UNIDO ONUDI

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
ORGANISATION DES NATIONS UNIES POUR LE DEVELOPPEMENT INDUSTRIEL

Progress Report
(01 July 2018 – 30 June 2019)

Name of country Thailand

Title[1]	**Industrial Energy Efficiency**
GEF ID:	**3786**
UNIDO SAP ID:	**103071**
GEF Replenishment Cycle:	**GEF-4**
GEF Focal Area:	**Climate Change Mitigation (CCM)**
Integrated Approach Pilot (IAP) Programs[2]**:**	**(select)**
GEF Project Size:	**Full-Sized Project (FSP)**
UNIDO PTC Department:	**Department of Energy (ENE)**
UNIDO Project Manager:	**Sanjaya Shrestha**

I. Brief description of the project

I.1 Objective: The project aims to promote industrial energy efficiency through adoption of ISO based energy management standards and system optimization approach for improvement of energy performance of industries to make its operations more reliable and competitive.

The project will build the capacity of relevant stakeholders consisting of factory management, factory personnel, consultants, equipment vendors/suppliers, certification body, accreditation body, researchers, lecturers, and government officers. The showcase of factories that adopted the energy management system (ISO 50001) and system optimization approach will be demonstrated through case studies. The project is structured in four technical components, plus a monitoring and evaluation component.

[1] As per approved CEO Endorsement document
[2] Only for **GEF-6 projects**, if applicable

Project Core Indicators		Expected at Endorsement	Actual at Mid Term stage	Actual at Terminal stage
6	**Greenhouse Gas Emissions Mitigated** (metric tons of CO2e)			
	Lifetime direct GHG emissions avoided (metric tons of CO2e)	196,757 tCO2eq	17,642 tCO2eq	247,047 tCO2eq
6.3	**Energy saved (MJ)**			
	Lifetime energy saved (MJ)	2,215,505,200 MJ	206,629,000 MJ	403,418,201 MJ

I.2 Baseline: In Southeast Asia, Thailand has been a leader in the promotion of energy efficiency. The Thai government has been proactive in fostering an energy efficiency culture and the industry has actively participated in energy efficiency activities. Taking stock of the energy situation in the country in terms of high energy usage, import bills, energy security and environmental concerns, the Government of Thailand has structured its energy policy, legal and regulatory frameworks in place well back, starting from early 1990's with the promotion of energy efficiency and renewable energy. Although energy efficiency has been promoted with the support from Thai government through policy and relevant funds, and adopted by Thai industry with some investments, the level of achievement is still limited based on three significant observations consisting of: the low rate of industry's participation to implement energy efficiency measures; focus on component-based energy efficiency measures; and the ad-hoc practice of energy management among Thai industry.

II. Targeted results and progress to-date

II.1 Describe in tabular form the project's progress made in achieving its outputs against key performance indicator's targets in the project's **M&E Plan/Log-Frame at the time of CEO Endorsement/Approval**. Please expand the table as needed.

Project Strategy	**KPIs/Indicators**	**Target level**	**Progress to-date**
Component 1 – ISO compliant energy management systems Outcome 1: Compliance to a policy instrument that encourages industrial enterprises to adopt ISO compatible energy management standards to deliver improvements in industrial energy efficiency, productivity and competitiveness.			
Output 1.1: Training material and tools on energy management developed	Training material on EnMS provided to industrial enterprises	Availability of translated materials and tools	Complete
Output 1.2: National awareness campaign launched on ISO 50001	National campaign provided information to industry to adopt ISO 50001	Promotional literature distributed to industries to promote the adoption of ISO 50001	Complete
Output 1.3: National experts/factory personnel trained on energy management systems	Number of trained national experts and factory personnel	- 500 factory managers attend the management workshop - 300 factories send their personnel to EnMS user training - 50 National Experts trained on EnMS	- 100% (612 managers) - 100% (364 factories) - 100% (62 National Experts completed all modules of the training course and passed the final examination)

Output 1.4: Peer-to-Peer network between industrial enterprises created and operational	Network established and used to support program recognition and present savings result from energy management	All participating enterprises share their implementation plan on energy management on the network and learn from others' experience and results	Complete
Component 2 – Industrial energy systems optimization Outcome 2: A cadre of energy efficiency professionals created within industrial facilities as well as national experts and equipment suppliers to initiate a process to transform local markets effectively and to provide industrial systems optimization services.			
Output 2.1: Training materials, software and tools on systems optimization developed	Training material on SO provided to industrial enterprises	Availability of translated materials and tools	Complete
Output 2.2: National experts/factory personnel trained on optimization of steam, compressed air, fan and pumping systems	Number of trained national experts and factory personnel	- 400 factory personnel attended SO user training - 50 National Experts trained on SO	- 100% (1,126 personnel) - 96% (48 National Experts completed all modules of the training course and passed the final examination)
Output 2.3: Equipment vendors/suppliers trained on systems optimization	Number of trained equipment vendors/suppliers	Training of 50 equipment suppliers/vendors of energy efficient products in SO	100% (60 companies)
Component 3 – Enhancement of industrial EE financing capacity Outcome 3: Increased availability of financial and institutional support for industrial energy efficiency initiatives.			
Output 3.1: Increased availability of financial and institutional support for industrial energy efficiency initiatives.	Evaluation criteria are harmonized within the financial institutions to help them select best EE projects	Criteria for evaluating EE projects are developed and harmonized by main financial institutions in Thailand	Report completed
Output 3.2: Capacity of banks/FIs enhanced on EE projects financing	Number of financial institutions and local banks personnel trained to understand main features of EE projects and better appraise EE projects proposals.	Strengthened capacity of financial institutions and local banks on EE projects evaluation	Complete
Output 3.3: Training material developed and industry managers trained on the development of financial proposals	- Training material relating to financing of energy efficiency project development are provided to industries - Number of trained facility managers/personnel in industrial energy efficiency project development	- Availability of translated materials and guidelines specifically supporting the development of financial proposals for EE projects - Industrial facility managers/personnel have the capacity to analyze SO and energy management projects and use energy and O&M costs reduction project	- Complete - Complete
Component 4 – Implementation of energy management and systems optimization projects Outcome 4: Demonstrable energy savings in participating factories through systems optimization and energy management standards and increased adoption of energy management standards by industry			
Output 4.1: Energy management systems implemented	- Number of factories with energy management plans implemented - Number of case studies	- 200 factories adopted energy management plans and completed operational improvement projects - 50 factories adopted and implemented ISO 50001	- 100% (200 factories) - 100% (50 factories) - Complete

	- Number of factories registered for peer-to- peer network	- Participating factories registered with the peer-to-peer network report energy savings	
Output 4.2: Documented system optimization demonstration projects	- Number of completed steam, pumping, fan and compressed air systems assessments - Number of completed systems optimization projects	- 75 system assessments conducted - 50 completed systems optimization projects - 25 case studies showing GHG emission reductions	- 100% (76 assessments) - 100% (74 projects) - 100% (25 cases)
Output 4.3: Recognition program developed and implemented	Recognition program for participating companies established based on successful achievements	Formal recognition of factories achieving power/fuel consumption reductions reflected in government reports	Complete

III. Project Risk Management

III.1 Please indicate the overall risk management: (i) as identified in the CEO Endorsement document, and (ii) progress to-date.

[Describe in tabular form the priority activities undertaken during the reporting period in line with the project document. **Note** that risks, risk level and mitigations measures should be consistent with the ones identified in the CEO Endorsement/Approval document.]

	(i) Risks	**(i) Risk level**	**(i) Mitigation measures**	**(ii) Progress to-date**	**New defined risk[3]**
1	Technology: Technical risks associated with the optimization of steam, compressed air, fan and pumping systems are very low. Considerable energy savings have been achieved in many countries through system level efficiency opportunities.	L	To deliver the required capacity building, UNIDO will employ the services of highly skilled experts with systems specific expertise (steam, pumping, fans and compressed air), and proven training skills.	The project staff, together with the international experts, have sought to ensure that the capacity of the selected national experts is built on System Optimization, and have worked closely with the targeted industries. After analyzing the training evaluation results and discussion with some participating industries, the project together with the international experts and national experts have developed the new training courses to fill the gap between the 2-day user training and the expert training. The new training courses available for EnMS, SSO and CaSO are designed to be a workshop-style training, which including the equipment usage, exercises, and discussion group, which aim to encourage the implement of EnMS and the assessment of SSO and CaSO opportunities in the plant.	☐
2	Sustainability: o Failure to achieve outcomes due to inability to scale up outputs o Failure to achieve sustainable market transformation	M	Through its linkage with ISO 50001, the project builds on the regular audit process, which assures that energy efficient operations become part of each	The PMU has worked on the sustainability issues with project partners. A key mitigation measure is the development of e-learning materials to increase the coverage and to ensure the accessibility of the project's training materials and case studies after the project termination. Moreover, the discussion with some national trainers who are also the lecturers in the leading	☐

[3] New risk added in reporting period. Check only if applicable.

	o Unwillingness of industries to bear even minimal costs of project participation and concerns over disruption to current operation and business priorities		participating enterprise's operating culture. The Government has already created a favorable environment with institutional framework, policy and regulations and incentives and financing mechanisms.	universities in Thailand about the incorporation of EnMS and SO principles in their curriculum has been initiated.	
3	Institutional: Change in government priorities leading to reduced support for the UNIDO/GEF project, implementation delays, and reductions in the effectiveness of delivery of the training and demonstration programs.	M	Through the project financing activities, UNIDO will provide training for enterprises' key personnel, to build their capacity to better understand the value of investing without delay on systems optimization and energy management, and the long-term financial benefits it brings.	Under the project, some investments in high-cost improvement measures have already been undertaken, such as the installation of new boiler, economizers and modification of the separated compressed air systems to the center system. In the current situation, industry has an increasing awareness of energy costs and energy efficiency projects.	☐

III.2 If the project received a sub-optimal risk rating (H, S) in the previous reporting period, please state the actions taken since then to mitigate the relevant risks.

N/A

IV Environmental and Social Safeguards (ESS) & Stakeholder Engagement

IV.1 As part of the requirements for **projects from GEF-6 onwards**, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

☐ Category A project

☐ Category B project

☐ Category C project

(By selecting Category C, I confirm that the E&S risks of the project have not been escalated to Category A or B).

[**Notes on new risks:**

- If **new risks** have been identified during implementation due to changes in, i.e. project design or context, these should also be listed in (ii) below.
- If these new/additional risks are related to Operational Safeguards # 2, 3, 5, 6, or 8, please consult with UNIDO GEF Coordination to discuss next steps.
- Please refer to the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP) on how to report on E&S issues.]

	E&S risk	**Mitigation measures undertaken during the reporting period**	**Monitoring methods and procedures used in the reporting period**
(i) Risks identified in ESMP at time of CEO Endorsement			
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)			

IV.2 Please provide any feedback submitted by co-financiers, and other Partners/Stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

Submitted with previous PIR.

IV.3 Please provide any **relevant stakeholder consultation documents**:

Submitted with previous PIR.

V Knowledge Management

V.1 Please provide any **relevant knowledge management mechanisms** / **tools** that the project has generated:

The project has produced the following KM mechanisms and tools (which was submitted with the previous PIR):

1. Website: www.ieeproject.com
2. IEE project leaflet
3. Biomass boiler's efficiency improvement leaflet
4. 25 case studies
5. e-learning for the financial evaluation of the energy efficiency project

VI Financial report

VI.1 **Financial** implementation of the project:

Please see the attached Project Delivery Report.

VII Work Plan and Budget

VII.1 Please provide **an updated project work plan and budget** for the remaining duration of the project, as per last approved project extension. Please expand/modify the table as needed.

The Project was completed in 2018. There is no further activity. The Terminal Evaluation Report is attached.

VIII Synergies

VIII.1 **Synergies** achieved:

[Describe potential synergies arising out of closer integration of the service modules within the project or cooperation with (external) multilateral and bilateral projects/programmes.]

TISI has continued their supports to ISO 50001 implementation (Component 1 and Component 4 of the project.)

DIP has continued their supports to industrial energy efficiency implementation through the recognition program of Prime Minister Awards – Industrial Energy Management.

DEDE has continued their supports to industrial energy efficiency implementation and ISO 50001 implementation through their various capacity building activities organized by their Energy Learning Center and the Energy Efficiency Projects.

The GEF5 project, "Greening Industry through Low Carbon Technology Applications for SMEs", has used the materials developed and leverage the knowledge of trained experts under the IEE project to raise awareness and convince the SMEs to implement energy efficiency measures.