

Independent mid-term review

INDONESIA

Promoting industrial energy efficiency through system optimization and energy management standards in Indonesia

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This report has been prepared for UNIDO for the Midterm Review of the UNIDO GEF Project "Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards (in Indonesia)"

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LIST OF ACRONYMS

ADB`	Asian Development Bank
APKENDIDO	Association of Energy Conservation Services Companies
AWP	Annual Work Plan
BPPT	<i>Badan Pengkajian dan Penerapan Teknologi</i> (Agency for the Assessment and Application of Technology)
BSN	<i>Badan Standardisasi Nasional</i> (National Standardization Agency)
CO ₂	Carbon dioxide
CDM	Clean Development Mechanism
DANIDA	Danish International Development Agency
DGNREEC	Directorate General for New Energy, Renewable Energy and Energy Conservation
DJEBTKE	<i>Direktorat Jenderal Energi Baru, Terbarukan dan Konservasi Energi</i> (Directorate General for New Energy, Renewable Energy and Energy Conservation)
EE	Energy efficiency
EM	Energy management
EMS	Environmental Management System (ISO)
EnMS	Energy Management System (ISO)
ESCO	Energy service company
FSP	GEF full-sized project
GW	Gigawatt, 1000 MW
GWh	Gigawatt-hours
GEF	Global Environment Facility
GEF CEO	GEF Chief Executive Officer
GHG	Greenhouse gas
HQ	Headquarters
ISO	International Organization for Standardization
HL	Highly Likely
HS	Highly Satisfactory
HU	Highly Unsatisfactory
IDR	Indonesian Rupiah
IEE	industrial energy efficiency
IPP	Independent Power Producer
KESDM	<i>Kementerian Energi dan Suber Daya Mineral</i> (Ministry of Energy and Mineral Resources)
kW	kilowatt
kWh	kilowatt-hour
M&E	Monitoring and evaluation
MASKEE	Indonesia Energy Conservation and Efficiency Society
MEMR	Ministry of Minerals and Energy Resources
MOEF	Ministry of Environment and Forests
MoFI	Ministry of Finance and Investment
MOI	Ministry of Industry
ML	Moderately Likely
MS	Moderately Satisfactory
MTI	Ministry of Trade & Industry
MTR	Mid-Term Review
MU	Moderately Unlikely
MU	Moderately Unsatisfactory
MW	megawatt (million Watt)
NE	National expert
NGO	Non-Government Organization
NPC	National Project Coordinator
NPD	National Project Director

OJK	<i>Otoritas Jasa Keuangan</i> (Financial Services Authority)
P2P	peer-to-peer
PIP	<i>Pusat Investasi Pemerintah</i> (Government Investment Unit)
PIR	Project Implementation Review
PLN	State Electricity Company
PPG	GEF project preparation grant
PMU	Project Management Unit
PSC	Project Steering Committee
SKKNI	Indonesia National Competency Standards
SO	System optimization
ToR	Terms of reference
UNIDO	United Nations Industrial Development Organization
USD	United States dollar
YEI	<i>Yayasan Energi Indonesia</i> (Indonesia Energy Foundation)

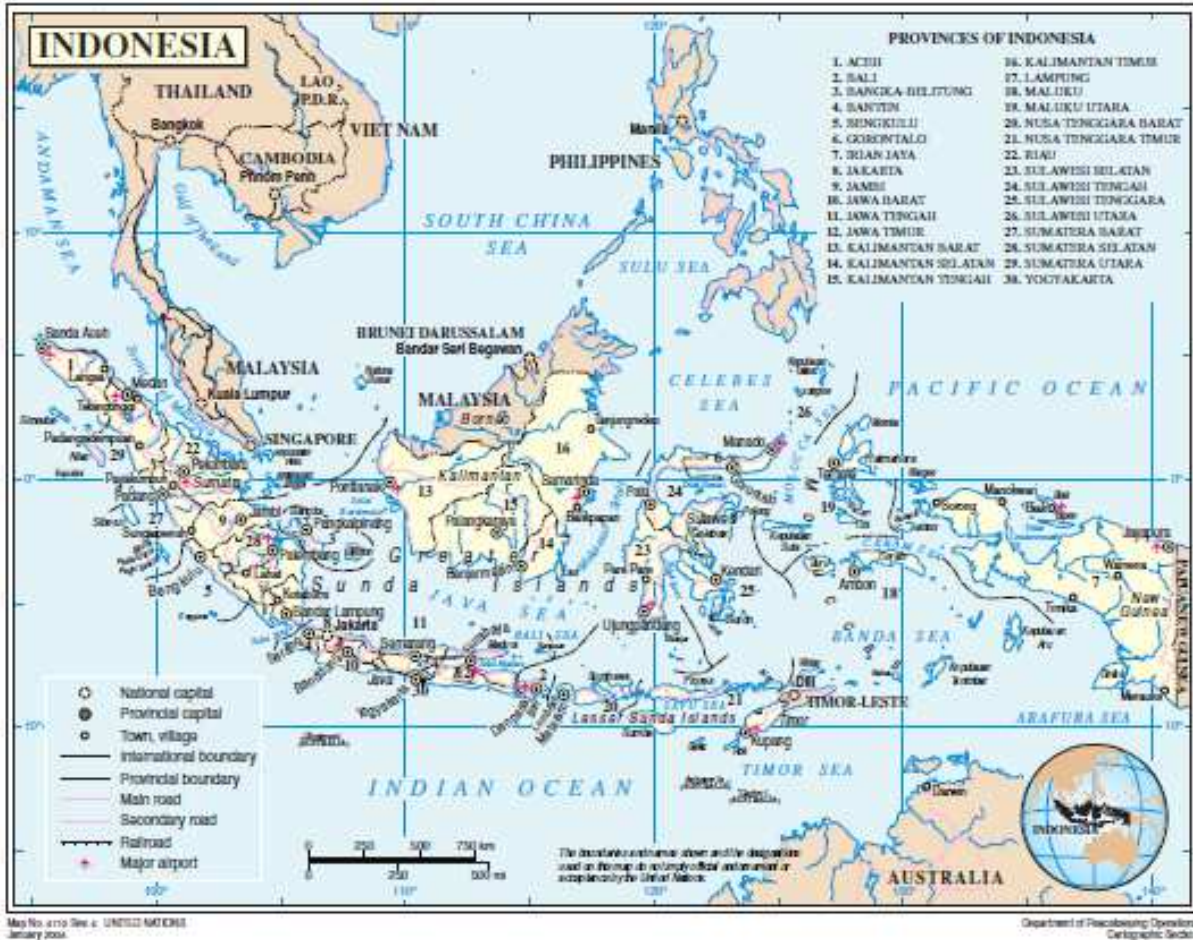
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MAP



The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations

EXECUTIVE SUMMARY

Project summary sheet

Project Title	Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards
GEF ID Number	3595
UNIDO ID (SAP Number)	GF/INS/11/001 (SAP: 103031 / 200000255)
Region	EAP
Country	Indonesia
GEF Focal Area and Operational Program:	CC (CCM), GEF-4
GEF Agencies (Implementing Agency)	UNIDO
Project Executing Partners	Ministry of Energy and Mineral Resources
Project Size (FSP, MSP, EA)	FSP
Project CEO Endorsement/Approval Date	02-04-2011
Project Implementation Start Date (PAD Issuance Date)	04-11-2011
Original Expected Implementation End Date (indicated in CEO Endorsement/Approval document)	31-08-2016
Revised Expected Implementation End Date (if any)	31-12-2017
GEF Grant (USD)	USD 2,180,380
GEF PPG (USD) (if any)	USD 80,000
Co-financing (USD) at CEO Endorsement	USD 14,175,000
Total Project Cost (USD) (GEF Grant + Co-financing at CEO Endorsement)	USD 16,355,380
Agency Fee (USD)	USD 226,038

Introduction and brief description of the project

The Energy Management System (EnMS) standard, ISO 50001, specifies the requirements for an organization to establish, implement, maintain, and improve an energy management system, enabling systematic achievement of continual improvement in energy performance, energy efficiency, and energy conservation. The Standard was adopted in Indonesia in 2012. In Systems Optimization (SO), the first point of entry in identifying energy efficiency options is to look at the system as a whole, rather than at the individual system components (such as motors, pumps, air compressor or boilers) separately.

Since 2000, Indonesia transitioned from a robust energy exporter to an importing nation that, for the first time, is concerned with growing domestic demand, and rising cost of energy imports and production. National energy efficiency and conservation is an obligation under the 2007 Energy Law and has been affected through government regulation (2009) and presidential instruction (2011). Energy resources users and final energy users that use energy equivalent to or more than 6,000 ton of oil equivalent annually are obliged to implement energy conservation through energy management. The Ministry of Energy and Mineral

Resources (MEMR) has also drafted a National Energy Conservation Plan and recently the Government, through its National Standardization Agency, adopted ISO 50001 as Indonesian national standard for energy management systems.

Despite these encouraging efforts initiated by the government, much work needs to be done in the field, in particular in the area of company energy management (following the EnMS) and Systems Optimization (SO). For example, at the facility/company level, there is often no built-in energy management policy or strategy that integrates energy issues in the existing management structure. Energy-related issues are taken on an ad-hoc basis and do not allow a comprehensive and integrated approach that ensures sustainable energy cost reduction and that simultaneously improves facility productivity.

For this reason, the United Nations Industrial Development Organization (UNIDO) has initiated the project “*Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards*” in cooperation with the Indonesian government entities Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry (MOI) and the National Standardization Agency (BSN). The project has received financial support from the Global Environment Facility (GEF) of USD 2,180,380 and co-financing from Indonesian government partners and the private sector of USD 14,175,000. The objective of the project is “To promote industrial energy efficiency through system optimization approach and introduction of ISO energy management standards”.

The project outcomes and outputs are:

1. Introduction of Energy Management Systems and Capacity Building
 - Reinforced capacity of government institutions
 - Training materials and tools developed
 - National awareness campaign launched on ISO 50001
 - Trained national experts & factory personnel on EM
 - Peer-to-Peer network established between industrial enterprises
2. Capacity Building on System Optimization
 - Training materials and tools developed
 - Trained national experts/factory personnel on SO
 - Equipment vendors & suppliers trained on SO
3. Financial capacity development to support energy efficiency projects in industry
 - Project evaluation criteria developed and harmonized
 - Training material developed and capacity of industrial enterprises built on bankable energy efficiency (EE) projects development
 - Capacity of financial institutions and local banks built to promote and invest in industrial energy efficiency projects
4. Implementation of energy management and system optimization projects
 - EnMS implemented
 - Documented industry demonstration projects
 - Recognition program developed and implemented

Project results and ratings

The GEF/UNIDO project in Indonesia is halfway through its project implementation and therefore needs to undergo a mid-term review (MTR) by independent reviewers as per UNIDO and GEF guidelines. This report presents the assessment and findings regarding project performance and progress against the evaluation criteria: relevance, effectiveness, efficiency, sustainability and impact.

The following table provides a summary of conclusions and the ratings for a) progress towards results, b) project implementation and adaptive management and c) sustainability.

Criteria	Summary concluding remarks	Rating
Attainment of objectives and result (overall ratings)		S-HS (satisfactory to highly satisfactory)
1. Design and relevance <i>UNIDO criterion:</i> implementation approach M&E design	<p>The overall project design is relevant to the national energy priorities, and has enjoyed strong participation of local stakeholders in project identification. The project is relevant to UNIDO and policies and fully relevant to the GEF focal area of climate change</p> <p>The Logical Framework with its outcomes and outputs, as well as target indicators are developed adequately and allow for the monitoring of project results. The M&E process and specific reporting requirements, are sufficiently identified in the Project Document (CEO ER). The budget provided for M&E at the planning stage was sufficient. Regarding project strategy, it is worth mentioning that the project is an integral part of overall UNIDO efforts to promote energy management and systems optimization. In South-East Asia, similar projects are being implemented in Malaysia, Myanmar, Thailand, Indonesia, the Philippines and Vietnam, allowing exchange of ideas and experiences, while the training programs follow a similar proven setup that can be adapted to local circumstances and language, as needed.</p> <p>Certain aspects regarding sustainability are not in the original project design, such as how the peer-to-peer network and training could be institutionalised to ensure functioning beyond the project's end. This issue has been given attention during implementation, but to consider this already during design would have been better.</p>	<p>Relevance: HL (highly relevant) Design: HS (highly satisfactory)</p>
2. Attainment of results; effectiveness	<p>The project has been under implementation for almost 3 years and its current achievements compared to the targets show highly satisfactory progress. The number of trained industry personnel has exceeded the target and the number of experts to be trained will be achieved early 2015. Component 3 on energy efficiency financing has made good progress with the establishment of a working group involving all relevant stakeholders including the Financial Services Authority (OJK), ministries and banks and preparing training for banks and on financial issues for companies. On Component 4, the project has supported many factories to implement EnMS and SO improvement projects that will result in significant energy savings and a reduction in GHG emissions. Based on the satisfactory progress achieved so far, it is expected that the project will achieve its global environment and development objectives and 'effectiveness' is rated accordingly.</p>	S-HS (satisfactory to highly satisfactory)
3. M&E; Efficiency; <i>UNIDO criteria:</i>	<p>Project management has been successfully carried out by the UNIDO Project Manager and Project</p>	S (satisfactory)

Quality at entry & preparedness; UNIDO supervision and backstopping;	Management Unit (PMU) led by the Project Coordinator. These have drafted the progress reports that provide the necessary aspects of the periodical achievements of the project with narrative link back to the outcomes, outputs and targets elaborated in the logical framework. There has been good cooperation between the various project partners (MEMR, MOI, BSN, OJK and Government Investment Unit (PIP)) that closely work together with the PMU and meet annually in the Project Steering Committee (PSC). Although counterpart resources and adequate project management arrangements were in place at project entry, the project initiation has met some delays, but currently project implementation is well on track. Realizing that the planned project implementation period may be too short, the project was extended until December 2017.	
4. Sustainability and risks; external factors	There are no major financial, socio-political or institutional and governance risks to sustainability identified. Technical risks associated with the optimization of compressed air and steam systems are very low. In fact, considerable energy savings have been achieved in many countries through system level efficiency opportunities. However, it should be noted that the companies participating are mostly larger companies that have already implemented similar ISO environment standard and/or due to the size need to mandatorily implement energy management. In future, the challenge may be in passing the EE message to companies that do not have that much experience with management standards and/or are smaller in size	Likely (L)

Key **conclusion** is that the project has been highly effective to date in the light of excellent project implementation course, with most planned outputs being achieved by the time of the mid-term review.

Recommendations

For the Project Team and national government partners

1) *National foundation, YEI*

The project has supported the establishment of the *Yayasan Energi Indonesia* (YEI), the foundation that would institutionalise the peer-to-peer network of energy management and optimization experts and provide services. This would contribute to sustainability as it would function as a pool of expertise that beneficiaries (companies, financial institutions, government) can resort to when needed. The project website could be incorporated later in the YEI website, in which participating industries can provide info on experiences and best practices. YEI could also work with MEMR to implement a recognition programme and award scheme for companies (as envisaged in output 4.3). One issue that remains is the definition of the exact mandate and function of YEI and second, how the foundation would be financially sustainable. We see the foundation basically in a facilitating role, by promoting competitive pricing of and facilitating access to member services. However, the temptation would exist for YEI to provide energy consulting and advisory services itself on a fee-for-service basis to generate an income, by which YEI would start competing with its own individual members (by offering consulting services it would no longer be an independent facilitator).

We suggest that the project helps YEI in drafting a detailed business plan for the foundation detailing: a) scope and mandate; b) functions and activities, (e.g. access to pool of expertise; maintaining peer-to-peer network; info dissemination; website; organization of recurrent and special short trainings, background

studies, monitoring and analysis; policy advice; facilitate regional networking); and c) budget and financing proposal for the first years of operation.

2) *Institutionalization of training*

Another aspect of sustainability is the institutionalization of training on EnMS and systems optimization. The trainings contain a wealth of information. In a country the size of Indonesia and a market of up to 40,000 medium and large enterprises, the number of trained national experts, about 70, and the number of companies serviced, about 300, is small indeed. Even if the project could be up-scaled, it would only cover of small section of the sheer number of companies in Indonesia. To ensure post-project training, we suggest diverting some project resources to the following:

- Integration of the EnMS and SO in the curriculum of relevant undergraduate programmes of prominent universities;
- Organization of short introduction and refresher courses in relevant engineering or business training institutes or by relevant industry associations.

The first (curricula integration) would be medium-term in nature, while the second option (short courses) could probably be implemented in the short term. Piloting both these programmes during the project's duration would be a desirable newly added output.

3) *Post-project action plan*

The Project Document foresees the transfer of the maintenance of the peer-to-peer database and reporting tools to a relevant government agency. We can add that transfer to an association of engineers such as Indonesia Energy Conservation and Efficiency Society (MASKEEI) or Association of Energy Conservation Services Companies (APKENINDO) or the new YEI foundation could also be possible. Similarly, the destination of the equipment of energy audit and measurement equipment, procured under the project, should be determined.

These issues, as well as the institutionalization of the P2P network, YEI business planning and sustainability of the EnMS and SO training should be part of a sustainability and scaling up plan to guide the government in the design and implementation of a long-term energy management program in the industry. Apart from stressing the role of YEI, the role of existing industrial associations, chambers of commerce and industry as well as professional associations of engineers could be highlighted. Such a 'post-project action plan' could have the following elements: a) overview chapter on status of EnMS, SO and EE, b) identification of lowered and remaining barriers, c) conclusion and recommendations to the Government and private sector institutions for post-project supportive actions.

4) For UNIDO Headquarters

Given the fact that UNIDO has organised similar projects on energy management and systems optimization in over 20 countries, we would like to suggest that in UNIDO itself the training is internally institutionalised, i.e. by offering refresher courses in the participating countries. It should be looked into how this could be organised and funded with UNIDO's regular or extra-budgetary funding.

5) For the GEF Secretariat

It is being discussed in Indonesia to present a new initiative for funding under the new GEF-6 budget cycle. Given the large scope for replication in a country the size of Indonesia and the cost-effectiveness of energy management planning and implementing energy optimization, it makes sense to scale up the activity and expand into other thematic or geographical areas:

- Support other industrial subsectors (iron and steel, cement, automotive, etc.) or other sectors (e.g. energy production) and large buildings (e.g. pumps, steam)
- Cover new topics in system optimization (e.g., chillers, fans);
- Expand the focus to include medium –small sized companies;

- Support industrial estates (to provide advisory services on EnMS and SO to companies).

Lessons learned

This project can be used and should be presented by UNIDO as a best practice, together with similar projects in other countries, to showcase the benefits of EnMS and SO in international fora and to a wider audience, stressing the importance of a well-conceived methodology regarding training and awareness raising and strong local ownership.

1. INTRODUCTION

1.1 Background

UNIDO industrial energy efficiency programme

Improving energy efficiency (EE) in industry is one of the most cost-effective measures to help supply-constrained developing and emerging countries meet their increasing energy demand and loosen the link between economic growth and environmental degradation, such as climate change. Despite this, energy efficiency improvements with very favourable payback periods often do not get implemented. When projects are implemented, it may often happen that results are not sustained due to lack of supportive operational and maintenance practices. Energy efficiency is still widely viewed as a luxury rather than a strategic investment in future profitability.

The final goal of the UNIDO Industrial Energy Efficiency (IEE) Programme is to effect sustained energy management and efficiency practices in industry of developing countries and emerging economies in order to reduce the environmental pressure of economic growth while increasing productivity, helping to generate economic growth, create jobs and alleviate poverty.

Systems optimization and energy management systems

Three decades of national and international experiences with industrial energy efficiency programmes have shown that most energy efficiency in industry is achieved through changes in *how energy is managed* in an industrial facility, rather than through installation of new technologies. The goal of sustainable energy efficiency in industry requires that energy efficiency is integrated into daily management practices and systems for continual improvement. In order to achieve that, top management needs to be engaged in the management of energy on an ongoing basis.

The Energy Management System (EnMS) standard (ISO 50001) specifies the requirements for organization to establish, implement, maintain, and improve an energy management system, enabling systematic achievement of continual improvement in energy performance, energy efficiency, and energy conservation. It imposes requirements on energy supply and consumption, in terms of measurement, documentation and reporting, design and procurement practices for energy-using equipment and systems as well as processes and personnel. However, it does not prescribe specific performance criteria with respect to energy. The energy management system will ensure the sustainability of the energy saving due to better planning and execution, more involvement of top management and all key persons and also a better monitoring and evaluations.

While equipment manufacturers have improved the performance of the individual system components (such as motors, steam boilers, pumps and compressors) to a high degree, the energy efficiency of systems that include these components is often quite low. Thus, efficiency of individual components may only be possible to improve with 2-5%, but by looking at the system as a whole and carefully matching equipment to demand needs, efficiency improvements of 20-50% are possible. Energy be saved, reliability and control of the system will be enhanced, while maintenance costs will decline. Payback periods for system optimisation projects are typically short—from a few months to two-three years—and involve commercially available products and accepted engineering practices. Payback periods are low, because the focus is not only on changing out or supplementing equipment, but on eliminating or reconfiguring inefficient uses and practices.

1.2 Purpose and approach of the mid-term review

Mid-term review

Independent evaluations of technical cooperation activities, such as projects, can take the form of mid-term reviews (MTRs), terminal (TE) or ex-post evaluations (UNIDO Evaluation Policy, 2006). Independent evaluations can be mandatory for programmes and projects as established in funding agreements with donors. As outlined in the GEF Monitoring and Evaluation Policy¹, **mid-term reviews** (MTRs) are mandatory for full-sized projects (GEF FSPs). The MTRs focus on a) assessment of progress towards results, b) monitoring of implementation and management, c) early identification of risks (to sustainability) and d) providing recommendations for corrective actions and future direction.

As per UNIDO and GEF guidelines, a mid-term review needs to be carried out for all GEF-financed full-sized projects by one or more independent consultants: ‘independent’ meaning not previously involved in the project’s design, management or implementation of activities. The GEF FSP projects in Indonesia is halfway its project implementation and therefore needs to undergo a MTR. It was decided by UNIDO to award the review contracts to two independent consultants, Mr. Johannes (Jan) Van den Akker (Netherlands) and Mr. Andi Samyanugraha (Indonesia).

Reducing industry’s carbon footprint in South East Asia through compliance with an energy management system (ISO 50001)

This programme framework was submitted by UNIDO to the Global Environment Facility (GEF) and approved by the GEF Council in November 2008. The objectives of the programme are (a) controlling the growth of greenhouse gas emissions attributable to rapid industrialization in the countries of South East Asia; and (b) helping these industries reduce their costs of fuel and electricity. The programme is composed of national projects implemented in Indonesia, Myanmar, Malaysia, the Philippines, Thailand and Vietnam; each designed to facilitate introduction of ISO 50001 through training and capacity building, including a technical focus on systems optimization.

The projects are in various stages of implementation. The GEF FSP projects in Indonesia, the Philippines and Thailand are halfway through their project period and therefore need to undergo a mid-term review (MTR). It was decided by UNIDO to award the contracts for the mid-term review in these three countries to one international (independent) consultant as lead evaluator, Mr. Johannes (Jan) Van den Akker (Netherlands). This ‘multi-country’ evaluation approach has the advantage that the results of the similar projects in various countries can be compared and country-specific situations (that may positively or negatively affect results) can be filtered out, which allows a more profound assessment.

This report presents the findings of the MTR for Indonesia, while a summary of issues and findings that are common to all three the countries are given in Annex D.

Objective and key question of the mid-term review

The Mid-term review (MTR) assesses project performance and progress against the evaluation criteria: relevance, effectiveness, efficiency, sustainability and impact.

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 industrial energy efficiency through system optimization approach and the introduction of ISO energy management standards. Through its assessments, the evaluation team should enable the Government, counterparts, the GEF, UNIDO and other stakeholders and donors to:

- 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,

¹ *The GEF Monitoring and Evaluation Policy* (GEF Secretariat, 2010)

and outcomes/impacts based on indicators. The assessment includes re-examination of the relevance of the objectives and other elements of project design;

- 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.

Methodology

Before undertaking the evaluation, an *Inception Report* was presented, including the proposed of tasks, activities and deliverables, as well as a table of main evaluation questions that need to be answered to determine and assess project results, and to identify where the information is expected to come from (e.g. documents, interviews and field visits).

The review used the following *sources of information*:

- Desk review of progress reports and project documents:
 - CEO Endorsement Request (CEO ER) and annexes; annual progress reports (project implementation reviews (PIRs)); other progress reporting;
 - Overview of budget expenditures and realized co-financing; annual work plans
 - Project technical reports and description of outputs; project or counterparts' websites
 - Policy documents on energy, industrial energy efficiency or climate change mitigation, as well as other relevant reports and documents from counterpart organizations or other stakeholders;
- One-week mission to Indonesia (from 9 to 13 March 2015) to hold interviews with stakeholders, beneficiaries and key informants and (if needed and possible) visits to selected project sites, in order to obtain in-depth information on impressions and experiences and to explore opinions about the initiative and their understanding and identify opportunities. The agenda of the mission is given in Annex B.

Regarding the data analysis and methods for analysis, the above-mentioned documents have been analysed and data derived cross-checked with various sources of information. A full list of documents is provided in Annex C. The review of project and background documents have provided the basic facts and information for developing a first draft mid-term review report, while the mission has served to verify this information, get missing data and to learn opinions of respondents to help interpret the facts. With respect to the latter, the individual interviews with key informants (one-to-one consultations) representing project partners and stakeholders are based on open discussion to allow respondents express what they feel as main issues, followed by more specific questions on the issues raised. The mission included on-site observations by visiting some of the companies that participated as 'demonstration' of energy management and systems optimization.

The mid-term review was 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 Monitoring and Evaluation Policy from 2010.

Limitation and strengths of the review

A one-week mission has the limitation of potentially giving a snapshot impression only. Nonetheless, it is felt that this mix of data collection and analysis tools has yielded viable answers to the evaluation/review questions within the limits of budget resources for the review and time availability. The international consultant was also recruited to undertake review of similar projects in the Philippines and Thailand. This has enabled a comparison of results between the three countries and for country-specific situations (that may positively or negatively affect results) to be filtered out, which allows to have a more profound assessment. The findings of the reviews will be presented in reports per country. This report presents the findings of the MTR for Indonesia; issues and options that are common to all three the countries are given in Annex D.

1.3 Content of the evaluation report

The review follows the latest UNIDO and GEF guidelines on mid-term reviews, also taking into account the guidelines for final evaluations as well as general criteria of UNIDO evaluations. As terminology and definitions can be confusing for the layperson, the following table in Box 1 tries to summarise the main contents of this report, indicating how the various evaluation issues and questions feed into the various chapters and sections. It slightly deviates from the outline given in the ToR (see Annex A) to allow a more logical presentation of the findings, but contains all the elements required in the ToR.

An *evaluation matrix* has been provided (see Box 21 in Annex D) that clarifies which evaluation criteria and questions have been addressed and how data were analyzed and collected. The purpose of the evaluation matrix is to clarify which issues will be looked at and in which sections of the MTR report these are presented.

Box 1 Overview of report content and evaluation scope

Contents	Reference to relevant parts in the model outline of the MTR report (as given in the ToR; see Annex A)
Title page Table of Contents	
Executive summary <ul style="list-style-type: none"> • Project general information • Summary of project achievements and ratings (incl. project fact sheet) • Summary of conclusions and recommendations 	
1. Evaluation objective and methodology <ul style="list-style-type: none"> • Background <ul style="list-style-type: none"> • Purpose and approach of the review • Content of the review report 	<ul style="list-style-type: none"> • Information on evaluation; scope and objectives of the evaluation • Methodology and sources of information • Outline of the report and evaluation questions/topics
2 Country context and project description <ul style="list-style-type: none"> • Context and project background • Project summary 	<ul style="list-style-type: none"> • Brief countries context and sector-specific issues of concern to the Project; • Project description; objectives and expected outcomes and results; budget and co-financing; project implementation and counterparts
2. Findings: Relevance and design <ul style="list-style-type: none"> • Relevance and conceptualization • Stakeholder involvement • Assessment of logframe and M&E design 	Project assessment: <ul style="list-style-type: none"> A. Design B. Report on the relevance of project towards countries and beneficiaries) H. Assessment of processes affecting achievement of project results: <ul style="list-style-type: none"> • Country ownership • Implementation approach
3. Findings: Results and effectiveness <ul style="list-style-type: none"> • Assessment of outcomes and outputs (cf. with baseline indicators) • Effectiveness • Global environmental and other impacts 	<ul style="list-style-type: none"> C. Effectiveness (The extent to which the project's deliverables were achieved, or are expected to be achieved, taking into account their relative importance) G. Impacts and long-term changes J. Gender mainstreaming
4. Findings: implementation, processes and efficiency <ul style="list-style-type: none"> • Management and administration • Monitoring and evaluation systems • Stakeholder engagement; gender mainstreaming • Budget, expenditures and co-financing; procurement 	<ul style="list-style-type: none"> F. Assessment of monitoring and evaluation systems (assessment of M&E plan implementation, project management) I. Project coordination and management (project management conditions and achievements, and partner countries commitment) D. Efficiency (Report on the overall cost-benefit of the project and partner Countries contribution to the achievement of project objectives) H. Assessment of processes affecting achievement of project results: <ul style="list-style-type: none"> • Preparation and readiness / quality at entry • Delays and project outcomes • UNIDO supervision and support

Contents	Reference to relevant parts in the model outline of the MTR report (as given in the ToR; see Annex A)
	<ul style="list-style-type: none"> Stakeholder involvement K. Procurement issues
5. Findings: sustainability <ul style="list-style-type: none"> Risks and external factors Replication 	E. Sustainability of Project Outcomes (assessment of 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) H. Assessment of processes affecting achievement of project results <ul style="list-style-type: none"> Co-financing and sustainability
6. Conclusions and recommendations <ul style="list-style-type: none"> Conclusions on attainment of objectives and results Lessons learned Recommendations 	<ul style="list-style-type: none"> Main evaluation conclusions related to the project's achievements and shortfalls; cross-referenced to relevant sections of the report Recommendations for UNIDO, government and/or counterpart organizations Lessons learned
Annexes <ul style="list-style-type: none"> Terms of Reference Mission schedule and list of people interviewed List of documents Regional scope and common approach in project evaluations 	

The project will provide ratings, as suggested in the Terms of Reference (see Annex A). The evaluation covers a number of criteria:

- Relevance* – the extent to which the project is linked with national development priorities and policies, and in line with UNIDO priorities and GEF Operational Programs;
- Effectiveness* – the extent to which results have been delivered (or likely how this will be achieved);
- Results* – direct project results (outcomes and outputs) and longer-term impacts
- Efficiency* – extent to which results have been delivered without delay and with cost-effectiveness;
- Sustainability* – likely ability to continue deliver benefits for an extended period of time after completion.

Box 2 GEF and UNIDO rating scales

Measure	Rating
Attainment of objectives and results (overall ratings)	<i>6-point scale:</i> <ul style="list-style-type: none"> Highly satisfactory (HS): no shortcomings; exceeding all targets (excellent) Satisfactory(S): minor shortcomings; achieving most of the targets (well above average) Moderately satisfactory (MS): moderate shortcomings; achieving most of the targets (average) Moderately unsatisfactory (MU): significant shortcomings; achieving some targets (below average) Unsatisfactory (U): major shortcomings; expected not to achieve most of the targets (poor) Highly unsatisfactory (HU): severe shortcoming (very poor; appalling) <i>Relevance (2-point scale):</i> <ul style="list-style-type: none"> Relevant (R) Not relevant (NR)
1. Design and <u>relevance</u> ; <i>UNIDO criteria:</i> quality at entry, preparedness	
2. Attainment of <u>results</u> ; <i>effectiveness</i>	
3. M&E; <u>Efficiency</u> ; <i>UNIDO criteria:</i> supervision and backstopping; implementation approach	
<u>Sustainability</u> and risks; external factors	<i>4-point scale:</i> <ul style="list-style-type: none"> Likely (L): no or negligible risks to sustainability Moderately likely (ML): moderate risks Moderately unlikely (MU): significant risks Unlikely (U): severe risks

2. COUNTRY INFORMATION AND PROJECT SUMMARY

2.1 Energy efficiency in industry in Indonesia

This Section provides an overview of the energy sector and policy frameworks that have been relevant during the project's design and implementation phases.

Energy sector overview

Since 2000, Indonesia transitioned from a robust energy exporter to an importing nation that, for the first time, is concerned with growing domestic demand, rising production costs and inadequate infrastructure, energy subsidies and a complex regulatory framework as well as local and global environmental concerns. Indonesia ranked as the 24th-largest crude oil producer in the world in 2013, although the country both imports and exports crude oil. Growing internal demand for energy, declining production (most notably in mature fields), and limited investment to increase capacity has led to a situation in which Indonesia currently imports crude oil and refined products to meet demand. Indonesia remains the world's largest exporter of coal by weight and exports about 75% of its production (standing at 452 million tons in 2012). Indonesia was the fourth-largest LNG (liquefied natural gas) exporter in 2012, about 870 billion ft³, while domestic consumption of gas was 1,329 billion ft³ in 2012.

Indonesia's total primary energy consumption grew by 44% between 2002 and 2012. The petroleum share, although decreasing, continues to account for the highest portion of Indonesia's energy mix at 36% in 2012. In the past decade, coal consumption nearly tripled and surpassed natural gas as the second most consumed fuel (20% and 17% of primary energy consumption in 2012). Indonesia is also a significant consumer of traditional biomass and waste in its residential sector, particularly in the more remote areas that lack connection to the country's energy transmission networks.

Fuel subsidies have cost the government between 7% and 25% of its annual public expenditures between 2005 and 2013. To curb oil imports and reduce pressure on the government budget, Indonesia reduced government fuel subsidies in June 2013 for the first time since 2008².

PLN³ is the most significant company in the electric power sector. It owned and operated about 85% of the country's generating capacity through its subsidiaries as of 2012 and maintains an effective monopoly over distribution activities. Indonesia had an estimated 44 gigawatts (GW) of installed capacity in 2012 and generated 200 billion kilowatt-hours (kWh), according to BPS-Statistics and IHS EDIN. In 2011, roughly 88% of the power generation came from fossil fuel sources, with the rest coming from hydroelectric (7%) and geothermal (5%). Coal accounted for just over half of the power generated from fossil fuels. Oil-fired generation capacity has declined along with Indonesia's oil production. Total electricity sales by PLN grew to about 174 billion kWh in 2012, increasing 10% from the 2011 level. Average annual growth rates have been 7% since 2002.

Energy efficiency policy and framework

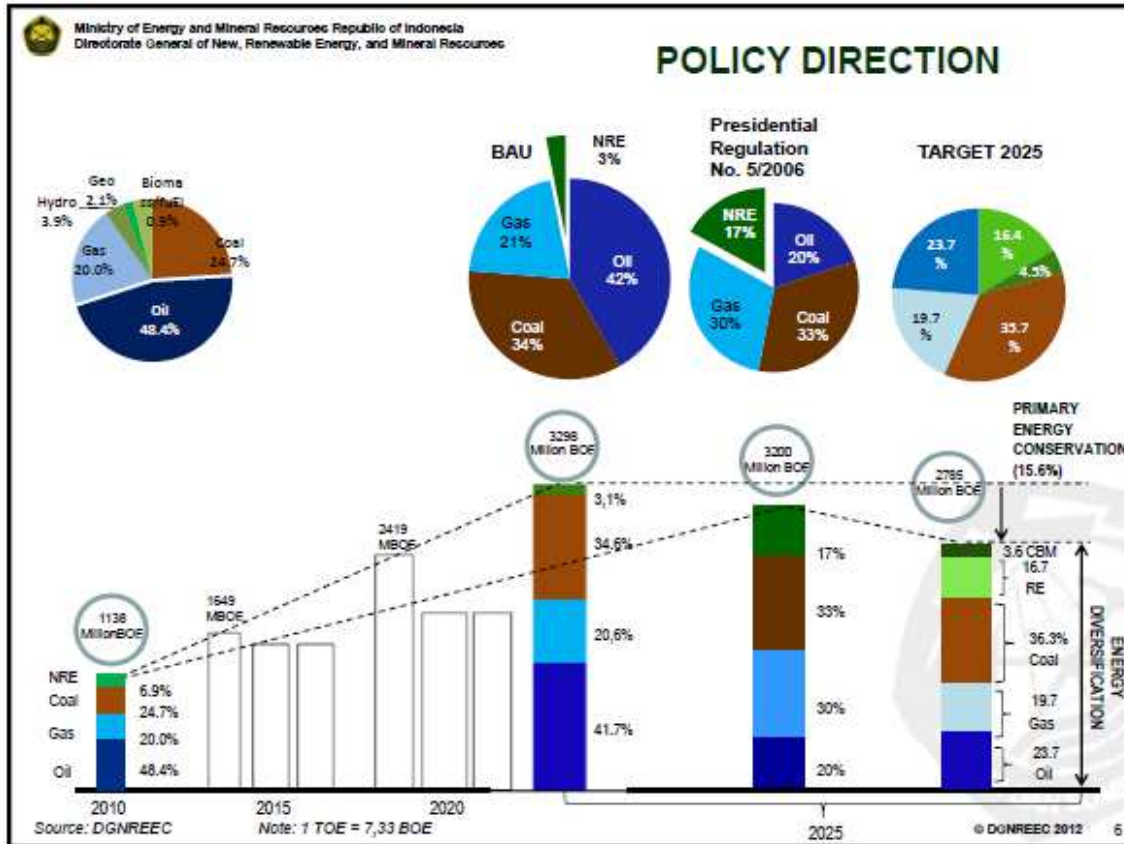
The Presidential Regulation No. 5 (2006) concerning national energy policy, resulted in Law No. 30 (2007) regarding Energy, also referred to as the *Energy Law*, mandates creation of the National Energy Council (DEN – *Dewan Energi Nasional*) to establish the National Energy Policy. The Energy Law mandates the Government to establish a National Energy General Master Plan based on the National Energy Policy. National energy conservation is by Law obligatory and the government regulation to this effect is

² Information in Section 2.1 has been compiled from <http://eia.gov.doe>, <http://en.wikipedia.org> and ADB (2013)

³ *Perusahaan Listrik Negara*, State Electricity Company

Government Regulation No. 70 (2009) regarding Energy Conservation. This has been followed by a Presidential Instruction No. 13 (2011) concerning on Energy and Water Saving. The Presidential Instruction mandates national and local government institutions to save water and energy and the goal is to achieve 20% electricity saving; 10% water saving, and 10% gasoline saving.

The Ministry of Energy and Mineral Resources (MEMR) as the authority for matters on energy is by Law the responsible authority in government for energy conservation. Within MEMR, energy efficiency and conservation is entrusted to the Directorate of Energy Conservation, in the Directorate General of New and Renewable Energy and Energy Conservation (DGNREEC)⁴, of the MEMR.



Box 3 Policy goals in energy conservation and energy diversification

Note: Indonesia’s policy direction on energy and energy conservation goal is called Energy Vision 25/25, adopted in November 2010. The Vision calls for 25% share of renewable energy in the primary energy supply mix in 2025. Energy Vision 25/25 calls for 15.6 % overall primary energy reduction from a business as usual (BAU) case, through energy conservation measures. Energy conservation measures are expected to reduce overall primary energy consumption from 3298 million barrels of oil equivalent under a BAU case, to 2785 million barrels of oil equivalent in the energy conservation case, in 2025.

The MEMR has drafted the National Energy Conservation Master Plan (RIKEN⁵) based on the before-mentioned National General Energy Master Plan. It outlines the strategies and activities to support the government’s energy policy through general policy instruments, namely: information, incentives, regulation and pricing. It also aims to enhance public awareness and attitude towards energy conservation and create the appropriate climate that is conducive for energy conservation endeavours. The country’s energy

⁴ In Indonesia known as DJEBTKE (*Direktur Jenderal Energi Baru, Terbarukan dan Konservasi Energi*)

⁵ *Rencana Induk Konservasi Energi Nasional*

conservation potential is estimated at between 10 to 30%; sectoral energy conservation targets are 17% (industry), 15% (commercial), 20% (transport) and 15% (households).

Energy resource users and final energy users that use energy equivalent to or more than 6,000 ton of oil equivalent annually are obliged to implement energy conservation through energy management⁶. Energy users that use equal to or more than 6,000 tons of oil equivalent annually and local energy saving product manufacturers that are able to implement and produce energy savings within a certain period of time can be provided incentives (e.g. tax breaks and facilities; low-interest financing) or a subject to disincentives.

A number of programs have been or are being undertaken by MEMR:

1. Creating Public Awareness (by means of public advertisement, printed materials, and the web; and through seminars and workshops);
2. Establishing a Partnership Program on Energy Conservation (with industry and commercial buildings on energy audits and identification of energy efficiency measures);
3. Implementation of Mandatory Energy Management (creating energy management programs and energy auditor competency);
4. Formulating Energy Efficiency Standards and Implementing a Labeling Program on Energy Efficiency (Indonesia has energy performance testing standards for selected electrical appliances/devices, a buildings standard is being updated; energy labels for selected products are based on a star-rating system of 4 stars);
6. Developing Education and Training on Energy Efficiency and Conservation;
7. Developing a Clearing House: the Energy Efficiency Clearing House Indonesia (EECHI) is developed under cooperation between the Directorate of Energy Conservation and Danish International Development Agency (DANIDA). EECHI will have a special role in promoting energy efficiency and conservation, by setting examples of prudent best practices, including promoting energy audit with high quality assurance.

2.2 Project rationale and justification

Despite these encouraging efforts initiated by the government, much work needs to be done in the field. For example, the above-mentioned Partnership Program has conducted free energy audits for 183 industrial facilities and 100 buildings since 2003, but covering only 1% of the industry. There is a very limited penetration of energy-efficient measures, technologies, and systems in the industries as many industrial enterprises have not implemented energy efficiency programs despite the large potential of efficiency improvements. An overview of relevant key issues and barriers is given in Box 3. The activities of the project that will address these barriers to the implementation and promotion of industrial energy efficiency and listed in the right column of the Table and are further detailed in the next section 2.3.

Box 4 Barriers and project-supported mitigation action

Barriers (identified in Project Document)	UNIDO/GEF Project intervention
<p>Energy management Most enterprises monitor their energy use by linking it to their production and analyzing it based on a performance goal every year or monthly for some. At the facility/company level, there is no built-in energy management policies and strategies that integrate energy issues in the existing management structure.</p>	<p>1.1 Reinforced capacity of government institutions 1.2 Training materials and tools developed 1.3 National awareness campaign launched on ISO 50001 1.4 Trained national experts & factory</p>

⁶ Elements are: a) Appointing an energy manager, b) Establishing an energy conservation plan, c) Conducting routine energy audit, d) implementing the steps recommended by the result of energy audit; and e) Reporting implementation of energy conservation annually to the appropriate authority

<p>There is no continuous implementation of energy management. The current practice does not institutionalize energy management and does not allow a comprehensive and integrated approach that ensures sustainable energy cost reduction and improves the facility productivity in an irreversible way.</p> <p>In addition, there is a lack of information about available options, best practices, and benchmarks. There are no awareness activities in the country to promote energy management standards and system optimization with comprehensive guidelines and documentation of demonstration cases</p>	<p>personnel on EM 1.5 Peer-to-Peer network established between industrial enterprises 4.1 EnMS systems implemented</p>
<p>Systems optimization Current practices in the field of energy efficiency tend to focus more on individual system components, such as motors, pumps, or boilers than on the whole system. Technical managers just make sure that the technical facilities are operational through current housekeeping practices that focus on fixing any trouble and failure. For example, equipment procurement procedures tend to rewind motors, instead of preferring high-performance equipment and working at the system level. This leads to oversized and poorly controlled industrial energy systems that inadequately match system supply to production demand. High turnover of plant personnel assigned to the operation of industrial systems and changes in production lead to a lack of persistence for system optimization improvements.</p> <p>Local manufacturers and equipment suppliers also have a lack of technical information and trainings for supporting decisions to pursue energy efficiency improvements in the products. The experience and skills are limited in marketing their specific (efficient) products and brands to the industry without offering alternatives to improve the system efficiency as a whole.</p>	<p>2.1 Training materials and tools developed 2.2 Trained national experts/factory personnel on SO 2.3 Equipment vendors & suppliers trained on SO 4.2 Documented industry demonstration projects 4.3 Recognition program developed and implemented</p>
<p>Financial aspects The financial barriers to investment in EE projects are more related to the lack of information on available financial mechanisms and incentives and how to access them. At financial institutions and banks level, there is a lack of understanding of the particularity of energy efficiency projects and how to properly evaluate them (disconnection between the financing products offered and the needs of EE projects).</p>	<p>3.1. Project evaluation criteria developed and harmonized 3.2 Training material developed and capacity of industrial enterprises built on bankable EE projects development 3.3 Capacity of financial institutions and local banks built to promote and invest in industrial energy efficiency projects</p>

2.3 Project description and strategy

The **objective** of the project is “To promote industrial energy efficiency through system optimization approach and introduction of ISO energy management standards”. The project outcomes and outputs are summarized in Box 5 on the next page.

UNIDO, the GEF implementing agency, has been implementing the project in close collaboration with the Ministry of Energy and Mineral Resources (MEMR), the Ministry of Industry (MOI) and the National Standardization Agency (BSN). The UNIDO Project Manager (at UNIDO Hqs.) oversees project implementation and monitoring. However, day-to-day project management is the responsibility of the Project Management Unit (PMU), headed by a National Project Coordinator, located within the premises of MEMR. The PMU will be guided by the Project Steering Committee on the implementation of the project and coordination among different government agencies and organizations. The PSC consists of high-level representatives from the MEMR, the MOI, the BSN, MOEF (the GEF focal point), UNIDO and other agencies (see also Section 5.1).

Box 5 Project overview: outcomes, outputs and budget

Project Components/ Outcomes	Project outputs	GEF (USD)	Co-financing (USD)
<p>Component 1: Introduction of Energy Management Systems and Capacity Building</p> <p>Outcome 1: Compliance to a policy instrument that encourages industrial enterprises to adopt ISO compatible energy management standards to deliver sustainable improvements in industrial EE and competitiveness</p>	<p>1.1 Reinforced capacity of government institutions</p> <p>1.2 Training materials and tools developed</p> <p>1.3 National awareness campaign launched on ISO 50001</p> <p>1.4 Trained national experts & factory personnel on EM</p> <p>1.5 Peer-to-Peer network established between industrial enterprises</p>	600,000	800,000
<p>Component 2: Capacity Building on System Optimization</p> <p>Outcome 2: A cadre of energy efficiency professionals created both within industrial facilities as well as consultants and equipment suppliers to initiate a process to transform local market effectively and provide industrial systems optimization services</p>	<p>2.1 Training materials and tools developed</p> <p>2.2 Trained national experts/factory personnel on SO</p> <p>2.3 Equipment vendors & suppliers trained on SO</p>	607,380	365,000
<p>Component 3: Financial capacity development to support energy efficiency projects in industry</p> <p>Outcome 3: Increased availability of financial and institutional support for industrial energy efficiency initiatives</p>	<p>3.1 Project evaluation criteria developed and harmonized</p> <p>3.2 Training material developed and capacity of industrial enterprises built on bankable EE projects development</p> <p>3.2 Capacity of financial institutions and local banks built to promote and invest in industrial energy efficiency projects</p>	275,000	163,000
<p>Component 4: Implementation of energy management and system optimization projects</p> <p>Outcome 4: Increased adoption of energy management standards and systems optimization energy efficiency projects by the industry for continuous higher energy savings</p>	<p>4.1 EnMS systems implemented</p> <p>4.2 Documented industry demonstration projects</p> <p>4.3 Recognition program developed and implemented</p>	400,000	12,325,000
Project Management		218,000	502,000
Monitoring and Evaluation		80,000	20,000
Total		2,180,830	14,175,000

2.4 Main project stakeholders

The following Box gives an overview of the main government stakeholders and partners:

Box 6 List of main stakeholders

Stakeholder	Description
Government	
Ministry of Energy and Mineral Resources (MEMR) – ESDM (Kementerian Energi dan Sumber Daya Mineral)	MEMR is the main policy maker in the energy sector. Within MEMR, the DGNREEC (Directorate General for New Energy, Renewable Energy and Energy Conservation – DJEBTKE (<i>Direktorat Jenderal Energi Baru Terbarukan, dan Konservasi Energi</i>)) DGNREEC has the function of preparing and implementing the policies in the fields of new, renewable energy and energy conservation, as well as preparing the standards, norms, guidelines, criteria, and procedures in the fields of new, renewable energy and energy conservation, providing technical guidance and evaluation.
Ministry of Industry (MOI) – Kementerian Perindustrian	The Ministry of Industry is in charge of developing and monitoring the government policies and strategies in the industrial sector. The MOI has the mandate to implement the Presidential Decree No. 28/2008 on the National Industrial Development Policy, which primarily aims at improving the industrial competitiveness by strengthening and developing core industrial clusters including food and beverages, textile, pulp and paper, and petrochemical industries. Regarding energy efficiency, tasks include: establish guideline to implement energy conservation in the industry sector; develop Ministerial initiatives to increase industrial energy efficiency and product competitiveness, and manufacture energy efficient products; establish energy intensity benchmarks,
National Standardization Agency (BSN) - Badan Standardisasi Nasional	The BSN was established in 1997 under the Presidential Decree No. 13/1997 and reinforced by the Presidential Decree No. 166/2000. BSN is a government institution, having the responsibility to develop and promote national standardization in Indonesia. Tasks include: Developing Indonesian National Standards (SNI); Developing a system of standards and conformity assessment; Improving public perception and participation of stakeholders in the field of standardization and conformity assessment; Developing policies and legislation of standardization and conformity assessment; Providing standardization information and training services, and promoting the application of the SNI.
BBPT - Badan Pengkajian dan Penerapan Teknologi (Agency for the Assessment and Application of Technology)	BBPT is a non-departmental government agency under the coordination of the Ministry of Research and Technology, which has the tasks of assessment and application of technology, acting as a technology clearinghouse and providing technology advisory services and audits for the Government. Regarding energy efficiency, tasks are: disseminate information on energy saving technology; coordinate assessment about energy conservation; develop demonstration of energy saving process, technology, and devices.
Ministry of Environment and Forestry - Kementerian Lingkungan Hidup dan Kehutanan	The Ministry is responsible for managing and conserving the country's forests and environmental protection. It is the GEF operational focal point.
Financial Services Authority (OJK) - Otoritas Jasa Keuangan	OJK is an autonomous government agency which regulates and supervises the financial services sector. The agency was established in 2011 to replace the role of Bapepam-LK in regulating and supervising the capital market and financial institutions, as well as that of Bank Indonesia in regulating and supervising banks, and to protect consumers of financial services industry.
Government Investment Unit (PIP) – Pusat Investasi Pemerintah	PIP is a sovereign wealth fund managed by the country's Ministry of Finance and invests in a variety of asset classes such as equity, debt, infrastructure and direct investments

3. FINDINGS: DESIGN AND FORMULATION

Chapters 3 to 5 presents an overview of the evaluation findings, based on an assessment of the achievement of results (outcomes, outputs and impacts), implementation, design and sustainability. Due to the size of this project assessment, we have split it into four Chapters, namely a) design and relevance (Chapter 3), b) results and effectiveness, (Chapter 4), c) implementation, processes and efficiency (Chapter 5), while sustainability is discussed in Chapter 6. The evaluation topics (given in Box 1) and the evaluation matrix of criteria and questions (see Annex D) were used as guidelines to formulate the chapters.

3.1 Relevance and conceptualization

National priorities and country drivenness

As explained in the previous Chapter 2, the project fits very well into government strategy on energy and sustainable energy development. There is a general concern at the government level about the inefficiency of energy usage in the industry. Moreover, the increasing greenhouse gas emissions arising from fossil fuel combustion in industry and power generation and high fuel prices in the international markets constitute a threat to the environment and economy sustainability of the country. The government is also conscious about the need to improve the competitiveness of industry by reducing production cost and promoting sustainable and low-carbon development. As discussed in Section 2.1 of this report, energy efficiency and conservation policy is laid down as follows:

- Law 30 (2007) concerning Energy,
- Presidential Instructions 2 (2008) and 13 (2011) on Energy and Water Saving;
- Government Regulation 70 (2009) on Energy and Water Saving;
- MEMR issued a number of regulations regarding energy and water saving during 2012/13:
 - MEMR Regulation No. 13/2012 concerning on electricity saving
 - MEMR Regulation No. 14/2012 concerning on energy management
 - MEMR Regulation No. 01/2013 concerning on fuel oil saving
- BSN adopted ISO 5001 as SNI ISO 50001:2012 in December 2012. Accreditation system for this standard is in place allowing eligible Indonesian companies to provide certification for SNI ISO 50001 compliance.
- MEMR is in the process of formulating SNI ISO 50001 requirements into the National Competency Standard (SKKNI) for energy managers.

In addition, the government issued the Law on industry in January 2014. The law calls for development of green industry where approaches such as policy formulation, capacity building, standards, and supporting facilities are mandated to be developed by the government. A new regulation in National Energy Policy was also issued with some of its targets being as follows:

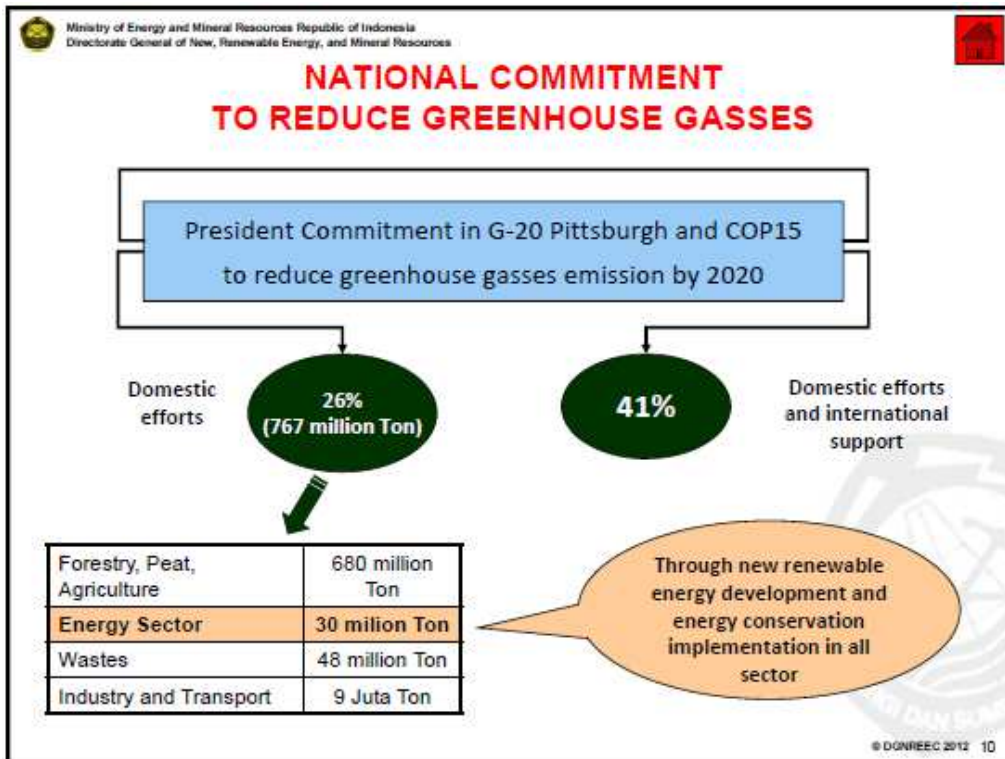
- Ensure efficient use of energy in all sector,
- Reduce energy elasticity below 1 in 2025,
- Reduce energy intensity by 1% annually until 2025,
- Implement energy conservation for energy producer and consumer while considering competitiveness aspects,
- Establish energy conservation policies and guidelines,
- Encourage financial institutions roles in energy efficiency financing.

In October 2014, Indonesia elected a new President, Mr. Joko Widodo. The new government has put phasing-out energy subsidies as a priority. Currently, only a minimal subsidy is provided by the government to the fossil-fuel price. This builds on the previous government's increase of the electricity tariff in July

2014 for non-small households, which is to be reviewed every two months until its economic price is met. These actions will encourage efficient use of fuels and electricity (even though the new government also has indicated their intention to keep industrial electricity tariffs subsidized in order to protect competitiveness and attract new foreign investment. The new government has also planned to install an additional 35,000 MW of electricity generation capacity (most are coal-based power plants). Therefore, it is likely to find in the near future increasing energy prices in Indonesia at a similar or even higher grid-electricity emission factor. These latest developments have strengthened the need of energy efficiency to reduce energy costs and greenhouse gas emissions.

Box 7 describes Indonesia’s national commitment to reduce greenhouse gases in a short and informative way (taken from a 2012 presentation by DGNREEC). A presidential decree on Greenhouse Gas Emission Reductions (RAN-GRK) was issued in 2011 to institutionalized the target and regarding the energy use and production, the policy employs approaches of a) Energy management and implementation of programs on energy efficiency, b) Use of cleaner fuels and c) New and renewable energy.

Box 7 Greenhouse gas emission reduction targets



GEF priorities

The project falls under and supports GEF-4 Climate Change Strategic Program 2 “Promoting energy efficiency in the industrial sector”. This project complies with that objective. By addressing key existing barriers on information, technical capacity and market barriers for industrial energy efficiency in Indonesia, the project will directly contribute to the promotion and increasing of the deployment and diffusion of energy-efficient technologies and practices in industrial production and manufacturing processes (Climate Change Strategic Long-term Objective 2). Its implementation includes improving policy and regulatory frameworks; institutional capacity building for industrial EE and demonstrating the application of industrial EnMS based on ISO 50001 and optimization of industrial energy systems in a number of industries.

UNIDO

The project is fully in line with UNIDO's mandate, core competences and can benefit from UNIDO's comparative advantage as a GEF implementing agency in the sustainable energy and climate change domain. The organization's mandate is to support inclusive and sustainable industrial development, having strong core competences in the field of green industry, cleaner production and sustainable energy. UNIDO contributed significantly to the development of the ISO 50001 energy management system standard (EnMS) and promotion of systems optimization practices. Until now, UNIDO has developed and been implementing similar IEE projects in various countries around the world. In particular, the project is part of the parent programme/umbrella project: "Reducing industry's carbon footprint in South East Asia through compliance with an energy management system (ISO 50001)". The programme is composed of national projects implemented in Indonesia, Malaysia, Myanmar, the Philippines, Thailand, and Vietnam, each designed to facilitate introduction of ISO 50001 through training and capacity building, including a technical focus on systems optimization (see Annex D).

Stakeholder involvement in project design

During the preparatory phase, UNIDO engaged in direct and open discussions with the Ministry of Energy and Mineral Resources and the Ministry of Industry to identify and understand the country's needs and priorities in terms of enhancement of the industrial sector. The government identified eight key sub-sectors and finally four sectors were chosen: a) textile and garments, b) food and beverages, c) pulp and paper, and d) chemicals. The final selection took into account already ongoing or planned initiatives, such as those aimed at cement and steel and foundry sectors.

During the project preparation phase (PPG), a survey of Indonesian industry was carried out, and an awareness raising inception workshop was held, as well as discussions with project counterparts and other stakeholders on technical design parameters and roles and responsibilities of the project partners.

Given the above considerations, **the project is rated as 'highly relevant'**.

3.2 Design of logical framework and progress indicators

Implementation approach and project strategy

The project has not been developed in isolation, but is part of the overall UNIDO efforts to promote energy management and systems optimization. The UNIDO IEE programme assists developing countries and emerging economies by providing policy advice, technical assistance, institutional capacity-building and market transformation support instrumental to the adoption and the implementation in industry of energy management and optimization systems. UNIDO contributed significantly to the development of the ISO 50001 energy management system standard (EnMS). Until now, UNIDO has developed and been implementing similar IEE projects in various countries around the world, including South-East Asia (in Malaysia, Myanmar, Thailand, Indonesia, the Philippines and Vietnam).

Monitoring and evaluation (M&E): logical framework design

The Project Document (CEO Endorsement Request) contains a project M&E plan, outlining specific M&E activities, responsible parties, budgets, and timeframes. It includes the logical framework (a.k.a. results framework or logframe), the annual work plans as well as detailed progress and activity reports. The plan also includes and budgets for a mid-term evaluation and a final project evaluation. The activities outlined in the M&E plan meet GEF minimum standards for M&E. The GEF budget of USD 80,000 is sufficient for the

mandatory mid-term and final evaluations and holding the inception workshop at project start and with this it follows ‘standard’ practice, i.e. in many GEF project M&E is usually budgeted at USD 50,000-80,000.

The project logical framework approach has been used for the design of activities to implement the project. The logical framework developed for this project is well-formulated with outcomes, outputs and progress indicators. Each component has quantitative and clear indicators of output, such as number of executives briefed, number of industry personnel trained, number of competent local expert trained, number of vendors involved and number of pilot implementation both on EnMS and system optimization.

For easy reference, we note that the list of indicators might have benefitted from a numbering system. In the next Chapter, the indicators of the logical framework will be described in detail, giving the evaluators’ assessment of progress in achieving the target value of each indicator.

In general, the reviewers have the opinion that project and M&E design is considered as ‘highly satisfactory’

4. FINDINGS: ASSESSMENT OF RESULTS AND EFFECTIVENESS

The results of the project include the project's outputs and outcomes and longer-term environmental and socio-economic impacts. Changes between the planned and actual results are described, based on the list of project indicators in the logical framework, and explained. External factors that may have affected the achievement of the intended results are identified.

4.3 Achievement of outcomes and outputs; effectiveness

4.3.1 Description of planned outputs and achievements

Boxes 8 to 11 provide a summary of the assessment of project effectiveness in terms of achievement of outcomes and outputs. The presentation of these results follows the structure of outputs and indicators presented in the results framework (logframe) of the Project Document and the annual Progress Reports (PIRs).

Box 8 Assessment of project progress: Component 1

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; Jan. 2015)
Component 1: Introduction of Energy Management Systems and Capacity Building		
<i>Outcome:</i> Compliance to a policy instrument that encourages industrial enterprises to adopt ISO compatible energy management standards to deliver sustainable improvements in industrial energy efficiency and competitiveness		
1.1 Reinforced capacity of government institutions on energy management <ul style="list-style-type: none"> • Workshops to introduce energy management and implementation guidelines and increase the capacity of key government institutions; • Recommend particular actions for promoting & institutionalizing energy management in industrial sector; • Development of a replication and scaling up plan to guide the government in the design and implementation of a long-term energy management program in the industry. 	1) Number of government staff in the PMU <ul style="list-style-type: none"> • PMU created and operational with staff from the government 2) Number of workshops/meetings <ul style="list-style-type: none"> • Key government institutions participating in workshops/meetings 3) Replication and scaling up plan developed <ul style="list-style-type: none"> • Replication and scaling up plan handed to the government 	1. PMU created and operational 2. Awareness: <ul style="list-style-type: none"> • 232 government and other staff participated in the training on EnMS and system optimization; • 204 executives briefed (6 briefings) • BSN has conducted 5 national campaigns in 5 cities as part of their co-financing contribution; Surabaya, Medan, Balikpapan, Batam and Semarang, attended by 200 participants; 3. Replication and scaling up: <ul style="list-style-type: none"> • ISO 50001 was adopted as Indonesia National Standard SNI 50001 by BSN in December 2012; • UNIDO has provided support in the development of the ISO 50001 accreditation scheme by the national accreditation body (KAN) • MEMR initiated the adoption of ISO 50001 EnMS in the revised SKKNI (national personnel competence standard) on energy managers; this also enables energy manager certification of the UNIDO-trained EnMS national experts

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; Jan. 2015)
		<p>Planned (2015-17):</p> <ul style="list-style-type: none"> • More Executives briefings are planned on EnMS and SO
<p>1.2 Training material and tools developed:</p> <ul style="list-style-type: none"> • Development of training material and tools publicly available for participating industries; • Development of guidelines for energy management and ISO 50001 implementation in English and Bahasa Indonesia; • Development of energy performance reporting tools to enable benchmarking in industry sub-sectors and peer- to-peer networking. 	<p>4) Training material on energy management provided to industrial enterprises.</p> <ul style="list-style-type: none"> • Comprehensive training material and tools specifically supporting the development and implementation of energy management compatible with ISO 50001. 	<p>4. Training materials and tools are made available in English and Bahasa Indonesia and have been used in a series of workshops</p> <p>Planned 2015:</p> <ul style="list-style-type: none"> • Translation of EnMS training materials (1/2 day, 2 days and expert training) to Bahasa Indonesia
<p>1.3 National awareness campaign launched on ISO 50001</p>	<p>5) National campaign provided information</p> <ul style="list-style-type: none"> • Promotional literature distributed to industries in Indonesia promoting the adoption of ISO 50001 	<p>5. A project fact sheet on EnMS and System Optimization has been distributed and a website under www.ieeindonesia.org established. The project's efforts have also been covered in a number of magazines and MEMR publications. Further, project staff have taken part in TV interviews for National TV, TVOne and MNC business.</p>
<p>1.4 Trained national experts/factory personnel on energy management.</p> <p><i>Note:</i> for an overview of the EnMS and SO training concept and methodology, the reader is referred to Annex D.</p>	<p>6) Number of trained national experts;</p> <ul style="list-style-type: none"> • Training on energy management in line with ISO 50001 of 25 national experts; <p>7) Number of trained factory personnel</p> <ul style="list-style-type: none"> • 300 factory managers receive briefing (out of which 200 will be trained in energy management system implementation) 	<p>6. To date, 44 national experts/candidate national experts have participated in the EnMS Expert Module:</p> <ul style="list-style-type: none"> • 2-day training for Industries and National Expert Candidates (10 times, 378 persons) • Batch 1: 23 national experts were trained on ISO 50001 (and passed exams) • Batch 2: 22 candidate national experts have completed the 2nd of 3 modules on EnMS expert training. The final exam is scheduled in May 2015⁷. <p>7. Factory personnel:</p> <ul style="list-style-type: none"> • 204 participants attended the combined ISO 50001 and System Optimization awareness workshops (6 times) <p>Planned 2015-2017:</p> <ul style="list-style-type: none"> • Finalization of Batch 2 EnMS expert training

⁷ Each trained local expert should complete their trainings, conduct assessment and written their report before participate in the final exam for national expert certificate.

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; Jan. 2015)
		<ul style="list-style-type: none"> • More 2-day EnMS trainings
1.5 Peer-to-Peer network established between industrial enterprises	8) Network established and use to support program recognition and present savings result from energy management <ul style="list-style-type: none"> • All participating enterprises share their implementation plan on energy management on the network and learn from others' experience and results 	8. Two (2) Peer-to-peer network meetings were conducted to share updates and progress on EnMS implementation, attended by 56 national experts and ministries, as well as pilot companies. Planned 2015-17: 3-4 network meetings per year To institutionalize the network, the Indonesia Energy Foundation (YEI, <i>Yayasan Energi Indonesia</i>) was established as EnMS, SO and EE expert pool and service centre Planned 2015-2017: <ul style="list-style-type: none"> • Planned is to further empower YEI to provide services to industries (and other EE clients) • Development of IEE project and YEI websites (April-May 2015)
Rating: highly satisfactory (HS)		



Box 9 Assessment of project progress: Component 2

Component 2: Capacity building on systems optimization		
<i>Outcome:</i> A cadre of energy efficiency professionals created within industrial facilities as well as consultants and suppliers to initiate a process to transform local markets effectively as to provide industrial systems optimization services		
2.1 Training material and tools developed <ul style="list-style-type: none"> • Development of training material and tools publicly available for participating industries • Development of guidelines for systems assessment and optimization in English and Bahasa 	9) Training material on systems optimization provided to industrial enterprises <ul style="list-style-type: none"> • Availability of translated, comprehensive training material and tools on systems optimization 	9. System optimization training materials and tools are made available in English and Bahasa Indonesia and have been used in a series of workshops;

Indonesia		
<p>2.2 Trained national experts/factory personnel on systems optimization</p> <p>The training setup is described in the main text. below</p>	<p>10) Number of trained national experts</p> <ul style="list-style-type: none"> • 45 national experts <p>11) Number of trained factory personnel</p> <ul style="list-style-type: none"> • 300 factory managers (out of which 200 will be trained in the use of UNIDO tools) 	<p>10. Testing equipment and instruments for the optimization of steam, compressed air and pumping systems have been procured and delivered to the PMU; these have been used in the expert training and pilot assessment;</p> <p>10. To date, 79 national experts/candidate national experts have participated in the SO Expert Modules:</p> <ul style="list-style-type: none"> • 46 national expert candidates have completed the final exam; <p>11. 382 people from industry personnel were trained in 12 2-day trainings on steam system (SSO), pump system (PSO) and compressed air system optimization (CASO)</p> <p>Planned:</p> <ul style="list-style-type: none"> • Certification of Energy Auditor for UNIDO National Experts (training subsidized by MEMR, Certification paid by NE)
<p>2.3 Trained Indonesian-based equipment suppliers on systems optimization</p> <ul style="list-style-type: none"> • Training on systems optimization of pumping, steam systems, and compressed air systems 	<p>12) Number of trained Indonesian-based equipment vendors/suppliers</p> <ul style="list-style-type: none"> • 50 Indonesian-based suppliers of energy-efficient products in systems optimization 	<p>12. Identification of energy efficiency related vendors has been initiated, vendor briefings:</p> <ul style="list-style-type: none"> • Steam system: 22 representatives • Pump system: 37 representatives Compressed air: 25 representatives
Rating: Highly satisfactory (HS)		



Box 10 Assessment of project progress: Component 3

Component 3: Financial capacity to support EE projects in industry		
<i>Outcome:</i> Increased availability of financial and institutional support for industrial energy efficiency initiatives		
<p>3.1 Project evaluation criteria developed and harmonized</p> <ul style="list-style-type: none"> • Development of project evaluation criteria to be used by financial institutions to better rate energy efficiency and 	<p>13) Evaluation criteria are harmonized within financial institutions to help them select best EE projects</p> <ul style="list-style-type: none"> • Criteria for evaluating EE projects are developed and harmonized by main 	<p>13. A working group involving the Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry (MoI), National Financial Institution Authority (OJK), Banks, ESCO associations and UNIDO was established by MEMR to discuss the</p>

<p>systems optimization projects</p> <ul style="list-style-type: none"> • Harmonization of available criteria for evaluation of industrial EE projects. • Preparation of guidelines to assist financial institution to evaluate industrial EE projects. 	<p>financial institutions in Indonesia</p>	<p>capacity building material on EE investment and a number of meetings have been held.</p> <ul style="list-style-type: none"> • Letter of Intent signed by UNIDO and PIP (Government Centre for Investment Unit) on EE investment for UNIDO pilot projects. <p>Planned 2015-27:</p> <ul style="list-style-type: none"> • Facilitate EE project financing by contacting banks and industries
<p>3.2 Training material developed and capacity of industrial enterprises built on bankable energy efficiency projects development</p> <ul style="list-style-type: none"> • Development of training material and tools on bankable EE projects for industrial enterprises in English and Bahasa Indonesia. • Compilation and dissemination of information on financial incentives/schemes available for investments on EE improvements • Training of factory personnel in preparation of bankable energy efficiency project proposals. The learning-by- doing approach to be used will be based on case studies and real projects from participating facilities 	<p>14) Training material relating to financing of energy efficiency project development are provided to industries</p> <ul style="list-style-type: none"> • Availability of translated, comprehensive material and guidelines specifically supporting the development of financial proposal for EE projects <p>15) Number of trained facility managers/personnel in industrial energy efficiency project development</p> <ul style="list-style-type: none"> • Industrial facility managers/personnel have the capacity to analyse systems optimization and energy management projects and use energy and O&M costs reduction projects 	<p>14. Training materials:</p> <ul style="list-style-type: none"> • The final draft of the training materials ready by January 2015; finalization expected by March/April 2015 <p>15. Training for industries energy managers on EE finance were conducted at Bogor and Surabaya participated by 50 representatives; training for banks (29 representatives) and 30 energy managers of the industries.</p> <p>Planned 2015-2017:</p> <ul style="list-style-type: none"> • EE finance trainings planned for energy managers
<p>3.3 Capacity of financial institutions and local banks built to promote and invest in industrial energy efficiency projects</p>	<p>16) Number of financial institutions and local banks personnel trained to understand main features of EE projects and better appraise EE projects proposals</p> <ul style="list-style-type: none"> • Strengthened capacity of financial institutions and local banks on EE projects evaluation 	<p>16. Training for banks on EE financing conducted in Bogor and Surabaya participated by 29 banks representatives.</p> <p>Planned 2015-2017:</p> <ul style="list-style-type: none"> • EE finance trainings for banks planned for in Medan and Surabaya
<p>Rating: Satisfactory (S)</p>		

Box 11 Assessment of project progress: Component 4

Component 4: Implementation of EnMS and SO projects

Outcome: Demonstrable energy saving in participating factories through system optimization and energy management standard and increase adoption of energy management standard by industry

<p>4.1 Energy management systems implemented</p> <ul style="list-style-type: none"> • Support of the implementation of operational improvement projects by national experts, with limited support from UNIDO's international team, in 150 factories selected among the participating industrial facilities. • Direct support to 25 industrial factories to enable them to conform to the ISO 50001 standard. The support consists of extensive on-site assistance from the national energy management experts guided by the UNIDO international experts. 	<p>17) Number of factories with energy management plan</p> <ul style="list-style-type: none"> • 150 factories adopted energy management plans and completed operational improvement projects <p>18) Number of case studies</p> <ul style="list-style-type: none"> • 25 factories adopted and implemented ISO 50001 <p>19) Number of factories registered for peer-to-peer network</p> <ul style="list-style-type: none"> • Participating factories registered with the peer-to-peer network report energy savings 	<p>17. 21 factories have adopted the ISO 50001 planning phase (11 pilot companies of Batch 1 and 10 pilot companies of Batch 2); more factories will be identified through the peer-to-peer network on EnMS;</p> <ul style="list-style-type: none"> • EM: 1st batch pilot companies saved USD 3.17 million USD/year or 31.114 ton CO₂/y reduced <p>18. Factories have adopted the ISO 50001 planning phase; 11 Pilots Companies Batch 1:</p> <ul style="list-style-type: none"> • IKPP Tangerang • Apac Inti Corpora • Argo Pantas • Chingluh Indonesia • Indolakto • KMK Global Sport • Great Giant Pinaple • Bayern Material Science • Bhinneka Karya Manunggal • Heinz ABC • Pabrik Kertas Leces <p>Ten (10) Pilots Companies Batch 2 :</p> <ul style="list-style-type: none"> • Pupuk Kujang • Kwarsa Indah Murni • Nippon Shokubai • United Textile • Daya Manunggal Textile • PQ Silicas • Hatindo Makmur • Inter Aneka Lestari • Bina Nusantara Prima • Ungaran Sari Garmen <p>Five (4) pilot companies, IKPP Tangerang (Pulp paper), Apac Inti Corpora (textile), Chingluh (Textile), Indolakto (Food), were certified to ISO 50001 EnMS.</p> <p>19. Peer-to-peer network meetings were conducted to share updates and progress on EnMS implementation, attended by 56 national experts and representatives from ministries, as well as pilot companies;</p> <p>Planned:</p> <ul style="list-style-type: none"> • The peer-to-peer network is currently being used to share experiences and identify more factories for the implementation of EnMS (replication; target: 10 pilots; Feb-Dec 2015) • Survey on EnMS planning adoption
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		(Oct-Nov 2015)
<p>4.2 Implemented and documented systems optimization demonstration projects</p> <ul style="list-style-type: none"> • Complete 60 systems assessment by the trained Indonesian experts nationwide with limited support from UNIDO international experts. • Implementation of 35 systems optimization projects; • Out of the 35 completed projects, 20 projects are planned to be documented as case studies. The case studies will be developed illustrating financially attractive investments in efficiency improvements for steam, pumps, and compressed air systems. They will document the energy and GHG emission savings directly attributable to the project. 	<p>20) Number of completed steam, pumping, and compressed air systems assessments</p> <ul style="list-style-type: none"> • 60 systems assessments conducted of which 35 led to completed systems optimization projects <p>21) Number of completed systems optimization projects</p> <ul style="list-style-type: none"> • 20 case studies showing GHG emission reductions 	<p>20. Assessments (37) completed by SO National Experts</p> <ul style="list-style-type: none"> • SSO: <ul style="list-style-type: none"> ○ Sentra Usaha Jayatama ○ Bhineka Karya Manunggal ○ Mitsubishi Chemical ○ Sansan Saudaratex Jaya ○ Argo Pantas ○ Asahimas Chemical ○ Indah Kiat Pulp Paper ○ Indolakto ○ Tripolita/Chandra Asri PP ○ Indo Acidatama ○ Chandra Asri Petrochemical Olefin ○ Lautan Otsuka Chemical ○ Nippon Shokubai ○ Biofarma ○ United Textile ○ Stryrindo Mono Indonesia ○ Indah Jaya Textile ○ Asia Pacific Fiber • CASO: <ul style="list-style-type: none"> ○ Clariant Chemical Tangerang ○ Chandra Asri Petrochemical ○ Clariant Chemical Cilegon ○ Indorama Technologies ○ Indorama Synthetics ○ Asahimas Chemical ○ Evonik Indonesia ○ Coca Cola Bottling Bali ○ Suparma Surabaya ○ Lautan Otsuka Chemical ○ CIBA Vision Batam ○ Grand Textile ○ Asia Pacific Fiber ○ Greenfield Indonesia ○ Propan Raya • Pumps <ul style="list-style-type: none"> ○ Bhineka Karya Manunggal ○ Toba Pulp Lestari ○ Indolakto <p>21. Over 72 projects on system optimizations were identified during the assessments: the identified project has potential CO₂ reduction of 92,784 ton/y, and potential saving of USD 10.76 million per year, simple payback of 9 months.</p> <p>Planned:</p> <ul style="list-style-type: none"> • Survey on SO project implementation and CO₂ reduction (Feb-Dec 2015); Monitor project impact to energy saving and CO₂ reduction • More SO pilot company assessments (target: 15 pilots) and due diligence (DD) by NE

<p>4.3 Recognition program developed and implemented</p> <ul style="list-style-type: none"> • Management of a peer-to-peer database and the website. Participating industries will provide their energy savings, which will then be made available through the peer-to-peer network website. • Every year, awards will be given to industries based on their annual savings performance. 	<p>22) Recognition program for participating companies established</p> <ul style="list-style-type: none"> • Formal recognition of factories achieving power/fuel consumption reductions reflected in government reports 	<p>22. IKPP Tangerang was covered in the MEMR magazine as a successful company having implemented an energy management system, supported by the UNIDO project. IKPP was also recommended by MEMR as an energy efficiency champion and covered by Media, an Indonesia newspaper. As other countries are currently also undertaking such projects, it is expected that they will receive similar recognition</p> <p>Planned: Discussion on reward scheme for industries adopted ISO 50001</p>
<p>Rating: satisfactory (S)</p>		

4.3.2 Assessment of effectiveness

Overall, the planned activities in this project have been implemented within the periods they were planned for in the project work plan with some slight delays. Thus, **the project implementation course to date has been very good with overreaching achievements in the training and awareness components 1 and 2 (hence the rating as ‘highly satisfactory’) and ‘satisfactory’ achievements in Components 3 and 4.**

Components 1 and 2

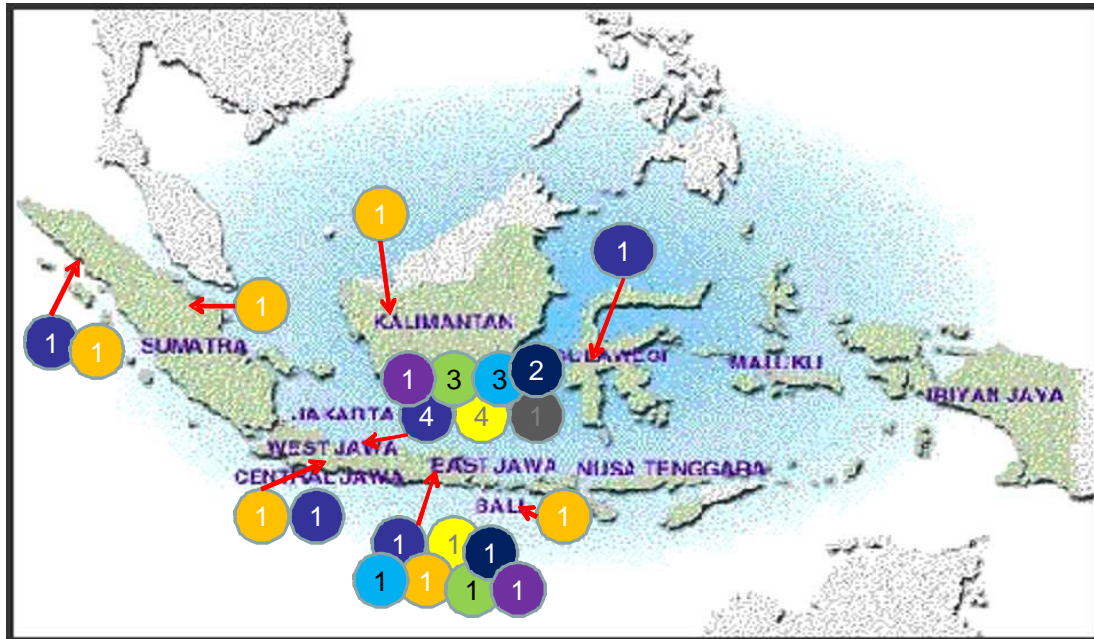
A total number of about 800 representatives of industry, consultants, government staff and university lecturers were have participated in briefings and awareness workshops on EnMS and SO (until end of 2014). The campaign has used promotional literature for the project and on ISO 50001 and systems optimization, press releases, and presentations to industry associations.

The technical capacity building consists of two-step trainings. The first step targets trainers where international experts deliver intensive training to national experts to a level such that they can train others. At the second step, international and national experts provide trainings and assistance to factory personnel. In the first part, 378 participated in 2-day training events on EnMS and 382 people participated in training on the three focus areas in systems optimization (pumps, compressed air and steam). This has been followed by more in-depth training on EnMS (expert training) in which 43 experts have participated (likely all to pass examination by May 2015) and training in one of the three SO experts modules (79 experts, in which 46 have passed exams so far). For a general overview on the approach and methodology of the various EnMS and SO trainings, the reader is referred to Annex D.

Component 4

Experts (EnMS, SO) may come from industry (in-house experts), are consultants or may come from academia/institutes, and trainings have therefore drawn a mix. As part of the training process, the trained local expert needs to implement their knowledge in pilot companies to assist them in setting up ISO 50001 and save energy through system optimization. Thus, the project has successfully supported 21 pilot companies to adopt ISO 50001, of which 4 have now been certified to ISO 50001; this is an indication of the national experts' capacity to support ISO 50001 adoption. For 2015 at least 10 more pilots are planned.

Box 12 Location of trainings and events



Source: Presentation by Aris I. Nugrahanto (4th PSC meeting, March 2015)

Of the 79 national expert candidates on system optimization, at least 46 are expected to complete the assignments and participate in the final exam. Additionally, over 70 project opportunities on system optimizations have been identified during the 37 SO assessments. With 2 years remaining of project duration and the number of trained experts, conducting an additional 15-30 assessments is an achievable target and with that the projects would have by far exceeded the original target of 60 assessments.

The companies interviewed during the evaluation in general stated that the project has catalyzed the adoption of energy management systems in their office and production facilities, and are encouraged to make energy management plans with short-term and mid-term objectives. Four case studies have been prepared, of PT Argas Pantes, PT. Apac Inti Corpora, Indiah Kiat Pulp and Paper and PT. KMK Global Sports. A summary of main features is given in Box 12.

Based on the results showed in capacity building of experts and with companies, the first two components are rated as ‘highly satisfactory’. Nonetheless, the proof of the pudding is in the eating, i.e. in achieving demonstrable results in the companies the experts have been working with in Component 4. In other words, how much of the measures and options identified in energy management planning and systems optimization assessments have actually be considered by company management and resulted in implementation and completion. For this reason, a survey is planned for in 2015 on the progress in SO project implementation and to be able to monitor the resulting project impact to energy saving and CO₂ reduction.

Box 13 Case studies EnMS and SO; selected companies

PT Agro Pantas is an integrated textile company of spinning, weaving and wet processing. Before joining the UNIDO programme, Argo Pantas had already implemented other standards, such as ISO 9001 (quality management system) and 14001 (environmental management system, EMS). A number of project-by-project energy efficiency interventions had been implemented, but not in an integrated energy management approach. With UNIDO support, an ISO 50001 compliant EnMS (energy management system) was implemented, involving all key employees in the day-to-day management of energy in the various SEUs (significant energy users). The EnMS has been incorporated into the existing Business Process Improvement Scheme. Under the guidance of the UNIDO-trained experts, Argo Pantas identified 25 opportunities through the EnMS approach, achieving savings of 12.2% per year achieved, equivalent to approximately 3,056,024 kWh (e.g. automation of water overflow system; changing the setting of the tension roller to reduce energy consumption, etc.). The company has further developed an energy optimization approach.

PT. Indah Kiat Pulp & Paper (IKPP), based in South Tangerang, was established in 1976 and has been producing wood-free paper since then; the company began producing specialty paper in the 1990s. IKPP Tangerang has implemented several management systems (ISO 9001, 14001 and 26000 on social responsibility). With support of the UNIDO IEE project, the company started implementing ISO 50001 in 2012 and became the first paper mill company in Indonesia to receive certification to ISO 50001. A potential energy performance improvement of 10% was identified and a majority of the actions were easily implemented with most savings coming from day-to-day operational controls.

PT. KMK Global Sports has been a producer of leading global brands of footwear since 2001, producing around 1.2 million pairs of shoes per month for both the domestic and international markets. With the support of the UNIDO project, KMK has implemented a structured approach to energy management, developing an energy policy and an EnMS procedure, setting up the energy team, identifying the significant energy usage area, setting up objectives and targets, sharing energy awareness through trainings organized for top- and mid-level management, and providing and installing monitoring devices for machinery. Before, KMK did implement energy efficiency measures but on a case-by-case basis without the support of a solid energy Team. The initiatives identified and implemented resulted in a 11.3% improvement in various sections which is monitored by energy performance as compared to the energy baseline of the previous year.

PT. Apac Inti Corpora (APACINTI) is a textile and textile product manufacturer. Through cooperation with the project, Apac Inti was certified to ISO 50001 in 2014. The company has developed an energy policy and an EnMS procedure, identified the significant energy usage areas of their facilities, set up a dedicated energy team and established objectives and targets for the mid- and long-term. The company was able to identify and focus on low-cost energy measures, making technical aspects a priority in the initial stage of the project.

Pilot Company Name	Subsector	Intervention	Action Plan Implemented	CO2 Reduced (ton/year)	Cost Saving (USD/year)	Investment (USD)	Simple payback (years)
Argo Pantas (saved 12.2% in the 1st year)	Textile	ENMS	Install water overflow automatic controller	2,720	275,042	40,000	0.15
			Change central blower position				
			Change roller motor tension setting				
PT. Argo Pantas	Textile	SSO	Reduce LP steam demand by 1.6% (optimize the users)	2,117	332,000	100,000	0.30
			Boiler efficiency improvement from 83% to 89% by reduce oxygen excess	1,927	301,000	50,000	0.17
			Install new blowdown HE	137	21,000	10,000	0.48
Apac Inti Corpora	Textile	EnMS	Replace screw compressor	16,020	1,710,000	150,000	0.09
			Install motor inverter				
			Purchase new machine with energy saving device				
Indah Kiat Pulp Paper	Pulp and Paper	EnMS	Control differential pressure of the compressor dyer	9,790	935,000	100,000	0.11
			Control refine process at the stock preparation area				
			Control paper moisture				
			Improve steam trap control and other steam losses				
			Manage the power factor				
Indah Kiat Pulp Paper	Pulp and Paper	SSO	Increase temperature of condensate recovered from 75°C to 80°C	12,968	428,019	150,000	0.35
			Increase condensate recovery from 73% to 80%				
			Modify make up water temp from 31°C to 40°C				
			Reduce steam demand by 5 ton/hour				
			Reduce blowdown rate from 4.2% to 2%				
KMK Global Sport	Footwear	EnMS	Reduce the running hour to reduce the baseload	1,558	148,750	25,000	0.17
			Reduce compressed air pressure , adjusted to the demand in the proses				
			Change the setting of the cascade of chiller				

For the moment, we rate the results of Component 4 as ‘satisfactory’ with the observation that the final evaluators (at the end of the project) should consider rating ‘highly satisfactory’ if all energy efficiency actions proposed (see Box 11) will actually have been implemented.

A peer-to-peer network will be created and managed by the project management unit to facilitate information exchange between the participating facilities. Participants in the two-day training sessions have been registered in the peer-to-peer network.

Component 3

The project has focused on capacity strengthening of the financial sector regarding energy efficiency. In Component 3 on energy efficiency financing, progress has been made with the establishment of a working group involving all relevant stakeholders including OJK, ministries and banks. Activities will be the development and harmonization of project evaluation criteria to be used by financial institutions to better rate energy efficiency projects. The criteria will take into account lifecycle costs of efficient technologies and best practices. Preparation of guidelines to assist financial institutions in enhancing their capacity to evaluate industrial EE projects and the dissemination of these guidelines is planned. This has been accompanied by trainings to local banks and government financial institutions to understand the main features of EE projects.

Another output will include the development of training material and tools and build the capacity of industrial facility managers to develop bankable projects. The training material development involved the MEMR, MOI, OJK, banks, services providers, and experts. The developed training material than delivered to energy managers of industries and bank /financial institution staff.

It is not quite clear to the Evaluators what the role of finance in general is in the context of energy management planning and systems optimization. In principle, the first recommendations coming out of energy planning and systems optimization assessment stress no-cost and low-cost options to be followed later by larger investments in processes and systems. However, the companies that participate in the project tend to be larger companies that would finance most energy efficiency activities as part of the company’s balance sheet rather than having to go to external financiers.

4.4 Environmental and longer-term impacts

Global environmental impacts

Project outputs and outcome contribute to the implementation of the GEF Focal Area on Climate Change, i.e. by reducing the energy-use related emissions of greenhouse gases (GHG) in the participating industry sectors.

Box 14 Overview of expected direct and indirect emission reduction by mid-2016

	Project activity	Number of Pilot companies with potential savings	Actual CO ₂ Reduced (ton/year)	Identified CO ₂ Reduced (ton/year)	Energy Cost Saving (USD/year)	Investment (USD)	Simple payback (years)
1	EnMS Batch 1	11	31,144	32,955	3,169,722	355,000	0.11
2	EnMS Batch 2	11	-	-	-	-	
3	SSO Batch 1	5	-	28,235	2,429,019	1,927,000	0.79
4	SSO Batch 2	12	-	55,375	7,383,898	5,462,399	0.74
5	PSO	4	-	3,229	326,500	90,000	0.28
6	CASO Batch 1	5	-	5,308	506,918	355,000	0.70
7	CASO Batch 2	10	-	638	120,546	193,688	1.61
TOTAL			31,144	125,740	13,936,603	8,383,086	0.60

Assuming a lifetime of 10 years of the measures, this implies direct emission reduction impact of 1,256 ktCO₂.

Box 14 provides an overview of the expected energy savings, CO₂ emission reduction and monetary savings as result of various energy management (32,955 tCO₂/yr) and systems optimization actions (steam, SSO; pumps, PSO; compressed air, CASO; 92,786 tCO₂/yr).

This compares favourably with the original estimates of direct greenhouse gas emission as given in the Project Document and summarized in Box below:

Box 15 GHG emission reduction estimates (Project Document)

Savings	# of companies	% savings	Fuel (GJ)	Power (MWh)
<i>Energy management</i>				
- Operational improvement	150	0.25%	70,177	11,938
- implement	25	2%	72,063	12,258
<i>Systems optimization</i>				
- steam	13	12%	261,437	
- compressed air	14	20%		8,199
- 'pumping	18	15%		5,089
<i>Total annual savings</i>			403,677	37,484
<i>Emission reduction (tCO₂/yr)</i>			34,044	33,398
Total (fuel and electricity)			67,442	tCO ₂ /yr
Lifetime (10 yrs)			674,420	tCO ₂

Note:

- Figures on annual savings are taken from Annex F in the CEO Endorsement Request
- Lifetime reduction is calculated by multiplying with assumed average lifetime (=10 years)
- Assumed emission factors: 0.891 tCO₂/MWh (Java grid), fuel oil: 74.07 tCO₂/TJ and coal: 94.6 tCO₂/TJ and use of coal and fuel oil is taken as 50-50% for boiler operations

Socio-economic and gender aspects

Gender is not a particular area of focus in the project design. Most trained experts have been male, not surprisingly given the traditional male domination in this field of technology. Nonetheless, in the first batch of 20 EnMS experts, three were women. To make the gender dimension in the various project activities more pronounced, gender-disaggregated indicators could be included in the planned company survey (see Box 11, Output 4.2) to be able to measure on gender of the project.

The improvement of energy efficiency in the Indonesian industry will result in a reduction in energy demand and intensity, as well as improved competitiveness and working environment in industry. In addition, the extensive awareness raising and capacity building activities will result in local experts with improved technical skill sets and might offer their abilities in the regional energy efficiency market.

Effectiveness

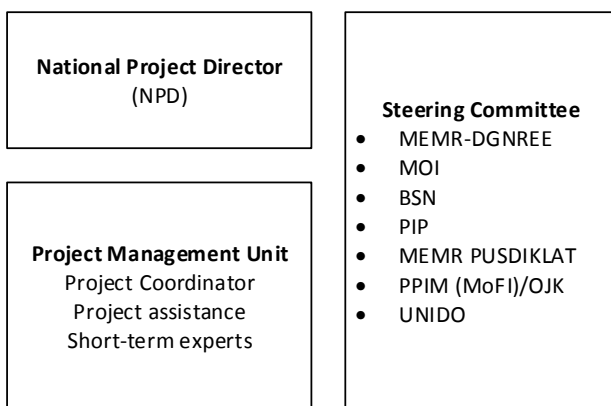
Based on findings presented in the Chapter, **project effectiveness at time of the mid-term evaluation is rated as between satisfactory and highly satisfactory (S-HS).**

5. FINDINGS: IMPLEMENTATION AND EFFICIENCY

5.1 Management and administration

Coordination and management

The following figure provides an overview of the project's management arrangements.



The *National Project Director's* (NPD)⁸ overall role has been to ensure the successful execution and implementation of the project toward achieving project results. The *Project Management Unit* is responsible for the overall operational management and implementation of the project activities; it manages the day-to-day operations of the project and is based at the premises provided by the MEMR. The PMU is headed by a National Project Coordinator⁹. The Project Steering Committee (PSC) consists of high-level representatives from the three project partners MEMR, MOI, BSN, as well as PIP, OJK and UNIDO¹⁰. The PSC has provided overall guidance to the implementation of the project, and good coordination among participating agencies and other organizations. The PSC has met four times, the last time in March 2015.

It was mentioned during the review that the various institutions (MEMR, MOI and BSN) and other institutions (such as OJK and PIP) have been working in close cooperation in this project and the project has been well-recognised as providing the platform for such a cooperation. Various respondents during the review mentioned that project has provided a good example of three government entities (MEMR, MOI and BSN) working successfully together.

Preparation and readiness; delays in implementation

Counterpart resources and adequate project management arrangements are in place at project entry, and capacities of executing institution and counterparts were properly considered when the project was designed; partnership arrangements properly identified and the roles and responsibilities negotiated prior to project approval. The project has faced some delays; originally planned to start in November 2011 (CEO Endorsement date is April 2011), project activities did not really start until February 2012 and the National

⁸ Ms. Maritje Hutapea

⁹ Mr. Aris Ika Nugrahanto

¹⁰ Ministry of Energy and Mineral Resources – DG New & Renewable Energy and Energy Conservation (MEMR-DGNREEC), Ministry of Industry (MoI), National Standardization Agency (BSN), Government Investment Agency (PIP), Centre for Financing and Multilateral Policy (PPIM) of Ministry of Finance (MoFI), Financial Services Authority (OJK), Training Centre for Electricity, NREEC (MEMR PUSIDKLAT KEBTKE)

Project Coordinator joined in April 2012. The project's Inception workshop was held in June 2012. Due to the delay in starting up activities, the proposed implementation end date was revised (from Aug 2016) to Dec 2017¹¹. Delays in the start of project execution can be attributed to the coordination mechanisms that were required among relevant stakeholders and a lengthy process for project registration with the Ministry of Finance and National Planning Agency (BAPPENAS) which is a must for all bilateral and multilateral project implementation in Indonesia.

Since then, project progress has been satisfactory, starting with the procurement and delivery of the testing equipment and instruments to the project office (PMU) at MEMR. International experts were recruited and local experts for EnMS and system optimization trainings were identified for further screening by international experts for final selection. A number of companies were identified to become pilot industry facilities.

The national management and overall coordination mechanisms seem to be efficient and effective. All parties are very aware of their roles in the Project and act within their appropriate responsibilities. There were no comments or issues on the overall project management by UNIDO or on the project execution identified by the PSC; in fact, during the some interviews with stakeholders the Project was praised as an example of large government entities (MEMR, MOI, BSN) being able to work closely together.

The rating for Project Coordination and Management is **satisfactory**.

5.2 Supervision; monitoring and evaluation (M&E)

Assessment of M&E implementation

In coordination with the UNIDO Country Office and the Project Steering Committee, the PMU has provided effectively periodic oversight in implementation by means of overviews of inputs, work schedules and results according to the reportorial requirements of UNIDO and GEF. Regarding reporting, three Project Implementation Reports (PIRs) have been formulated (Oct 2012; Oct 2013 and Dec 2014). These are very detailed reports that provide exhaustive aspects of the periodical achievements of the project with narrative links back to the outcomes, outputs and targets elaborated in the logical framework. This process, now being supplemented with this Mid-Term Review, has strongly supported the monitoring of progress in implementation and results and has helped the Steering Committee in detecting issues that need to be addressed accordingly.

An Inception workshop was held in June 2012¹². The Project Steering Committee has met on four occasions (June 2012, March 2013, March 2014 and March 2015). Apart from the PIRs, the National Project Coordinator has presented an extensive overview (PowerPoint presentation) on achievements and issues to be discussed. During the 3rd PSC meeting (2014), MoI recommended to expand into other high energy-intensive industries, such as fertilizers, glass and ceramics, or iron and steel. In response, PMU started to involve fertilizers and glass ceramic industries in the project's training activities. At the 3rd meeting, it was also decided that the energy efficiency financing training (Component 3) should involve the financial institutions PIP and OJK and individual energy service companies (ESCOs).

UNIDO supervision and backstopping

UNIDO staff has provided quality support and advice to the project coming from UNIDO HQ and also hired international consultants bringing the best available knowledge and practice, providing the right staffing levels, continuity and frequency of field visits for the project, identifying problems in a timely manner and

¹¹ At Second Project Steering Committee (2013)

¹² Attended by 101 participants representing industries, government agencies, professional associations, financial Institutions, multilateral agencies, media, energy consultants and service providers

providing appropriate response. The Project Manager at HQ and National Project Coordinator (at PMU) have continuously monitored and the Project Manager has visited the country and project sites (e.g. coinciding with PSC meetings).

Overall, we can rate the implementation of M&E and its use for adaptive management as **highly satisfactory**.

5.3 Stakeholder involvement; communications

Generally, there is a very high level of stakeholder involvement in the project. Involvement of relevant stakeholders, sharing information and consultations is carried out on several levels within the Project. National energy experts and other practitioners plan to organise themselves in a foundation, called YEI, with the aim of facilitating services by these experts to industries and other clients on energy efficiency.

On a managerial and planning level, stakeholders are engaged within the Project Steering Committee (PSC), which is established to provide strategic guidance on the project implementation and facilitation of the coordination of various Government authorities, institutions and the industries. On participation by government stakeholders, it can be mentioned that government support to the project is demonstrated by providing co-financing to conduct trainings and by the commitment to the adoption of EnMS ISO 50001 as part of government policies. The inclusion of ISO 50001 in the SKKNI (national personnel competency standard) will boost the awareness of energy managers in the industries on ISO 50001.

The project implemented appropriate outreach and public awareness campaigns through publishing of technical evaluation reports, manuals, newspapers, articles. Up to now, a dedicated project website has not been established. However, during the 3rd PSC meeting it was decided to set such a website up and should be up and running by May 2015.

5.4 GEF budget and co-financing

Financial planning and realization

The Project has appropriate financial controls, including reporting and planning, that allows management to make informed decisions regarding the budget and allows for timely flow of funds. UNIDO manages the overall project budget and procures all services required, as well as preparing timely financial reports to the GEF, in accordance with the established UNIDO rules and regulations and applicable GEF requirements.

A summary of the performance of the project in terms of actual expenditures per main project component and budget category is given in the Box 16. It should be noted that detailed financial management or disbursement issues are not the subject of this MTR as such, as the project has a separate financial auditing process. This section analyses the progress of expenditures in relation with the progress of outputs and results.

The following can be observed:

- The disbursement rate (of the GEF funds) has been 65% (USD 1,4 million of the GEF budget of USD 2.18 million);
- The realized co-financing is quite low (6%). However, the government co-financing realized is 27% of the committed co-financing and large part of government financed has been in cash

Government cash contributions have been for supporting the various trainings (MEMR, MOI, BSN), for the working group that revises the energy manager SKKNI and ISO 150001 accreditation scheme as well as to support the awareness campaigns.

Box 16 Overview of GEF budget and expenditures; committed and realized co-financing

GEF budget (USD)	Original budget	Expenditures (2012-14)		Original budget	Expenditures (early 2015)
International experts	530,000	711,892	Component 1	600,000	918,651
National experts	550,000	240,874	Component 2	607,380	204,192
Travel	200,000	73,204	Component 3	275,000	25,969
Subcontracts	280,000	19,661	Component 4	400,000	37,281
Training	270,000	146,544	M&E	80,000	
Equipment	245,000	196,096	Project mngt.	218,000	103,706
Sundries/misc	105,380	26,699	1st 2 year		193,088
Total	2,180,380	1,414,970		2,180,380	1,482,887

Co-financing (USD)	Committed	Realized		
		Cash	In-kind	Total
MEMR	1,545,000	143,760	88,500	232,260
MOI	280,000	169,500	13,500	183,000
BSN	350,000	171,400	9,000	180,400
Industries		208,083		208,083
Financial sector	12,000,000			0
Total	14,175,000	692,743	111,000	803,743
Cash	13,113,000	692,743		
In-kind	1,062,000		111,000	

Source: based on data provided by PMU (until Dec 2014). Note: expenditures per component could not be provided for first two years due the fact that UNIDO's SAP financial system was only introduced in 2013.

Regarding the financial sector, the co-financing realization reflects the amount of loans actually given for energy management and system optimization, which is zero. This does not mean that the private sector is not committed, on the contrary, the various participating companies have already drawn plans for energy efficiency improvements with investments that total USD 8.38 million (of which about USD 208,000 was realized by Dec 2014, which has increased to over USD 0.6 million; see Box 14). Given the fact that more pilot projects are planned in Component 4 (in both energy management and systems optimization), it is not unlikely that by the end of the project, co-financing by private sector might reach the USD 12 million originally committed. The contributions from the private sector (both cash and in-kind) are estimates, based on the national experts' assessments. In addition, ongoing surveys of operational improvement projects that are planned after this MTR will allow the project to gain a better understanding of the actual contributions of the private sector.

Procurement

Procurement has not been a major issue with 'equipment' a minor component in the overall budget. Apart from office equipment, it mainly consists of the testing equipment and instrument for optimization of steam, compressed air and pumping systems. This equipment was procured in 2012 and delivered to the PMU. Pilot companies are selected in an interactive process, in which companies express their interest (e.g. 5 companies expressed their support at the inception report; followed by 10 more thereafter) or are identified by MEMR and checked for compliance (e.g. are within the industrial target subsectors; are willing to share info to the general public as pilot company).

Efficiency and ratings

The assessment of efficiency should answer whether the project is implemented in a cost-effective way and presents least-cost option. Efficiency also considers adequacy of contributions of government as well as the national executing agency for project implementation. Given the findings in this Chapter 5, we have the opinion that all efforts were undertaken to ensure cost-effectiveness of project results. Only co-financing has

not been forthcoming, but this can be explained by the time lag in realizing private sector investments which should pick up in the second half of project implementation. **The overall rating for efficiency is satisfactory.**

6. SUSTAINABILITY

In GEF evaluations, the concept of *sustainability* is understood as the likelihood of continued benefits after the project ends. The assessment will look at the sustainability of outcomes and review technical, financial and organizational sustainability and how this sustainability will be affected by risks, both exogenous and endogenous risks.

Box 17 Risk management and sustainability of project

Risks	Project mitigation	Assessment by MTR review team
<p>Institutional</p> <ul style="list-style-type: none"> Change in government priorities leading to reduced support for the project, implementation delays, and reductions in the effectiveness of delivery of the training and demonstration programs. Capacity of MEMR to manage the UNIDO/GEF project diverted to other projects. 	<p>The project actively supports MEMR mandated responsibilities, such as mandated requirement for large energy consumers on energy management and audits for enterprises and adopting ISO 50001.</p>	<p>So far, MEMR, MOI and BSN have been actively supporting (as also evidenced by the realized co-financing for the training of around USD 130,000) and involved OJK and PIP in the financial trainings. These government entities are also actively involved in the Project and at the moment their support does not seem in doubt.</p> <p>Sustainability rating: likely</p>
<p>Technological</p> <ul style="list-style-type: none"> Unwillingness of industrial energy-using firms concerns over disruption to current operation and business priorities and on techno-economic feasibility. Unwillingness to bear even minimal costs of project participation 	<p>To deliver the required capacity building, UNIDO will employ the services of highly skilled experts with systems specific expertise (steam and compressed air) and proven training skills to convince senior and technical management at company level.</p>	<p>Technical risks associated with the optimization of compressed air and steam systems are very low. In fact, considerable energy savings have been achieved in many countries through system level efficiency opportunities. Most options are ‘low hanging fruits’ and the pilot implementation experiences have shown that the project provides adequate and practical EnMS and OS tools to pick these fruits.</p> <p>Sustainability rating: likely</p>
<p>Project-specific sustainability aspects</p> <ul style="list-style-type: none"> Failure to achieve outcomes due to inability to scale up outputs Failure to achieve sustainable market transformation 	<p>Through its linkage with ISO 50001, the project builds on the regular audit process, which assures that energy- efficient operations become part of each participating firm’s operating culture.</p> <p>The combination of standards with tools and training will allow companies to “hardwire” industrial EE projects/investments into management structures, such as ISO, that provide documentation, independent verification, and continuous improvement.</p>	<p>The capacity and the awareness of major players will be enhanced including equipment vendors, equipment buyers (industry), services providers (consultants, designers), financiers and the government.</p> <p>In order to help industries’ easy access to the trained local experts, a foundation was established as a human resources pool. Each participant of the two-day training session will be registered in the peer-to-peer network. Each participating factory will have access to support from the national energy management experts to assist them in implementing their energy management system and operational improvements</p> <p>Sustainability rating: likely</p>

<p>Financial</p> <ul style="list-style-type: none"> • Following the systems optimization audit and report, enterprises might not be willing to invest and finance the installation of new equipment, even if the energy reduction potential is important; • Financial government resources are not been made available 	<p>Government regulation no. 70/2009 which made it mandatory to implement energy management for larger energy consumers (consuming energy more than 6,000 TOE per year)</p> <p>The project is working with MEMR to conduct trainings for industry's energy managers and for risk management staff of financial institutions/banks on energy efficiency financing including how to develop a bankable proposal</p>	<p>The regulation 70/2009 has become a strong motivation for the targeted industries to actively participate in the project, but this may be less true for companies that consume less than the threshold figure.</p> <p>Incentives to promote EE are mooted by the Ministry of Finance. The Government has also established a regulation to phase-out the electricity subsidy.</p> <p>OJK, the National Authority Body, is committed to push and persuade financial institutions to increase their portfolio of EE investments.</p> <p>Sustainability rating: likely</p>
<p>Socio-political risks</p> <ul style="list-style-type: none"> • Legal frameworks, relevant policies and governance structures to promote EE and EE standards are not in place 	<p>The project activities have been developed consistently with the possibility of ISO 50001 coming into effect later than expected, but was adopted in 2012.</p>	<p>The project has supported the BSN to adopt ISO 50001 as SNI 50001, and to develop the accreditation scheme of ISO 50001 (to encourage certification bodies to develop an EnMS market). The project has also stimulated the adoption process of ISO 50001 as the requirement of National Competent Standard (SKKNI) of energy manager by MEMR</p> <p>Sustainability rating: likely</p>
<p>Environmental risks</p> <ul style="list-style-type: none"> • Factors, that can influence future benefits of the project 	<p>Not identified</p>	<p>No environmental risks connected to sustainability could be identified related with the project that may jeopardize sustainability of the outcomes, which means the environmental sustainability is likely to be achieved.</p>

Note:

Sustainability and risk descriptions are based on Project Document (CEO ER), PIR 2014 as well as assessments by the MTR team

Potential for replication

The industrial beneficiaries selected for this study can be categorized as medium and large size industries. The project will directly provide benefits to 300 facilities in the four selected sub-sectors. However, the replication opportunity is much larger. Within these sub-sectors, there are approximately 13,000 facilities, which represent 48% of medium and large size manufacturing units in Indonesia. In all industrial subsectors, there are over 40,000 facilities. One of the key requirements for replicability is to overcome the low penetration of energy management and systems optimization in industry due to the lack of knowledge of its mechanisms and its long-term benefits. This is addressed through increased institutional and technical capacity and awareness, as well as demonstration projects in the country and the development of a network where industrial facility managers and experts can share their experiences regarding the implementation of energy efficiency projects.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Summary of findings and ratings

The following table provides a summary of the ratings for a) progress towards results, b) project implementation and adaptive management and c) sustainability. Although not strictly required, a rating for ‘design’ has been added.

Box 18 Summary of main conclusions and ratings

Criteria	Summary concluding remarks	Rating
Attainment of objectives and result (overall ratings)		S-HS (satisfactory to highly satisfactory)
1. Design and relevance <i>UNIDO criterion:</i> implementation approach M&E design	<p>The overall project design is relevant to the national energy priorities, and has enjoyed strong participation of local stakeholders in project identification. The project is relevant to UNIDO and policies and fully relevant to the GEF focal area of climate change</p> <p>The Logical Framework with its outcomes and outputs, as well as target indicators, is developed adequately and allows for the monitoring of project results. The M&E process and specific reporting requirements, are sufficiently identified in the Project Document (CEO ER). The budget provided for M&E at the planning stage was sufficient. Regarding project strategy, it is worth mentioning that the project is an integral part of overall UNIDO efforts to promote energy management and systems optimization. In South-East Asia, similar projects are being implemented in Malaysia, Myanmar, Thailand, Indonesia, the Philippines and Vietnam, allowing the exchange of ideas and experiences, while the training programs follow a similar proven setup that can be adapted to local circumstances and language, as needed.</p> <p>Certain aspects regarding sustainability are not in the original project design, such as how the peer-to-peer network and training could be institutionalised to ensure functioning beyond the project’s end. This issue has been given attention during implementation, but having considered this already during design would have been better.</p>	Relevance: HL (highly relevant) Design: HS (highly satisfactory)
2. Attainment of results; effectiveness	<p>The project has been under implementation for almost 3 years and its current achievements compared to the targets show highly satisfactory progress. The number of trained industry personnel has exceeded the target and the number of experts to be trained will be achieved early 2015. Component 3 on energy efficiency financing has made good progress with the establishment of a working group involving all relevant stakeholders including OJK, ministries and banks and preparing training for banks and on financial issues for companies. On</p>	S-HS (satisfactory to highly satisfactory)

	Component 4, the project has supported many factories to implement EnMS and SO improvement projects that will result in significant energy savings and a reduction in GHG emissions. Based on the satisfactory progress achieved so far, it is expected that the project will achieve its global environment and development objectives and effectiveness is rated accordingly.	
3. M&E; Efficiency; <i>UNIDO criteria:</i> Quality at entry & preparedness; UNIDO supervision and backstopping;	Project management has been successfully carried out by the UNIDO Project Manager and Project Management Unit (PMU) led by the Project Coordinator. These have drafted the progress reports that provide the necessary aspects of the periodical achievements of the project with narrative link back to the outcomes, outputs and targets elaborated in the logical framework. There has been good cooperation between the various project partners (MEMR, MOI, BSN, OJK and PIP) that closely work together with the PMU and meet annually in the Project Steering Committee (PSC). Although counterpart resources and adequate project management arrangements were in place at project entry, the project initiation has met some delays, but currently project implementation is well on track. Realizing time planned may be too short the project implementation period was extended until December 2017.	S (satisfactory)
4. Sustainability and risks; external factors	There are no major financial, socio-political or institutional and governance risks to sustainability identified. Technical risks associated with the optimization of compressed air and steam systems are very low. In fact, considerable energy savings have been achieved in many countries through system level efficiency opportunities. However, it should be noted that the companies participating are mostly larger companies that have already implemented similar ISO environment standard and/or due to the size need to mandatorily implement energy management. In future, the challenge may be in passing the EE message to other companies that may not have such experiences with management systems in general; and/or are smaller in size.	Likely (L)

7.2 Recommendations

For the Project Team and national government partners

1) *National foundation YEI*

The project has supported the establishment of the *Yayasan Energy Indonesia* (YEI), the foundation that should institutionalise the peer-to-peer network of energy management and systems optimization experts and provide services. This would contribute to sustainability as it would function as a pool of expertise that beneficiaries (companies, financial institutions, government) can resort to when needed. The project website could be incorporated later in the YEI website, in which participating industries can provide info on experiences and best practices. YEI could also work with MEMR to implement a recognition programme and award scheme for companies (as envisaged in output 4.3).

One issue that remains is definition of the exact mandate and function of YEI and second, how the foundation would be financially sustainable. We see the foundation basically in a facilitating role, by promoting competitive pricing of and facilitating access to member services. However, the temptation would exist for YEI to provide energy consulting and advisory services itself on a fee-for-service basis to generate an income, by which YEI would start competing with its own individual members; by offering consulting services it would no longer be an independent facilitator.

We suggest that the project helps YEI in drafting a detailed business plan for the foundation, detailing a) scope and mandate, b) functions and activities (e.g., access to pool of expertise; maintaining peer-to-peer network; info dissemination; website; organization of recurrent and special short trainings, background studies, monitoring and analysis; policy advice; facilitate regional networking) and c) budget and financing proposal for the first years of operation.

2) *Institutionalization of training*

Another aspect of sustainability is the institutionalization of training on EnMS and system optimization. The trainings contain a wealth of information. In a country the size of Indonesia and a market of up to 40,000 medium and large enterprises the number of trained national experts, about 70, and the number of companies serviced, about 300, is small indeed. Even if the project could be up-scaled, it would only cover a small section of the sheer number of companies in Indonesia. To ensure post-project sustainability, we suggest diverting some project resources to the following activities:

- Integration of the EnMS and SO in the curriculum of relevant undergraduate programmes of prominent universities;
- Organization of short introduction and refresher courses in relevant engineering or business training institutes or by relevant industry associations.

The first (curricula integration) would be medium-term in nature, while the second option (short courses) could probably be implemented in the short term. Piloting both these programmes during the project's duration could be a desirable output.

3) *Post-project action plan*

The Project Document foresees the transfer of the maintenance of the peer-to-peer database and reporting tools to the relevant government agency. We can add that transfer to that an association of engineers such as Indonesia Energy Conservation and Efficiency Society (MASKEEI) or Association of Energy Conservation Services Companies (APKENINDO). Similarly, the destination of the equipment of energy audits and measurement equipment, procured under the project should be determined.

These issues, including the institutionalization of the P2P network, YEI business planning and sustainability of the EnMS and SO training, should be part of a sustainability and scaling up plan to guide the government in the design and implementation of a long-term energy management program in industry. Apart from stressing the role of YEI, the role of existing industrial associations, chambers of commerce and industry, as well as professional associations of engineers, could be highlighted. Also, the three Ministries play a continuing role in promoting energy efficiency. Within MEMR, the Energy Efficiency Clearing House Indonesia (EECHI) is developed under cooperation between the Directorate of Energy Conservation and Danish International Development Agency (DANIDA) and can support awareness enhancement on EnMS and SO.

Such a 'post-project action plan' could have the following elements: a) overview chapter on status of EnMS, SO and EE, b) identification of lowered and remaining barriers, c) conclusion and recommendations to the Government and private sector institutions for post-project supportive actions.

4) For UNIDO Headquarters

Given the fact that UNIDO has organised similar projects on energy management systems (EnMS) and systems optimization (SO) in over 20 countries, we would like to suggest that in UNIDO itself the training is internally institutionalised, i.e. by offering refresher courses in the participating countries. It should be looked into how this could be organised and funded with UNIDO's regular or extra-budgetary funding.

This could be part of a wider effort by UNIDO to continue promoting EnMS and SO. In this respect, we note that UNIDO, as one of the initiators of the process that led to ISO 50001 (see Box 23 in Annex D), should be more internationally visible on industrial energy efficiency by highlighting EnMS and SO more prominently on its own website as a recognized 'best practice'.

5) For the GEF Secretariat

It is being discussed to present a new initiative for funding under the new GEF-6 budget cycle. Given the large scope for replication in a country the size of Indonesia and the cost-effectiveness of energy management planning and implementing energy optimization, it makes sense to scale up the activity and expand into other thematic or geographical areas:

- Support other industrial subsectors (iron and steel, cement, automotive, etc.) or large buildings (pumps, steam, HVAC)
- Cover new topics in system optimization (e.g., chillers, fans);
- Expand the focus to include smaller-sized (medium-small) companies;
- Support industrial estates (to provide advisory services on EnM and SO to companies).

Lessons learned

This project can be used and should be presented by UNIDO as a best practice, together with similar projects in other countries, to showcase the benefits of EnMS and SO in international fora and to a wider audience, stressing the importance of a well-conceived methodology regarding training and awareness raising and strong local ownership.

Annex A. TERMS OF REFERENCE

I. Scope and Purpose of the Evaluation

The mid-term evaluation will cover the duration of the project from its starting date in April 2011 to the estimated mid-term evaluation date in January 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 four (4) 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 industrial energy efficiency through system optimization approach and the introduction of ISO energy management standards.

II. 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 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.

III. 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 Energy and Mineral Resources (MEMR) will support the evaluation team. The UNIDO GEF Coordinator will be briefed on the evaluation and equally provide support to its conduct.

IV. Time Schedule and Deliverables

The mid-term evaluation is scheduled to take place in the period from January 2015 to March 2015. The field mission is planned for March 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 Indonesia.

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.

V. 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 Indonesia, and regional and international agreements. See possible evaluation questions under "Country ownership/driveness" 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 design and the project results framework given changes in the country and operational context?

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:

- a. **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?

- b. **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?
- c. **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?
- d. **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.
- e. **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?
- f. **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?
- g. **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?
- h. **Implementation approach.** 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

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, please elaborate.
- Was the freight forwarding timely and within budget? If no, please 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?

VI. 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

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 Jakarta 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.

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.

VII. 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 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 (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)
- 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:

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.

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

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.”

Annex B. MISSION AGENDA AND ITINERARY

Date & Time	Meeting & Location
Sunday, 8 March 2015	Arrival of International Expert, Mr. Jan VAN DEN AKKER
Monday, 9 March 2015	
09:00 – 10:00	UNIDO Representative, Ms. Shadia Bakhait Hajarabi UNIDO office, Jakarta
10:30 – 12:00	Head of PSC and Director of Energy Conservation, MEMR, Mrs. Maritje Hutapea EBTKE Building, Jakarta
13:00 – 14:00	GEF Operational Focal Point Indonesia, Mrs. Tuti Hendrawati Mintarsih Ministry of Environment & Forestr (Jakarta)
15:00 – 16:00	Head of Center for Green Industry and Environment, MoI, Mr. Ngakan Timur Antara, Ministry of Industry Bldg, Jakarta
Tuesday, 10 March 2015	
09:00 – 10:00	Association of IEE Project National Experts (Indonesian Energy Institute) At PMU Office, Cikini, Meeting Room of Director. Mr. Untung Semedhi (expert CASO), Ms. Suryaningsih (candidate expert EnMS), Ms. Dewi Komalasari (candidate expert EnMS)
11:00 – 12:00	Head of Center for Education and Socialization, National Standardization Agency of Indonesia Mrs. Metrawinda (Ade) Tunus Gedung , Jakarta
13:00 – 14:00	PMU Team, EBTKE Building, Jakarta
15:00 – 16:00	Government Investment Unit (PIP), Mr. Puji S.H Graha Mandiri, Jakarta
Wednesday, 11 March 2015 Site Visit to Pilot Companies	
09:00 – 10:00	PT. Indah Kiat Pulp and Paper, Tangerang Mill, Mr. Kholisul Fatikhin, Production Dept. Head Serpong Utara, Tangerang
13:00 – 14:00	PT. Indolakto, Mr. Slamet Nugroho, Jakarta
Thursday, 12 March 2015	
09:00 – 10:00	Mr. Edi Setijawan, Deputy Director for Banking Research and Regulation Indonesia Financial Service Authority, Jakarta
11:00 – 12:00	Textile Association (API), Mr. E.G. Ismy & Mr. Herry Pranoto, Jakarta
13:00 – 17:00	Reporting and analysis @ Sari Pan Hotel
Friday, 13 March 2015 Debriefing	
14:00 – 16:00	Presentation of mid-term evaluation @ EBTKE Building, Jakarta

Annex C. DOCUMENTS REVIEWED

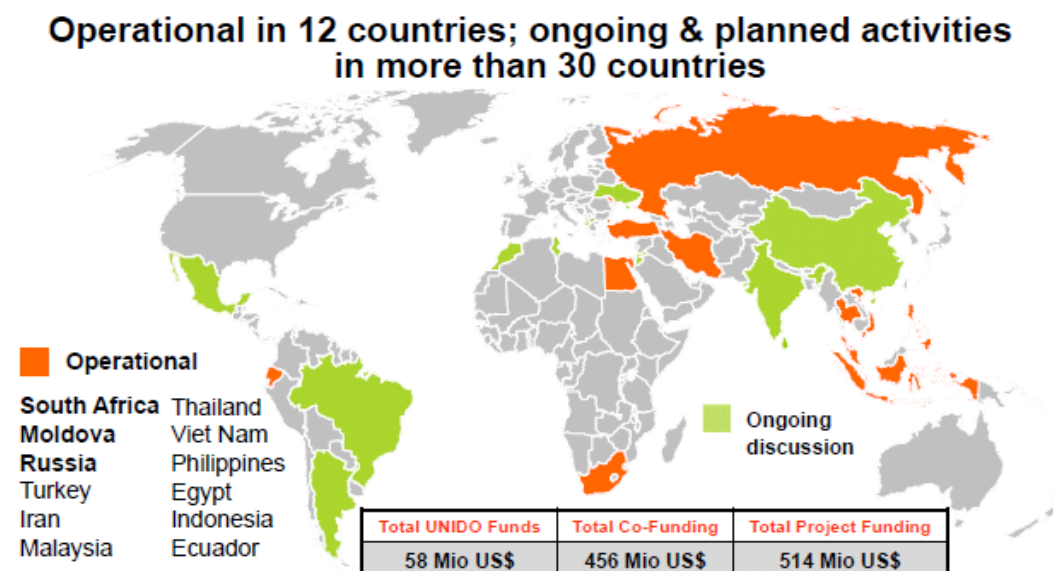
1. Project Document: REQUEST FOR CEO ENDORSEMENT/APPROVAL, UNIDO, Resubmission Date 21 December 2010.
2. Terms of Reference, Independent Mid-Term Evaluation of the UNIDO Project: Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards in Indonesia, UNIDO; February 2015.
3. Project Document: UNIDO ANNUAL PROJECT IMPLEMENTATION REPORT (PIR), Fiscal Year (FY) 2014 (1 July 2013 – 30 June 2014), UNIDO, 11 December 2014.
4. Draft Presentation for the 4th Project Steering Committee Meeting, GEF 4 Project: Energy Efficiency in the Industries - Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards in Indonesia, National Project Coordinator; March 2015.
5. Project Fact Sheet: A Case Study of PT. ARGO PANTES, UNIDO.
6. Project Fact Sheet: A Case Study of PT. APAC INTI CORPORA, UNIDO.
7. Project Fact Sheet: A Case Study of PT. INDAH KIAT PULP & PAPER, UNIDO.
8. Project Fact Sheet: A Case Study of PT. KMK GLOBAL SPORTS, UNIDO.
9. Government Regulation No. 79/2014 on National Energy Policy, Government of Indonesia, 2014.
10. Law No. 3/2014 on Industries, Government of Indonesia, 2014.
11. Government Regulation No. 70/2009 on Energy Conservation, Government of Indonesia, 2009.

Annex D. REGIONAL SCOPE AND CONTEXT

D.1 UNIDO projects on industrial energy efficiency in SE Asia

UNIDO Industrial Energy Efficiency programme

The organizations' mandate is to support inclusive and sustainable industrial development, having strong core competences in the field of green industry, cleaner production and sustainable energy. UNIDO contributed significantly to the development of the ISO 50001 energy management system standard (EnMS) and promotion of systems optimization practices. Until now (March 2015), UNIDO has developed and been implementing similar IEE projects in various countries around the world, as indicated in the figure below¹³:



The IEE projects have a common approach; a typical IEE project may have the following components:

Project objective	To reduce GHG emissions and enhance competitiveness of industry through improved energy efficiency and the transformation of the market for industrial energy efficiency products and services.
Project components:	
Policy and institutional support	Development and establishment of: <ul style="list-style-type: none"> ✓ National Energy Management Standard compatible with ISO 50001 ✓ National IEE Monitoring, Verification and Benchmarking Programs ✓ IEE Best-Practice Information, Dissemination and Recognition Programs ✓ Incentives for IEE and other
Capacity-building	<ul style="list-style-type: none"> ✓ Energy Management Systems (EnMS) Expert Training ✓ System Optimization (SO) Expert Training (steam, pumps, compressed air, ..) ✓ Development and provision of tools to assist industry in developing and implementing EnMS and system optimization projects ✓ Training of industry energy managers and engineers
Pilot IEE projects	✓ Implementation of pilot EnMS and SO projects in selected enterprises
Financing for IEE	✓ Development of IEE investment supporting schemes in partnership with international as well as national financing institutions

¹³ In the South-East Asia region, Myanmar was added in 2015

Reducing industry's carbon footprint in South East Asia through compliance with an energy management system (ISO 50001)

This programme framework was submitted by UNIDO to the Global Environment Facility (GEF) and approved by the GEF Council in November 2008. The objectives of the programme are (a) controlling the growth of greenhouse gas emissions attributable to rapid industrialization in the countries of South East Asia; and (b) helping these industries reduce their costs of fuel and electricity.

The programme is composed of national projects to be implemented in Indonesia, Malaysia, Myanmar, the Philippines, Thailand and Vietnam each designed to facilitate introduction of ISO 50,000 through training and capacity building, including a technical focus on systems optimization. The programme will benefit from the involvement of regional organizations concerned with accelerating the introduction of standards and with harmonization of standards as trade facilitation mechanisms. For example, the program will be coordinated with the scheduled meetings of regional bodies concerned with energy and standards including the ASEAN Consultative Committee on Standards and Quality (ACCSQ) and the Pacific Area Standards Congress (PASC).

Sustainable energy efficiency improvement in the industrial sector requires focused training at the level of individual systems, going beyond generic audits and simple equipment changes. Training has been accompanied by an incentive to make energy efficiency a permanent priority for industry managers. The strategic approach taken in each of the national projects involves provision of tools and capacity building for industrial energy systems optimization and the promulgation of an energy management standard (ISO 50000), supported by appropriate project financing and the implementation by industries of energy efficiency/systems optimization projects. Similarly, in each country capacity building is being delivered to prepare governments (standards bodies) and industries for the introduction of an energy management standard, to be compatible with the international ISO 50000.

Projects in Indonesia, the Philippines and Thailand: promoting industrial efficiency through system optimization and energy management standards

The projects in these countries started in April 2011 and are expected to finalise their operations by August-December 2017 and are now halfway their implementation. All projects have a similar structure in terms of components and expected outputs, as is summarized in the Boxes 19 and 20.

Box 19 Project budget and implementing partners

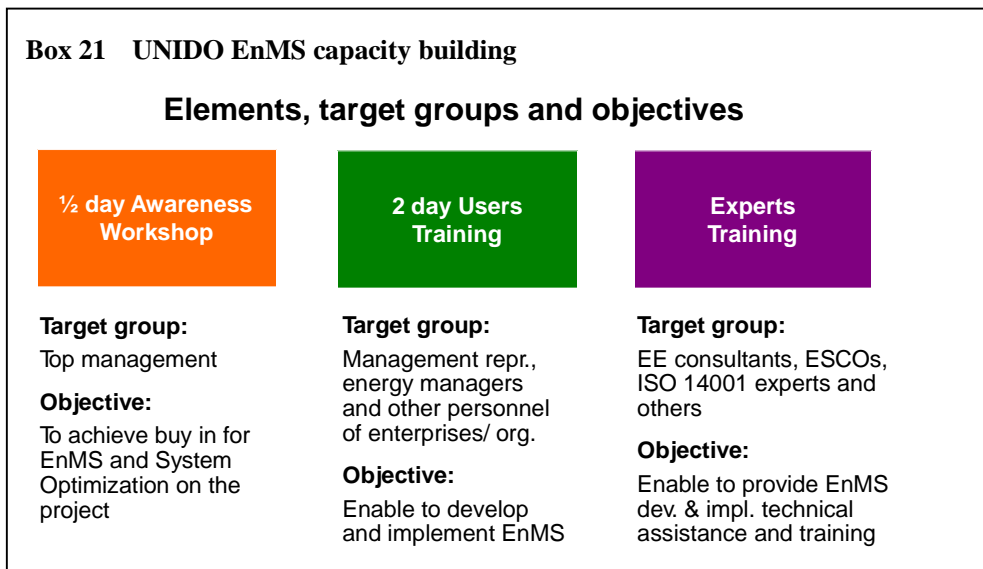
	GEF financing (USD)	Co- financing (USD)	Implementing partners
Indonesia	2,180,380	14,175,000	Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry (MOI) and <i>Badan Standardisasi Nasional</i> (BSN)
Philippines	3,166,065	24,000,000	Department of Energy (DOE), Department of Trade and Industry – Bureau of Product and Standards (DTI-BPS)
Thailand	3,620,000	15,645,000	Department of Industrial Promotion (DIP); Department of Industrial Works (DIW); Thai Industrial Standards Institute (TISI); and Department of Alternative Energy Development and Efficiency (DEDE)

Box 20 Overview of components and outputs in the four projects

Component	Expected outputs		
	Indonesia	Philippines	Thailand
Energy management systems	<ul style="list-style-type: none"> 1.1 Reinforced capacity of government institutions 1.2 Training materials and tools developed 1.3 National awareness campaign launched on ISO 50001 1.4 Trained national experts & factory personnel on EM 1.5 Peer-to-Peer network established 	<ul style="list-style-type: none"> 1.1 Policy support 1.2 Training materials and tools developed 1.3 National awareness campaign on ISO50001 launched 1.4 Peer-to-peer network developed 1.5 Trained national experts/factory personnel on EM 	<ul style="list-style-type: none"> 1.1 Training material and tools on energy management developed 1.2 National awareness campaign launched on ISO 50001 1.3 National experts/factory personnel trained on ISO compliant EM systems 1.4 Peer-to-peer network between industrial enterprises established and operated
Systems optimization	<ul style="list-style-type: none"> 2.1 Training materials and tools developed 2.2 Trained national experts/factory personnel on SO 2.3 Equipment vendors & suppliers trained on SO 	<ul style="list-style-type: none"> 2.1 Training materials and tools developed 2.2 Trained national experts/factory personnel on SO 2.3 Vendors participation on SO training 	<ul style="list-style-type: none"> 2.1 Training material and tools on SO developed 2.2 National experts/factory personnel trained on SO of steam, compressed air, pumping and fans systems 2.3 Equipment vendors & suppliers trained on SO
Financial capacity	<ul style="list-style-type: none"> 3.1 Project evaluation criteria developed and harmonized 3.1 Training material developed and capacity of industrial enterprises built on bankable EE projects development 3.2 Capacity of financial institutions and local banks built to promote and invest in industrial energy efficiency projects 	<ul style="list-style-type: none"> 3.1 Harmonized EE project evaluation criteria 3.2 Training materials developed 3.3 Managers trained on financial aspects of EE projects 3.4 Support for packaging of loans for industrial EE projects 	<ul style="list-style-type: none"> 3.1 Harmonized EE project evaluation criteria 3.2 Capacity of banks/FIs enhanced on EE 3.3 Training material developed and industry managers trained on the development of financial proposals
Implementation and demonstration	<ul style="list-style-type: none"> 4.1 Energy Management systems implemented 4.2 Documented industry demonstration projects 4.3 Recognition program developed and implemented 	<ul style="list-style-type: none"> 1.6 ISO compliant EM systems implemented 2.4 Documented SO demonstration projects. 1.7 Recognition program developed 	<ul style="list-style-type: none"> 4.1 Energy Management projects implemented 4.2 Documented SO demonstration projects 4.3 Recognition program developed

D.2 Training on EnMS and systems optimization

The trainings on EnMS and SO in the various countries roughly follow the same pattern and approach, which is shortly described in this Section.



Awareness workshops

The programme generally starts with conducting short (½-day) workshops for (top) factory managers on the benefits of implementing an energy management system in conformance with ISO 50001. Part of the workshop is dedicated to presenting the range of technical assistance that is available to their company and staff as a benefit of project participation. Guest speakers from industry who are already engaged in energy management can be invited for the workshop. The objective is to get the factories buying into EnMS (and SO) and to encourage managers to register their key staff to participate in the subsequent technical capacity building (2-day workshops).

Energy management

The technical capacity building consists of two-step trainings. The first step targets ‘training of trainers’ where international experts will deliver intensive training to national experts to a level as such that they can train others¹⁴. At the second step, international and national experts provide trainings and assistance to factory personnel. The preparatory activities will include the compilation of the training material by international experts, translation, identification of initial factories for the on-site training and identification of classroom facilities. The national experts and factory engineers will be selected based on criteria agreed in consultation with the government counterparts.

Intensive training for national experts:

The UNIDO international team provides training for the national energy management experts with most of this training taking place within the first two years of the project. These individuals subsequently assume the role of national energy management experts, become a source of national energy management expertise, and serve as multipliers for project impacts. Experts may be energy consultants, ESCOs, factory engineers, ISO 14001 experts and others. The expert training consists of three modules: 1) Planning and class-room training (7-8 days); 2) Implementation and operation (trainees apply skills and work for 10-15 days with partner

¹⁴ A list of international trainers for EnMS and SO for the UNIDO projects in Indonesia, Philippines, and Thailand is given in Box 24

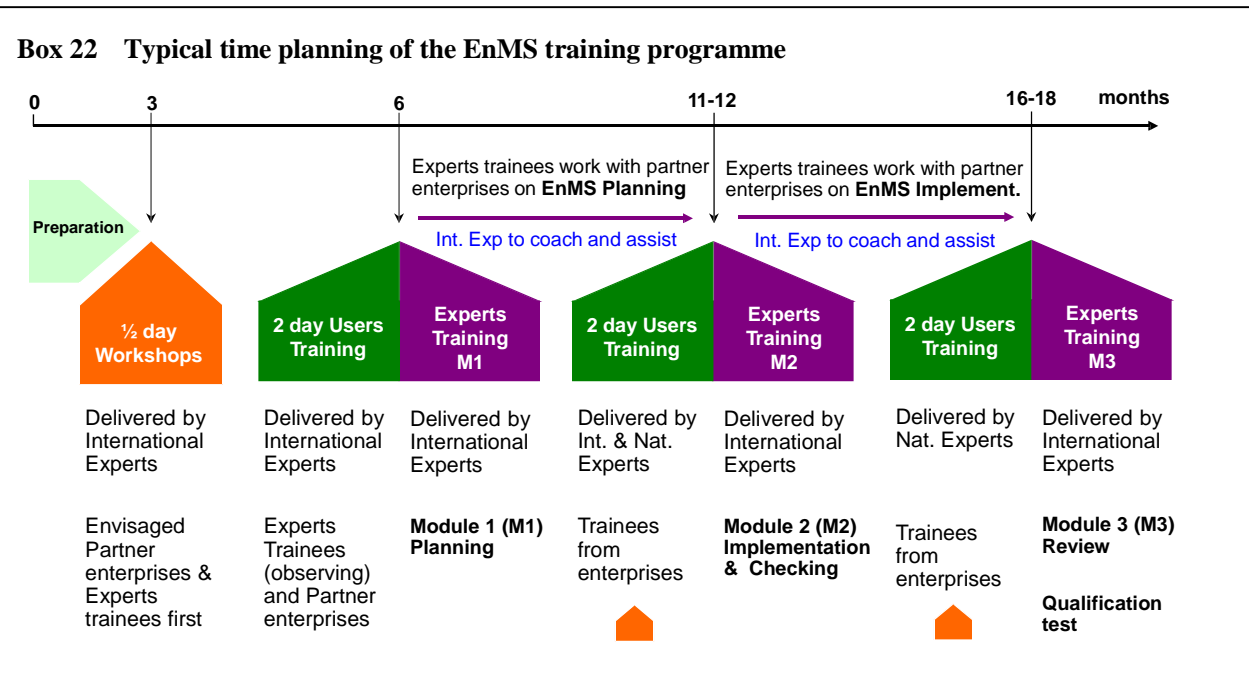
enterprises under the remote supervision and coaching of international experts); and 3) Checking and management review and qualification test.

The national energy management experts are trained through a mentoring and on-the-job (OTJ) process to an intermediate level of expertise. At the end, they are expected to be capable of and will be recruited by UNIDO for conducting the ½-day awareness workshops and 2-day training sessions. Thus, the training curricula are introduced to the national experts in three stages: observing the international experts teach, co-teaching with the international experts, and teaching with international experts observing and commenting on teaching techniques.

User trainings (for factory managers and personnel)

At this second step, UNIDO’s international team, along with trained national experts, conduct additional energy management training sessions. Together, they develop specific criteria to select relevant participants for whom they will conduct energy management training sessions. Thereafter, participating factories will receive 2-day training on ISO 50001 energy management system implementation and internal auditing techniques to assist them in conforming to ISO 50001. The assumption is that of the factory managers participating in the half-day workshops, approximately 50-60% will choose to commit their employees to the energy management system implementation training.

The two-day training will guide participants through the Plan-Do-Check-Act cycle as it applies to the ISO 50001 energy management system (explained in Box 23). Instruction will be given on how to establish an effective energy plan, set improvement targets and objectives, establish energy performance indicators, and identify significant energy uses and opportunities for improvement. At least half a day will be dedicated to internal auditing and integrating the ISO 50001 energy management system into existing ISO management systems such as ISO 9001 and 14001.



Box 23 Energy management systems and standards

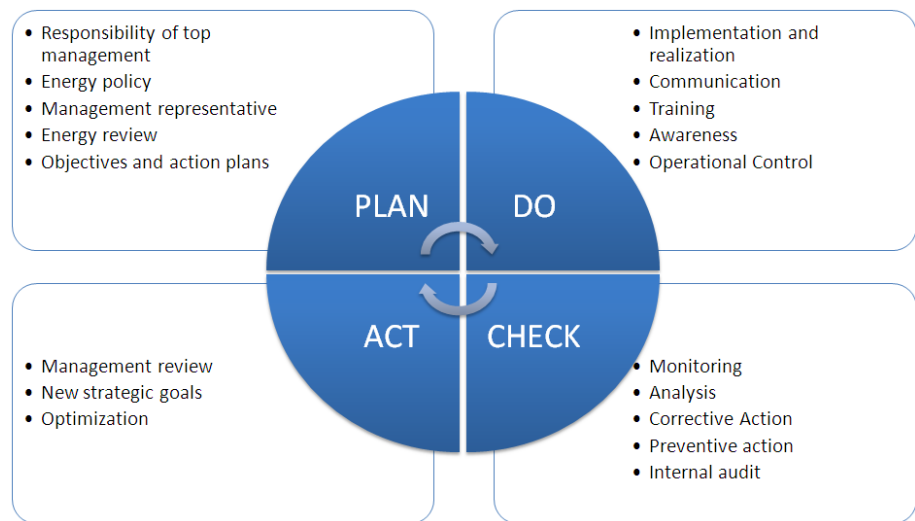
Energy efficiency improvements with very favourable payback periods often do not get implemented. When projects are implemented, it may often happen that results are not sustained due to lack of supportive operational and maintenance practices. Energy efficiency is still widely viewed as a luxury rather than a strategic investment in future profitability. Energy efficiency in industry depends more on how energy is managed rather than through the simple installation of new technologies.

Energy Management Systems (EnMS) have emerged over the last two decades as a proven best practice methodology to ensure proactive and effective energy management. Existing ISO standards for quality management practices (ISO 9000 series) and environmental management systems (ISO 14000 series) have successfully stimulated improvements within organizations. UNIDO started in 2006 to promote the development of an international/ISO energy management system standard, which was officially adopted as ISO 50001 in 2011 by the International Organisation for Standardisation (ISO).

EnMS provide a structured and systematic approach on how to integrate energy efficiency in an enterprise management culture and daily practices. ISO 50001 specifies the requirements for an organization to establish, implement, maintain, and improve an energy management system, enabling systematic achievement of continual improvement in energy performance, energy efficiency, and energy conservation. It imposes requirements on energy supply and consumption, in terms of measurement, documentation and reporting, design and procurement practices for energy-using equipment and systems as well as processes and personnel (see the figure below). However, it does not prescribe specific performance criteria with respect to energy. ISO 50001 is designed to be used independently, yet can be aligned or integrated with other management systems (e.g., ISO 9001 and ISO 14001). It is not only applicable to industry, but to all organizations that use energy.

ISO 50001 focuses on a continual improvement process to achieve the objectives related to the environmental performance of an organization (enterprise, service provider, administration, etc.). The process follows a plan – do – check – act approach (Plan-Do-Check-Act, PDCA).

- **Plan:** The overall responsibility for the installed energy management system must be located with the top management. An energy officer and an energy team should be appointed. Furthermore, the organization has to formulate the energy policy in form of a written statement which contains the intent and direction of energy policy. Energy policy must be communicated within the organization. The energy team is the connection between management and employees. In this phase the organization has to identify the significant energy uses and prioritize the opportunities for energy performance improvement.
- **Do:** The stated objectives and processes are now introduced and implemented. Resources are made available and responsibilities determined. Make sure that employees and other participants are aware of and capable of carrying out their energy management responsibilities. The realization of the energy management system starts.
- **Check:** An energy management system requires a process for compliance and valuation of energy-related regulations. Internal audit can help to verify that the energy management system is functioning properly and generating the planned results. The processes are monitored with regard to legal and other requirements (customer requirements, internal policies) as well as to the objectives of the energy management of the organization. The results are documented and reported to top management.
- **Act:** The top management prepares a written valuation based on the internal audit. This document is called the management review. The results will be evaluated on their performance level. If necessary, corrective or preventive actions can be initiated. Energy-relevant processes are optimized and new strategic goals are derived.



Info based on www.unido.org; www.iso.org; en.wikipedia.org

Systems optimization

This capacity building follows the same two-phase training approach as explained under ‘energy management’. Steam system optimization trainings are very technical trainings which allow the trained local expert learn and practice the system optimization assessment from UNIDO international experts. The trained local expert learns how to utilize the system optimization measurement devices, and use the analysis software to assess the industry steam, pump and compressed air system optimization opportunities.

The preparatory activities involve the compilation of training material by international teams, translation, the identification of appropriate factories for the in-plant training with requisite compressor/steam systems, securing approval of site visits, purchase of measurement equipment to perform the in-plant training, acquisition of technical data from host plants pertaining to the systems and components to be evaluated by the teams, identification of classroom facilities, provision of accommodation for trainees, etc.

Intensive training for national experts in systems optimization (SO)

In the first phase, one-to-one and one-to-many trainings and implementation schemes will be organized, in which UNIDO’s team of international experts is engaged in initial capacity building to create a core of highly skilled national experts. These individuals would subsequently assume roles as systems optimization experts, become a source of national systems optimization expertise, and serve as multipliers for project impacts. To ensure success of the project, trainees will be rigorously selected based on technical and training capabilities and consultation with the government counterpart ministry.

The SO training consists of:

- Training of 45 national systems optimization experts by the UNIDO international team in classroom and plant settings. The national experts will be trained “on-the-job” on the use of measuring instrumentation, data collection and analysis, and the preparation of investment proposals for energy system improvements which are subsequently submitted to the management of the plants hosting the training.
- Training on use of UNIDO’s tools designed to assist national experts and their industrial customers in developing and documenting sustainable projects.
- Prepare national systems optimization experts to deliver training (specific to each system type) curricula.

Most of this training will take place within the first two years of the project. The national experts will receive both classroom training and on-site interactive training involving participating industrial facilities. Following completion of initial systems optimization training courses, the international team returns to work with their trainees on plant assessment and project development skills. In addition, the international experts will prepare and observe trained national experts conducting training of local personnel in “factory training sessions”.

Factory personnel capacity building on systems optimization

At this second stage, UNIDO’s international team and trained national experts will jointly conduct additional systems optimization training sessions.

- One-day trainings for factory personnel across the country to introduce general concepts on pumping systems, steam systems, and compressed air systems optimization. This session will be a mix of theory and practical considerations.
- About half of factory employees that have already taken part in the 1-day training sessions will receive additional 2-day training sessions in the utilization of the UNIDO’s tools designed and developed under this component.

For a list of international experts involved in training on EnMS and SO in the Philippines, Thailand and Indonesia, the reader is referred to Box 24.

Box 24 International trainers, UNIDO IEE projects in South-East Asia

Trainer	System	Project Country
Stefan Walta	EnMS	Philippines, Indonesia
Richard Morrison	EnMS	Philippines, Thailand
Michael Doyle	EnMS	Thailand, Indonesia
Gunnar Hovstadius*	PSO	Philippines, Thailand, Indonesia
Eric Harding	CASO	Philippines, Thailand, Indonesia
Mark Pollard	CASO	Philippines, Thailand
Ian Moore	CASO	Indonesia
Ron Wroblewski*	FSO	Thailand
Riyaz Papar*	SSO	Thailand, Indonesia, Philippines
Veerasamy Venkatesan	SSO	Philippines

* Also developed the training materials for their respective systems.

D.3 Approach followed in reviews and evaluations; evaluation matrix

MTR: Indonesia, Philippines, Thailand:

The GEF FSP projects in Indonesia, the Philippines and Thailand are halfway through their project implementation and therefore need to undergo a MTR. It was decided by UNIDO to award the contract to one international (independent) consultant as lead evaluator, Mr. Johannes (Jan) VAN DEN AKKER (Netherlands).

Mid-term reviews and final evaluations

Independent evaluations of technical cooperation activities, such as projects, can take the form of mid-term, terminal or ex-post evaluations (UNIDO Evaluation Policy, 2006). Independent evaluations can be mandatory for programmes and projects as established in funding agreements with donors. As outlined in the GEF Monitoring and Evaluation Policy¹⁵, all GEF-financed projects must receive a final (or **terminal**) **evaluation**, (or TE) while mid-term evaluations (called **mid-term reviews**, or MTR) for mandatory for full-sized projects (GEF FSPs). All evaluations need to be undertaken by independent consultants, i.e. who has not been previously involved in project design, management or implementation of project activities. The reviews/evaluation will be carried out in accordance with the principles formulated by the UN Evaluation Group (UNEG)¹⁶. The MTR and TE processes are quite similar, although the focus differs slightly. MTRs focus on a) assessment of progress towards results, b) monitoring of implementation and management, c) early identification of risks (to sustainability) and d) providing recommendations for corrective actions and future directions. Terminal evaluations also focus on a) assessments of results and implementation, b) identification of the project's successes and actions needed for consolidation of replicability and sustainability, c) emphasis on lessons learnt and recommendations for future project designs.

This 'multi-country' evaluation approach has the advantage that the results of the similar projects in various countries can be compared and country-specific situations (that may positively or negatively affect results) can be filtered out, which allows to have a more profound assessment. However, the findings of the reviews will be presented in separate reports per country as per GEF and UNIDO requirements, although the Evaluator will indicate common elements in an Annex on regional aspects.

The following table relates the main evaluation parameters with the various sections of the proposed outline of the review/evaluation report.

¹⁵ The GEF Monitoring and Evaluation Policy (GEF Secretariat, 2010)

¹⁶ UNEG Quality Checklist for Evaluation Reports, UNEG/G(2010)/2

Box 25 Outline of the MTR report and link with criteria and questions in evaluation matrix

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
<p>3. Findings: Relevance and design</p> <ul style="list-style-type: none"> • Relevance and country drivenness • Stakeholder involvement • Assessment of logframe and M&E design 	<p>Relevance:</p> <ul style="list-style-type: none"> • National development and environmental priorities and strategies of the Government and population of Indonesia, and regional and international agreements. 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? • Relevance of the project’s objectives, outcomes and outputs to the different target groups of the interventions. Is the Project addressing the needs of the target beneficiaries? • Consistency with the GEF focal areas in Climate Change/operational program strategies of the GEF CC - SP2 – Promoting Energy Efficiency in the Industrial Sector? UNIDO’s thematic priorities: were they in line with UNIDO’s mandate, objectives and outcomes defined in the Programme & Budget and core competencies? • Links with the parent program/umbrella project: “Reducing industry’s carbon footprint in South East Asia through compliance with an energy management system (ISO 50001)” <p>Design:</p> <ul style="list-style-type: none"> • 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 was formulated with the participation of national counterpart and/or target beneficiaries; • 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? • 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 	<p>Relevance:</p> <ul style="list-style-type: none"> • Relationship between the Project objectives and the GEF climate change focal area; • Relationship between identified national energy priorities, policies and strategies • Perceptions of in-country stakeholders, including energy sector practitioners, CSOs, NGOs, communities, local government, as to whether Project responds to national priorities and existing capacities <p>Design:</p> <ul style="list-style-type: none"> • Degree of involvement of government partners and other stakeholders in the Project design process • Coherency and complementarity with other national and donor programmes • Number and type of performance measurement indicators for monitoring of implementation of strategy and intended results in planning documents (SMART indicators); • Number and type of 	<ul style="list-style-type: none"> • Desk review of project design and technical documents; documents from GEF and other donors; national policies and strategies; • Interviews with project staff management, project partners (incl. former staff), stakeholders (industry, banks, associations) and UNIDO staff

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
	logical framework (project results framework) approach; <ul style="list-style-type: none"> Have any amendments to the assumptions or targets been made or planned during the Project's implementation? M&E design. Did the project have an M&E plan to monitor results and track progress towards achieving project objectives? 	amendments made to project design	
4. Findings: Results and effectiveness <ul style="list-style-type: none"> Assessment of outcomes and outputs (cf. with baseline indicators) Effectiveness Global environmental and other impacts 	Results and effectiveness <ul style="list-style-type: none"> Are the project outcomes commensurate with the original or modified project objectives? 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? Impacts <ul style="list-style-type: none"> Describe project actions and accomplishments toward establishing a long-term monitoring system (environmental baselines; specification of indicators; and provisioning of equipment and capacity building for data gathering, analysis, and use) To what extent were socioeconomic benefits delivered by the project at the national and local levels, including consideration of gender dimensions? To what extent did the project actively incorporate gender mainstreaming into project development and implementation? 	Results and effectiveness: <ul style="list-style-type: none"> Program level of achievement (intended and unintended outputs, outcomes and impacts) Number of planned vs. implemented Projects/activities (see progress indicators in document) 	<ul style="list-style-type: none"> Desk review of project design and technical documents (incl. PIRs; results framework; monitoring data on company participation and energy savings); other relevant docs Interviews with project partners, stakeholders (industry, banks, associations), and UNIDO staff; interviews with project experts (national and international); Visit to beneficiary companies
5. Findings: implementation, processes and efficiency <ul style="list-style-type: none"> Management and administration; role of UNIDO Monitoring and evaluation systems 	Implementation and management <ul style="list-style-type: none"> Were counterpart resources (funding, staff, and facilities), and adequate project management arrangements in place at project entry? Was any steering or advisory mechanism put in place? The national management and overall coordination mechanisms have been efficient and effective? Did each partner have assigned 	Implementation and management <ul style="list-style-type: none"> Examples of changes made in approach or strategy by management; Timeline for implementation 	<ul style="list-style-type: none"> Desk review of project design and technical documents (incl. PIRs; data on budget; other

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
<ul style="list-style-type: none"> Stakeholder engagement and communications Budget, expenditures and co-financing; procurement 	<p>roles and responsibilities from the beginning? Did each partner fulfil its role and responsibilities? Adaptive management practices</p> <ul style="list-style-type: none"> 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? <p>Assessment of M&E system</p> <ul style="list-style-type: none"> <i>M&E plan implementation.</i> 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. Was the information provided by the M&E system was used to improve performance and to adapt to changing needs; Are there any annual work plans? <i>Budgeting and Funding for M&E activities.</i> Was 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. <p>Stakeholder involvement</p> <ul style="list-style-type: none"> Did the project involve the relevant stakeholders through information sharing and consultation? Did the project implement appropriate outreach and public awareness campaigns? 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, NGOs, 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? 	<p>and completion of activities</p> <ul style="list-style-type: none"> Evidence of clear roles and responsibilities for operational and management structure <p>M&E</p> <ul style="list-style-type: none"> Existence of a Project M&E system, including relevant processes and mechanisms for, monitoring, reporting, data collection & management, and learning; Actual use of the M&E system to change or improve decision- making/adaptive management Quality and quantity of progress reports <p>Stakeholders and communications</p> <ul style="list-style-type: none"> Extent to which the implementation of the Project has been inclusive of relevant stakeholders and collaboration between partners and/or local partnerships have been developed Client/Stakeholder satisfaction with Project staff Extent to which lessons learnt have been communicated to project stakeholders and other related programs and projects <p>Financial planning</p> <ul style="list-style-type: none"> Extent to which inputs have been of suitable quality and 	<p>relevant docs; media coverage, official notices and press releases</p> <ul style="list-style-type: none"> Interviews with project partners, stakeholders (industry, banks, associations) and UNIDO staff; interviews with project experts (national and international)

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
	<p>Financial planning and procurement</p> <ul style="list-style-type: none"> • 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? Did promised co-financing materialize? Specifically, the evaluation will also include a breakdown of final actual project costs by activities compared to budget (variances), financial management (including disbursement issues), and co-financing. • If there was a difference in the level of expected co-financing and the co-financing actually realized, what were the reasons for the variance? Did the extent of materialization of co-financing affect project outcomes and/or sustainability, and, if so, in what ways and through what causal linkages? • To what extent does the process provide adequate treatment to different types of procurement (e.g. by value, by category, by exception...) <p>Efficiency and cost-effectiveness</p> <ul style="list-style-type: none"> • 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? 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? • 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? • The project cost was effective? Was the project using the least cost options? • 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? 	<p>available when required to allow the Project to achieve the expected results;</p> <ul style="list-style-type: none"> • Planned vs. actual budget and co-finance realization • Percentage of budget for management and operations (vs. other activities); Percentage of budget spent on M&E systems <p>Effectiveness</p> <ul style="list-style-type: none"> • Perceptions as to cost-effectiveness of program 	

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
<p>6. Findings: sustainability</p> <ul style="list-style-type: none"> Risks and external factors Replication 	<p>Sustainability</p> <ul style="list-style-type: none"> <i>Financial risks.</i> 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? <i>Sociopolitical risks.</i> 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? <i>Institutional framework and governance risks.</i> 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? <i>Environmental risks.</i> 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. <p>Replication</p> <ul style="list-style-type: none"> 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 	<p>Sustainability</p> <ul style="list-style-type: none"> Extent to which risks and assumptions are adequate and are reflected in the project documentation Extent to which project is likely to be sustainable beyond the project; <p>Replication</p> <ul style="list-style-type: none"> Replication of activities with high levels of achievement toward objectives in other countries/interventions 	<ul style="list-style-type: none"> Desk review of project design and technical documents (incl. PIRs; other relevant docs) Interviews with project staff, project partners, stakeholders (industry, banks, associations) and UNIDO staff; interviews with project experts (national and international)

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
<p>7. Conclusions and recommendations</p> <ul style="list-style-type: none"> • Conclusions on attainment of objectives and results • Lessons learned • Recommendations 	<ul style="list-style-type: none"> • Evaluation conclusions related to the project’s achievements and shortfalls • What recommendations, if any, can be made based on the mid-term review to ensure the Project is on track to meet its targets? • Does the project remain relevant taking into account the changing environment? Is there a need to reformulate the project design and the project results framework given changes in the country and operational context? 	<ul style="list-style-type: none"> • Perceptions of or actual levels of relative effectiveness and/or efficiency of the project cf. with other projects; Perceptions of clients, partners, and other stakeholders as to tangible development results stemming from Project activities/involvement • Lessons that have been learned regarding achievement of outcomes • Changes could have been made (if any) to the design to improve the achievement of the results 	<ul style="list-style-type: none"> • Interviews with project staff and partners • Desk review of project docs and reports as well as external policy and other docs

ANNEX E. ABOUT THE EVALUATORS

Mr. Jan van den Akker is a technology management scientist with a Master's degree from Eindhoven University of Technology (Netherlands), specializing in international development cooperation. He is an expert on sustainable energy policy and technologies. Mr. Van den Akker specializes in studies and analytical work, project design and development, project coordination and implementation, project monitoring and evaluation, knowledge management, capacity strengthening and public-private partnerships in the field of sustainable energy strategies, energy efficiency, energy technologies and supply, climate change and the Clean Development Mechanism. He has lived and worked abroad for over 7 years in Zambia, Mexico and Thailand. In addition, has undertaken numerous short missions to about 45 countries in Africa, Latin America and Asia & the Pacific.

In 2003/2004 he founded ASCENDIS, as an independent office, and has been providing consultancy on sustainable energy and climate change, specializing in development issues. ASCENDIS is based in Westerhoven, Netherlands, but offers services in Africa, Asia and the Pacific, Europe and Latin America & the Caribbean, often by associating itself with local freelance experts, professionals and organizations. As a long-term expert with the United Nations system, Mr. Van den Akker has provided advice to governments and organizations on the design of investment and capacity building programs for UNEP, UNDP and UNIDO, mostly in GEF-funded activities, UNFCCC and for NGOs/consultancy companies (e.g., Practical Action Consulting, Winrock) in the area of renewable energy, energy efficiency and sustainable transportation. He has reviewed and evaluated about 30 GEF-funded sustainable energy projects.

Mr. Andi Samyanugraha is a sustainable technology specialist with Master's degree from University College of Borås, Sweden. He specializes in studies and analytical works, project development and management, knowledge management and capacity building activities in the field of sustainable energy, energy efficiency and climate change mechanisms. He has been working for Indonesia's private and government institutions, including for the Indonesian focal point to the UNFCCC and DNA for Clean Development Mechanism, and now is an independent consultant while occasionally giving advices to the Government. In his consultancy careers, he has provided services to the Government of Indonesia, national and foreign private sector and donor organisation.

ANNEX F. EVALUATION CONSULTANT CODE OF CONDUCT FORM

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 limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Evaluation Consultant Agreement Form

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

Name of Consultant: J.H.A. VAN DEN AKKER (as Team Leader)

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 Westerhoven, Netherlands

Signature: _____

