

Independent mid-term review

REPUBLIC OF THE PHILIPPINES

Industrial Energy Efficiency in the Philippines

UNIDO project No.: **GF/PHI/11/002**
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This report has been prepared for UNIDO for the Midterm Review of the UNIDO GEF Project "Industrial Energy Efficiency" (in the Philippines)

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LIST OF ACRONYMS

ADB`	Asian Development Bank
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
AWP	Annual Work Plan
BPI	Bank of the Philippine Islands
BPS	Bureau of Philippine Standards (f.k.a. Bureau of Products and Standards)
CEO ER	CEO Endorsement Request form
CASO	Compressed air system optimization
CC	Climate change
CO ₂	Carbon dioxide
CDM	Clean Development Mechanism
DPB	Development Bank of Philippines
DENR	Department of Environment and Natural Resources
DOE	Department of Energy
DTI	Department of Trade and Industry
EE	Energy efficiency
EE&C	Energy efficiency and conservation
EMS	Environment Management Standard (ISO)
EnMS	Energy Management Standard (ISO)
ENPAP	Energy Efficiency Practitioners Association of the Philippines
EU	European Union
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
IIEE	Institute of Integrated Electrical Engineers of the Philippines
ISO	International Organization for Standardization
HL	Highly Likely
HS	Highly Satisfactory
HU	Highly Unsatisfactory
IMS	Integrated management standard
IEE	industrial energy efficiency
ktoe	kiloton of oil equivalent
kW	kilowatt
kWh	kilowatt-hour
M&E	Monitoring and Evaluation
MOI	Ministry of Industry
ML	Moderately Likely
MS	Moderately Satisfactory
Mtoe	million tons of oil equivalent
MTR	Mid-Term Review
MU	Moderately Unlikely
MU	Moderately Unsatisfactory
MW	megawatt (million Watt)
NE	National expert
NEECP	National Energy Efficiency and Conservation Program
NGO	Non-Government Organization

NPC	National Project Coordinator
NPD	National Project Director
P2P	peer-to-peer
PEP	Philippine Energy Plan
PIR	Project Implementation Review
PHP	Philippine peso (1 USD \approx PHP 50)
PPG	GEF project preparation grant
PSC	Project Steering Committee
PSO	Pump system optimization
RFP	Request for proposals
SO	System optimization
SSO	Steam system optimization
tCO ₂	tons of carbon dioxide (equivalent)
ToR	Terms of reference
UNIDO	United Nations Industrial Development Organization
UP-NEC	University of the Philippines, National Engineering Center
USD	United States dollar

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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	Industrial Energy Efficiency
GEF ID Number	3601
UNIDO ID (SAP Number)	GF/PHI/11/002 (SAP: 103049 / 200000288)
Region	EAP
Country	Philippines
GEF Focal Area and Operational Program:	CC (CCM), GEF-4
GEF Agencies (Implementing Agency)	UNIDO
Project Executing Partners	Department of Energy; Department of Trade and Industry
Project Size (FSP, MSP, EA)	FSP
Project CEO Endorsement/Approval Date	25-03-2011
Project Implementation Start Date (PAD Issuance Date)	16-04-2011
Original Expected Implementation End Date (indicated in CEO Endorsement/Approval document)	30-11-2016
Revised Expected Implementation End Date (if any)	01-05-2017
GEF Grant (USD)	USD 3,166,065
GEF PPG (USD) (if any)	USD 85,650
Co-financing (USD) at CEO Endorsement	USD 24,000,000
Total Project Cost (USD) (GEF Grant + Co-financing at CEO Endorsement, excl. PPG)	USD 27,166,065
Agency Fee (USD, excl. PPG)	USD 325,171.5

Introduction and brief description of the project

The Energy Management Standard (EnMS), ISO 50001, requires an organization to establish, implement, maintain, and improve an energy management system (EnMS), enabling systematic achievement of continual improvement in energy performance, energy efficiency, and energy conservation. The Bureau of Philippine Standards (BPS) adopted it as a national standard in 2012 (PNS ISO50001:2012). In Systems Optimization (SO), the first point of entry in identifying energy efficiency options is to look at the functioning of a component (such as motors, pumps, fans, compressed air or boilers) in the system as a whole, rather than at the individual system components separately.

Due to its modest proven fossil fuel reserves, the Philippines is dependent on imports and is susceptible to price shocks from volatility in world oil prices. The 2012-2030 Philippine Energy Plan (PEP) recognizes the need for an energy conservation law as a critical measure in managing the country's energy demand. The PEP includes the National Energy Efficiency and Conservation Program (NEECP), launched in 2004, as one of the centerpiece strategies. The new National Energy Efficiency and Conservation Action Plan has the goal of 10% savings in the annual final energy demand forecast for the period 2010 to 2030. A legislative bill has been crafted to enhance the energy efficiency and conservation activities of the Philippines. This bill is

known as the Sustainable Energy Efficiency and Conservation Act of 2015 (the Enercon Bill) and is now under discussion in Congress.

Despite these encouraging efforts initiated by the government, much work needs to be done in the energy efficiency field in practice. For example, most industries in the Philippines are already ISO certified (ISO 9001:2008) for quality management and safety, but are not familiar with latest ISO standard 50001 on EnMS nor are they familiar with the concept of system optimization for improving energy efficiency. Thus, at the facility/company level there are often no built-in energy management policies and strategies that integrate energy issues in the existing management structure and energy-related issues are taken on an ad-hoc basis that does not allow a comprehensive and integrated approach that ensures sustainable energy cost reduction and improves the facility productivity simultaneously.

To address such barriers, multilateral technical assistance was sought from the United Nations Industrial Development Organization (UNIDO) and the Global Environment Facility (GEF). The resulting “*Philippine Industrial Energy Efficiency project (PIEEP)*” is executed in cooperation with the Philippine Department of Energy (DOE) and the Bureau of Philippine Standards of the Department of Trade and Industry (DTI-BPS). The project has received financial support from the GEF of USD 3,166,065 and co-financing from Philippine government partners and private sector of USD 24,000,000. The objective of the project is “To introduce ISO 50001 energy management standard along with system optimization approach for improvement of industrial energy efficiency of the Philippines”.

The project outcomes and outputs are:

1. Energy management

- Policy support
- Training materials and tools developed.
- National awareness campaign on ISO50001 launched.
- Peer-to-peer network developed.
- Trained national experts/factory personnel on energy management.
- ISO compliant energy management systems implemented.
- Recognition program developed

2. Systems optimization

- Training materials and tools developed.
- Trained national experts/factory personnel on systems optimization.
- Vendors participation on system optimization training
- Documented systems optimization demonstration projects.

3. Financial capacity development to support energy efficiency projects in industry

- Harmonized energy efficiency project evaluation criteria.
- Training materials developed.
- Managers trained on financial aspects of energy efficiency projects.
- Support for packaging of loans for industrial energy efficiency projects

Project results and ratings

The GEF/UNIDO project in the Philippines 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 following 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 policies and fully relevant to the GEF focal area of climate change</p> <p>The Logical Framework, with its outcomes, outputs and target indicators, has been 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 is 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 and Vietnam, allowing for 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 project design, such as how the peer-to-peer network and training could be institutionalized to ensure functioning beyond the project's end. This issue has been given attention during implementation, but to consider this already in the design phase 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 <i>highly satisfactory progress in Component 1</i> and <i>satisfactory in Component 2</i>. The project has certified 44 National Experts (NEs) on EnMS, but to date only 10 NEs on SO; although the target may be reached during 2016. The project has supported various factories to implement EnMS and SO improvement projects that will result in energy savings and a reduction in GHG emissions. Taking into account the delays the project has met and the nonetheless satisfactory progress achieved, it is possible that the project could achieve its global environment and development objectives and effectiveness is rated accordingly</p> <p>In Component 3 (on energy efficiency financing) activities have not started, except for preparation of a request for proposals (RFP) for training for banks and on financial issues for companies. Banks, such as DBP, LBP and BPI, seem interested in cooperation. Activities are rated as <i>moderately satisfactory in Component 3</i>, observing that activities can only be evaluated after they have been initiated in 2015.</p>	S (satisfactory)
3. M&E; Efficiency; <i>UNIDO criteria:</i> Quality at entry & preparedness; UNIDO supervision and backstopping;	<p>Although counterpart resources and adequate project management arrangements were in place at project entry, the project initiation has met some delays and project management has had a setback in terms of the absence of a National Project Coordinator (Oct 2013-Feb 2015). Realizing time planned may be too short, the project has been extended until May 2017. Despite the delay, many management tasks have been satisfactorily carried out by the UNIDO Project Manager and the Officer-in-Charge of the Project Office at the DOE (and project implementation has gotten back on track). They have drafted the progress reports that provide the necessary aspects of the periodical achievements of the project with narrative links back to the outcomes, outputs and targets elaborated in the logical framework.</p>	S (satisfactory)

	There has been good cooperation between the various project partners (DOE, and DTI-BPS) that meet annually in the Project Steering Committee (PSC).	
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 has to be noted that the companies participating are mostly larger companies that have already implemented similar management standards (ISO environment standard or quality). In future, the big challenge will be in passing the energy efficiency (EE) message to medium and small sized companies.	Likely (L)

Key **conclusion** is that the project has been quite effective to date, despite encountering some delays in project implementation, with most planned outputs being achieved by the time of the mid-term review or expected to be on track by the end of 2015.

Recommendations

For the Project Team and national government partners

1) *Association of energy efficiency experts*

A web-based peer-to-peer network, through Basecamp, is in operation to facilitate exchange of information between participating local experts and international experts. To institutionalize this peer-to-peer network and strengthen links with individual companies, industry associations and other organizations, the idea has been proposed to set up an ‘association of experts on EnMS and SO’. The objective of such an association includes:

- To promote competitive pricing of their services
- To protect the member-experts from uncompetitive practices
- To create synergies in building a portfolio of EnMS and SO projects
- To have access to various expertise
- To have a platform or venue for networking
- To facilitate knowledge dissemination and sharing and thus continuing professional education

The ‘Association’ could contribute to sustainability as it would function as a pool of expertise that beneficiaries (companies, financial institutions, government) can resort to when needed. Furthermore, the project website (or parts of it) could be incorporated later in the Association’s website to guarantee the website’s post-project functioning. Here, the Association’s website could also be a place for participating industries to provide information on experiences and best practices, and the Association could also work with the DOE to implement and further strengthen the Don Emilio Abello Energy Efficiency award scheme for companies and to implement a ‘recognition scheme’ for experts in a transparent manner. One issue that remains is the definition of the exact mandate and function of such an Association and second, how it would be financially sustainable. We see the Association basically in a facilitating role, by promoting competitive pricing of and facilitating access to member services.

We suggest that the Project:

- Investigates the desirability and viability of setting up a new Association or, alternatively, joining existing Associations could be an option;
- Helps setting up a detailed business plan for the Association, detailing a) scope and mandate, b) management and administration, c) 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 d) 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 the Philippines and a market of up to tens of thousands of small, medium and large enterprises, the number of trained national experts envisaged, about 80, and the number of companies targeted, about 200 in EnMS and 40 in SO, 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 the country. We suggest diverting some project resources to the following:

- Integration of the EnMS and SO trainings in the curriculum of relevant undergraduate programs of prominent universities;
- Organization of short introduction and refresher courses or seminars at relevant engineering or business training institutes (e.g. UP-NEC) or by relevant industry and professional associations (e.g. IIEE).

The first (curricula integration) would be medium-term in nature, while the second option (short courses and workshops) could probably be implemented in the short term. Piloting both these programs during the project's duration would be a desirable (new) 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 (or partial transfer of relevant info and data), to an existing association (e.g. ENPAP) or the proposed new Association should be considered. Similarly, the destination of the equipment of energy audits and measurement equipment, procured under the project should be determined.

These issues, as well as the institutionalization of the P2P network, the business planning of the Association of EnMS and SO experts, as well as the post-project sustainability of the EnMS and SO training should be part of 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 obvious role of the new Association, the role of existing industrial associations, chambers of commerce and industry and professional associations of engineers could be highlighted. Also, the post-project role and tasks of government entities, such as DOE and DTI-BPS, should be detailed.

These issues should be addressed towards the end of the Project by commissioning a sound 'post-project action plan'. Such an '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.

5) *Finance*

It is not clear exactly what the need for external finance of industrial companies is to realize efficiency improvements (based on EnMS and SO analysis) or regarding larger investments with a large energy efficiency improvement component. In this respect, smaller entities (in particular, small and medium-size industries) would be in more need of finance. The planned survey (see Output 1.6, Indicator 7) should include questions on financing needs and support required. Another suggestion is to establish a working group (that would meet regularly) involving all relevant stakeholders including DOE, banks and selected industry associations to discuss financial issues and options regarding energy efficiency in industry. Such a working group could also advise on training for banks and on financial issues for companies (for which a RFP has been issued), as well as on streamlining evaluation criteria for the approval of efficiency-linked loans.

6) *Gender*

To make the gender dimension in the various project activities more pronounced, gender-disaggregated indicators could be included in the planned company survey to be able to measure gender mainstreaming of the project.

For the multilateral organizations involved

7) *UNIDO*

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

In general, the visibility of the UNIDO-supported projects on EnMS and SO could be much improved, for example, by setting up a dedicated website (as part of UNIDO's overall website) or as a separate set of webpages, covering EnMS and SO in general and the countries where UNIDO has implemented projects in particular. This would also be a good place to make available reports, manuals and selected course materials as well as maintaining an agenda of upcoming events.

8) *GEF*

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 the Philippines 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 (if companies from these subsectors clearly indicate their needs);
- Cover new topics in system optimization (e.g., chillers, fans; again, this should be demand-driven);
- Increased focus on medium-sized companies.

On design, we notice a discrepancy between the sources of confirmed co-financing and the actual realization. Having been involved in the design of many GEF-funded projects, the evaluator knows that co-financing is also calculated to meet GEF demands (e.g. to achieve ratios of 1 to 4 or 6 in GEF financing and co-financing), irrespective of the type of project or how letters of co-financing can be organized during project design. This setup favors the confirmation of co-financing with a few large (supply-side) energy investments over demand-side projects with a multitude of beneficiaries that individually realize small investments. In general, private sector entities are more reluctant to sign co-financing letters than government entities and often not sure what the legal implications of signing such a letter might be. Second, it is obviously easier to get a co-financing letter from two entities investing or making funding available than getting letters from a multitude of entities. In the case of the Philippine proposal, a large part of co-financing has been committed by the financial sector (as such positive, because it indicates their interest and commitment in energy efficiency), while in practice it seems likely to come from the companies themselves that realize small energy efficiency investments without having to resort to external finance. Conclusion is that the GEF should allow more flexibility and realism when co-financing is incorporated in the project design.

Lessons learned

The framework program on EnMS and SO in South East Asia can be used and should be presented by UNIDO as a best practice. The Philippines project can use this context to present 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 favorable 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 Standard (EnMS), ISO 50001, requires 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. 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 systems optimization 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 programs 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 Philippines is halfway its project implementation and therefore needs to undergo a MTR. It was decided by UNIDO to award the review contract to two independent consultants, Mr. Johannes (Jan) Van den Akker (Netherlands) and Mr. Jessie Todoc (Philippines).

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 program 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. Besides the Philippines project, the programme is composed of national projects implemented in Indonesia, Thailand, Vietnam, the Philippines and Malaysia; each designed to facilitate introduction of ISO 50001 through training and capacity building, including a technical focus on systems optimization.

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 for the mid-term reviews 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 to have a more profound assessment. This report presents the findings of the MTR for the Philippines, while a summary of issues and findings that are common to all four countries is 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, and outcomes/impacts based on indicators. The assessment includes re-examination of the relevance of the objectives and other elements of project design

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

- 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 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 has been based on 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 the Philippines (from 16 to 20 March 2015) to hold interviews with stakeholders, beneficiaries and key informants and 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 analyzed 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 has provided the basic facts and information for developing a first draft mid-term review report, while the mission has served to verify the basic facts, 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 has been conducted in accordance with the UNIDO Evaluation Policy, the UNIDO Guidelines for the Technical Cooperation Programs and Projects, the GEF's 2008 Guidelines for Implementing and Executing Agencies to Conduct Terminal Evaluations, the GEF Monitoring and Evaluation Policy from 2010 (see Annex G).

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 will yield viable answers to the evaluation/review questions within the limits of budget resources for the review and time availability. In addition, the international consultant was also recruited to undertake the mid-term review of similar projects in Indonesia 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 the Philippines, while issues that are common to all three 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 summarize 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 Terms of Reference (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 18 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"> 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 Stakeholder involvement

Contents	Reference to relevant parts in the model outline of the MTR report (as given in the ToR; see Annex A)
	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 (ToR) 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> ; <u>effectiveness</u>	
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 the Philippines

Energy sector overview

In 2012, the total primary energy supply was 42.1 million tons of oil equivalent (Mtoe). Of that, 26.4 Mtoe (62%) came from fossil fuels and the remaining 15.7 Mtoe from renewable sources (geothermal, hydro, biomass, solar, wind). Due to its modest proven fossil fuel reserves, the Philippines is dependent on imports and is susceptible to price shocks from volatility in world oil prices. Total energy demand in 2012 was 23.3 Mtoe, with the industrial sector consuming 5.8 Mtoe (25%). Total CO₂ emissions from energy related activities reached 72.9 million tons of carbon dioxide-equivalent (MtCO_{2e}) in 2011 with the industry sector contributing 11.32 MtCO_{2e} (15.5%).

The industrial sector will have the highest growth in energy demand out of any sector. It is projected to grow a minimum of 5.2% on average per year to 2030, while total energy demand is expected to grow at minimum of 3.5-3.6% on average per year to 2030². On the other hand, under a low carbon scenario, the DOE projects total final energy consumption to increase at an average rate of 2.8% per year, from 23.0 Mtoe in 2011 to 39.1 Mtoe in 2030 with industry energy demand growing at 3.0% annually.

The 2012-2030 Philippine Energy Plan (PEP) seeks to mainstream access of the larger populace to reliable and affordable energy services to fuel, most importantly, local productivity and countryside development. For the medium-term, the 2012-2030 PEP is basically anchored on the policy framework set in place with the formulation of the Energy Reform Agenda (ERA). The ERA is consistent with national development directives such as the President's Social Contract and the 2011-2016 Philippine Development Plan; and is responsive to global policy frameworks on energy such as the UN Sustainable Energy for All (SE4All) Initiative and the APEC Green Growth Goals.

Energy efficiency policy and framework

The PEP includes the National Energy Efficiency and Conservation Program (NEECP) as one of the centerpiece strategies in pursuing energy security of the country and looks into it as a major solution to the energy challenges of the future. To lay the groundwork for a national energy efficiency plan, the PEP recognizes the need for an energy conservation law as a critical measure in managing the country's energy demand.

The NEECP was launched in August 2004. The following activities have been implemented under NEECP:

- DOE Fuel Economy Run, focusing on vehicle maintenance and driving capabilities to promote and obtain data on actual fuel consumption;
- Don Emilio Abello Energy Efficiency Awards that give recognition to outstanding companies and energy managers who have implemented EE&C (energy efficiency and conservation) programs;
- The ASEAN-wide Best Practices Awards Competition (for energy management in buildings and industry) was launched in March 2000 as part of the program on EE&C of the ASEAN;
- Energy Labelling and Efficiency Standards; DOE's Lighting and Appliance Testing Laboratory (LATL) conducts energy performance tests on electrical household appliances, such as room air conditioners and refrigerators and lighting system such as fluorescent lamps and ballasts;
- Energy audits is a technical service provided by the DOE to manufacturing plants, commercial buildings and other energy-intensive companies, often seeking the support of energy service companies (ESCOs) in

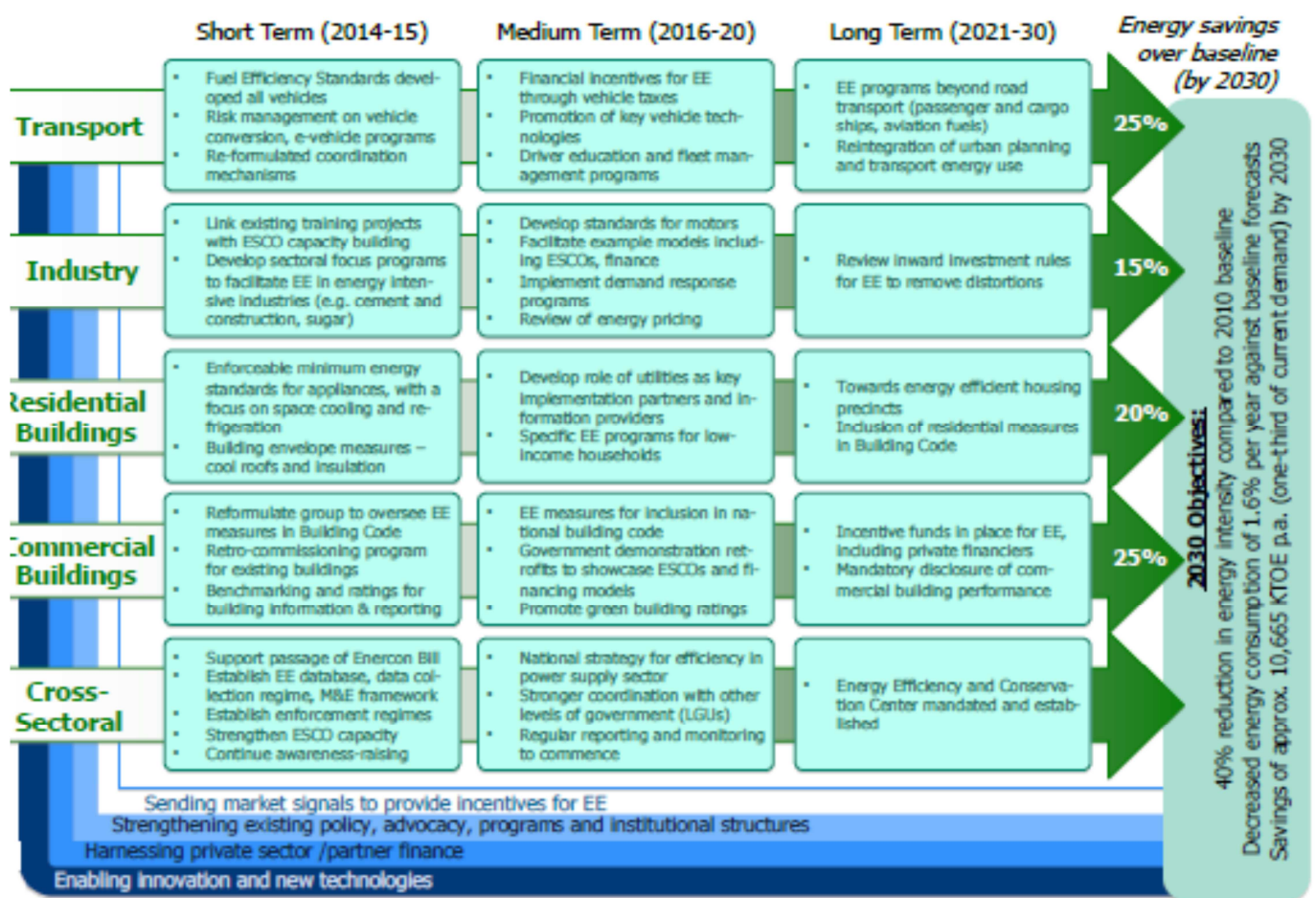
² APEC (2014), based on energy statistics provided by DOE

providing engineering and energy management services. The promotion and the accreditation of ESCOs by the DOE has been embodied under the DOE-Department Circular issued in 2008;

- Government Energy Management Program (GEMP), which is a continuing program of the DOE that involves the monitoring of fuel and electricity consumption of all government departments, bureaus, government owned & controlled corporations, academic institutions, as well as the establishment of energy conservation programs and an energy conservation group in each agency;
- Voluntary agreements are arranged between the DOE and industrial and commercial establishments, encouraging these sectors to voluntarily monitor their energy consumption and implement EE&C programs;
- Information, education and communication (IEC) campaigns, disseminating information on energy standards, energy efficient products and technologies;
- Promotion of energy efficient technologies in the industrial, commercial, government buildings and household sectors (demand-side management).

The DOE has come up with the National Energy Efficiency and Conservation Action Plan with the goal of 10% savings in the annual final energy demand forecast for the period 2010 to 2030. The long term objective of the plan is to increase annual energy savings, deferred power capacity and annual GHG emission

Box 3 Summary of the new 2014-2030 EE&C Road Map



Source: EU (2013), “An Energy Efficiency Roadmap for the Philippines 2014-2030,” Switch Asia Policy Support

avoidance from 848 ktoe, 384 MW and 1413 kilotons CO₂ in 2012, respectively, to 2,850 ktoe, 1291 MW and 4,748 kilotons CO₂ annually by the year 2030³

A legislative bill has been crafted to enhance the EE&C activities of the Philippines. This bill is known as the Sustainable Energy Efficiency and Conservation Act of 2015 (the Enercon Bill) and seeks to establish a policy foundation for accelerating energy efficiency in the economy, and to develop an integrated, comprehensive energy management policy to maximize the impact of energy efficiency and conservation in the economy. The Bill has not been passed in Congress yet. The sooner the legislature enacts the bill, the sooner the Act’s provisions will come into effect, which would trigger significant improvements in energy efficiency across the Philippines

The bill would empower the DOE to lead and coordinate with other government agencies a national program on EE&C. The Bill also proposes:

- An Energy Efficiency and Conservation Center of the Philippines that would provide information, knowledge and training and conduct certification of energy managers, among other functions;
- The provision of fiscal incentives, including tax and duty –free importation of capital equipment and tax credit on domestic capital equipment;
- The establishment of an Energy Efficiency and Conservation Fund to support implementation of projects, training and capacity building, and an IEC campaign.

The NEECP had been the basis for the Energy Efficiency and Conservation Roadmap (2011-2030). Among others it had sought for the updating and expansion of the NEECP, as well as passage and implementation of the Enercon Bill. A new Roadmap (2014-2030) targets 1.6% average annual energy savings by 2030 that translate to 24% cumulative or total savings, 3% average annual improvement in energy intensity and 40% total reduction in energy intensity, all compared to 2010 baseline. For the industrial sector, the new Roadmap targets 1.3% average annual savings and 15% total savings as against 2010 baseline. The new Roadmap specifies priority short-, medium- and long-term actions both cross-cutting and by sector.

2.2 Project rationale and justification

Despite these encouraging efforts initiated by the government, much work needs to be done in the energy efficiency field in practice. For example, most industries in the Philippines are already ISO certified (ISO 9001:2008) for quality management and safety, but are not familiar with latest ISO standard 50001 on energy management systems (EnMS) nor are they familiar with the concept of system optimization for improving energy efficiency. To address barriers to the more widespread adoption of energy management and system optimization practices and to energy efficiency in industry in general, multilateral technical assistance was sought from United Nations Industrial Development Organization (UNIDO) and the Global Environment Facility (GEF) for the “Industrial Energy Efficiency Project” (see Box 4).

Box 4 Barriers and project-supported mitigation action

Barriers	UNIDO/GEF Project intervention (outputs as mentioned in Project Document)
<p>Companies have investment priorities other than energy efficiency; insufficient information available on costs/benefits</p> <p>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. The strong perception</p>	<p>1.1 Policy support</p> <p>1.2/2.1 Training materials and tools developed.</p> <p>1.3 National awareness campaign on ISO50001 launched.</p> <p>1.5 /2.2 Trained factory personnel on energy management and on systems optimization</p> <p>1.7 Recognition program developed.</p>

³ *Energy Efficiency and Conservation, 2011 Accomplishments*, presentation by DOE

<p>prevails that energy efficiency is exclusively about process change-out and retooling and from a lack of knowledge of the financial attractiveness (modest investment, less than 2-year payback) of the majority of energy efficiency opportunities.</p>	
<p>Insufficient technical expertise in the company to identify, develop and implement EE projects <i>Energy management</i> 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. 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><i>System optimization</i> 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 consider just making 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>1.2/2.1 Training materials and tools developed. 1.4 Peer-to-peer network developed. 1.5 /2.2 Trained national experts and factory personnel on energy management and on systems optimization 1.6 ISO compliant energy management systems implemented. 2.4 Documented systems optimization demonstration projects.</p>
<p>Local manufacturers and equipment suppliers lack technical information and expertise for supporting decisions to pursue energy efficiency improvements in the products. The experience and skills are limited in marketing their products and brands to the industry without offering alternatives to improve the system efficiency as a whole.</p>	<p>2.3 Vendors participation on system optimization training</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 the financial institution and bank level, there is a lack of understanding of the particularity of energy efficiency projects and how to properly evaluate them, and (ii) the disconnect between the financing products offered and the needs of EE projects.</p>	<p>3.1 Harmonized energy efficiency project evaluation criteria. 3.2 Training materials developed. 3.3 Managers trained on financial aspects of energy efficiency projects. 3.4 Support for packaging of loans for industrial energy efficiency projects</p>

2.3 Project description and strategy

The **objective** of the project is “Introduce ISO 50001 energy management standard along with system optimization approach for improvement of industrial energy efficiency of the Philippines”. The project outcomes and outputs are summarized in Box 5 below.

UNIDO, the GEF implementing agency, has been implementing the project in close collaboration with the Department of Energy (DOE) and the Bureau of Philippine Standards of the Department of Trade and

Industry (DTI-BPS). The UNIDO Project Manager (at UNIDO Hqs.) oversees project implementation and monitoring. However, the day-to-day project management is the responsibility of the Project Management Unit (PMU), headed by a National Project Coordinator, which located within the premises of DOE. The PMU has been guided by the Project Steering Committee (PSC) on the implementation of the project and coordination among different government agencies and organizations. The PSC consists of high-level representatives from DOE, DTI, Department of Environment and Natural Resources (DENR), 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: Energy Management</p> <p>Outcomes :</p> <ul style="list-style-type: none"> • Energy management standard promulgated nationally • Capacity of industry and industry support organizations developed to implement ISO compliant energy management systems. • Increased adoption of energy management standards by industry 	<p>1.1 Policy support</p> <p>1.2 Training materials and tools developed.</p> <p>1.3 National awareness campaign on ISO50001 launched.</p> <p>1.4 Peer-to-peer network developed.</p> <p>1.5 Trained national experts/factory personnel on energy management.</p> <p>1.6 ISO compliant energy management systems implemented.</p> <p>1.7 Recognition program developed.</p>	1,078,065	4,600,000
<p>Component 2: Systems optimization</p> <p>Outcome 2:</p> <ul style="list-style-type: none"> • Capacity of industry and industry support organizations developed to implement systems optimization. Increased adoption of system optimization energy efficiency projects by industry 	<p>2.1 Training materials and tools developed.</p> <p>2.2 Trained national experts/factory personnel on systems optimization.</p> <p>2.3 Vendors participation on system optimization training</p> <p>2.4 Documented systems optimization demonstration projects.</p>	1,163,500	18,200,000
<p>Component 3: Enhancement of financing capacity</p> <p>Outcome 3:</p> <ul style="list-style-type: none"> • Increased availability of financial capacity and support for industrial energy efficiency projects 	<p>3.1 Harmonized energy efficiency project evaluation criteria.</p> <p>3.2 Training materials developed.</p> <p>3.3 Managers trained on financial aspects of energy efficiency projects.</p> <p>3.4 Support for packaging of loans for industrial energy efficiency projects</p>	503,500	475,000
Project Management		316,000	705,000
Monitoring and Evaluation		105,000	20,000
Total		3,166,065	24,000,000

2.4 Main project stakeholders

The following Box gives an overview of the main government stakeholders in energy and industry:

Box 6 List of main stakeholders

Stakeholder	Description
Government	
Department of Energy (DOE)	DOE has been entrusted with the mandate to prepare, integrate, coordinate, supervise and control all plans, programs, projects and activities of the government relative to energy exploration, development, utilization, distribution and conservation. The DOE formulates, plans and implements energy policy of the country. Within DOE, the Energy Utilization Management Bureau (EUMB) is responsible for the formulation and implementation of policies, plans, programs and regulation on utilization of energy, including conventional, new and renewable energy technologies. Within EUMB, there is the Energy Efficiency and Conservation Division (EECD). The DOE chairs the Steering Committee of the Don Emilio Abello Energy Efficiency Award, while the Technical Evaluation Committee is chaired by a representative from the private sector.
Bureau of Philippine Standards (BPS) – Department of Trade and Industry (DTI)	Under the Department of Trade and Industry, BPS develops, promotes, and implements product standards and related programs nationwide. It also participates and represents the country in various standards-related activities worldwide. BPS is an active member of the International Organization for Standardization (ISO), the International Electro-technical Commission (IEC), the Asia Pacific Economic Cooperation (APEC), and the ASEAN Consultative Committee for Standards and Quality. Among its programs and services is the Accreditation of Conformity Assessment Bodies, which awards certificates of accreditation to management system certification bodies that issue Certificates, e.g. on ISO 9001, ISO 14001 and ISO 50001
Department of Environment and Natural Resources (DENR)	The DENR is tasked to formulate and implement policies, guidelines, rules and regulations related to environmental management and pollution prevention and control. It likewise implements and supervises the government's policies, plans and programs pertaining to the management, conservation, development, use and replenishment of the country's natural resources and biological diversity. DENR is the GEF focal point.
Department of Science and Technology (DOST)	DOST formulates the Technology and Science Plans, and promotes technological and scientific research in the country, and provides where appropriate certain technological and assessment services. Under the purview of DOST, the Philippine Council for Industry and Energy Research & Development (PCIERD) is a government agency for the planning, monitoring, and promotion of scientific and technological research for applications in the industrial, energy, utility, and infrastructure sectors.
Development Bank of Philippines (DBP) Land Bank of the Philippines (Land Bank)	DBP is a state/owned development bank aiming at various economic sectors, while the Land Bank (also state-owned) has a focus on agriculture. DBP aims to cater for the need of enterprises with emphasis on small and medium-scale enterprises. In their development financing DBP and Land Bank are committed to environmental and sustainable development projects and have been financing projects in the area of renewable energy, energy efficiency and biofuels.
Bank of the Philippine Islands (BPI)	BPI is a leading private-owned provider of financial services in the Philippines. BPI's Sustainable Energy Finance (SEF) Program makes available finance for companies to invest in technologies aimed at improving the efficiency of energy generation, energy distribution and energy use. Sustainable energy projects include energy efficiency modifications and renewable energy technologies.

3. FINDINGS: DESIGN AND FORMULATION

Chapters 3 to 5 present an overview of the evaluation findings, based on an assessment of the achievements 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

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 at the international markets constitute a threat to the environment and economic 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 in more detail, energy efficiency and conservation policy and planning is laid down in the 2012-2030 Philippine Energy Plan, the National Energy Efficiency and Conservation Program (launched in 2004), and the latest Energy Efficiency and Conservation Roadmap (2014-2030). The Climate Change Act 9729 (2010) aims at mainstreaming climate change into government policy formulations, establishing the framework, strategy and program on climate change and creating the Climate Change (CC) Commission. The CC Commission (under the Office of the President) is the lead-policy making body of the government tasked to coordinate, monitor and evaluate government programs and ensure mainstreaming of climate change in national, local, and sectoral development plans. Under DENR, a Climate Change Office (CCO) was created in 2009 that serves as the coordinating mechanism internally among the DENR offices, as well as externally, with other national government agencies, non-government organizations and local government units on matters related to climate change.

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 the Philippines, 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 firms.

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 about 25 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 to be 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 for more information on methodology and setup).

Stakeholder involvement in project design

During the preparatory phase, UNIDO engaged in direct and open discussions with the Department of Energy (DOE) to identify and understand the country’s needs and priorities in terms of enhancement of the industrial sector. The government identified finally four sectors as a priority for the Project: a) metals and steel, b) food and beverages, c) pulp and paper, d) chemicals. The final selection took into account already ongoing or planned initiatives. During the project preparation phase (PPG) 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.

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 about 25 countries around the world, including six countries in South East Asia.

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), 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 the GEF minimum standards for M&E. The GEF budget of USD 105,000 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. In fact, the allocation for M&E is higher than in similar GEF projects in which the GEF funds for M&E are usually budgeted at USD 50,000-100,000, depending on the size of the project.

The project logical framework approach has been used for the design of activities to implement the project. The logical framework (or logframe) 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 (numbered for easy reference), giving per indicator the evaluators’ assessment of progress in achieving the target value of the indicator.

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

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 7 to 9 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 7 Assessment of project progress: Component 1

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; March 2015)
Component 1: Energy management		
<i>Outcome:</i>		
<ul style="list-style-type: none"> • Energy management standard promulgated nationally. • Capacity of industry and industry support organizations developed to implement ISO compliant energy management systems. • Increased adoption of energy management standards by industry 		
1.1 Policy support: <ul style="list-style-type: none"> • Government officials will be familiarized with policy instruments used in developed economies to stimulate the uptake of EE 	1) Policy paper <ul style="list-style-type: none"> • Policy paper focusing on energy management in the context of negotiated agreements and experience in developed economies and China 	1. Policy paper: <ul style="list-style-type: none"> • Policy workshop was conducted on February 20, 2014 in Manila, and recommendations were agreed-upon, including inputs to be provided to the DOE on the Enercon Bill. • These recommendations have been forwarded to the DOE for their action. • Ongoing and planned: the Project team will continue to support the DOE as required for the approval of the draft Enercon Bill, as well as energy-related standards (like ISO 50001) and energy-efficient practices
1.2 Training materials and tools on energy management developed <ul style="list-style-type: none"> • Development of training materials, teaching materials, guidelines and manuals. • Preparation of an energy management guide for industry 	2) Availability of training materials on energy management <ul style="list-style-type: none"> • Detailed and tested training materials to facilitate industries' conformance with an energy management standard (ISO 50001); 	2. Comprehensive training materials and tools to support energy management systems were revised in early 2014 in line with feedback from the PMU, experts and training participants. Trainings materials are as follows: <ol style="list-style-type: none"> a) EnMS Awareness Workshop b) EnMS Two-Day User Training c) EnMS Experts Training (3 Modules)

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; March 2015)
with energy performance reporting tool		
<p>1.3 National awareness campaign launched on ISO 50001:</p> <ul style="list-style-type: none"> • Media and publicity campaign. • Development of promotion materials. • Awareness campaign for ISO 50001 with press releases and presentations to industry association 	<p>3) A national campaign to promote industrial energy management and ISO 50001</p> <ul style="list-style-type: none"> • Publicity materials; brochures 	<p>3. Ongoing awareness campaigns:</p> <ul style="list-style-type: none"> • Awareness workshops, networking/ appreciation meetings, development of the project website, as well as posting of notices on the DOE website and social media; • Project website and brochures; see www.iee-philippines.com; • Participation and/or collaboration on related national and regional seminars and workshops. e.g. joint organization of Seminar on EGY 101 for Philippine legislators, and participation in Seminar on Basic Energy Management organized by ENPAP
<p>1.4 Peer-to-peer network developed:</p> <ul style="list-style-type: none"> • Creation of the network • Oversight and data collection (facilities which will take part in the project will be encouraged to send their energy management implementation plan and the result of implementations) 	<p>4) A peer-to-peer (information sharing) web-based network established to enable companies to share information on energy management;</p> <ul style="list-style-type: none"> • Network in operation and in use to document energy savings by companies participating in the project and to identify companies worthy of recognition; 	<p>4. Network:</p> <ul style="list-style-type: none"> • A web-based network, through Basecamp, is in operation to facilitate exchange of information between participating local experts and international experts; The address link is www.basecamp.com • Ongoing collaboration with professional organizations, industry associations, chambers of commerce, accreditation bureaus and certification bodies. Organizations include the Federation of Philippine Industries (FPI), Institute of Integrated Electrical Engineers (IIEE), Philippine Society of Mechanical Engineers (PSME). • Regular updating of project progress to DOE officials. • Currently coordinating with PEZA (Philippine Economic Zone Authority), FPI (Federation of Philippine Industries), PMAI (Phil. Metalcasting Association, Inc.) and PhilFoodEx (Philippine Food Exporters Association) to conduct information campaign to their member association and business locators.
<p>1.5 Trained national experts/factory personnel on energy management.</p> <p>The training setup is described in the main text below</p>	<p>5) Number of Filipino experts trained in energy management practice and procedures</p> <ul style="list-style-type: none"> • 40 engineers trained specifically in energy management to a level such than they can train others; <p>6) Number of Filipino factory personnel trained in energy management practice and procedure</p> <ul style="list-style-type: none"> • Personnel from 500 factories familiar with 	<p>5. Training of experts</p> <ul style="list-style-type: none"> • The project targets 40 National Experts on EnMS and so far 44 experts have passed, including 19 out of the 30 that participated during Batch one and 25 out of the 32 that participated in Batch two. Experts are usually from a mix of backgrounds, including consultants, experts from beneficiary industries, partner government agencies, equipment and service providers and academia. <p>6. To date, 8 EnMS 2-day User trainings have been conducted with 529 personnel coming</p>

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; March 2015)
	energy management of which 200 will be capable of implementing energy management plans.	from 270 factories; • Plan for 2015: management and engineers from 300 factories will be trained on EnMS (including half-day awareness workshops and 2-day user training)
1.6 ISO compliant energy management systems implemented: • 200 factories complete energy management projects • 40 factories nationwide to fully implement ISO 50001; • Participating factories are registered for the peer-to-peer network.	7) Number of factories implemented ISO compliant energy management systems and operational energy management projects • 200 factories complete operational improvement projects. • National experts work with 40 factories to fully implement ISO 50001. There were 56 candidates who assisted in the implementation 8) 30 case studies	7. Energy Management systems: • Follow-up surveys will be conducted in 2015 to collect data on the number of operational improvement projects actually implemented by companies after their staff attended 2-day User Trainings • 23 candidate national experts of Batch 1 worked with 8 companies to implement EnMS, while 27 candidate national experts of Batch 2 worked with 10 companies ⁴ . Up to now, 44 of these experts passed to be recognized as National Experts (NEs). 8. No report was submitted for 2 companies under batch 1, and a report is pending submission for one company under batch 2. Up to now, only 15 companies have proven implementation of EnMS ⁵ . Up to now, 4 case studies have been developed for EnMS host plants, namely, Nestle Philippines – Lipa factory, Steel Asia Bulacan Works, Pag-asa Steel Works, and Funai Electric (producer of inkjet printer supplies and consumer electronics).
1.7 Recognition program (award scheme) for participating factories based on successful achievement: • Data inputs by participating industries into peer-to-peer network website on their energy saving performances. • Factories reporting energy savings receive recognition.	9) Existing DOE award program strengthened	9. The DOE has an ongoing national recognition program held annually, the Don Emilio Abello (DEA) Energy Efficiency Awards; 19 National Experts (Batch 1) trained by the project on EnMS (Batch 1) were recognized as National Experts during these awards in December 2013, while 10 SO national experts were recognized during the 2014 DEA Awards. Since then, 25 more candidates have been trained and certified as National Experts. The project aims to enhance this program by recognizing companies that have saved energy through EnMS and Systems Optimization. The 18 companies that have put in place EnMS and 25 EnMS National Experts trained and certified by the project will be recognized during the 2015 DEA Awards.
Rating: highly satisfactory (HS)		

⁴ The project also rewards up to USD 2,000 to national experts that have implemented EnMS in companies, but only companies that belong to the four priority industry sectors are eligible—that is, food and beverages, chemicals, metals and steel, and pulp and paper. In this regard, at least 2 companies (i.e. Maynilad Water and San Miguel Yamamura Packaging) that have implemented ENMS under the project do not belong to these priority sectors.

⁵ It should be noted that often companies are seeking certification of ISO 50001, as part of IMS certification (Integrated Management System) (e.g. Pag-asa Steel, San Miguel Yamamura, CADPI, Steel Asia-Bulacan Works).



Expert training on energy management, first batch



Recognition of national CASO and SSO experts, Dec. 2014 (during National Energy Consciousness Month)

Box 8 Assessment of project progress: Component 2

Outputs and activities	Indicators (numbered) Targets (bulleted)	Value or description of indicator (evaluation assessment; Jan. 2015)
Component 2: Systems optimization		
<p><i>Outcome:</i></p> <ul style="list-style-type: none"> Capacity of industry and industry support organizations developed to implement systems optimization; Increased adoption of system optimization energy efficiency projects by industry 		
<p>2.1 Training material and tools developed</p> <ul style="list-style-type: none"> Development of training materials (presentations, background papers, guidelines) on steam, compressed air, pump and fan systems 	<p>10) Availability of technical training materials and tools on systems optimization for industries.</p> <ul style="list-style-type: none"> Training curricula and guidelines for steam, compressed air and pumping systems optimization; 	<p>10. Six (6) sets of training materials and manuals completed for steam, pumping and compressed air system optimization and distributed during trainings</p>
<p>2.2 Trained national experts/factory personnel on systems optimization</p>	<p>11) Number of trained national experts</p> <ul style="list-style-type: none"> 40 Filipino engineers intensively trained on 	<p>11. Four expert trainings conducted, with a total of 81 local experts participating:</p> <ul style="list-style-type: none"> CASO (compressed air), 22 experts SSO (steam), 45 experts

<p>The training setup is described in the main text below</p>	<p>compressed air, pump, fan systems and steam system optimization.</p> <p>12) Number of trained factory personnel</p> <ul style="list-style-type: none"> • 400 factory personnel familiar with systems optimization of which 150 are familiar with the use of UNIDO's tools; 	<ul style="list-style-type: none"> • PSO (pumps), 14 experts • So far, 10 NEs have passed (for CASO and SSO) <p>12. Training on SO:</p> <ul style="list-style-type: none"> • To date, fourteen (14) 2-day industrial End-User trainings on Systems Optimization (SO) were conducted in various regions of the Philippines. In these trainings, 446 personnel from 312 factories were made familiar with the use of UNIDO tools in SSO, CASO and PSO <p>Plan for 2015:</p> <ul style="list-style-type: none"> • 60 factories participate in SSO user training, 60 factories in CASO users training, 50 factories in PSO users training, • 23 local experts trained as national experts on SSO , 12 people as national experts on CASO and 15 as PSO national experts
<p>2.3 Vendors participation on system optimization training</p> <ul style="list-style-type: none"> • To introduce equipment vendors, manufacturers' representatives, and suppliers of steam boilers, pumps, fans and compressors to system optimization technique 	<p>13) Number of equipment vendors participated on the training programs:</p> <ul style="list-style-type: none"> • 40 Filipino equipment vendors (pumps, compressors motors, etc.) knowledgeable about capture of systems level efficiency opportunities applicable to their products. 	<p>13. 30 personnel from equipment vendors of compressed air and steam systems have been trained on SO</p> <ul style="list-style-type: none"> • Plan for 2015: 10 companies participate in SSO vendors training, 30 companies in CASO vendors training, 30 companies in PSO vendors training
<p>2.4 Documented energy efficiency (systems optimization) demonstration projects:</p> <ul style="list-style-type: none"> • Out of 60 completed system assessments, it is expected that 40 participating industries will implement systems optimization projects in their facilities. Case studies will document the energy and GHG emissions savings directly attributable to the project. 	<p>14) Documented energy efficiency (SO) demonstration projects</p> <ul style="list-style-type: none"> • 60 systems assessments completed, of which 40 lead to completed projects • 25 case studies documenting energy savings. 	<p>14. Implemented SO projects:</p> <ul style="list-style-type: none"> • 22 factories have served as host plants for SO assessments, of which 14 assessments were completed to date; • 42 plants/factories were visited by international experts and the PMU for the promotion of SO and identification of suitable plants for implementation of SO projects; • Case studies on SO are expected to be developed in 2015
<p>Rating: Satisfactory (S)</p>		



Industrial users training, SSO

Box 9 Assessment of project progress: Component 3

Component 3: Enhancement of financial capacity		
<i>Outcome:</i> Increased availability of financial capacity and support for industrial energy efficiency projects		
<p>3.1 Harmonized energy efficiency project evaluation criteria</p> <ul style="list-style-type: none"> • These criteria will be consistent with accepted banking practices and will include a scoring system to provide guidance for bankers in determining the validity of projected energy savings resulting from proposed energy efficiency improvements, and provide guidance on using the scoring system as in input to the assessment process to determine the return on investment for the financial institution from a loan for the proposed improvements 	<p>15) Evaluation criteria are harmonized within financial institutions to help them select better EE projects.</p> <ul style="list-style-type: none"> • Evaluation criteria are harmonized within financial institutions to help them select better EE projects 	<p>15. Terms of reference have been issued as part of a request for proposals (RFP) for the hiring of a suitable consultancy company to design the training materials is presently being developed and consultations with sector experts are also underway. The activity is expected to start in July 2015.</p>
<p>3.2 Training materials developed</p> <ul style="list-style-type: none"> • Development of training material and tools on bankable EE projects for industries • Compilation and dissemination of information on financial/incentives/schemes available for investments on energy efficiency projects in the Philippines 	<p>16) Availability of training materials on financing energy efficiency projects</p> <ul style="list-style-type: none"> • IEE-specific training materials and guidelines available to both loan applicants and FI staff. 	<p>16. Activities under this component are scheduled to begin in 2015.</p>
<p>3.3 Managers trained in the financial aspects of energy efficiency project:</p> <ul style="list-style-type: none"> • The international energy management experts responsible for developing the energy management training (Output 1.4) will conduct workshops on energy management, including a one-hour training offered to the 500 factory managers participating in the energy management workshop. • 2 hour workshop on energy efficiency evaluation criteria given to 	<p>17) Number of managers trained:</p> <ul style="list-style-type: none"> • Financial managers with increased knowledge of risk assessment, technical issues and legal concerns, pertaining to evaluation of IEE investments 	<p>17. Activities under this component are scheduled to begin in 2015.</p>

financial institutions <ul style="list-style-type: none"> • One-half day workshop on energy efficiency project development given to at least 40 national experts 		
3.4 Support for packaging of loans for industrial energy efficiency projects: <ul style="list-style-type: none"> • 2 -day workshops on the packaging of loans for industrial energy efficiency projects. The workshops will include: project development cycle, market analysis, technical aspects,-financial analysis, economic cost-benefit analysis, and project implementation 	18)Support for packaging of loans for industrial energy efficiency projects: 19) Financial managers with improved understanding of IEE investment project appraisal	Activities under this component are scheduled to begin in 2015.
Rating: Marginally satisfactory (MS)		

Components 1 and 2; training

Over 900 representatives of industry, consultants, government staff and university lecturers have participated in briefings and awareness workshops on EnMS and SO (half-day awareness and 2-day user trainings). 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 will deliver intensive training to national experts to a level as such that they can train others. At the second step, international and national experts provide trainings and assistance to factory personnel. For a general overview on the approach and methodology of the various EnMS and SO trainings, the reader is referred to Annex D.

In the Philippines, 529 people (from 270 companies) participated in 2-day training events on EnMS and 446 people (from 312 factories) 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 62 experts have participated (of which 44 have passed examination) and training in three SO expert modules (81 experts, in which 10 have passed exams so far). For 2015, more staff will be trained on EnMS (from an expected 300 factories), while an additional 50 experts will be trained and about 170 factories might participate in the SO trainings. Annex E presents more information on the 2015 training plan.

Components 1 and 2; implementation

Experts (EnMS, SO) may come from industry (in-house experts), are consultants or may come from equipment vendors, service providers and academia/institutes, and trainings have, therefore, drawn a mix. As part of the training process, the trained local experts need to implement their knowledge in pilot companies to assist them in setting up ISO 50001 and save energy through systems optimization. The project has successfully supported around 18 pilot companies to adopt ISO 50001, of which four case studies have been developed; this is an indication of the national experts' capacity to support ISO 50001 adoption. Regarding SO, 22 factories have served as hosts, of which 14 assessments were completed to date.

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 Outputs 1.6 and 2.4.

Box 10 Case studies EnMS and SO; selected companies

Pag-asa Steel Works Inc. is one of the largest producers of concrete-reinforcement steel bars in the Philippines, located in Pasig City, employing over 200 people. The company had already implemented management standards, such as ISO 9001 (quality management system). With UNIDO support, an ISO 50001 compliant EnMS (energy management system) has been implemented and the company has expressed interest to get ISO 50001 certification. As a focus area, the furnace system was chosen and a data-driven approach to improve energy performance was placed on the furnace, as well as challenging operational control and procedures. Changes were made to the operational set points (combustion air temperature, waste gas temperature, soaking zone, billet temperature, heating zone and furnace pressure) and this has resulted in a 5% improvement in the furnace's bunker fuel consumption as compared to the baseline. Other measures (e.g. down-time monitoring leading to power savings) are in progress.

TIPCO is a major manufacturer of high quality paper for Philippines and many countries in the Asia-Pacific region. The entire product is manufactured from recycled paper that is processed on site. Daily production is around 420 tons. Compressed air is an essential service used for instrumentation, processes and general services. With the help of a National Expert, a number of measures have been identified to optimize the compressed air systems: a) repair of air leaks on the systems; b) improvements in the cooling water of the air compression units (by reducing 3-4°C on inlet water temperature); c) use of portable vacuum cleaners in cleaning of rollers instead of blowing air; d) reduction of the pressure set-point from 6 to 5 bars for the service air system; and e) reduction of air volume needed by installing threading nozzles on service air hose and f) installation of new air dryers for the instrument air system.

Nestlé Philippines is a large food and beverage company and has various manufacturing facilities in the country. The factory at **Lipa** (Batangas) was chosen as pilot for the implementation of an ISO 50001 compliant EnMS. The factory produces well-known brands such as Milo chocolate drink and Nestlé breakfast cereal and has re-packaging facilities for other products. The factory already had an existing IMS (integrated management system) in place, encompassing ISO 9001 (quality), ISO 14001 (environmental management) and 22000 (food safety). The Lipa factory has conducted an energy review (to establish a baseline and energy base load) and crafted an energy policy with objectives, targets and action plans and energy performance indicators. A number of measures have also been identified, such as steam insulation, steam trap management, improving of the power factor and reduce transformer losses, installation of a high-efficiency blower and replacement of an existing chilled water pump with an energy efficient pump.

The Rightpak plant of the **San Miguel Yamamura Packaging Corp.** provides packaging solutions to a range of food, beverage and pharmaceutical companies. Before the introduction of an ISO based EnMS, the company was already implementing measures, such as engineering and energy audits and monitoring of power and fuel consumption per unit of product produced but activities were not implemented as part of a consistent framework. Now, energy management is planned and implemented more systematically and the awareness of managerial and technical staff has increased. Operation and maintenance practices have also improved, such as better temperature control in the Exlam machine (less rejection of products due to delamination), improvements in the water supply line and less ink clogging caused by clogged coils in the air handling system, as well as switching off water supply during no-operation, changing to LED lighting in offices, installation of skylight roofing at the staging areas, and decentralization of air-conditioning.

Pilot Company	Actions Implemented	GJ Fuel Saved/year	MWh Saved /year	CO2 Reduced (ton/year)	Energy Cost Saving (USD/year)	Investment (USD)	Simple payback (years)
Pagasa Steel	Set point adjustment at the furnace	811,900		2,157.1	179,536	-	0.00
Nestlé - Lipa	Steam insulation management		103	68.1	2,443	3,250	1.33
	Steam trap management		648	428.6	11,239	35,159	3.13
	Improve power factor and reduce transformer losses	144		95.2	6,455	13,636	2.11
	Use high efficiency blower	717		474.2	13,848	27,955	2.02
	Replace existing chilled water pump with high EE pump	2,336		1,545.0	40,258	21,591	0.54
	TOTAL	3,197	751	2,611.1	74,242	101,591	1.37
San Miguel Yamamura Asia Corp.	Furnace temperature optimization		868	2,306.4	120,939	-	0.00
	Compressed air leak reduction		736	309.0	102,484	3,409	0.03
	Conversion of 250W metal halide to 65W CFL	144		60.6	20,094	4,612	0.23
	Compressed air header and filter replacement	294		123.5	40,970	78,409	1.91
	TOTAL		1,174	2,799.4	284,487	86,430	0.30
TIPCO	Repairs air leaks on compressed air system		144	60.6	20,184	1,000	0.05
	Improve cooling water system air compressor		15	6.3	2,107	4,000	1.90
	Use of portable vacuum cleaner		1	0.6	200	300	1.50
	Pressure point set reduction service air		165	69.2	23,082	0	0.00
	Installation threading nozzles on service air hose		12	4.9	1,644	1,120	0.68
	Wrapping compressor IA pressure		18	7.7	2,549	14,000	5.49
	Air dryer for instrument air system		18	7.7	12,009	32,000	2.66
	TOTAL		374	156.9	61,774	52,420	0.85

In other words, how much of the measures and options identified in energy management planning and systems optimization assessments have actually been 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. This survey should help in monitoring project impacts on energy saving and CO₂ reduction.

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

Overall, many planned activities in this project have been implemented within the periods they were planned although with some delays, which will be discussed in the next Chapter 5. Thus, **the project implementation course to date has been with very noticeable achievements in the training and awareness components 1 and 2 (hence the ratings of ‘highly satisfactory’)**. If activities in 2015 will be completed as planned, this could increase rating to ‘highly satisfactory’ for Component 1. About 45 projects on system optimizations have been identified during the assessments, out of which 22 have served as host. With 2 years remaining of project duration and the number of trained experts, conducting the additional SO assessments is an achievable target and with that the projects could reach the target of 45 assessed and implemented SO activities. **We rate the results of Component 2 as ‘satisfactory’** with the observation that the final evaluators (at the end of the project) could consider rating ‘highly satisfactory’ if the target of 60 companies assessed and/or 45 companies with implemented SO measures would be reached.

Component 3

In Component 3 on energy efficiency financing, little progress has been made. A first activity planned⁶ for 2015 is 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 as well.

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 that can easily be financed in-house by the companies that participate in the project and tend to be larger companies that would finance energy efficiency as part of the company’s balance sheet rather than having to go to external financiers. None of the companies participating in the Project have sought external or bank finance. However, the principles of EnMS and SO do not exclude medium or high-cost energy efficiency investment that may be considered when the ‘low-hanging fruits’ have been picked.

ESCOs have not been involved in the Project’s activities and only a few experts have attended. ESCOs seems to focus more on buildings (lighting, air-conditioners, etc.) rather than on SO in industry. ESCO contracts heavily depend on savings, so the relative small amounts associated with EnMS or SO measures may not be attractive enough. Also, it is more difficult for them to monitor and measure savings in energy efficiency improvements in processes (e.g. those involving steams and electric motors) than say of lighting in buildings. However, the ESCO approach could be attractive when dealing with smaller industries (that possibly cannot afford energy experts as full-time staff), i.e. SMEs or a group of SMEs (e.g. located at an industrial incubator or estate site).

With the activities in Component 3 only really starting in 2015, it is difficult and too early to tell the results of this Component and we provide the rating as ‘marginally satisfactory’.

⁶ For which a Request for Proposals has already been developed and advertised.

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 11 GHG emission reduction projections

Savings	# of companies	% savings	Fuel/yr (GJ)	Power/yr (MWh)	Lifetime (yrs)
<i>Energy management</i>					
- Operational improvement	200	0.25%	144,640	58,120	5
- implementation EnMS	40	2%	231,432	92,992	15
<i>Systems optimization</i>					
- steam	13	12%	247,923		10
- compressed air	13	20%		23,868	10
- pumping	6	15%		6,735	10
- fans	6	15%		8,328	10
<i>Total annual savings (all companies)</i>			623,995	190,043	
<i>Lifetime energy savings</i>			6,673,910	2,074,790	
<i>Lifetime emission reduction</i>			538,584	977,226	tCO ₂
Total (direct) emission reduction				1,515,810	tCO ₂
Indirect emission reduction (bottom-up; RF=2)				3,031,619	tCO ₂

Note:

- Figures on annual savings are taken from Annex F in the CEO Endorsement Request (CEO ER). However, the lifetime savings and emission reduction calculation method estimate differs from the CEO ER, which assumes direct emission reduction as realized during the first 5 years of the project and indirect as post-project savings of these investment over the next 5 years and as a consequence of new investments (but only counted over the 5-year period, not over the lifetime of the new investments. This is not correct; e.g. of an investment realized in yr 4 of the project, only the emission reduction in the first year would be counted, while in reality the reduction would still take place over the remaining lifetime of the investment. The results of the calculation presented in this Box are more in line with the methodology of the 2008 *Manual for Calculating GHG Benefits of GEF Projects: EE and RE Projects* (GEF/C.33/Inf.18):
 - Direct emission reduction (tCO₂/yr) is calculated as resulting from investment effected during the project-period and lifetime emission is calculated by multiplying the annual reduction with the assumed lifetime
 - Indirect emission reduction (bottom-up) results from multiplying the (lifetime) direct emission reduction with a so-called replication factor (RF=2)
- Lifetime reduction is calculated by multiplying with assumed average lifetime (=10 years)
- Assumed emission factors: 0.47 tCO₂/MWh (Luzon grid) and emission factor for fuel = 80.7 tCO₂/TJ, based on fuel oil-coal fuel mix of 75%-25%
- The original GHG reduction estimates (as given in the CEO ER/Project Document) calculate 'direct savings' as reduction from pilot projects (energy management and systems optimization) realized strictly during the project life (5 years) and 'indirect savings' as savings from operational projects in a 5-year post-project period:
 - Direct fuel savings of 1,143,149 GJ and power savings of 359,877 MWh resulting in savings of 261,754 tCO₂
 - Indirect fuel savings of 4,927,860 GJ and power savings of 1,697,878 MWh resulting in 1,197 ktCO₂ reduction
- The calculation method utilized in Annex F of the CEO ER/Project Document underestimates the lifetime CO₂ emission reduction, basically because direct emission reduction are not calculated over the full lifetime of the investment (identified or realized in the project period) but with the end of the project (after 5 years) as cut-off date; also for the indirect emission reduction a 5-year period is taken, while the Manual GEF/C.33/Inf.18) suggests a 10-year period after project's end.

Box 11 gives estimates of expected energy and greenhouse gas emission reduction savings based on assumptions made at the time of writing the project proposal (CEO ER-Project Document). The next Box 12 above provides an overview of the expected energy savings, CO₂ emission reduction and monetary savings as result of the various energy management and systems optimization actions that have been identified in

companies by the national experts so far (a total of 32,044 tCO₂/yr). Assuming an average lifetime of 10 years of the measures, this implies direct emission reduction impact of 320.0 ktCO₂.

It should be noted that the methodology of calculating cumulative GHG emission reduction is different from the one used in the Project Document (see the Notes of Box 11). This does *not* imply that the calculations in the Project Document are not correct, just that the methodology of calculating cumulative emission impact is different. In fact, this method is followed in many GEF project documents written prior to the 2008 Manual for Calculating GHG Benefits. We have re-calculated the estimates of the Project Document here for the sake of consistency in comparing the emission reduction results. In general, we can observe that, when reporting GHG emission reduction results, care has to be taken on how these calculated and the method made clear to the reader.

If we calculate the cumulative emissions of the Batch 1 projects of Box 11 over the project period (4 years, from year 2 up to year 5), the emission reduction is 128,000 tCO₂, which looks more or less okay in view of the target of 261,754 ktCO₂. In our revised calculation (see Box 12), the identified lifetime GHG savings (320,44 tCO₂) of the operational energy management and systems optimization projects (given in Box 11) would still be quite short of the reformulated target of 1,515 kilotons of CO₂. It should be noted that obviously there is time delay in training experts, doing the analysis at the plant work floor and have measures identified and realized). So, more Batch 1 companies will present identified (and ultimately realized) GHG savings, while additional companies will report results as part of Batch 2.

Box 12 Overview of expected direct and indirect emission reduction by mid-2015

	Pilot Company Name	# of companies	Identified CO ₂ Reduced (ton/year)	Energy cost saving (USD/year)**	Investment USD *	Simple payback (years)
1	EnMS Batch 1	5	15,737	4,555,883.46	106,735.11	0.02
2	EnMS Batch 2	9	3,524	555,415.82	264,941.82	0.48
3	SSO Batch 1	6	11,846	3,039,964.40	137,153.38	0.05
4	CASO Batch 1	4	937.76	345,842.11	56,159.09	0.16
TOTAL			32,043.96	8,497,105.80	564,989.41	0.07

Source: summary table based on data provided by national experts for the individual companies

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. In the EnMS national experts training, 4 out of 30 who participated in the first batch and 5 out of 32 who participated in the second batch were women. In the SO national experts training, 3 out of 26 who participated in the first batch of SSO were women, and none in the second batch, which included 19 candidates. No women participated in the first batch of CASO training, which included 22 candidates. And only one woman out of 14 participated in the first batch of PSO training.

Three of the four women who participated in the first Batch of ENMS national experts training and all five of the second Batch have been certified or recognized as National Experts. At least one of them has been actively serving as a resource person in the EnMS User Training and is also very actively involved in the proposed association of National Experts. She is also now representing her energy management company in the technical committee of a foreign chamber of commerce that is very active in promoting and assisting member-companies in developing and implementing industrial energy efficiency programs and projects. One of the three women in the first batch of steam SO training has been certified as National Expert in SSO (and is also among those certified as EnMS national expert).

The improvement of energy efficiency in the Philippine 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 national and regional energy efficiency market. The majority of those who participated in the EnMS national experts training as well as many who have been certified or recognized as EnMS National Experts are from consultancies, academe, relevant government departments and non-profit organizations, or technical audit firms that would be naturally instrumental in disseminating the concept and practice of EnMS and ISO 50001 in particular. For example, at least one consultancy owned and managed by one certified EnMS National Expert is already assisting companies to establish EnMS and acquire ISO 50001 certification. A group from the academe, industry, government and non-profit organizations led by certified EnMS National Experts in Mindanao has organized themselves into an energy management company. They are now assisting a government agency in its technology upgrading program for SMEs in the region and are being tapped by a multi-lateral technical assistance program on industrial energy efficiency to provide energy audit services to target industries.

Effectiveness

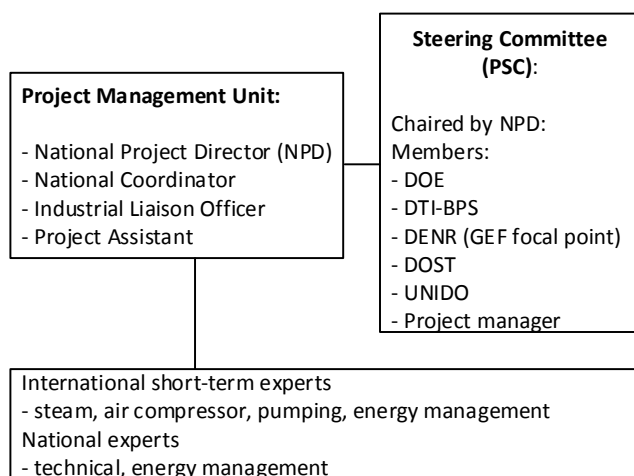
Based on findings presented in the Chapter, **project effectiveness at time of the mid-term evaluation is rated as satisfactory (S).**

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 *Project Management Unit (PMU)* is responsible for the overall operational management and implementation of the project activities and is based at the premises provided by the Department of Energy (DOE). Its day-to-day operations are in the hands of a *National Project Coordinator (NPC)*⁷. The Project Office is headed by a high-ranking DOE official as *National Project Director*⁸, whose overall role has been to ensure the successful execution and implementation of the project toward achieving project results. The PMU consists furthermore of an Industrial Liaison Officer and Project (Technical Support) Assistant⁹. The Project Steering Committee (PSC) consists of high-level representatives from the project partners, DOE, DTI-BPS, DENR, DOST, as well as UNIDO. 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.

Preparation and readiness; delays in implementation

Counterpart resources and adequate project management arrangements are in place at project entry, and capacities of executing institutions and counterparts 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 April 2011 (CEO Endorsement date is March 2011), project activities did not really start until December 2011 with the establishment of the PMU. Delays in the start of project execution can be attributed to the coordination mechanisms that were required among relevant stakeholders, to get the PMU established with the National Project Coordinator (NPC) and due to time taken for securing approval from the National Economic Development Authority (NEDA).

⁷ Mr. Oscarlito Malvar (since March 2015)

⁸ Currently the Undersecretary, Mr. Donato Marcos

⁹ Mr. Magdaleno Baclay and Ms. Sheena Ganzagan respectively

The Project actually started with the procurement and delivery of the testing equipment and instruments to the PMU at DOE. 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.

However, the former NPC, Mr. Richard Saing, left in October 2013 and there was no NPC until March 2015, when Mr. Malvar was appointed as NPC. Having no NPC for one and a half year has obviously caused delays in certain activities, notably in Component 3. On the other hand, the Industrial Liaison Officer, Mr. Baclay, had been responsible, as Officer-in-Charge, for the satisfactory progress in the Components 1 and 2. Batch 1 and Batch 2 experts have been trained in energy management with more workshops and user trainings planned for in 2015 (see Annex E). A second batch of expert training (SSO and CASO) was undertaken in March-April 2015, and subsequent user and vendors trainings are planned for in the months thereafter.

Due to the delay in starting up and implementation of activities, the proposed implementation end date has been revised (from November 2016) to May 2017¹⁰. Despite the delays, the project seems to be on track now with the training plan for 2015 (see Annex E) and activities in Component 3 being initiated. Therefore, 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 and the Project Steering Committee, the PMU has provided effective 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 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 March 2012¹¹. The Project Steering Committee has met on several occasions (July 2012, March 2013, and Dec 2013). Issues discussed included, among others: the delayed recruitment of the NPC, need to improve the project's visibility (e.g. by means of a website, amongst other activities), the need for transparent 'recognition' of national experts and difficulties in finding and getting commitment from host factories (to be remedied by more assistance from DOE, involving chambers of industry and using the personal networks of the trained national experts), as well as the involvement of DTI-BPS (and their role in getting ISO 50001 adopted as Philippine national standards)

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 providing appropriate response. The Project Manager (PM; at UNIDO HQ in Vienna, Austria)¹² and Officer-in-Charge (OiC) at the PMU have continuously monitored and the Project Manager has visited the country and project sites (e.g. coinciding with PSC meetings). Given the fact that there was no NPC from October

¹⁰ At Second Project Steering Committee (2013)

¹¹ Attended by 126 participants representing industries, government agencies, professional associations, banking institutions, multilateral agencies and the media

¹² Mr. Sanjaya Man Shrestha

2013 - March 2014, we appreciate the role of the UNIDO PM and OiC in the implementation of M&E and its use for adaptive management and suggest to rate it 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 organize themselves in an association with the aim of facilitating services by these experts to industries and other clients on energy efficiency.

On a managerial and planning level, it is done 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 the government support to the project is not only limited to providing co-financing to conduct trainings, but they are also visible with the adoption of EnMS ISO 50001 in the government policies.

The project implemented appropriate outreach and public awareness campaigns through publishing of technical evaluation reports, manuals, newspapers, articles. The need for improvement of the Project's visibility was stressed in the 3rd Project Steering Committee meeting (December 2013) and the DOE suggested the development of promotional materials, flyers, brochures, posters and a website. The website has recently been set up and can be accessed at www.iee-philippines.com; it is in process of being developed further with more materials to be made available. Currently, the project brochure and some materials can be downloaded (e.g. primer and student manual on energy management systems), and a list of national experts is made available.

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 13. 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 disbursement rate (of the GEF funds) has been 52% (USD 1.66 million of the GEF budget of USD 3.166 million); the realized co-financing is quite low (3%), as the lending schemes of the Land Bank, BPI or DBP have not been used for the purpose of Project-linked energy efficiency investments. Most co-financing so far has been in the form of investments by enterprises in energy management and systems optimization opportunities identified by the national experts. Government cash contributions have been for supporting the various trainings as well as support for the awareness campaigns.

Regarding the financial sector, the co-financing realization reflects the amount of loans actually given for energy management and system optimization, which is zero. As mentioned, the various participating companies have already drawn plans for energy efficiency improvements with investments that total USD

0.56 million (see Box 11). Given the fact that more pilot projects will finalize plans and realize investments (in both energy management and systems optimization), it is not unlikely that by the end of the project, co-financing (cash for EnMS and SO improvements) by private sector might reach the USD 2.5 million. The contributions from the private sector (both cash and in-kind) are estimates, based on the national experts' assessments, but a survey of operational improvement projects and other performance surveys that are planned after this MTR (see Output 1.6 in Box 7) will allow the project to gain a better understanding of the actual contributions of the private sector.

Box 13 Overview of GEF budget and expenditures; committed and realized co-financing

GEF budget (USD)	Approved budget (GEF CEO ER, 2011)	Expenditures (USD)
International consultants	675,500	734,073.53
Local consultants and staff	1,031,648	209,760.46
Administrative Support	3,353	
Staff travel	345,000	296.60
Project travel		97,462.92
Subcontracts	280,000	157,770.16
Training	392,500	142,323.61
Equipment	340,000	267,346.25
Sundries and other	98,065	53,930.89
Total	3,166,065	1,662,964.42

Co-financing (USD)	Committed co-fin (GEF CEO ER 2011)	Realized co-financing		
		Cash	In-kind	Total
DOE	4,000,000	15,935	66,134	82,069
Factory		564,989	130,002	694,991
LBP	10,000,000			0
BPI	10,000,000			0
Total	24,000,000	580,924	196,136	777,060
Cash		580,924		
In-kind	24,000,000		196,136	

Source: based on data provided by the PMU (2011-2014), except for the estimate of cash finance of factories, which has been taken as the identified investment for energy management and systems optimization (see Box 11)

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 or are identified by the DOE and are checked on compliance (e.g. are within the industrial target subsectors; are willing to share information with the general public as a 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 the 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 and the over-optimistic expectation regarding lending of the financial sector for these types of EnMS and SO projects (see also Chapter 6 and 7 for observations of finance). **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 institutional sustainability and how this sustainability will be affected by exogenous and endogenous risks.

Box 14 Risk management and sustainability of project

Risks	Project mitigation	Assessment by MTR review team
<p>Institutional and policy: change in focus</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. Legal frameworks, relevant policies and governance structures to promote EE is not in place 	<p>The proposed Enercon Bill is still under discussion. However, the Project is closely aligned with the DOE's priorities as formulated under the NEECP</p> <p>Also DTI-BPS has been supportive in promoting ISO 50001 as a national (voluntary) standard. Since EnMS is relatively new, certification bodies are not yet familiar and have been slow to respond.</p>	<p>So far, the DOE (and DTI-BPS) have been actively supporting the Project. These government entities are also actively involved in the Project and at the moment their support does not seem in doubt.</p> <p>The Project is offering these certification bodies the skills of the trained national experts and the Project may also provide additional training to these bodies (on how to audit an EnMS implemented in a company)</p> <p>Sustainability rating: likely</p>
<p>Techno-economic</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. Electricity tariffs in Philippines are among the highest in the region and this should be a key driver for EE improvements</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 SO 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 	<p>Through its linkage with ISO 50001, the project helps to ensure 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 and 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 is being 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 expert, the establishment of an association of experts a resources pool has been mooted. National experts as well as participants of the two-day training session will be registered in the peer-to-peer network. Each participating factory will also have access to support from the EnMS and SO experts to assist them in implementing their energy management system, resulting in operational improvement.</p> <p>Sustainability rating: likely</p>
<p>Environmental risks</p> <p>Factors, that can influence future benefits of the project</p>	<p>Not identified</p>	<p>No environmental risks connected to sustainability could be identified s, which means the environmental sustainability is likely to be achieved.</p>

<p>Financial risks</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>The project will work with banks (such as LBP, DBP and BPI) to conduct trainings for industry's energy managers and the risk management staff of financial institutions/banks on energy efficiency financing including how to develop a bankable proposal</p>	<p>DBP, BPI and LBP all have specific windows for financing EE projects; DBP through its Green Financing Program and BPI thru its SEF program (in cooperation with IFC catering to both RE and EE). Unfortunately, only LBP's SEF seems to have takers for loans, but mostly for larger investments or in other sectors (energy supply, buildings). Maybe the size of investment (for energy management and SO) is such that these are usually financed on the company's balance sheet. Larger investment might involve changes in production processes (e.g. changing a production line), but then the EE aspect will just be part of the overall investment. Small and medium-size enterprises (SMEs) might be more in need of external finance. For example, BPI mentioned that loans to SMIs are between PHP 0.5 billion and PHP 7-8 billion. To conclude, if needed, banks have energy loan schemes available. Partner banks could be and should be effective allies in promoting ISO 50001 to their client-base. Therefore, we give the financial sustainability rating: likely</p>
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Note: Sustainability and risks description, possible mitigation measures and assessment are based on Project Document (CEO ER), PIR 2014 as well as information on risks collected and added by the MTR team

Potential for replication

The industrial sub-sectors selected for this study are categorized as medium and large size industries. So far about 28 companies have participated, while the target is up to 240 companies¹³. While we judge that the participating companies have done so enthusiastically, these also form a small share of the total market of companies. The replication opportunity is much larger; manufacturing companies in the formal sector already number 16,230 companies¹⁴. One of the key requirements for replicability is to overcome the low penetration of energy management and systems optimization in the industry due to the lack of knowledge on its mechanism and its long-term benefits. This is addressed through increased institutional, 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 experience regarding the implementation of energy efficiency projects. On the other hand, we note that the factories participating in the Project's pilot EnMS and SO activities are large, modern companies that already have experience with other ISO-compatible management systems and/or do some energy management. The big question is what will happen post-project regarding EnMS and SO being able to reach a substantial part of the market of those large, medium and small companies that are not as advanced in managerial or environmental awareness as the companies currently participating in the Project.

EnMS National Experts are from consultancies, academe, relevant government departments and non-profit organizations, or technical audit firms that would be naturally instrumental in disseminating the concept and practice of EnMS. Some progress can be detected. For example, a group from the academe, industry, government and non-profit organizations led by certified EnMS National Experts in Mindanao has organized themselves into an energy management company. They are now assisting a government agency in its technology upgrading program for SMEs in the region and are being tapped by a multi-lateral technical assistance program on industrial energy efficiency to provide energy audit services to target industries.

¹³ EnMS: 200 companies; SO: 40 companies. Some companies might implement an EnMS as well as a SSO, CASO or PSO

¹⁴ Out of 148,270 establishments in the formal sector (2010 Annual Survey on Philippine Business and Industry; National Statistics Office. DTI statistics (2012) mention that about 944,900 enterprises (business and industry) were operating in 2012; of which most can be categorised as SMEs, i.e. 89.8% can be categorised as micro and 9.8% as small; and the remainder as medium (0.5%) and large (0.4%). About 177,600 establishments are micro, small and medium-sized manufacturing enterprises

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 15 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, outputs and target indicators, has been 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 is 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 and Vietnam allowing for 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 project design, such as how the peer-to-peer network and training could be institutionalized 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 <i>highly satisfactory progress in Component 1</i> and <i>satisfactory in Component 2</i>. The project has certified 44 National Experts (NEs) on EnMS, but to date only 10 NEs on SO; although the target may be reached during 2016. The project has supported various factories to implement EnMS and SO improvement projects that will result in energy savings and a reduction in GHG emissions. Taking into account the delays the project has met and the nonetheless satisfactory progress achieved, it is possible that the project could achieve its global environment and development objectives, and thus effectiveness is rated accordingly</p>	S (satisfactory)

	In Component 3 (on energy efficiency financing) activities have not started, except for preparation of a request for proposals (RFP) for training for banks and on financial issues for companies. Banks, such as DBP, LBP and BPI, seem interested in cooperation. Activities are rated as <i>moderately satisfactory in Component 3</i> , observing that activities can only be evaluated after they have been initiated in 2015.	
3. M&E; efficiency; <i>UNIDO criteria:</i> Quality at entry & preparedness; UNIDO supervision and backstopping;	Although counterpart resources and adequate project management arrangements were in place at project entry, the project initiation has met some delays and project management has had a setback in terms of the absence of a National Project Coordinator (Oct 2013-Feb 2015). Realizing that the time planned may be too short the project has been extended until May 2017. Despite the delay, many management tasks have been satisfactorily carried out by the UNIDO Project Manager and the Officer-in-Charge of the PMU at the DOE (and project implementation has gotten back on track). They 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 (DOE, DTI-BPS and DENR) that meet annually in the Project Steering Committee (PSC).	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 management standards (ISO environment standard or quality). In future, the big challenge will be in passing the EE message to other large, but in particular to the medium and small sized companies.	Likely (L)

7.2 Recommendations

For the Project Team and national government partners

1) *Association of energy efficiency experts*

A web-based peer-to-peer network, through Basecamp, is in operation to facilitate exchange of information between participating local experts and international experts. To institutionalize this peer-to-peer network and strengthen links with individual companies, industry associations and other organizations, the idea has been proposed to set up an ‘association of experts on EnMS and SO’. The objective of such an association includes:

- To promote competitive pricing of their services
- To protect the member-experts from uncompetitive practices
- To create synergies in building portfolio of EnMS and SO projects
- To have access to various expertise
- To have a platform or venue for networking
- To facilitate knowledge dissemination and sharing and thus continuing professional education

The 'Association' could contribute to sustainability as it would function as a pool of expertise that beneficiaries (companies, financial institutions, government) can resort to when needed. Furthermore, the project website (or parts of it) could be incorporated later in the Association's website to guarantee the website's post-project functioning. Here, the Association's website could also be a place for participating industries to provide information on experiences and best practices and the Association could work with the DOE to implement and further strengthen the Don Emilio Abello award scheme for companies and to implement a 'recognition scheme' for experts in a transparent manner. One issue that remains is a definition of the exact mandate and function of such an Association and second, how it would be financially sustainable. We see the Association basically in a facilitating role, by promoting competitive pricing of and facilitating access to member services.

We suggest that the Project:

- Investigates the desirability and viability of setting up a new Association or, alternatively, joining existing Associations could be optional;
- Helps setting up a detailed business plan for the Association, detailing: a) scope and mandate; b) management and administration; c) 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 d) 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 the Philippines and a market of up to tens of thousands of small, medium and large enterprises, the number of trained national experts envisaged, about 80, and the number of companies targeted, about 200 in EnMS and 40 in SO, 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 the country. We suggest diverting some project resources to the following:

- Integration of the EnMS and SO in the curriculum of relevant undergraduate programs of prominent universities;
- Organization of short introduction and refresher courses or seminars at relevant engineering or business training institutes (e.g., UP-NEC) or by relevant industry and professional associations (e.g. IIEE).

The first (curricula integration) would be medium-term in nature, while the second option (short courses) could probably be implemented on the short term. Piloting both these programs during the project's duration would be a desirable (new) 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 (or partial transfer of relevant info and data) to an existing association (e.g. ENPAP) or the proposed new Association should be considered. Similarly, the destination of the equipment of energy audits and measurement equipment, procured under the project should be determined.

These issues, as well as the institutionalization of the P2P network, the business planning of the Association of EnMS and SO experts, as well as the post-project sustainability of the EnMS and SO training should be part of 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 obvious role of the new Association, the role of existing industrial associations, chambers of commerce and industry and professional associations of engineers could be highlighted. Further, the post-project role and tasks of government entities, such as DOE and DTI-BPS, should be detailed.

These issues should be addressed towards the end of the Project by commissioning a sound ‘post-project action plan’. Such an ‘action plan’ could have the following elements: a) overview chapter on status of EnMS, SO and EE; b) identification of lowered and remaining barriers; and c) conclusion and recommendations to the Government and private sector institutions for post-project supportive actions.

4) *Finance*

It is not clear exactly what the need for external finance of industrial companies is to realize efficiency improvements (based on EnMS and SO analysis) or regarding larger investments with a large energy efficiency improvement component. In this respect, maybe SMEs (small and medium-size enterprises) would be in more need of finance. The planned survey (see Output 1.6, Indicator 7) should include questions on financing needs and support required. Another suggestion is to establish a working group (that would meet regularly) involving all relevant stakeholders including DOE, banks and selected industry association to discuss financial issues and options regarding energy efficiency in industry. Such a working group could also advice on training for banks and on financial issues for companies (for which a RFP has been issued), as well as on streamlining evaluation criteria for the approval of efficiency-linked loans.

5) *Gender*

To make the gender dimension in the various project activities more pronounced, gender-disaggregated indicators could be included in the planned company survey to be able to measure gender mainstreaming of the project.

For the multilateral organizations involved

6) *UNIDO*

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

In general, the visibility of the UNIDO-supported projects on EnMS and SO could be much improved, for example, by setting up a dedicated website (as part of UNIDO’s overall website) or as a separate set of webpages, covering EnMS and SO in general and the countries where UNIDO has implemented projects in particular. This would also be a good place to make available reports, manuals and selected course materials as well as maintaining an agenda of upcoming events.

7) *GEF*

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 the Philippines 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 (if companies from these subsectors clearly indicate their needs);
- Cover new topics in systems optimization (e.g., chillers, fans; again, this should be demand-driven);
- Increased focus on medium-sized companies.

On design, we notice a discrepancy between the sources of confirmed co-financing and the actual realization. Having been involved in the design of many GEF-funded projects, the evaluator knows that co-financing is also calculated to meet GEF demands (e.g. to achieve ratios of 1 to 4 or 6 in GEF financing and co-financing), irrespective of the type of project or how letters of co-financing can be organized during project design. This setup favors the confirmation of co-financing with a few large (supply-side) energy investments

over demand-side projects with a multitude of beneficiaries that individually realize small investments. In general, private sector entities are more reluctant to sign co-financing letters than government entities often not being sure what the legal implications of signing such a letter might be. Second, to give an example, it is obviously easier to get a co-financing letter from two entities investing or making available USD 6 million each than getting 100 co-financing letters from companies investing USD 120,000 on average. In the case of the Philippine proposal, a large part of co-financing has been committed by the financial sector (as such positive, because it indicates their interest and commitment in energy efficiency), while in practice it seems likely to come from the companies themselves that realize small energy efficiency investments without having to resort to external finance. The conclusion is that the GEF should allow more flexibility and realism when co-financing is incorporated in the project design.

Lessons learned

The framework program on EnMS and SO in South East Asia, can be used and should be presented by UNIDO as a best practice. The Philippine project can use this context to present 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 Department of Energy (DOE) 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 February 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 the Philippines.

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

Executivesummary

- 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)

Projectassessment

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
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

Time	Meeting & Location
Monday, 16 March 2015	
08.30	Project Office at DOE
10.30	DOE, Mr. Donato Marcos (Undersecretary) and team
13.30	UNIDO representative, Mr. Fakhruddin Azizi
14.15	DENR, Ms. Annalisa Teh (Undersecretary and GEF Focal Point)
Tuesday, 17 March 2015	
09.00	BPS, Mr. Mario Gaudiano (Chief, Standard Dept. Division), Ms. Maria del Rosario
10.00	DBP, Mr. Noli Cruz (AVP), Ms. Anita Salayon (SVP), Jona Luardo
11.00	BPI, Ms. Jo-Ann Eala (VP)
13.30	Meeting at DOE with EnMS and SO experts (Rommel Benig, Eugenio Araullo, Jun Mocas and Raymond Chua)
Wednesday, 18 March 2015 Site Visit to Pilot Companies	
09.30	Pagasa Steel Works (Mr. Donato Dioso, Mr. Fortunato Rilles, Jose Oribiana)
13.30	San Miguel Yamamura (Mr. F. Dayego, engineering head)
Thursday, 19 March 2015	
	Reporting and analysis; discussion among MTR team
Friday, 20 March 2015 Debriefing	
10.00	Presentation at DOE of preliminary findings

Annex C. DOCUMENTS REVIEWED

Project documentation

1. Project Document - Request for CEO Endorsement, UNIDO, Submission date 17/02/2011.
2. Terms of Reference, Independent Mid-Term Evaluation of the UNIDO Project: Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards in Philippines, UNIDO; February 2015.
3. UNIDO Annual Project Implementation Report (PIR), Fiscal Year (FY) 2014 (1 July 2013 – 30 June 2014), UNIDO, Dec. 2014
4. UNIDO Annual Project Implementation Report (PIR), 2013, UNIDO, Oct. 2013
5. UNIDO Annual Project Implementation Report (PIR), 2012, UNIDO, Oct. 2012
6. Draft Presentation for the 4th Project Steering Committee Meeting, Philippine Industrial Energy Efficiency Project; December 2014
7. Project Fact Sheet: A Case Study of Pag-asa Steel Works, UNIDO.

Technical reports

1. Report into the compressed air systems at TIPCO, by R. Mero (national expert), 2013
2. Implementation of energy management system, Nestlé-Lipa factory, by R. Bacalso, R. Benig and D. Dioniso (2013)
3. Implementation of energy management system, S. Miguel Yamamura Packaging, by F. Dayego, R. Dimal and E. Daylo

Background

8. An Energy Efficiency Roadmap for the Philippines (by M. Lister) ; EU Switch-Asia Programme (2013)
9. Philippine Energy Plan 2012-2030, Department of Energy
10. Follow-up Peer Review on Energy Efficiency in Philippines, Asia-Pacific Economic Cooperation (APEC), Nov 2014
11. Peer Review on Energy Efficiency in Philippines, Asia-Pacific Economic Cooperation (APEC), Nov 2014, Nov. 2012
12. Energy Efficiency Accomplishments, PowerPoint presentation (2011), Department of Energy'
13. National Energy Efficiency in Philippines, Department of Energy, Conference on Energy-Efficient Technologies in the Philippines, ASEAN Centre for Energy (ACE)

Annex D. REGIONAL SCOPE AND CONTEXT

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

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 program 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 program is composed of national projects to be implemented in Indonesia, the Philippines, Thailand, Myanmar, Vietnam and Malaysia; each designed to facilitate introduction of ISO 50001 through training and capacity building, including a technical focus on systems optimization. The program 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 industry 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 50001), 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 50001.

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

The projects in these countries started in April 2011 and are expected to finalize their operations by August-December 2016. All projects have a similar structure in terms of components and expected outputs, as is summarized in the Boxes 4 and 5

MTR: Indonesia, the 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 one contract for the mid-term reviews (as lead evaluator) to the international (independent) consultant, Mr. Johannes (Jan) VAN DEN AKKER (Netherlands).

Box 16 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 3.2 Training material developed and capacity of industrial enterprises built on bankable energy efficiency projects development 3.3 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

Box 17 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 Philippine 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)

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.

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 others. 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 provide 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. The curricula is 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. 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:

- Conducting short (one-half day) workshops for factory managers on the benefits of implementing an energy management system in conformance with ISO 50001 and highlighting the technical assistance available to participating companies
- Conducting two-day training sessions for energy managers on implementation of an energy management system in conformance with ISO 50001, including information on internal auditing techniques
- Coaching facility personnel on energy management system implementation.

Energy management trainings for factory managers and personnel

At this second step, UNIDO’s international team along with trained national experts will conduct additional energy management training sessions. Together, they will develop specific criteria to select relevant participants for whom they will conduct energy management training sessions:

- Half-day workshops for factory personnel, including energy managers. The purpose is to encourage managers to register their key staff to participate in the subsequent full-day implementation training

sessions. The role of ISO 50001 in improving competitiveness, EE mandates, and enhancing prospects for international trade will be discussed at the workshop. A part of the workshop will be dedicated to presenting the range of technical assistance that would be available to their company and staff as a benefit of project participation. A guest speaker from the industry who is already engaged in energy management will also be sought for each workshop;

- 500 factories will receive two-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, a number 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. 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.

Systems optimization

This capacity building follows the same two-phase training approach as explained under ‘energy management’. Steam system optimization trainings are very technical training which allow the trained local expert to learn and practice the system optimization assessment from UNIDO international experts. The trained local experts learn 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 materials 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 training and implementation schemes will be achieved, 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 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 18 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

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 programs 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) are mandatory for full-sized projects (GEF FSPs) only. 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

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

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

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.

Evaluation matrix

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

Box 19 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 the country 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>Financial planning and procurement</p>	<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
	<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 	
6. Findings: sustainability	Sustainability	Sustainability	<ul style="list-style-type: none"> • Desk review of

Contents	Model evaluation criteria and/or questions	Indicator(s)	Means and sources of verification
<ul style="list-style-type: none"> Risks and external factors Replication 	<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 	<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 	<p>project design and technical documents (incl, PIRs; other relevant docs)</p> <ul style="list-style-type: none"> 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. TRAINING PLAN 2015

SO Training Plan for 2015

Proposed Training	Time Line	Location	Number of Factories / Companies to be trained	Trainers	Remarks
<i>SSO Experts Training Final Module</i>	24 August	Manila	23 CNE	Ven Venkatesan	
<i>Batch 2 final exam for SSO CNE</i>	25 August	Manila	23 CNE	Ven Venkatesan	
<i>Vendors Training</i>	26 August	Manila	10 vendors	Ven Venkatesan	
<i>SSO User Training</i>	27-28 August	Manila	30 factories	Ven Venkatesan with Local Expert	To train further Luzon-based local experts
<i>SSO User Training</i>	12-13 November	Manila	30 factories	Ven Venkatesan with Local Expert	To train further Luzon-based local experts
<i>Batch 2 CaSO Final Module</i>	19 October	Manila	12 CNE	Mark Pollard	
<i>Batch 2 CaSO CNE Final Exam</i>	20 October	Manila	12 CNE	Mark Pollard	
<i>CaSO Vendors Training</i>	21 October	Manila	30 Vendors	Mark Pollard	
<i>PSO Users Training</i>	23-24 September	Manila	20 factories	Gunnar Hovstadius with Local Expert	To train further Luzon-based local experts Interview for 2 nd batch candidate national expert
<i>PSO Vendors Training</i>	25 September	Manila	30 vendors	Gunnar Hovstadius	Interview for 2 nd batch candidate national expert
<i>PSO Experts Training for 2nd batch</i>	9-13 November	Manila	15 CNE	Gunnar Hovstadius	

EnMS Training Plan

Activity	Date	Location	Number of Factories / Companies to be trained	Expert
Plant Visits	20-24 July	Manila	5 factories	Stefan Walta
PIEEP Forum	28 July	Manila	40 factories	2 national experts
	31 July	Cebu	40 factories	2 national experts
Half day Awareness Workshop	5 August	Manila	30 factories	1 national expert
Two day Implementation Training	13-14 August	Manila	30 factories	2 national experts
Plant Visit	17-21 August or 7-11 September	Manila and Cebu	5 factories	Richard Morrison
Half day Awareness Workshop	9 September	Cebu	30 factories	1 national expert
Two day Implementation Training	17-18 September	Cebu	30 factories	2 national experts

Annex F. 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, European Commission 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. He currently advises as key expert in the European Union Technical Assistance Facility for Sustainable Energy for All. He is married with one child.

Mr. Jessie L. Todoc has more than 20 years of national and international experience in sustainable energy as planner, researcher, consultant, and program manager. He had worked in the Philippines at the Energy Regulatory Commission and Department of Energy and worked out of Bangkok, Thailand for 14 years as researcher and consultant on power sector markets and reform; clean energy policy, project development, finance, and sustainable development impacts; and urban energy and solid waste management. He was involved in the conceptualization, design, implementation, evaluation, and management of various energy planning, capacity building, research, and technical assistance projects funded by bilateral and multilateral development agencies. He played a leading role in the design, development and implementation of partnership projects among European and ASEAN research and non-profit institutes, consultancies, and national and local governments in the framework of European Union-Asia energy and environment cooperation programs. He now develops and manages the sustainable energy programs in the Philippines and has advised on renewable energy projects in other SEA countries as well as regional projects for the whole ASEAN for a global non-profit industry association. He is also a member of the AEMI group, a group of SEA researchers and academics led by Thailand's Chulalongkorn University pushing for integration of energy markets in ASEAN in support of the ASEAN Economic Community (AEC) agenda. Mr. Todoc received a bachelor's degree in electrical engineering (cum laude) from the University of Santo Tomas and an MBA (International Business Management) from the Asian Institute of Technology in Bangkok and completed graduate courses in business and industrial economics at the University of Asia and the Pacific. He is married with three children.

Annex G. 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: _____

