



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

**Progress Report**  
(01 July 2018 – 30 June 2019)

**Name of country Indonesia**

<b>Title<sup>1</sup></b>	<b>Promoting industrial energy efficiency through system optimization and energy management standards in Indonesia</b>
<b>GEF ID:</b>	<b>3595</b>
<b>UNIDO SAP ID:</b>	<b>103031</b>
<b>GEF Replenishment Cycle:</b>	<b>GEF-4</b>
<b>GEF Focal Area:</b>	<b>Climate Change Mitigation (CCM)</b>
<b>Integrated Approach Pilot (IAP) Programs<sup>2</sup>:</b>	<b>(select)</b>
<b>GEF Project Size:</b>	<b>Full-Sized Project (FSP)</b>
<b>UNIDO PTC Department:</b>	<b>Department of Energy (ENE)</b>
<b>UNIDO Project Manager:</b>	<b>Mr. Sanjaya Shrestha</b>

**I. Brief description of the project**

**I.1 Objective:** The objective of the Project is to promote industrial energy efficiency (EE) through energy systems optimization (ESO) approach and introduction of ISO energy management standards. Improving energy efficiency 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.

Targeted results: The Project is being implemented by UNIDO in cooperation with the Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry (MoI) and the National Standardization Body (BSN) of Republic of Indonesia. It aims to build the capacity of stakeholders that include local experts, industrial enterprises, equipment suppliers, engineering/energy services companies and government planners to develop services focused on system level efficiencies. The Project will promote the integration of energy efficiency into management system of industrial enterprises through energy management standards to accelerate adoption of energy efficient best practices on a continuous basis;

Specifically, the Project aims to:

<sup>1</sup> As per approved CEO Endorsement document

<sup>2</sup> Only for **GEF-6 projects**, if applicable

1. Establish a policy instrument that encourages industrial enterprises to adopt ISO compatible energy management standards to deliver sustainable improvements in industrial energy efficiency and competitiveness;
2. Develop of a cadre of energy efficiency professionals within industrial facilities as well as international experts and equipment suppliers to initiate a process to transform local markets effectively as to provide industrial systems optimization services;
3. Increase the availability of financial and institutional support for industrial energy efficiency initiatives; and
4. Provide technical assistance to industries for the purpose implementing ISO-compliant energy management systems (EnMS) in their facilities.

<b>Core Indicator 6</b>	<b>Greenhouse gas emission mitigated</b>				<b>(Tons)</b>
	Tons (6.1+6.2)				
	Entered		Entered		
	PIF stage	Endorsement	MTR	TE	
	Expected CO2e (direct)	67,442 tCO2	67,442 tCO2		998,803 tCO2
	Expected CO2e (indirect)	522,960 tCO2	522,960 tCO2		
<b>Indicator 6.3</b>	<b>Energy saved</b>				
	MJ				
	Expected		Achieved		
	PIF stage	Endorsement	MTR	TE	
	Direct savings	538,942,400	538,942,400		5,465,844,000
	Indirect savings	4,128,144,000	4,128,144,000		321,480

**I.2 Baseline:** Indonesia's economic wealth is highly dependent on the growth of the industry, which contributes to almost 48% of the GDP while the industrial sector is also the largest energy-consuming sector in Indonesia. The industries are implementing energy efficiency on an ad-hoc basis and not in a systematic way. In practice the energy efficiency action in industries are component approaches and not system approaches which is lowering the potential saving. When it comes to the financing of energy efficiency, the financial institutions' awareness and capacity on energy efficiency financing is still lacking.

## 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.

<b>Project Strategy</b>	<b>KPIs/Indicators</b>	<b>Target level</b>	<b>Progress to-date</b>
<b>Component 1 – Introduction of Energy Management System and Capacity Building</b>			
Outcome 1: Compliance to a policy instrument that encourages industrial enterprises to adopt ISO compatible energy management standards to deliver sustainable improvements in industrial energy efficiency and competitiveness			
Output 1.1: Reinforced capacity of government institution on energy management	Number of Government staff in the PMU	PMU established	PMU operated in the MEMR office. ACHIEVED
	Number of workshop/meetings	Key Government Institution participated in the workshops	200 government staff trained ACHIEVED
	Replication and Scaling up plan developed	Replication and Scaling up plan handed over	The Plan handed over and discussed ACHIEVED

Output 1.2: Training Material and Tools Developed	Training material on energy management provided to industrial enterprises	Availability of translated training material on energy management system compatible to ISO 50001	Training material on EnMS ISO 50001 available in Bahasa ACHIEVED
Output 1.3: National Awareness Campaign launched on ISO 50001	National campaign provided information to the industry to adopt ISO 50001	Promotional literature distributed to industries in Indonesia promoting adoption of ISO 50001	Fact sheet and case study was distributed to over 1,400 training participants. ACHIEVED
Output 1.4: Trained national experts and factory personnel on energy management	Number of trained national experts  Number of trained factories personnel	25 national experts  300 factories managers (out of which 200 will be trained on EnMS implementation)	38 National experts graduated as UNIDO EnMs National experts. 150% ACHIEVED  912 industries personnel has been trained on EnMS in which 524 trained on EnMS implementation 300% ACHIEVED
Output 1.5: Peer to peer network established between industrial enterprises	Network Established and used to support program recognition and present saving result from energy management	All participating enterprises share their implementation plan on energy management on the network and learn from other experiences and results	4 time peer to peer network meeting was conducted, participated by 200 industry personnel ACHIEVED
<b>Component 2 – Capacity building on systems optimization</b>			
Outcome 2: A cadre of energy efficiency professionals created within industrial facilities as well as consultants and suppliers to initiate a process to transform local markets effectively as to provide industrial systems optimization services			
Output 2.1: Training material and tools developed	Training materials on system optimization provided to the industrial enterprises	Availability of translated comprehensive training materials and tools on system optimizations	Training materials in Bahasa is Available and used. ACHIEVED
Output 2.2: Trained national expert on system optimization	Number of trained national experts  Number of trained factory personnel	45 national experts  300 factory managers ( out of which 200 will be trained in the use of UNIDO tools	46 national experts on SO trained. 100% ACHIEVED  323 factory managers trained on the use of UNIDO tools. 100% ACHIEVED
Output 2.3: Equipment vendors/supplier trained on system optimization	Number of trained Indonesian based equipment vendors/supplier	Training of 50 Indonesia based supplier of energy efficiency product in system optimizations	84 Indonesia based supplier was trained on system optimization. 160% ACHIEVED
<b>Component 3 – Financial capacity development to support energy efficiency projects in industry</b>			
Outcome 3: Increased availability of financial and institutional support for industrial energy efficiency initiatives			
Output 3.1: Project evaluation criteria developed and harmonized	Evaluation criteria are harmonized within financial institution to help them select best EE project	Criteria for evaluating EE project are developed and harmonized by main financial institution in Indonesia	The criteria has been agreed and adopted in the guidebook. ACHIEVED
Output 3.2: Training material developed and capacity of industry enterprises built on bankable energy efficiency project development	Training material relating to financing EE project development are provided to the industries  Number of trained	Availability of comprehensive material and guidelines specifically supporting the development of financial proposal for EE projects.  Industrial facility manager	Training material available in Bahasa and has been used in 2 time training for energy managers. ACHIEVED  88 energy managers from industries

	facility manager in industrial EE project development	have the capacity to analyze system optimization and energy management projects and use energy and O&M cost reduction projects	trained on EE financing. ACHIEVED
Output 3.3:Capacity of financial institutions and local banks built to promote and invest in industrial energy efficiency projects	Number of financial institutions and local banks personal trained to understand main features of EE project and better appraise EE projects proposals	Strengthened capacity of financial institution and local bank on EE project evaluation.	190 banks and financial institution personnel including OJK have been trained on EE financing. ACHIEVED  25 personnel have been trained as trainer. ACHIEVED
<b>Component 4 – Implementation of energy management and systems optimization projects</b>			
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 System Implemented	Number of factories with energy management plan  Number of case studies  \ Number of factories registered to peer to peer network	150 factories adopted energy management plan and completed operational improvement plan  25 factories adopted and implemented ISO 50001  Participating factories registered with the peer to peer network report energy savings	159 factories completed the EnMS plan. 100% ACHIEVED  28 factories adopted full cycle of ISO 50001. 110% ACHIEVED  4 times peer to peer network was implemented participate by 200 factories personnel's. ACHIEVED
Output 4.2:Documented industry demonstration projects	Number of completed steam, pumping and compressed air system assessment  Number of completed system optimization projects	60 system assessments conducted of which 35 led to completed system optimization projects.  20 case studies showing GHG emission reduction	49 SO assessment was conducted and 67 projects were implemented by the industries. 80% & 190% ACHIEVED  67 project completed and reduce 526,755 ton CO2. 300% ACHIEVED
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 reduction reflected in the government reports	Pilots companies win the national energy conservation award in 2015, 2016 and 2017. ACHIEVED

### 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.

	(i) Risks	(i) Risk level	(i) Mitigation measures	(ii) Progress to-date	New defined risk <sup>3</sup>
1	Institutional Risk - 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. Capacity of MEMR to manage the UNIDO/GEF project diverted to other projects.	Low risk (L)	A newly enacted legislation in Indonesia explicitly refers to energy management and audits for enterprises. The project actively supports MEMR mandated responsibilities. Through its linkage with ISO 50001, the project incorporates a strong element of market drivenness in parallel to its dependency on government support.	The regulation on EE has strongly supported the market development of ISO 50001 in Indonesia. It will be furthered strengthened through the plan to lower the minimum threshold of obligated management energy for industries with the energy consumption from 6000 TOE to 4000 TOE.	<input type="checkbox"/>
2	Technology Risk - Technical risks associated with the optimization of compressed air and steam systems are very low. Considerable energy savings have been achieved in many countries through system level efficiency opportunities.	Low risk (L)	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.	The trainings delivered by UNIDO's international experts and trained local experts, have been considered of high quality. The SO training are in high demand and the industries show high interest in them. Some industries are even willing to pay for similar services by trained local experts.	<input type="checkbox"/>
3	Sustainability - Failure to achieve outcomes due to inability to scale up outputs - Failure to achieve sustainable market transformation - Unwillingness of industrial energyusing firms to bear even minimal costs of project participation and concerns over disruption to current operation and business priorities	Modest risk (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 participating firm's operating culture. The combination of standards with tools and training will allow companies to "hardwire" industrial EE projects/investments into management structures, such as ISO, that provide documentation, independent verification, and continuous	The standard, ISO 50001, has been adopted as the reference for a national competent standard on energy managers based on the Ministry of Manpower decree no. 80/2015. This will ensure the acceptance of industry of EnMS due to the mandatory need for energy managers for industries consuming more than 6000 TOE of energy. Industries are now increasingly willing to pay for the consultation and assessment services on ISO 50001 and system optimization, which is evidence the satisfactory quality of the services.	<input type="checkbox"/>

<sup>3</sup> New risk added in reporting period. Check only if applicable.

			improvement. As one of its outcomes, the project seeks to strengthen existing financing incentives for industrial users to improve EE. The institutional capacity will be built to pursue the project efforts. As a market driven approach, the capacity and the awareness of major players will be enhanced including equipment vendors, equipment buyers (industry), services providers (consultants, designers), financiers and the government.		
4	ISO 50001 - ISO 50001 is planned to be approved late this year or early 2011, but uncertainty and unexpected events could delay the final approval even up to mid- or late 2011.	Low risk (L)	The project activities have been developed consistently with the possibility of ISO 50001 coming into effect later than expected. With this possibility in mind, activities related to ISO 50001 are scheduled to start mostly in the second half of 2011.	In December 2012, BSN issued a National Standard (SNI) on EnMS adopted from ISO 50001.	<input type="checkbox"/>
5	Financial Risk - 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.	Modest risk (M)	Through the project financial 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.	OJK, the National Financial Services Authority Body, has adopted UNIDO EE training as their guidelines for banks and 200 banks staff have been trained by UNIDO, MEMR and OJK. • One of UNIDO pilots on SSO has granted a 3 mio USD loan to improve their boiler system from one of the trained banks, which proves to show the banks increased awareness on EE financing. To date, 37 out of 70 identified projects were executed by industries with completed SO assessment reports, indicating that potential financial risks are not causing delays.	<input type="checkbox"/>

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.

#### 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).

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

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

[Examples: *Project Steering Committee minutes, Aide Memoire, Meeting Agenda, etc.*  
All attachments are to be named as per the GEF required format, i.e.: "GEFID\_Document Title"]

## V Knowledge Management

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

The project has produced some viable knowledge which will be very useful for the government partner and other stakeholders in order to continue the activity and support the impact sustainability of EnMS and system optimization. PMU has collected and managed the information and created cloud storage for knowledge management.

The knowledge management has been arranged and stored in a Google Drive link accessible to the stakeholders. The information is also stored in a knowledge management flash disk and distributed to stakeholders during the project closure seminar in October 2017 and December 2017.

The knowledge management file is not only limited to training materials, but also includes success case studies developed during the project. Information on the contact persons of participating industries and other participants is valuable data that could be used by stakeholders in the future. The knowledge management also shares some project document and also reports, which describe the project management activities.

Furthermore, under Component 1, the Project established a peer-to-peer network where 200 companies shared their progress on EnMS and SO project energy savings. The network also included a recognition programme, implemented in close cooperation with MEMR.

Moreover, Component 3 on energy efficiency financing completed the development of training module for bank staff and for industry energy managers. The modules have been delivered to bank staff and manager energy since 2015 onward and two trainings for trainer had been delivered. In 2016, OJK decided to adopt the training modules for financial institutions into OJK guidelines on EE investment for financial institutions. This guideline is a part of a series of guidelines on sustainable finance, released by OJK as supporting material for sustainable finance roadmap. The OJK's guidelines on EE investment for financial institutions were officially launched by OJK in the Sustainable Finance International Event and symbolically handed over to 8 first-mover banks in Indonesia in November 2015. This action has helped increase the awareness of financial institutions, including banks, on EE investment financing opportunities in the industries.

Finally, following the completion of all project activities, knowledge management were also handed over to the local universities. In 2017, MEMR conducted 6 EnMS Goes to Campus trainings which were attended by more than 1,200 engineering students from Universitas Diponegoro in Semarang, Central Java, UNILA in Lampung Sumatera, Universitas Gajah Mada at Yogyakarta, UNSOED in Puwokerto Central Java, Universitas Brawijaya in Malang, East Java, and ITS in Surabaya, East Java. These campus events are planned for continuation. During the EnMS Goes to Campus, NPC supported MEMR as speaker on EnMS implementation in the industry and others experts also shared experiences on structural EnMS implementation.

## VI Financial report

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

## 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.

Project has reached operational completion.

## 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.]

The Project's establishment and support of the Indonesia Energy Foundation (YEI) to mainstream the cadre of national experts not only nurtured the nascent market for commercial EE services, but developed an institution that could provide post-project training services and serve as a repository for the Project materials and resources

Furthermore, under Component 1, the Project established a peer-to peer network where 200 companies shared their progress on EnMS and SO project energy savings. The network also included a recognition programme, implemented in close cooperation with MEMR.

Overall, the National Counterparts worked synergistically on the supervision of the Project through the PSC. While the Project tasks were primarily undertaken by the PMU, the fact that the PMU resided in the offices of the MEMR / DG NEEEC led to a close working relationship with MEMR and DG NEEEC staff.