green Technology and Water (MEGTW)	Putrajaya
4	Meeting with Datin Badriyah Binti Ab Malek, Director, Mr. Mohd. Syukri Mat Jusoh, Deputy Director, Ms. Usha Thamotharan, Assistant Director	Economic Planning Unit (EPU), Energy Section	Putrajaya
November 25, 2015 *(Wednesday)*			
5	Meeting with FMM representatives: Ms. Wan Haslina Wan Hussin, Energy, Utilities and Infrastructure Unit, Ms. Sia Chooi Leng, General Manager, FMM Institute and Mr. V. Ramamuthie, FMM Energy Management Committee, Amsteel Mills Sdn. Bhd.	Federation of Manufacturers Malaysia (FMM)	Kuala Lumpur
6	Meeting with Mr. Zulkiflee Umar, Head, Demand Side Management Unit, Mr. Ahmad Firdaus, Mr. Kumareshan Mardappan, Junior Executive, Demand Side Management Unit	Energy Commission	Putrajaya
November 26, 2015 *(Thursday)*			
7	Meeting with Ms. Kaveta Chelliah,	PMU	Seremban

#	Activity	Stakeholder involved	Place
	Assistant Project Manager, IEEMMS		
8	Meeting with Mr. Gurdev Singh Bhatti, Chief Operating Officer, Mr. S. Sadish Kumar, Senior Manager, Mr. Lim Peng Lun, Senior Engineer, Mr. Ng Poh Hoong, Senior Engineer, Mr. Kirubaharan, Engineer	IOI Pan-Century Edible Oils Sdn. Bhd.	Johor Bahru
***November 27, 2015** (Friday)*			
	Travel from Johor Bahru to Malacca		
9	Meeting with Mr. Lee Learn Ping, Manager and Mr. Chong Wei Hoong, Manager.	CSC Steel Holdings Berhad	Malacca
***November 28, 2015** (Saturday)*			
10	Visit to the IEEMMS Project Equipment Centre	IEEMMS Trainer, Coordinator and Participants	Seremban
***November 29, 2015** (Sunday)*			
	Work on report		
***November 30, 2015** (Monday)*			
11	Meeting with Mr. Meor Kamal Azhar, Senior Director, Business Development Division, Ms. Julyskristin Poly, Manager, Business Development Division	SME Corp	Kuala Lumpur
12	Meeting with representatives from SME Bank, Affin Bank, UOB Bank, Hong Leong Bank, Standard Charted Bank and Malaysian Green Technology Corporation	Representatives from financing institutions	Kuala Lumpur
13	Meeting with Ir. Dr. K. S. Kannan, National Project Manager, IEEMMS	PMU	Kuala Lumpur
14	Debriefing on initial findings of the ME with Datuk Wong Seng Foo, Senior Director, MTPN, Ms. Nur Adani Mohd. Hasran, Assistant Director, MTPN, Ms. Alia Md. Salleh, Assistant Director, Policy Sector, Ms. Diana Jaafar, Senior Assistant Director, Investment Policy and Trade Facilitation Division and Ir. Dr. K. S. Kannan, National Project Manager, IEEMMS	Ministry of International Trade and Industry (MITI)	Kuala Lumpur
***December 1, 2015** (Tuesday)*			
15	Debrief meeting on initial ME findings with Ir. Dr. K. S. Kannan, National Project Manager, IEEMMS	PMU	Kuala Lumpur
	Departure of Mr. Roland Wong		

#	Activity	Stakeholder involved	Place
December 2, 2015 *(Wednesday)*			
	Travel to Vienna		
December 3, 2015 *(Thursday)*			
16	Debrief meeting on initial ME findings Industrial Energy Efficiency Unit including Mr. Khac Tiep Nguyen and Ms. Pamela Mikschofsky	UNIDO	Vienna
December 4, 2015 *(Friday)*			
17	Follow-up meetings with Mr. Khac Tiep Nguyen and Ms. Pamela Mikschofsky	UNIDO	Vienna
December 11, 2015 *(Friday)*			
	Departure from Vienna		

Total number of meetings conducted: 16

APPENDIX C – LIST OF PERSONS INTERVIEWED AND DOCUMENTS REVIEWED

This is a listing of persons contacted in Vienna and Kuala Lumpur (unless otherwise noted) during the midterm review period for the MTR only. The midterm review team regrets any omissions to this list.

1. Mr. Khac Tiep Nguyen, Industrial Energy Efficiency Unit, Energy and Climate Change Branch, UNIDO
2. Ms. Pamela Mikschofsky, Industrial Energy Efficiency Unit, Energy and Climate Change Branch, UNIDO
3. Ir. Dr. K. S. Kannan, National Project Manager, PMU, IEEMMS
4. Ms. Kaveta Chelliah, Assistant Project Manager, PMU, IEEMMS
5. Ms. Noor Hasimah A. Manaf, Training Coordinator, PMU, IEEMMS
6. Datuk Wong Seng Foo, Senior Director, Multilateral Trade Policy and Negotiations (MTPN), MITI
7. Mr. Zahari Mohd Ali, Assistant Director, MTPN, MITI
8. Ms. Nur Adani Mohd Hasran, Assistant Director, MTPN, MITI
9. Ms. Alia Md Salleh, Assistant Director, Policy Sector, MITI
10. Mr. Joshua Xlgooi, Investment Policy and Trade, MITI
11. Ms. Diana Jaafar, Senior Assistant Director, Investment Policy and Trade Facilitation Division, MITI
12. Dato' Dr. Nadzri Bin Yahaya, Deputy Secretary General, MEGTW
13. Ms. Falisya Binti Noor Azam, Principal Assistant Secretary, Sustainable Energy Division Energy Sector, MEGTW
14. Datin Badriyah Binti Ab Malek, Director, Energy Section, EPU
15. Mr. Mohd. Syukri Mat Jusoh, Deputy Director, Energy Section, EPU
16. Ms. Usha Thamotharan, Assistant Director, Energy Section, EPU
17. Ms. Wan Haslina Wan Hussin, Energy, Utilities and Infrastructure Unit, FMM
18. Ms. Sia Chooi Leng, General Manager, FMM Institute
19. Mr. V. Ramamuthie, FMM Energy Management Committee, Amsteel Mills Sdn. Bhd.
20. Mr. Zulkiflee Umar, Head, Demand Side Management Unit, Energy Commission
21. Mr. Ahmad Firdaus, Demand Side Management Unit, Energy Commission
22. Mr. Kumareshan Mardappan, Junior Executive, Demand Side Management Unit, Energy Commission
23. Mr. Gurdev Singh Bhatti, Chief Operating Officer, IOI Pan-Century Edible Oils Sdn. Bhd.
24. Mr. S. Sadish Kumar, Senior Manager, IOI Pan-Century Edible Oils Sdn. Bhd.
25. Mr. Lim Peng Lun, Senior Engineer, IOI Pan-Century Edible Oils Sdn. Bhd.
26. Mr. Ng Poh Hoong, Senior Engineer, IOI Pan-Century Edible Oils Sdn. Bhd.
27. Mr. Kirubaharan, Engineer, IOI Pan-Century Edible Oils Sdn. Bhd.
28. Mr. Lee Learn Ping, Manager, CSC Steel Holdings Berhad
29. Mr. Chong Wei Hoong, Manager, CSC Steel Holdings Berhad
30. Mr. Meor Kamal Azhar, Senior Director, Business Development Division, SME Corp
31. Ms. Julyskristin Poly, Manager, Business Development Division, SME Corp
32. Mr. Ahmad Yusnee Mohamed Zaid, Manager, Business Development, SME Bank
33. Mr. Jailani Harun, Appraiser SME Business, Affin Bank
34. Mr. Vincent Loo Sye Ngee, Senior Vice President Area Head, Commercial Banking, UOB Bank

35. Mr. Tang Hock Kuen, Head, Regional Renewal Team, Commercial and SME Banking, Hong Leong Bank
36. Ms. Dolly Chua, Director and Team Head Commercial Clients, Standard Charted,
37. Mr. Abdul Malik Atan, Senior Analyst, Malaysian Green Technology Corporation

Documents reviewed for this MTE includes:

1. Project Document;
2. Quarterly Progress Reports for 2014 and 2015;
3. Monthly progress reports for 2012, 2013, 2014, 2015 (various months)
4. Project Steering Committee Reports for 2013, 2014, 2015 (1st half);
5. Project Steering Committee Minutes for 2013, 2014, 2015;
6. Monthly progress reports for 2012, 2013, 2014, 2015 (various months)
7. User Training Course and Trainer Evaluation Summaries for 2013, 2014, 2015
8. Project Equipment and Assets leasing forms
9. Participation and Factory Databases
10. Inception Report 2012
11. Project Implementation Reports for 2012, 2013, 2014
12. IEEMMS Project Newsletter Issue 1 2, 3.
13. IEEMMS Project Brochure
14. Newspaper articles: NSTP 22 March 2014, BERNAMA 26 March 2014;
15. Mission reports
16. Project case studies
17. Assessment reports on energy saving assessments (PSO, CASO, FSO, SSO)
18. Application forms for training
19. 11th Malaysia Plan
20. SME Master Plan 2012-2020
21. SME Annual Report 2014/2015
22. Economic Census 2011: Profile of SMEs
23. Malaysia Energy Statistics Handbook 2015
24. UNDP GEF Final Evaluation MIEEIP, 2008

APPENDIX D – PROJECT PLANNING MATRIX

Applicable GEF Strategic Objective and Program: To promote energy-efficient technologies and practices in industrial production and manufacturing processes					
Applicable GEF Expected Outcomes: Improved energy efficiency of industrial production					
Applicable GEF Outcome Indicators: Efficiency of industrial energy use (energy use / $ GDP); GHG emissions from industry (tons CO2 eq/ $ GDP); and $/ t CO2eq					
	Indicator	**Baseline**	**Targets End of Project**	**Source of verification**	**Risks and Assumptions**
Project Objective To promote energy efficiency improvements in the Malaysian manufacturing sector through the development of national energy management standards and application of system optimization	A) Direct energy savings and indirect emission reduction	• N/A	• Implementation of energy management plans, system optimization and operational improvements in 604 enterprises lead to annual fuel savings of 5.92 million GJ and power savings of 794 MWh (details are given in Annex 2 of the UNIDO ProDoc)	• As given under the various Outcomes • Surveys	• Willingness of industry to invest
	B) Direct and indirect emission reduction	• In BaU scenario industrial emissions will grow at 6% annually	• Cumulative direct emission reduction (associated with above-mentioned energy savings) of 11,465 $ktCO_2$ • Indirect emission reduction of up to 30,950 $ktCO_2$ 44.8 (assuming a growth of 5.3% annually over 2010-2024) See Annex 2 in UNIDO ProDoc	• As given under the various outcomes • Survey and National Plans	• Willingness of industry during and after the project to invest
Outcome 1 Enhanced regulatory framework facilitating increased implementation of EE in the industrial sector	1) Status of policy paper on how to implement industrial policy *(output 1.1)*	• NEEMP formulated	• Proposed policy and regulation instruments to facilitate the implementation of the NEEMP and NEEA, in particular those for the implementation of ISO 50001 accepted and implemented.	• Official publication • Progress report	• Government-level support for incentives and other supporting measures for industrial EE
	2) Status of M&V structure *(output 1.2)*	• Some reporting requirements for large industry • Some database at PTM	• Systematic data recording mandatory in large and voluntary in SMEs • Database established	• Database outputs • Reporting format • Statistical report • Progress reports	• Willingness to provide accurate data (which sometimes can be considered confidential)
	3) Status of post-project action plan *(output 1.3)*	• N/A	• Final project report consolidating the results and lesson learnt from the implementation of the project,	• Action plan • Project report	• Willingness of implementing agencies and

			as well as post-project strategy		partners to work together in future
	4) Monitoring and evaluation carried out and knowledge captured *(output 1.4)*	• N/A	• Monitoring (quarterly and annually) • Mid-term and final evaluation • Audit reports • Number of case studies, lessons learned from (inter-) national sources and number of brochures and booklets	• Regular project progress reports • Evaluation reports • Reports, booklets, brochures on EE	• Adequate documentation, reporting and filing of documents
Outcome 2 Widespread awareness among SMEs and larger industries of the benefits of energy efficiency; strong interest by industry (and other sectors participating in EnMS, such as institutional and government) in energy management, systems optimization as well as energy efficient equipment and services in general.	5) Status of networking amongst industrial decision-makers *(output 2.1)*	• No formal or informal network existing	• Peer-to-peer network established (to assist companies in info exchange, energy management plan design and implementation)	• Minutes of meeting • Progress reports	• Willingness to network within industry or subsectors amongst decision-makers and managers
	6) Status of national information campaign *(output 2.1)*	• Some awareness created by previous projects, such as MIEEP	• Number and quality of info materials developed and type of media (radio, TV, documentaries, newspaper; leaflets, booklets) • Info campaign developed on energy management, system optimization and EE in industry in general • 150 companies participating recognition scheme established for participating companies • Decision makers are informed through 10 events (workshops, seminars, meetings) attended by at least 300 policy makers, industry owners and managers on EE industry	• Information materials • Progress reports	• Support given by media in Egypt •
	7) Improved information services *(output 2.2)*	• Some info available on selected websites of Malaysian institutions	• Upgraded and inter-linked website at Green Tech M. to provide integrated info on EE • Project newsletter with regular reporting on progress and results	• Web sites • Project newsletter	• Implementing agencies coordinate the content of their websites on EE aspects
Outcome 3 A cadre of highly	8) Status of EM training	• Training materials to	• Training materials and software available on EM adapted to	• Copies of the materials	

specialized energy management experts from the public and private sectors is available as a long-term technical resource to industry and the country	materials *(output 3.1)*	be developed	Malaysian circumstances	• Progress report	
	9) Level of capacity of SIRIM and SIRIM QAS *(output 3.2)*	• Dormant capacity on EM	• SIRIM is acknowledged as lead auditor certification for ISO 50001 • SIRIM QAS is recognized to certify ISO 50001 compliance	• Official and international reports stating the status • Progress reports	• The institution can develop their capacity in time to provide services for output 3.4
	10) Level of expertise on EM *(output 3.3)*	• Limited EM knowledge	• 40 national experts trained • Energy managers and technical staff are trained at 15 training sessions of 500 factories • 10 follow-up training sessions for 300 factories	• Presentations and training materials • Project progress report • Project website	• Willingness of the targeted public to benefit from the training and supporting materials
	11) Level of implementation and showcasing of EM *(output 3.4)*	• N/A	• 300 companies implement operational improvements • 100 companies implement ISO 50001 compatible energy management plans • 30 companies reported as case studies	• Reports on EE improvements • EM plans reported as case study • Progress reports	• Willingness of companies to implement EE measures and EM plans and share info
Outcome 4 A cadre of highly specialized systems optimization experts from the public and private sectors is available as a long-term technical resource to industry and the country.	12) Status of EM training materials *(output 4.1)*	• Training materials to be developed	• Training materials and software tools available on systems optimization	• Copies of the materials • Progress report	
	13) Level of capacity GreenTech M. *(output 3.2)*	• Dormant capacity at GreenTech M.	• GreenTech M. is providing training at expert and factory level • SIRIM QAS is recognized to certify ISO 50001 compliance	• Training minutes of meeting • Progress reports	• The institution can develop their capacity in time to provide services for output 4.3 and 4.4
	14) Level of expertise on systems optimization *(output 3.3)*	• Limited exposure to audits and EE measures (e.g. enhanced by MIEEP), but no systematic knowledge on systems optimization	• 50 national experts trained • 12 training sessions for staff of 350 factories on steam, pump, motor/fan and compressed air systems • 12 follow-up training sessions for 150 factories • Trained staff on process heating as needed	• Presentations and training materials • Project progress report • Project website	• Willingness of the targeted public to benefit from the training and supporting materials
	15) Level of info of vendors/suppliers on opportunities	• No info available	• About 4-5 training and info events on the market opportunities in which at least 60	• Info materials • Project progress	• Willingness of the targeted public to benefit

	in systems optimization		vendors/suppliers participate	reports	from the training and supporting materials
	16) Level of implementation and showcasing of EM *(output 3.4)*	• N/A	• Operational improvements in 154 companies • 75 completed system assessments • 50 companies have implemented optimization activities • 20 companies reported as case studies	• Reports on EE improvements • Systems optimization reported as case study • Progress reports	• Willingness of companies to implement EE measures and EM plans and share info
Outcome 5 SMEs and larger industries have coordinated access to technical and financial assistance for implementing energy efficiency projects, including system optimization	17) Status on sources of IEE financing *(output 5.1)*	• Sources of public and private funding support available, but not fully accessed	• At least 10 information and consultation events on financial mechanisms supported by the project attended by 200-300 people	• Presentation at events • Project progress report • Project website	• Willingness of the targeted public to benefit from the training and supporting materials
	18) Status of TA support to new or existing financial loan and credit guarantee schemes *(outputs 5.1-5.2)*	• Existing schemes do not provide loans for EE in industry due to lack of technical evaluation capacity	• Harmonized set of criteria for techno-economic evaluation of industrial EE projects • Assistance given to SME Corp to provide EE-related soft loans, either in setting up or supporting existing systems	• Financial institutions leaflets and reports • Evaluation reports	• Willingness and need of financial schemes to receive TA support by the project and/or trained experts

APPENDIX E – TRACKING TOOL

Tracking Tool for Climate Change Mitigation Projects
(For CEO Endorsement)

Special Notes: reporting on lifetime emissions avoided

Lifetime direct GHG emissions avoided: Lifetime direct GHG emissions avoided are the emissions reductions attributable to the investments made **during the project's supervised implementation period**, totaled over the respective lifetime of the investments.
Lifetime direct post-project emissions avoided: Lifetime direct post-project emissions avoided are the emissions reductions attributable to the investments made outside the project's supervised implementation period, but supported by financial facilities put in place by the GEF project, totaled over the respective lifetime of the investments. These financial facilities will still be operational after the project ends, such as partial credit guarantee facilities, risk mitigation facilities, or revolving funds.
Lifetime indirect GHG emissions avoided (top-down and bottom-up): indirect emissions reductions are those attributable to the long-term outcomes of the GEF activities that remove barriers, such as capacity building, innovation, catalytic action for replication.
Please refer to the Manual for Calculating GHG Benefits of GEF Projects.

Manual for Energy Efficiency and Renewable Energy Projects
Manual for Transportation Projects

For LULUCF projects, the definitions of "lifetime direct and indirect" apply. Lifetime length is defined to be 20 years, unless a different number of years is deemed appropriate. For emission or removal factors (tonnes of CO2eq per hectare per year), use IPCC defaults or country specific factors.

General Data	Target at CEO Endorsement	Notes
Project Title	Industrial Energy Efficiency for Malaysian Manufacturing Sector (IEEMMS)	
GEF ID	3908	
Agency Project ID	103042	
Country	Malaysia	
Region	EAP	
GEF Agency	UNIDO	
Date of Council/CEO Approval	May 13, 2011	Month DD, YYYY (e.g., May 12, 2010)
GEF Grant (US$)	4,200,000	
Date of submission of the tracking tool		Month DD, YYYY (e.g., May 12, 2010)
Is the project consistent with the priorities identified in National Communications, Technology Needs Assessment, or other Enabling Activities under the UNFCCC?	0	Yes = 1, No = 0
Is the project linked to carbon finance?	0	Yes = 1, No = 0
Cofinancing expected (US$)	16,670,000	

Objective 2: Energy Efficiency		
Please specify if the project targets any of the following areas		
Lighting		Yes = 1, No = 0
Appliances (white goods)		Yes = 1, No = 0
Equipment	1	Yes = 1, No = 0
Cook stoves		Yes = 1, No = 0
Existing building		Yes = 1, No = 0
New building		Yes = 1, No = 0
Industrial processes	1	Yes = 1, No = 0
Synergy with phase-out of ozone depleting substances		Yes = 1, No = 0
Other (please specify)		
Policy and regulatory framework	2	0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building	5	0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Lifetime energy saved		MJ (Million Joule, IEA unit converter: http://www.iea.org/stats/unit.asp) Fuel savings should be converted to energy savings by using the net calorific value of the specific fuel. End-use electricity savings should be converted to energy savings by using the conversion factor for the specific supply and distribution system. These energy savings are then totaled over the respective lifetime of the investments.
Lifetime direct GHG emissions avoided	11,500,000	tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)	22,900,000	tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)	31,000,000	tonnes CO2eq (see Special Notes above)

APPENDIX F - UNEG CODE OF CONDUCT FOR EVALUATORS/MIDTERM REVIEW CONSULTANTS[19]

Evaluators:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study imitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

MTR Consultant Agreement Form[20]

Agreement to abide by the Code of Conduct for Evaluation in the UN System

Name of Consultant: __Roland Wong_____

Name of Consultancy Organization (where relevant)**:** _____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at *Surrey, BC, Canada* on *December 30, 2015*

Signature: 

[19] www.undp.org/unegcodeofconduct
[20] www.unevaluation.org/unegcodeofconduct