

Terminal Evaluation Review form, GEF Independent Evaluation Office, APR 2016

## 1. Project Data

Summary project data			
GEF project ID		3594	
GEF Agency project ID		GF/VIE/10003 UNIDO SAP ID: 103081	
GEF Replenishment Phase		GEF-4	
Lead GEF Agency (include all for joint projects)		UNIDO	
Project name		CF: Promoting Industrial Energy Efficiency through System Optimization and Energy Management Standards	
Country/Countries		Vietnam	
Region		Asia	
Focal area		Climate Change	
Operational Program or Strategic Priorities/Objectives		SP-2-Promoting energy efficiency in the industrial sector	
Executing agencies involved		Ministry of Industry and Trade (MOIT)	
NGOs/CBOs involvement		Not involved	
Private sector involvement		Yes, through co-financing,	
CEO Endorsement (FSP) / Approval date (MSP)		October 12, 2010	
Effectiveness date / project start		November 24, 2010	
Expected date of project completion (at start)		June 30, 2014	
Actual date of project completion		December 2015	
Project Financing			
		At Endorsement (US \$M)	At Completion (US \$M)
Project Preparation Grant	GEF funding	0.05	0.05
	Co-financing	0.1536	0.1536
GEF Project Grant		0.859	0.859
Co-financing	IA own	0.08	-
	Government	1.0	0.742
	Other multi- /bi-laterals	4.6	-
	Private sector	-	9.587
	NGOs/CSOs	-	-
Total GEF funding		0.909	0.909
Total Co-financing		5.8336	10.55296
Total project funding (GEF grant(s) + co-financing)		6.7426	11.46196
Terminal evaluation/review information			
TE completion date		August 2015	
Author of TE		Segbedzi Norgbey (Independent Evaluation Consultant and team leader) and Nhien Ngo To (National Evaluation Consultant)	
TER completion date		January 2017	
TER prepared by		Malac L. Kabir	
TER peer review by (if GEF IEO review)		Molly Watts	

## 2. Summary of Project Ratings

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

## 3. Project Objectives

### 3.1 Global Environmental Objectives of the project:

The GEO of the project, as stated in the Project Document (PD), is to effect sustained energy management and efficiency practices in the industry of developing countries and emerging economies in order to reduce the environmental pressure of economic growth while increasing productivity (PD, page 16, C2). There are growing concerns within Vietnam over increased energy demand accompanied by rapid industrial development and increased greenhouse gas emission arising from fossil fuel combustion and power generation coupled with inefficient energy practices.

### 3.2 Development Objectives of the project:

The main development objective of the project is to promote industrial energy efficiency (EE) through system optimization approach and introduction of ISO energy management standards incorporating industrial energy systems optimization (Request for CEO Endorsement p.1). The proposed project is designed to offer: i) a system optimization approach to industrial enterprises to maximize energy savings at the system level, and ii) capacity building to adopt the ISO energy management standards for industrial enterprises to integrate EE as part of the management cycle for the realization of continuous annual energy savings (PD, page 16, C1). It is expected that the project will contribute substantially towards meeting Vietnam's goals of improving energy efficiency in the industry as envisioned in the Vietnam National Energy Efficiency Program (VNEEP).

The project ties closely to Vietnam's national energy strategy as economic growth and a high demand for electricity remains a top concern for the Government of Vietnam (GOV). As noted in the PD, "The expansion and modernization of the Vietnamese economy and industry in particular is occurring in rapid pace within a short transition period and there are gaps to implement best practices efficiently on energy management and system optimization. The introduction of the energy management standard and optimization practices has not kept pace with this expansion." (PD, page 11)

This project is relevant to the Government of Vietnam due to the development of the Vietnamese National Energy Efficiency Program (VNEEP) which seeks to reduce 3-5% of total national energy consumption from 2006-2010 and 5-8% of total national energy consumption from 2011-2015. (PD,

page 14). MOIT is designated as the nodal agency in the implementation of the Law, including responsibility for guiding and overseeing the implementation of VNEEP nationwide, monitoring and evaluation of programs, and ensuring compliance and enforcement of regulations under the Law. Since VNEEP and the project are led by MOIT, this has ensured adequate support has been given to ensure energy efficiency in the industrial sector remains a top priority in Vietnam. Additionally, the project has closely coordinated with VNEEP to mobilize trained national experts to provide consultancy/services to VNEEP (PIR 2013, page 7). This project's achievements also integrate into the VNEEP framework and is shared with MOIT periodically.

This project is also relevant to the GEF Strategy, specifically GEF-4 Climate Change Strategic Program 2-promoting energy efficiency in the industrial sector, as it addresses "key existing information, capacity and policy barriers for sustainable IEE in Vietnam". (Request for CEO Endorsement p.18).

Lastly, this project's work on energy efficiency aligns with UNIDO's mandate since it will contribute to promoting and increasing the deployment and diffusion of energy efficient technologies and practices in industrial production and manufacturing processes.

<b>4.2 Effectiveness</b>	<b>Rating: Satisfactory</b>
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The TE rates effectiveness as Satisfactory, and this TER confirms the rating. All of the project components/activities were delivered on time and within budget. In terms of achievement of expected project outcomes .....The project achievements are further detailed below under the three components:

#### **Component 1: National program to build capacity on energy management and system optimization**

- Output 1.1 Training materials, software and tools on SO and ENMS have been developed
  - Translated training materials, software and tools on Energy Management System (EnMS), Steam and Compressed Air System Optimization provided to trainees from industry and consultancy institutions.
- Output 1.2. National awareness campaign to promote industrial energy management have been developed and implemented:
  - Articles/news and case studies on ISO 50001 introduction posted in the EECO and related websites
  - 4 TV programs on ISO 50001 EnMS implemented;
  - 1 leaflet on ISO introduction disseminated to more than 500 industrial enterprises;
  - 241 management persons from enterprises received ISO EnMS introduction workshops;
  - 15 case studies on EnMS and SO project implementation showing energy and GHG emission savings;
  - 1 short video clip in English on project outcomes and impact targeting GoV, UNIDO, other donors, bilateral agencies and top level managers in enterprises showing;
  - 1 long video clip in Vietnamese on 3 successful stories of EnMS adoption and relevant government policies on EnMs promotion aiming at middle level managers of enterprises.

- Output 1.3 Basecamp (<https://Basecamp.com/1858667>), an electronic platform, for the exchange of information and views between industrial enterprises and international and trained national experts since its establishment in May 2012.
- Output 1.4 National experts and factory personnel have been trained on energy management system.
  - 27 national experts & 14 persons from 10 enterprises received training on EnMS Modules of which 27 national experts and 3 factory staffs were granted certificates;
  - 241 management personnel from 219 enterprises received ISO EnMS introduction workshops organized by the IEE project;
  - 250 energy managers/production operators from 126 enterprises and another 29 energy consultants participated in the EnMS user training program.
- Output 1.5 National experts, factory personnel and vendors have been trained on systems optimization
  - 44 national experts trained on steam (23) and compressed air (21) systems optimization of which 24 national experts were granted certificates;
  - 286 energy managers/engineers from 156 enterprises and 11 other energy consultants participated in the User training program on systems optimization;
  - 38 representatives from 22 vendors participated in vendor discussions on steam and compressed air systems optimization.

## **Component 2: Implementation of energy management and system optimization demonstration projects**

- Output 2.1 Energy management projects have been implemented
  - 63 factories adopted energy management system including activities such as developing energy plans and completing operational improvement projects with assistance provided by trained national experts or their trained staff
  - 14 factories fully implemented energy management systems and certified in line with ISO 50001
  - 5 case studies have been developed showing energy and GHG emission savings
  - Participating factories have registered with the basecamp network for sharing discussion.
- Output 2.2 Industry demonstration projects have been documented.
  - 150 system assessments have been completed; 139 of which led to SO projects being implemented, details:
    - SSO assessments of 65 industrial enterprises done, of which 62 enterprises have implemented some SSO projects varies from low cost solutions such as condensate and flash recovery, piping insulation, replacement of valves and broken trap, etc. to the replacement of the old - inefficient boiler with new EE boilers;
    - CASO assessments of 85 enterprises done, of which 77 enterprises have implemented some CASO projects;

- 26 implementation reports showing energy savings and GHG emission reductions completed;
- 10 case studies showing GHG emission reductions have been developed.
- Output 2.3 Recognition program has been implemented and the project outputs are reported periodically to MOIT and project achievements integrated into VNEEP Framework

### **Component 3: Financial capacity development to support energy efficiency projects in industry**

- Output 3.1 Training materials on financial analysis of EE projects developed and recommendations on harmonized EE project evaluation criteria made
  - Training materials and tools for development of the feasibility analysis/study of EE projects have been developed and disseminated to national experts and staff of some financial institutions
  - Recommendations on criteria harmonization for evaluating EE projects discussed with relevant financial institutions and government agencies
- Output 3.2 Industrial enterprises have been trained to enhance financial capacity to develop bankable projects
- 27 national experts and staff of financial institutions participated in the financial analysis training conducted in April 2014
- Training on financial analysis of EE investment projects have been provided to enterprise personnel during trainings on EnMS, SSO & CASO conducted during 2012-4.

<b>4.3 Efficiency</b>	Rating: Satisfactory
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The project implementation was considered cost-effective due to appropriate industrial sector selection, establishment of effective partnerships with key organizations, agencies and industries, building on programmes of partners and strong national support. In addition, the project was not delayed and stayed relatively close to its deadline. The project also stayed within budget.

Issues tied to efficiency focused on the need for a better geographic distribution of training workshops and organizing more in-plant training activities to ensure coverage was fully met on the ground and better access to training events would have been possible for participants. The limited budget did not allow for the implementation of additional training events. (TE, page x- ix).

<b>4.4 Sustainability</b>	Rating: Likely
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The TE rates sustainability overall as Likely, and this TER also rates sustainability as Likely.

**Financial Resources Sustainability:** Financial resources are **likely** to be sustainable however there are factors that could be weakened by resource constraints due to increasing demands from the sectors affected by high energy (food and beverage, textiles, chemicals and chemical products). Additionally, the TE notes that over half of enterprises that participated in the User training did apply some of the systems solutions after training, a lack of action from remaining enterprises was due to a slump in their production and financial conditions not yet stable (page 39).

**Sociopolitical Sustainability: Likely** sociopolitical sustainability due to the building of national, legal and institutional capacity to enable governments to integrate ISO 50001 energy management standard into national legislation and regulatory processes in the Decree No. 134/2013/ND-CP issued on 17 October 2013. The project was successful in increasing the adoption of ISO 50001 energy management standards and system optimization, having increased more threefold between 2012 and 2014.

**Institutional Framework: Likely.** GOV's deep interest and commitment to EE and ownership within government agencies has rated this project as highly likely. National, legal and institutional capacity

**Environmental: Likely** for environmental sustainability due to the reduction in GHG emissions and no negative consequences on the environment from the implementation of project activities.

## 5. Processes and factors affecting attainment of project outcomes

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

The TE described co-financing briefly. The TE noted that co-financing from project partners, including the Vietnamese Government institutions, materialized well above the levels anticipated. Project co-financing reported was USD 10.4 million, more than USD 4.8 million above the anticipated co-financing of USD of 5.6 million (TE, page 30). This was mainly from equity finance investments from industrial enterprises primarily for Systems Optimization and Energy Management Systems solutions. The TE reported that USD 9.85 million was invested by industrial enterprises of which USD 6.66 million was for Steam Systems Optimization, USD 2.46 million for EnMS, and USD 0.46 million for Compressed Air Systems Optimization. This surplus filled a knowledge gap by bringing new training topics (in particular ENMS and SO) to local industrial enterprises at the beginning of project implementation, which resulted in the adoption of ISO 50001 energy management standards and system optimization approach.

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

Project did not experience significant delays or project extensions except for a 6 month delay at startup. The TE mentions that a 6 month delay was not anticipated and was a result of the processes required within the Vietnamese government to internalize the project. The TE also noted that during the 6 month

period, some procurement actions were initiated by UNIDO to enable the project to take off after government approval (TE, page 27). The timelines for project implementation remained adequate.

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

Collaboration between government agencies/institutions and industrial enterprises created awareness and built capacity at the national level. Political support towards a sustainable energy future and ownership within government agencies also contributed to country ownership efforts. Ministries such as Industry and Trade, Science and Technology, and Environment were heavily involved throughout the stakeholder process in project design (TE, page 27).

## 6. Assessment of project's Monitoring and Evaluation system

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

Please justify ratings in the space below each box.

6.1 M&E Design at entry	Rating: Moderately Satisfactory
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The TE rates M&E overall as Satisfactory based on the rating for M&E Implementation (Satisfactory). Regarding M&E Design, this is rated as Moderately Satisfactory in the TE, and this TER agrees with that rating. The M&E design at entry followed UNIDO's standard monitoring and evaluation procedures and GEF guidelines on project monitoring. SMART indicators were formulated and M&E was considered throughout the project design. However, the log frame did not have any outcome indicators and means of verification. While project output and objective level indicators were developed, outcome indicators were ignored either by design or overlooked. Additionally, the TE mentions that a specific budget line in the project document for M&E activities was not included, which affected a lack of a specific budget for evaluation activities, a major flaw in the design at entry for M&E. (page 32-33).

6.2 M&E Implementation	Rating: Satisfactory
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The TE rates M&E Implementation as Satisfactory, and the TER rates M&E Design as Satisfactory. PIRS, progress reports and MTR were completed as required and used to track project performance through rating the progress made to date. Reports delivered in the project monitoring framework included:

1. Inception work and inception workshop minutes was completed in November 2011 (within 3 months of the project implementation start)
2. Project implementation reports (PIRs) and workplans have been developed in accordance with GEF guidelines;
3. Project progress reviews have been convened as per UNIDO regulations;
4. Project terminal project report;
5. The project terminal evaluation has been conducted in accordance with the project M&E plan and GEF guidelines

The project appears to have been well monitored including progress towards objectives, however, without clear indicators at the outcome level, reporting on progress towards outcomes could not be verified. The project budget also did not clearly show budget allocated for M&E activities despite resources found to meet all monitoring, reporting and evaluation requirements.

## 7. Assessment of project implementation and execution

Quality of Implementation includes the quality of project design, as well as the quality of supervision and assistance provided by implementing agency(s) to execution agencies throughout project implementation. Quality of Execution covers the effectiveness of the executing agency(s) in performing its roles and responsibilities. In both instances, the focus is upon factors that are largely within the control of the respective implementing and executing agency(s). A six point rating scale is used (Highly Satisfactory to Highly Unsatisfactory), or Unable to Assess.

Please justify ratings in the space below each box.

<b>7.1 Quality of Project Implementation</b>	Rating: Satisfactory
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The TE noted that effective coordination among project implementing partners (UNIDO, MOIT, STAMEQ, etc.) was an important factor in the successful project implementation. For UNIDO's performance, financing of the project was well planned and fund disbursements were made on time (TE - Table 7, page 41). The TE noted effective and regular communication and close coordination between the project office and UNIDO project management team in Vietnam and Headquarters, as well as proper instructions and guidance provided by the UNIDO PM were instrumental in achieving project goals. The UNIDO Country Representative provided support to the project office in addressing issues, problems and finding solutions to constraints. The UNIDO Country Office played a significant role in local procurement and the recruitment of national experts and project staff.

<b>7.2 Quality of Project Execution</b>	Rating: Satisfactory
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The project's executing agency was Vietnam's Ministry of Industry and Trade (MOIT). The TE noted the institutional arrangements for the project were largely implemented as anticipated in the PD. The DIRECT MANAGEMENT MODALITY was used, whereby UNIDO, in coordination with MOIT, performed the responsibilities assigned to the Executing Agency.

MOIT, as coordinator of the program, performed well during the project and reached deliverables on time and stayed within budget (TE – Table 7, page 41). MOIT also developed the Energy Efficiency Office for the implementation of the program which signifies their commitment and dedication to this issue but limited information was found on its role and effectiveness (TE, page 2).

## 8. Assessment of Project Impacts

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

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

Changes in environmental stress or status are reported in the TE pertaining to energy savings and GHG reductions estimated at 1,119,388 GJ (56,034 MWh, 21,735 TOE) and 106,394 ton of CO<sub>2</sub>eq, respectively.

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

No changes in human well-being are reported in the TE to have occurred by the end of the project.

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

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

a) Capacities – The indirect result of the project led to 1,620 additional participants from 857 enterprises to receive ISO introduction training workshops (delivered by IEE project-trained national experts). Project awareness workshops (four after 3.5 years of implementation) and capacity building programs increased knowledge on EE issues resulting in the adoption of ISO 50001 energy management standards and system optimization by industry (TE, page 12).

b) Governance – The TE notes that ownership, awareness and capacity building within government agencies are likely to continue to shape attitudes and behaviors long term.

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

No unintended impacts are reported in the TE to have occurred as a result of the project.

8.5 Adoption of GEF initiatives at scale. Identify any initiatives (e.g. technologies, approaches, financing instruments, implementing bodies, legal frameworks, information systems) that have been mainstreamed, replicated and/or scaled up by government and other stakeholders by project end. Include the extent to which this broader adoption has taken place, e.g. if plans and resources have been established but no actual adoption has taken place, or if market change and large-scale environmental benefits have begun to occur. Indicate how project activities and other contextual factors contributed to these taking place. If broader adoption has not taken place as expected, indicate which factors (both project-related and contextual) have hindered this from happening.

The TE mentions that the project contributed to creating an enabling environment for the widespread adoption of energy management and system optimization practices in industrial enterprises in Vietnam. The ISO 50001 energy management standard has been issued nationally. The TE also mentions that the project has catalyzed changes in behavior through the introduction of new technologies and approaches and through the implementation of demonstration projects in industrial enterprises enabling demonstrations replicated successfully in other industrial enterprises (TE, page ix).

## **9. Lessons and recommendations**

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

- The project design was clear and practical.
- Clear indicators with coordination among the various project implementing partners (UNIDO, MOIT, STAMEQ, etc.) were important factors in the project.
- Strong project relevance, demand and effective partnership among stakeholders during project execution facilitated the elimination of barriers to policy and adoption of EE measures and

leveraged substantial amounts of resources for the implementation of the project and EE activities within industrial enterprises.

9.2 Briefly describe the recommendations given in the terminal evaluation.

- Examples of projects from local enterprises in Vietnam or projects within the particular region as opposed to foreign plants would have been more helpful for local experts to easily compare to and understand (TE, page 36).

## 10. Quality of the Terminal Evaluation Report

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

Criteria	GEF IEO comments	Rating
To what extent does the report contain an assessment of relevant outcomes and impacts of the project and the achievement of the objectives?	The assessment of relevant outcomes and achievements is thorough and consistent however more information on project impacts is strongly needed.	<b>MS</b>
To what extent is the report internally consistent, the evidence presented complete and convincing, and ratings well substantiated?	TE is consistent with the evidence complete and convincing. However, the TE is limited in detail especially in the shortcomings of the project.	<b>MS</b>
To what extent does the report properly assess project sustainability and/or project exit strategy?	TE briefly assesses project sustainability but it did not describe a project exit strategy. TE describes coordination and collaboration among public and private sector as being core drivers of project sustainability.	<b>MS</b>
To what extent are the lessons learned supported by the evidence presented and are they comprehensive?	The lessons provided are supported by evidence however the section was brief and neglected sufficient information. Findings related to policy adoption and the interaction between the private sector and the government supported by the project would have been more beneficial and useful.	<b>MS</b>
Does the report include the actual project costs (total and per activity) and actual co-financing used?	Yes, the report includes the project costs (total and per activity) and the actual co-financing used.	<b>S</b>
Assess the quality of the report's evaluation of project M&E systems:	TE mentions the project M&E systems but the section neglects details and is touched upon briefly.	<b>MS</b>
<b>Overall TE Rating</b>		<b>MS</b>

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