



Project Implementation Report

(1 July 2022 – 30 June 2023)

Project Title:	Utilizing Solar Energy for Industrial Process Heat in Egyptian Industry
GEF ID:	4790
UNIDO ID:	120073
GEF Replenishment Cycle:	GEF-5
Country(ies):	Egypt, the Arab Republic of
Region:	MENA
GEF Focal Area:	Climate Change Mitigation (CCM)
Integrated Approach Pilot (IAP) Programs¹:	NA
Stand-alone / Child Project:	Stand-alone
Implementing Department/Division:	ENE / ESI
Co-Implementing Agency:	NA
Executing Agency(ies):	Ministry of Trade and Industry (MoTI) – Egyptian National Energy Cleaner Production Centre (ENCPC)
Project Type:	Full-Sized Project (FSP)
Project Duration:	60
Extension(s):	3
GEF Project Financing:	6,500,000 USD
Agency Fee:	617,500 USD
Co-financing Amount:	37,300,000 USD
Date of CEO Endorsement/Approval:	12-18-2014
UNIDO Approval Date:	02-28-2015
Actual Implementation Start:	02-24-2015
Cumulative disbursement as of 30 June 2023:	6,448,988.16USD
Mid-term Review (MTR) Date:	08-15-2018
Original Project Completion Date:	02-24-2020
Project Completion Date as reported in FY22:	12-31-2022
Current SAP Completion Date:	03-31-2023
Expected Project Completion Date:	03-31-2023

¹ Only for GEF-6 projects, if applicable

Expected Terminal Evaluation (TE) Date:	03-31-2023
Expected Financial Closure Date:	09-30-2023
UNIDO Project Manager²:	ATTIA / GHONEIM

I. Brief description of project and status overview

Project Objective		
<p>The objective of the project is to develop the market environment for the diffusion and local manufacturing of solar energy for industrial process heat. The project focuses on improving the energy efficiency of the industrial process heat system and the introduction of solar thermal technologies mainly in industrial companies with a high fraction of low and medium temperature heat demand in three industrial sectors, namely the food, chemical and textiles sectors. Further the project will support the local manufacturing of quality components of the solar systems.</p>		
Project Core Indicators	Expected at Endorsement/Approval stage	
1	Direct emission reductions over 10 years	722,028 tCO ₂
2	Installations of solar energy made in industrial applications	100 Installations
3	Standards for solar energy systems developed	2
4	Framework for the certification of personnel developed	1
5	Bank staff trained on evaluation of projects (30% females)	150 Trainees
6	System optimization measures for industrial process heat implemented	100 Enterprises
7	Workshops organized targeting 500 participants (30% females)	20 Workshops

Baseline
<p>Egypt is a significant producer of natural gas and crude oil and relies on imports of coal and oil products and part of its crude oil consumption to meet its energy needs. The Egyptian electrification rate is 99.4%, according to the International Energy Agency (IEA); this rate is among the highest in Africa. However, ageing infrastructure and rising demand have led to intermittent blackouts mainly associated with the high AC cooling demand during the hot summer months.</p> <p>According to the African Development Bank (AfDB), Egypt's total primary energy demand has grown at an average annual rate of 4.6% during the last two decades. In order to meet the increasing energy needs, mainly thermal power plants have been built. As a result, Egypt ranks among the 11 countries in the world showing fastest growing GHG emissions according to the AfDB.</p> <p>Industry is the most significant energy consuming sector in Egypt. The sector is expected to further grow due to high demand and rapid expansion of industrial production. The energy productivity in Egyptian industry is way below the international average, where the energy consumption per unit of output in Egyptian industries is 10 to 50% higher in Egypt compared to the international average.</p> <p>The industrial sector is also one of the highest sectors consuming energies in the country consuming over 40% of the final energy consumption in Egypt.</p> <p>The GEF project is complimentary to the existing baseline project and aims at addressing the barriers that are not addressed by the baseline project where EE and RE are now seen as a priority at Government level and the potential for using solar energy for industrial process heat is fairly high.</p>

² Person responsible for report content

Please refer to the explanatory note at the end of the document and select corresponding ratings for the current reporting period, i.e., FY23. Please also provide a short justification for the selected ratings for FY23.

In view of the GEF Secretariat's intent to start following the ability of projects to adopt the concept of adaptive management³, Agencies are expected to closely monitor changes that occur from year to year and demonstrate that they are not simply implementing plans but modifying them in response to developments and circumstances or understanding. In order to facilitate with this assessment, please introduce the ratings as reported in the previous reporting cycle, i.e., FY22, in the last column.

Overall Ratings ⁴	FY23	FY22
Global Environmental Objectives (GEOs) / Development Objectives (DOs) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
<i>No changes in ratings</i>		
Implementation Progress (IP) Rating	<i>Satisfactory (S)</i>	<i>Satisfactory (S)</i>
<i>No changes in ratings</i>		
Overall Risk Rating	<i>Low Risk (L)</i>	<i>Low Risk (L)</i>
<i>No changes in ratings</i>		

II. Targeted results and progress to-date

Please describe the progress made in achieving the 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	Baseline	Target level	Progress to-date
Component 1 – Develop policy instruments to promote the use of solar energy for industrial process heat in 3 sectors				
Outcome 1: Policy instruments promoting the use of solar energy for industrial process heat.				
Output 1.1: A roadmap and implementation plan for dissemination of solar energy for industrial heat formulated	Roadmaps for solar thermal energy in 3 industrial sectors developed	No roadmap for solar thermal energy in 3 industrial sectors developed	Roadmap for solar thermal energy in 3 industrial sectors adopted by stakeholders	100% of targets achieved and reported previously
Output 1.2: Instruments to control the quality of solar components, companies and personnel performing installation and maintenance of	2 standards for solar energy systems developed 1 Framework for the certification of personnel developed	No quality standards for solar energy systems developed No certification framework for certification of	Minimum quality standards for solar energy systems enforced Certification scheme for personnel in place	100% of targets achieved: National Roadmap for strengthening the quality of locally manufactured products and components related to SWH and Solar thermal technologies completed and published. Standards for minimum required quality of solar components developed.

³ Adaptive management in the context of an intentional approach to decision-making and adjustments in response to new available information, evidence gathered from monitoring, evaluation or research, and experience acquired from implementation, to ensure that the goals of the activity are being reached efficiently

⁴ Please refer to the explanatory note at the end of the document and assure that the indicated ratings correspond to the narrative of the report

solar energy systems		personnel developed		<p>Manual of standard operation procedure on installation and maintenance of SWH components and systems developed.</p> <p>Minimum requirements for Installer & Maintainer certification scheme formulated.</p> <p>Training centres operational scheme developed and supplied with required equipment PVTD and NREA training centres establishment.</p> <p>Train of the trainers (IMC, PVTD and NREA)</p> <p>SCHAMCI/Solar Keymark became mandatory SWH standard for all manufacturers and suppliers with ministerial decree.</p>
Component 2 – Mobilize financing for the deployment of solar energy for industrial heat				
Outcome 2: Financing for the deployment of solar energy for industrial heat Mobilized				
Output 2.1: Revolving Fund to facilitate financing of solar thermal technologies is set up	Revolving fund is set-up and disburses US\$2 million over the project duration in loans	No dedicated fund for financing solar energy for industrial applications	\$ 19 million invested in solar energy in the industrial sector	<p>100% of targets achieved and presented in previous GEF reports.</p> <p>The revolving fund is operationalised with the first agreement between the NBE and FRESH (local manufacturer of SWH) was signed in April 2023. The project worked on the inclusion of non-industrial sectors such as the tourism sector as well as SWH local manufacturers to the fund. Those are currently receiving funding from the SHIP revolving fund. This inclusion has encouraged local manufacturing and speeded up the disbursements rates.</p>
Output 2.2: Solar thermal technologies installed in selected facilities	<p>System optimization measures for industrial process heat implemented in 100 enterprises.</p> <p>100 installations of solar energy made in industrial applications</p>	<p>Limited projects improving the energy efficiency of the industrial heat system implemented</p> <p>Limited installations of solar energy in industrial applications</p>	8,907,180 GJ direct savings over 10 years. Direct emission reductions of 722,028 t CO2 eq. over 10 years.	<p>SHIP continues its effort to enrol industrial enterprises under the project umbrella with valuable technical assistance. 410 Companies are identified and recorded in the Leads Database, where the food sector represents 55% of the registrations, textile 27% and Chemicals 16%.</p> <p>260 Walkthroughs, 76 detailed thermal audits prepared and 9 measurements visits conducted.</p> <p>The project target has changed from 100 to 20 pilot projects. This target was not fulfilled due to various reasons such as the subsidized cost of natural gas and electricity which affects the payback period of installing a SWH, devaluation of EGP and unavailability of foreign currency which makes it difficult to import SWH components, customs tariff management, challenges faced by the industrial sector due to macro-economic situation which makes it difficult for them to operate..</p>
Output 2.3: Technical capacity of staff of local banks on the assessment of projects enhanced	150 bank staff trained on evaluation of projects (30% females)	Staff of local banks have a limited knowledge of the assessment of business plans for financing solar thermal installations in industry		<p>100% of targets achieved:</p> <p>Six training rounds completed reaching accumulated 353 trainees over the project life-time, Covering 15 National/International banks with 15% females representation</p> <p>2nd Study Tour to Tunisia in June 2022 included NBE representatives.</p> <p>A Tunisian delegation was received by Egypt officials in Sept. 2022 to exchange experiences and lessons learnt between Egypt and Tunisia. This visit was facilitated by the project. This exchange has led to the development of a policy paper summarising how can the Egyptian market expand the installation of SWH, quantifying the cost of NG and electricity which will be reduced. The paper will be presented to the Government officials in the Ministry of Trade and Industry.</p>
Output 2.4.	20 workshops organized	Limited activities		100% of targets achieved:

<p>Awareness campaign on solar thermal technologies for industrial process heat implemented</p>	<p>targeting 500 participants (30% females)</p> <p>2 Leaflets distributed</p> <p>5 press releases published</p> <p>100 best practice case studies compiled</p> <p>10 visits to successful projects organized</p>	<p>targeting the awareness of industries, experts and stakeholders on solar thermal applications in the industrial sector</p>		<p>Project website https://shipprojectegypt.org/ is maintained and updated</p> <p>SWH platform launched by NREA. https://www.swhegypt.com/</p> <p>Dissemination of promotional material and case studies and infographics and leaflets was completed.</p> <p>Educational material such as Installer and Maintainer (I&M) educational film is published via all virtual platforms</p> <p>Lessons learnt info graph was disseminated through the UNIDO accelerator website https://www.industrialenergyaccelerator.org/egypt/rolling-out-solar-energy-to-power-egyptian-industries-10-lessons-learned/</p>
---	--	---	--	--

Component 3 – Improve the manufacture, supply and distribution of solar energy components and systems

Outcome 3: The local manufacture, supply and distribution of solar energy components and systems is strengthened

<p>Output 3.1: Laboratory facility for testing quality of the local manufactured and imported products is accredited</p>	<p>1 Facility for testing is accredited</p>	<p>10% of the products manufactured fulfil quality requirements</p> <p>No facility for testing the quality of locally manufactured products is accredited</p>	<p>50% of products manufactured locally fulfil quality requirements</p>	<p>100% of cumulative targets achieved and reported previously.</p> <p>The SWH testing laboratory in NREA was accredited in March 2023, marking the completion of this activity.</p> <p>Qualified engineers are certified according to the newly released standards for the SWH testing methods. Training conducted on a revision of the testing procedures. The number of participants is 6 from NREA team with 50% females.</p> <p>Training material developed on the testing procedures revision.</p>
<p>Output 3.2: Capacity of the testing laboratory staff on testing protocols and procedures developed</p>	<p>Manual on testing procedures developed</p> <p>Expert group meeting from various centres of excellence to share and exchange knowledge & lessons learned on quality testing of solar components and products</p>	<p>Staff of the testing laboratory do not have the skills required for the testing</p>	<p>20 experts of the testing laboratory trained (20% females)</p>	<p>Completed and reported previously</p>
<p>Output 3.3: Basic tools and training required for improving the quality of locally manufactured components provided</p>	<p>Manual on improving the quality of locally manufactured components developed</p> <p>40 companies own tools required to improve the quality of their manufactured products</p>	<p>None of the local manufacturers possess tools required to produce good quality components</p>	<p>Create linkages between the supply and demand side to stimulate the market</p> <p>Technical assistance for start-ups and solar energy entrepreneurs</p>	<p>100% of targets achieved and previously reported:</p>

Output 3.4: Training programme on best practices in the manufacture of solar energy components and systems conducted	Manual on best practices in the manufacturing developed	Staff of local manufacturers do not have the skills to manufacture good quality products	200 technicians from selected companies trained (10% females)	100% of targets achieved and reported previously Manual developed Training for 220 participants completed (35 females 16%, 185 males 84%)
Output 3.5: A platform to enhance information exchange, cooperation and partnerships between local industries, international centers of excellence and technology suppliers created	Design the framework of the platform completed Launch and operate the platform	No platform is available	1 Platform is established and functioning	100% of targets achieved: A platform to enhance information exchange, cooperation and partnerships between local industries, international centres of excellence and technology suppliers created. https://www.swhegypt.com/ Training on platform operation & MNE using google analytics is completed to trainees from NREA IT & technical team.
Component 4 – Build the capacity of technical staff designing, developing and servicing solar systems				
Outcome 4: Technical capacity of the system designers, developers, facility managers and service providers for solar energy utilization for industrial process heat enhanced.				
Output 4.1: Training programme on energy savings based on process heat optimization for experts, facility managers and service providers are conducted	100 experts trained on SO (10% females)	No institutionalized training course available Staff of companies not aware of the opportunities for EE improvements	Training course developed runs at the vocational training schools	100% of targets achieved and reported previously: SSO material adapted and customized to Egypt context 2 trainings on SSO for 129 trainees were held 18 technical experts registered in IMC service provider list.
Output 4.2. Training programme on system design for experts, facility managers and service providers are conducted.	20 experts and 50 vendors trained on system design (10% females)	No institutionalized training course available No experts aware of the best practice in the design of solar thermal systems	Training course developed runs at the vocational training schools	This output was 100% completed and reported in previous PIR, however, the project found a need to offer an extra capacity building dedicated to SWH designs. Accordingly, an extra round of advanced SWH design training was conducted in November 2021. The training duration was for 5-days to 21 of the project consultants 23.5% females participation.
Output 4.3. Training programme on solar thermal installation and servicing for technicians, installers and service providers established	200 technicians trained on proper installation and servicing practices (10% females)	No institutionalized training course available A limited number of technicians is trained on proper installation and servicing procedures	Training course developed runs at the vocational training schools	Two Training Rounds: Tools/equipment & practices improvement upgrade for 106 participants/67 Companies. Train of the Trainer (ToT) theoretical and practical training completed Measurements equipment's purchased and delivered, two training centres are equipped and delivering training services. 3 rounds of the training of SWH installation and maintenance were developed with total 81 trainees (14% females) several target audiences such as NREA, IMC and SWH market. Coaching 5 people from NREA that attended the ToT.

Output 4.4. Training programme on business development for solar energy businesses developed	100 entrepreneurs trained on business development (20 % females)	No institutionalized training course available Enterprises and entrepreneurs working in the energy sector do not pose sufficient management skills to support the market development	Training course developed runs at the vocational training schools Develop training material on business development and entrepreneurship for the solar energy businesses Develop one round of training	Technical support to NREA to roll out the training for SWH installation and maintenance in cooperation with PVTD and IMC. 100% of targets achieved and previously reported.
Component 5 – Monitoring and Evaluation		Adequate monitoring and evaluation mechanisms are in place, facilitating smooth and successful project implementation and sound impact	Regular monitoring exercises conducted, PIRs prepared, tracking tools according to the GEF requirements prepared. Final project evaluation conducted	- Nine Project Implementation Reports (PIRs) submitted - Mid-Term review completed in July 2018 - Final Evaluation completed in April 2023 - Project steering committee meetings conducted and documented - Monthly/Bi-monthly monitoring reports prepared - Quarterly reports prepared and submitted to Ministry of Trade and Industry (MoTI)

III. Project Risk Management

1. Please indicate the overall project-level risks and the related risk management measures: (i) as identified in the CEO Endorsement document, and (ii) progress to-date. Please expand the table as needed.

	(i) Risks at CEO stage	(i) Risk level FY 22	(i) Risk level FY 23	(i) Mitigation measures	(ii) Progress to-date	New defined risk ⁵
1	Political Risk: Lack of government commitment to support the project	Low risk (L)	Low risk (L)	A comprehensive awareness plan is included aimed at business owners and senior managers to explain the benefits of implementing an EnMS and convince enterprises to avail of the training and technical assistance available	Continuous collaboration with the relevant counterparts including the Ministry of Trade and Industry, IMC/ENCPC, NREA, GOIEC and Egyptian Organization for Standardization (EOS) is conducted through steering committee meetings, study tour and awareness events to strengthen the national commitment to the project.	Low <input type="checkbox"/>
2	Technical Risk: There is limited technical risk since RE technologies (solar, wind, etc) are widely used in many developing countries. The risk can however come	Low risk (L)	Low risk (L)	Efforts will be done to pick suitable sites notably by extensively analysing solar insulation records.	National consultants were trained on SWH design to ensure high performance in submission of the feasibility studies in addition to the careful selection of industrial factories for implementation of the solar water heater system.	Low <input type="checkbox"/>

⁵ New risk added in reporting period. Check only if applicable.

	from the selection of an unsuitable site.					
3	Financial risk: financial/credit constraints, high capital costs and an inhospitable investment environment prevent Egyptian private sector from investing in the projects. The existing financial mechanisms are inadequate and could affect investment projects on a larger scale.	Medium risk (M)	Medium risk (M)	In Egypt, like in many countries worldwide, efficient financial mechanisms have been set up. Based on the national and global experience it is possible to develop suitable financial tools for Egypt.	Financial assessment of the Egyptian market is regularly conducted to take the required measures to mitigate the financial risks. Due to COVID-19 impact and various changes such as devaluation of the Egyptian pound and global situation causing financial instability that lead to a loss of appetite in the Egyptian industrial sector to implement pilot projects and focusing on economic activities rather than energy related activities. Thereof the project has conducted a proposal for diversifying the fund beneficiaries to include more sectors along with an in-depth study of the market situation and sectors categorization where the Tourism sector was selected as one of the highest potential sectors with good market size. That in addition to supporting the local manufacturing side to assist in the market creation of the SWHs.	Medium <input type="checkbox"/>
4	Effects of project on the environment and biodiversity: the project has opposite effects than those expected	Low risk (L)	Low risk (L)	The project will promote market-based development of renewable energy use for air conditioning and hot water production. Such technologies (solar thermal, heat pumps, etc.) are well exploited and do not have negative environmental impacts. Further the involvement of the Egyptian National Cleaner Production Centre at the Ministry of Industry will ensure that the production of these components is done in line with the principles of resource efficiency.	Awareness campaign launched promoting the project targets and showing the environmental benefits of using SWH and RE in general in the industrial sector. Generating case studies and publishing them. Feasibility studies developed that proves the efficiency of integrating solar water heaters on the industrial processes and savings of CO2 emissions. Articles released in both English & Arabic Reputable News Papers printed and digital newspapers to show the benefits of the SHIP project, objectives and financial mechanisms available to stimulate the industrial sector to participate in the project.	Low <input type="checkbox"/>
5	Sustainability risk: failure to achieve project outcomes and objectives after successful delivery	Medium risk (M)	Medium risk (M)	By making market players fully aware of the economic potential of RE technologies and by equipping them with the capacity and tools to realize and reap the benefits of such potential, the project will generate a self-reinforcing market. In addition, the policy framework and financial framework that will be put in place will create a positive context that is	The project has various players covering the market cycle with the collaboration with MoTI; starting from SWH manufacturers/service providers, laboratory facility, the industrial sector and NBE. All the roles and responsibilities were defined during planning stages of the project and entities were invited to participate in their respective fields of expertise to eliminate the risk of sustainability failure beyond the project life-time. NREA is fully engaged in the laboratory upgrade and calibration plan, EOS leading with PMU the mandate of SWH SCHAMCI standard and the personnel certification framework.	Low <input type="checkbox"/>

				<p>expected to ensure the attainment of the project outcomes and their sustainability.</p>	<p>Industrial modernization centre with external consultancy developed a national roadmap for local manufacturing supply chain to provide best practices for manufacturing, designing and installing of SWH. Project consultants and services are now listed within IMC list of certified consultants and provided services.</p> <p>National Bank of Egypt along with many others are involved in capacity building and awareness raising seminars to enhance their knowledge on investments in the RE market. Revolving fund with NBE is established under the umbrella of the Ministry beyond project life-time.</p> <p>The creation of an information exchange platform enables smoother communication with all parties. All together shall generate a self-reinforcing market after successful delivery.</p> <p>The above mentioned covers the financial support, supply side and demand side in addition to SWH quality control measures in order to enable to a strong SWH market to ensure sustainable SWH market beyond project life-time.</p>	
6	<p>Sustainability of Financial Mechanisms risk: failure to establish and sustain financial mechanisms to support access to project financing.</p>	Low risk (L)	Low risk (L)	<p>By developing strong relationships with stakeholders including beneficiaries, investors, donors, banks and financial institutions and mobilizing a variety of funding types including private sector, government financing and other the project will build a financial platform that can be used for matchmaking between potential projects and investors.</p>	<p>To mitigate this risk, a revolving fund is set up with the NBE with 2M\$ from GEF and another 2M\$ as a contribution from NBE with total 4M\$.</p> <p>The business frame created in the form of soft loans to finance the SWH technology investments in the Egyptian industry.</p> <p>Awareness campaign, press releases, revolving fund brochure, flyer and awareness events in addition to workshops, project website and many other means of communication has emphasized to the industrial sector the presence of such tools and financial mechanisms that supports access to project financing</p>	<p>Low</p> <input type="checkbox"/>
7	<p>Climate Change Risk: Climate change impacts could impact on solar technologies due to variations in cloud cover- though the science remains uncertain.</p>	Low risk (L)	Low risk (L)	<p>Sun radiation in Egypt remains very high and is considered among the best in the world.</p>	--	<p>Low</p> <input type="checkbox"/>

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 and improve the related risk rating. Please also elaborate on reasons that may have impeded any of the sub-optimal risk ratings from improving in the current reporting cycle; please indicate actions planned for the next reporting cycle to remediate this.

Not Applicable

3. Please indicate any implication of the **COVID-19** pandemic on the progress of the project.

Reported previously in FY22:

The COVID-19 pandemic has led to slow down of the implementation rate. Travel restrictions of international experts led to delays in the capacity building activities which relied on the physical presence of international experts. Site visits and audits were postponed until the number of Corona cases decreased in Egypt.

However, the project overcame the delays by finding alternative solutions to operate smoothly and quickly as holding **online** trainings and remote walk throughs in the industrial facilities.

Covid has caused uncertainty for companies to take investment decisions which affected the demand on the revolving fund and implementation of pilot projects reflecting on component 2.

4. Please clarify if the project is facing delays and is expected to request an **extension**.

The project is completed

5. Please provide the **main findings and recommendations of completed MTR**, and elaborate on any actions taken towards the recommendations included in the report.

- Component 1: Policy;
 - Agreed action during MTR is certification of installers
Status: Installers and maintainers trained completed
- Component 2: Finance;
 - Resolve issues with revolving fund,
Agreed action during MTR is to share risk with NBE or find an alternate mechanism
Status: Revolving fund in place, working on operationalizing the fund.
 - Strengthen ties with CBE program investments,
Agreed action during MTR is to obtain any reports on SME RE/EE finance.
Status: Review of RE financing scheme completed.
- Component 3: Manufacturer capacity, continue and include heat recovery technology,
Agreed action during MTR is to test instruments available and used in product development.
Status: Out of project scope.
- Component 4: Industry Capacity
 - Strengthen designer results,
Agreed action: peer reviewed pipeline of projects.
Status: Designer trainings completed, SWH platform launched

IV. Environmental and Social Safeguards (ESS)

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 escalated to Category A or B).

Please expand the table as needed.

	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	N/A	N/A	N/A
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)	N/A	N/A	N/A

V. Stakeholder Engagement

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes** regarding engagement of stakeholders in the project (based on the Stakeholder Engagement Plan or equivalent document submitted at CEO Endorsement/Approval).

The project is continuously collaborating and engaging designated stakeholders to implement the project targeted objectives.

Egyptian National Cleaner Production Centre (ENCPC)

Mandate: ENCPC was established by the Ministry of Industry, Trade & SMEs (MITS) in close cooperation with the UNIDO as a service provider for the Egyptian Industry providing technical assistance for technology transfer in the fields of resource efficiency in addition to energy efficiency and renewable energy applications.

The initial **role** for ENCPC within the MTI was the leading executing partner and host location for the PMU.

Challenges: Shortage of resources at the ENCPC to support in the technical work – However the project is mitigating this challenge by assigning consultants.

Progress: PMU with ENCPC and IMC with service providers are working hand-in hand to cover the technical assistance that is covered under component two as they are supporting with the walkthroughs, technical audits and feasibility studies. This is planned during the project time and beyond inclusive to assisting the registered industrial factories to implement SWH systems at their facilities.

Outcomes: Collaboration with ENCPC increase the effectiveness of technical assistance to selected facilities thanks to ENCPC's and IMC outreach in industry.

Industrial Modernization Centre (IMC)

Mandate: The industrial Modernization Centre (IMC) provides technical support to the industrial sector through performing Preliminary Energy Audits (PEA) and delivering energy efficiency Technical Assistance (TA) services as well as fostering the implementation of energy management systems. Furthermore, the project has encouraged a favourable technology transfer environment to enhance technological and non-technological innovation while stimulating the set-up of a supply chain in the EE sector.

Progress: IMC is working closely with the Project Management Unit PMU. IMC has added the list of verified trained consultants of the project to their list of SWH design certified consultants with SWH design services to the list of provided services by IMC.

Challenges: None

Outcomes: The project identified ENCPC in collaboration with IMC as the executing agency for this project due to their strong relationships with governmental stakeholders, suppliers, and industrial enterprises. Therefore, the ENCPC with IMC are focusing on executing project outcomes and supporting industrial enterprises and demonstration projects.

New and Renewable Energy Authority (NREA)

Mandate: NREA is the national focal point to develop and introduce renewable energy technologies to Egypt on a commercial scale together with implementation of related energy conservation programs. NREA plays the leading role in the project for providing RE data, supporting policy development and setting up testing facilities for the quality assurance of locally produced components and systems.

Challenges: None

Progress:

NREA is fully engaged with the project mainly on two outcomes; 1) Development of quality standards for solar energy systems and 2) Upgrading of its laboratory facility. For that, NREA is part of a working group that achieved the first outcome target and working closely in a consortium with UNIDO, PSE & CENER for the laboratory upgrade through workshops, site visits and study tour that reached activity targets.

NREA having a core role in supporting various trainings such as SWH installation and maintenance, Creation of a training centre to support SWH training beyond project life-time along with PVTD, ToT and testing protocols and procedures for EOS and EGAC in addition to the support provided to develop SWH components and systems manuals/best practices.

SWH online platform to enhance information exchange, cooperation and partnerships between local industries, international centres of excellence and technology suppliers was created www.swhegypt.com. The Platform objectives are; Enhance information exchange, Cooperation/partnerships between local industries, international centres of excellence & technology and suppliers.

Outcome: Improve the manufacture, supply and distribution of solar energy components and systems through accreditation of NREA's laboratory, enhanced capacity of laboratory staff and establishing platform to increase knowledge sharing among partners

Egyptian Organization for Standardization (EOS)

Mandate: EOS is the official body responsible for standardization activities, and quality and industrial metrology aiming at increasing the competitiveness of the Egyptian products in the international and regional markets along with consumer's and environment protection. Main role is to support the elaboration and adoption of quality standards for the local manufacturing of components, products and vendors

Challenges: None

Progress: EOS has led the working group focusing on the development of quality standards for solar energy systems, adapting SCHAMCI/Solar Keymark as mandatory SWH standard.

Outcome: SCHAMCI/Solar Keymark became mandatory SWH standard for all manufacturers and suppliers with ministerial decree.

Egyptian Accreditation Council (EGAC)

Mandate: EGAC is the sole national body for the assessment and accreditation of conformity assessment bodies in Egypt performing testing/calibration of laboratories, inspection and certification of products and systems, as well as personnel with main role to overlook and confirm the accreditation of the NREA laboratories

Challenges: Needed to take the role of a certification body in Egypt according to international standards like EGA

Progress: Engaged in the accreditation of the laboratories and through the working group of development of a framework for the certification of personnel working in the installation and maintenance of solar energy systems.

Outcome: Laboratory accreditation is in progress and certification of personnel is completed.

Productivity and Vocational Training Department (PVTD)

Mandate: PVTD/Ministry of Industry provides productivity and vocational training service to improve Egyptian industrial development. It qualifies technical staff at various skill levels required by the industrial labour market. Its objectives are to improve productivity in industry and develop management systems. Project role for PVTD network is to support the roll out of various training modules to the industrial sector

Challenge: None

Progress: Involvement of PVTD within the certification of personnel working group and development of a document stating the minimum requirements to be fulfilled in personnel working on installation and maintenance of SWH components and systems. Training material integrated with PVTD and TVET Long term program. New training rounds are being initiated within PVTD and TVET with UNIDO PMU support.

Relevant Outcome: PVTD and NREA were trained and coached as part of the project support their training centres to ensure the sustainability of the training programme beyond the project life-time.

National Bank of Egypt

NBE is the largest Egyptian bank with a 27% share of the market for deposits and 21% of the loans market and the leading Egyptian bank in development/ environment financing. Main role is to be the manager of the revolving fund to be created within the project.

Challenge: None

Progress and Outcome:

The revolving fund was established with 2M\$ GEF and another 2M\$ contribution from NBE.

Business framework was created
Capacity building was provided to NBE staff to familiarize them with SHIP/RE financial models

2. Please provide any feedback submitted by national counterparts, GEF OFP, co-financiers, and other partners/stakeholders of the project (e.g. private sector, CSOs, NGOs, etc.).

Continuous coordination with national partners took place through steering committee meetings, visits and events where all governmental partners are sharing their views, ideas and suggestions.

The project has consistently taking all their views forward and is always progressing in a participatory manner with all its partners.

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

Please list here the documents which will be submitted in addition to the report

1. 4790_SHIP 7th PSC MoM final
2. 4790_SHIP 8th PSC MoM final
3. 4790_SHIP UNIDO PIR_7
4. 4790_SHIP UNIDO PIR_8
5. 4790_MoTI_Extension Letter September 2021
6. 4790_Platform launching event report 29 Sep_20211221

VI. Gender Mainstreaming

1. Using the previous reporting period as a basis, please report on the **progress** achieved **on implementing gender-responsive measures** and **using gender-sensitive indicators**, as documented at CEO Endorsement/Approval (in the project results framework, gender action plan or equivalent).

Using previous reporting period as a basis;

PMU has the gender dimension well integrated within project activities, publications and all related events. This is apparent within the gender sensitive language in publications, photos showing both women and men via project social media platforms and website, women representation is highlighted in pictures, videos and statements to empower and encourage women involvement in the industrial sector.

The project assessed the gender situation in solar technology factories through interviews and it has been decided to focus on gender mainstreaming activities within the training activities. The project's targeted industrial sector has typically lower female labour force than other sectors which affected the indicator results.

During the project, efforts were made to promote the training programmes available to equally qualified female candidates. Gender-aggregated data is collected. Events such as trainings, awareness sessions and study tours were encouraging female presence.

Total number of trained people: 1,141 with 18.7% female representation (213 trainees) during project life-time.

Disseminating information with the project beneficiaries within the industrial sector as part of the promotion for the Gender Energy Compact. Where three factories have shared their interest to join the compact.

<https://genderenergycompact.org/>

Publications of Women in Energy within the Industrial Accelerator website:
<https://www.industrialenergyaccelerator.org/mexico/women-energy-practitioners-talk-about-the-future-of-energy-and-their-contribution/>

VII. Knowledge Management

1. Using the previous reporting period as a basis, please elaborate on any **knowledge management activities / products**, as documented at CEO Endorsement / Approval.

The SHIP project through its execution period from 2015 to-date had very strong documentation and knowledge management taking place on all its activities. Through the project 5 components; Policy, Financial, Technical, Capacity building and M&E on-going reporting is produced per event, training, walkthrough/audits, workshops, seminars, webinars and study tours.

These documentations are crucial and considered a core tool in enhancing the quality of the work provided by the PMU team. Various information is being shared whether on a public level through the website especially via the policy/resources/cases studies/trainings tab in order to be of wider benefit. And other information is shared internally to project stakeholders or steering committee members such as steering committee presentations/MoM.

Information is also shared with the project main counterparts; MoTI/IMC/ENCPC ex: data base of trained consultants in the different fields (Banking/Technicians/Laboratories/Engineers) for further use by the Ministry in other projects. And another data bases of the factories registrations forms; walkthroughs and audits that is shared with project consultants, SWH suppliers and project technical arms.

The project has developed and launched an online SWH platform to enhance information exchange, cooperation and partnerships between local industries, international centres of excellence and technology suppliers: <https://www.swhegypt.com/>

Another powerful tool is to show the audience the impact of the SWH thermal audits on real case studies to stimulate the industrial market, this is done by showcasing on UNIDO accelerator and SHIP's platforms example; <https://www.industrialenergyaccelerator.org/egypt/sana-foods/> & <https://www.industrialenergyaccelerator.org/egypt/integrating-solar-invegetableprocessing/?fbclid=IwAR2BHT9uBj0f2rDfNMOnDgd3X1nxPXHMUeZlPdRkmY8YJkeGkr6V3RE2xh0>

The following are the links of the various information shared whether on internal or public levels:

1. <https://www.industrialenergyaccelerator.org/egypt/how-an-industrial-energy-efficiency-revolution-was-ignited-in-egypt/>
2. <https://www.industrialenergyaccelerator.org/egypt/how-unido-egypt-mobilized-over-usd-18-million-in-financing-for-energy-efficiency/>
3. <https://www.industrialenergyaccelerator.org/mexico/women-energy-practitioners-talk-about-the-future-of-energy-and-their-contribution/>

2. Please list any **relevant knowledge management mechanisms / tools** that the project has generated.

1. Online information exchange/sharing platforms: <https://www.swhegypt.com/>
2. Relevant technical reports:
 1. 11 training material/manuals/best practices are available for public to use at: <https://shipprojectegypt.org/resources/>
 2. Case studies: <https://shipprojectegypt.org/case-studies/>
 3. Installer and Maintainer Educational Movie: <https://www.youtube.com/watch?v=fcPc2KFibtA>
3. Link to project websites, videos, publications:
 1. Facebook: <https://www.facebook.com/shipprojectegypt/>
 2. LinkedIn: <https://www.linkedin.com/company/shipprojectegypt/>
 3. YouTube: <https://www.youtube.com/channel/UCo0FPzBS-xWILki8accrfA>
 4. Website: <https://shipprojectegypt.org/>
4. Flyers, etc:
 1. <https://shipprojectegypt.org/ships-eighth-steering-committee-meeting-looks-into-diversifying-the-revolving-fund-beneficiaries/>
 2. Gallery for field visits: <https://shipprojectegypt.org/gallery/>
 3. SHIP's Promo Video: <https://youtu.be/ivZy83iMKNg>
 4. Revolving Fund Flyer:

https://drive.google.com/file/d/1orhKj4N3LRFL2vj8Fkq06Kt98C0WW0_o/view?usp=sharing

5. Revolving Fund Brochure:

<https://drive.google.com/drive/folders/1BoiVzSW7oaS9RU2c75EhUUZypWekKRt2>

6. Case

Studies:

https://drive.google.com/drive/u/2/folders/1WvOqcKXd_DJ3H8bKf36FE9n3PTXlg5il

5. 4790_Proficiency Laboratory NREA Certificate

VIII. Implementation progress

1. Using the previous reporting period as a basis, please provide information on **progress, challenges and outcomes achieved/observed** with regards to project implementation.

The project has ended in March 2023 and has achieved almost 100% of its targets with important milestones at all components.

SHIP project consists of 5 components; Policy, Finance, Technological improvement, Capacity Building and M&E.

Policy component: The roadmap for strengthening the quality of locally manufactured products and components related to solar water heaters and solar thermal technologies in Egypt, was completed and published after holding a public workshop to present it and disseminate it. A Solar Heating Arab Mark and Certification Initiative (SHAMCI) was adopted as mandatory SWH standard. SWH certification scheme was completed covering all the activities of certification value chain of SWH installation and maintenance.

Financial component: Revolving fund was set and a business frame created with the National Bank of Egypt (NBE). MoTI and UNIDO authorized technical and financial team members to release loans. Financial brochure printed and disseminated. Organizational and management structure in place. 100% of contract value was transferred to NBE equivalent to 2M USD. Training material developed by the project for NBE and various banks where six training rounds completed reaching to accumulated number of 353 trainees covering 15 National/International banks (15% females), senior bankers awareness seminar completed, (1) Round of training of the trainers and (2) Study tours to Tunisia were conducted to further improve the national capacities. PMU had faced many challenges in terms of data collection from the industrial sector necessary for providing the technological support however the project team managed to overcome such obstacles and continued their progress by completing 260 walkthroughs, submitting 76 detailed thermal audits, receiving 410 registration forms and completing 2 installations.

Awareness Raising outcome: Communication campaign was launched to raise the stakeholder's awareness using various means of marketing such as outdoor billboards, radio channels airing, branded trucks, industrial parades, website development, social media channels creation, 3 promotional stands produced, branded material such as brochures (EN/AR)/flyers/banners/calendars/notebooks printed, 6 press releases & case studies documented and published, and participation in annual EXPOs and conducting various awareness sessions for 861 participants in industrial zones and over the country. Complementing all the above efforts, project has participated in the following international events; WorldYouthForum, ISID Brochure, COP26 UNCCC, GC'19 Gender Video.

Technology strengthening: Improved the local manufacturing supply and distribution of solar energy components and systems beginning with the laboratory output, therefore assessment and mapping of the existing and planned laboratory in addition to development of the quality management system are completed. Software and hardware upgrade completed with online training for NREA staff. Installation of Solar Water Heaters and collectors at NREA's labs completed. The NREA laboratory was accredited in April 2023. Various trainings provided to NREA staff in addition to two study tours for their experts with international centres of excellence. A SWH Platform to enhance information exchange, cooperation and partnerships between local industries, international centres of excellence and technology suppliers, was launched and operationalized. The development of manual on best practices to ensure high quality of solar thermal systems and components was completed and published. Training for 200 engineers/technicians from selected companies was completed.

Capacity Building: This component is designed to ensure that the SWH market creation is completed by the presence of the qualified trained calibres who are trained on SWH design, qualified on potential sites selection with the right capabilities on installing and maintaining the SWH system. This was achieved through development of training materials, manual and best practices. Steam System Optimization material developed and training conducted to 129 trainees with 18 technical experts registered in IMC service provider list to ensure the sustainability of quality service is provided to the beneficiaries beyond project life-time. System design training completed to 129 participants and 6

industrial facilities. Refreshment webinar to 20 local experts with 23 SWH design consultants were qualified. 9 Measurements training conducted.

Solar thermal equipment installation and servicing for technicians, installers and service providers training material and manual developed and training conducted to 220 trainees. Measurements equipment's purchased and delivered with two training centres established at PVTD and NREA, ToT theoretical and three practical trainings completed with 82 participants, minimum requirements for Training of Trainers (ToT) on the eligibility criteria to qualify conducting SWH short-term trainings program for qualification of SWH installers and maintainers developed.

Training Material on business development and entrepreneurship for the solar energy businesses were developed and training completed for 53 trainees. Nine one-to-one business development consultation sessions with companies. Two training of the trainers' sessions on the business development training conducted and one to one business development consultation session to the ENCPC and IMC, two waves 2-days trainings on business development completed with technical assistance to 9 SMEs and entrepreneurs.

Monitoring and Evaluation component; Eight steering committee meetings were completed with 8 PIRs submitted, monthly/bi-monthly reports provided regularly to management. MTR completed and terminal evaluation preparations on-going. Achievement progress reports (outcome level and financial status) are reported on quarterly basis to the project counterpart – Ministry of Trade and Industry in addition to GEF yearly reports.

Challenges: The COVID-19 pandemic has led to slow down of the implementation rate. Travel restrictions of international experts led to delays in the capacity building activities which relied on the physical presence of International experts. Site visits and audits were postponed until the number of coronavirus cases decreased in Egypt. The project faced significant challenges such as receiving delayed responses from the Ministry of Trade and Industry especially related to decision on contracting the ENCPC and IMC due to change in some key management positions in the ministry. That in addition to delays related to data sharing and lack of interest in investment of the enterprises due to the worldwide economic recession on top of the delays due to administrative issues with NBE for setting up the revolving fund and finalizing the business framework.

Outcomes: Roadmap for solar thermal energy in 3 industrial sectors adopted by stakeholders. SCHAMCI/Solar Keymark became mandatory SWH standard for all manufacturers and suppliers with ministerial decree. National Roadmap developed for Strengthening the Local Manufacturing. Revolving fund is set up. Two SWH installations finished. Marketing campaign launched to raise awareness. Manual on best practices in the manufacturing developed, manual on testing procedures developed and Training Material on business development and entrepreneurship developed. Two training centres established. SWH platform launched.

2. Please briefly elaborate on any **minor amendments**⁶ to the approved project that may have been introduced during the implementation period or indicate as not applicable (NA).

Please tick each category for which a change has occurred and provide a description of the change in the related textbox. You may attach supporting documentation, as appropriate.

<input type="checkbox"/>	Results Framework	
<input type="checkbox"/>	Components and Cost	
<input checked="" type="checkbox"/>	Institutional and Implementation Arrangements	ENCPC and IMC are supporting in the implementation of the project
<input type="checkbox"/>	Financial Management	
<input checked="" type="checkbox"/>	Implementation Schedule	Project was extended from 2020 to March 2023
<input type="checkbox"/>	Executing Entity	
<input type="checkbox"/>	Executing Entity Category	

⁶ As described in Annex 9 of the *GEF Project and Program Cycle Policy Guidelines*, **minor amendments** are changes to the project design or implementation that do not have significant impact on the project objectives or scope, or an increase of the GEF project financing up to 5%.

<input checked="" type="checkbox"/>	Minor Project Objective Change	Changed number of pilot projects from 100 to 20
<input type="checkbox"/>	Safeguards	
<input type="checkbox"/>	Risk Analysis	
<input type="checkbox"/>	Increase of GEF Project Financing Up to 5%	
<input type="checkbox"/>	Co-Financing	
<input type="checkbox"/>	Location of Project Activities	
<input type="checkbox"/>	Others	

3. Please provide progress related to the **financial implementation** of the project.

Total: 6,448,988.16 USD disbursed from start of project to 30 June 2023 equivalent to 99.2%.

IX. Work Plan and Budget

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 is completed in March 2023

X. Synergies

1. **Synergies** achieved:

The project has sought synergies with UNIDO Programme for Country Partnership (PCP) in Egypt especially on inclusive and sustainable industrial development approach to industrial diagnostics for advancing Egypt's industrialization. Cooperation was achieved with UNIDO industrial energy efficiency project (GEF4) in several trainings, such as the capacity building of the banks and the Steam Optimization workshops.

3. **Stories to be shared** (Optional)

XI. GEO LOCATION INFORMATION

The Location Name, Latitude and Longitude are required fields insofar as an Agency chooses to enter a project location under the set format. The Geo Name ID is required in instances where the location is not exact, such as in the case of a city, as opposed to the exact site of a physical infrastructure. The Location & Activity Description fields are optional. Project longitude and latitude must follow the Decimal Degrees WGS84 format and Agencies are encouraged to use at least four decimal points for greater accuracy. Users may add as many locations as appropriate.

Web mapping applications such as [OpenStreetMap](#) or [GeoNames](#) use this format. Consider using a conversion tool as needed, such as: <https://coordinates-converter.com>

Please see the Geocoding User Guide by clicking [here](#)

Location Name	Latitude	Longitude	Geo Name ID	Location and Activity Description
Cairo, Egypt	30.06263	31.24967	360630	SHIP technical assistance
Alexandria, Egypt	31.20176	29.91582	361058	SHIP technical assistance

Please provide any further geo-referenced information and map where the project interventions is taking place as appropriate.

EXPLANATORY NOTE

1. **Timing & duration:** Each report covers a twelve-month period, i.e. 1 July 2022 – 30 June 2023.
2. **Responsibility:** The responsibility for preparing the report lies with the project manager in consultation with the Division Chief and Director.
3. **Evaluation:** For the report to be used effectively as a tool for annual self-evaluation, project counterparts need to be fully involved. The (main) counterpart can provide any additional information considered essential, including a simple rating of project progress.
4. **Results-based management:** The annual project/programme progress reports are required by the RBM programme component focal points to obtain information on outcomes observed.

Global Environmental Objectives (GEOs) / Development Objectives (DOs) ratings	
Highly Satisfactory (HS)	Project is expected to achieve or exceed <u>all</u> its major global environmental objectives, and yield substantial global environmental benefits, without major shortcomings. The project can be presented as “good practice”.
Satisfactory (S)	Project is expected to <u>achieve most</u> of its <u>major</u> global environmental objectives, and yields satisfactory global environmental benefits, with only minor shortcomings.
Moderately Satisfactory (MS)	Project is expected to <u>achieve most</u> of its major <u>relevant</u> objectives but with either significant shortcomings or modes overall relevance. Project is expected not to achieve some of its major global environmental objectives or yield some of the expected global environmental benefits.
Moderately Unsatisfactory (MU)	Project is expected to achieve <u>some</u> of its major global environmental objectives with major shortcomings or is expected to <u>achieve only some</u> of its major global environmental objectives.
Unsatisfactory (U)	Project is expected <u>not</u> to achieve <u>most</u> of its major global environmental objectives or to yield any satisfactory global environmental benefits.
Highly Unsatisfactory (HU)	The project has failed to achieve, and is not expected to achieve, <u>any</u> of its major global environmental objectives with no worthwhile benefits.

Implementation Progress (IP)	
Highly Satisfactory (HS)	Implementation of <u>all</u> components is in substantial compliance with the original/formally revised implementation plan for the project. The project can be presented as “good practice”.
Satisfactory (S)	Implementation of <u>most</u> components is in substantial compliance with the original/formally revised plan except for only few that are subject to remedial action.
Moderately Satisfactory (MS)	Implementation of <u>some</u> components is in substantial compliance with the original/formally revised plan with some components requiring remedial action.
Moderately Unsatisfactory (MU)	Implementation of <u>some</u> components is <u>not</u> in substantial compliance with the original/formally revised plan with most components requiring remedial action.
Unsatisfactory (U)	Implementation of <u>most</u> components in <u>not</u> in substantial compliance with the original/formally revised plan.
Highly Unsatisfactory (HU)	Implementation of <u>none</u> of the components is in substantial compliance with the original/formally revised plan.

Risk ratings	
Risk ratings will assess the overall risk of factors internal or external to the project which may affect implementation or prospects for achieving project objectives. Risk of projects should be rated on the following scale:	
High Risk (H)	There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S)	There is a probability of between 51% and 75% that assumptions may fail to hold or materialize, and/or the project may face substantial risks.
Moderate Risk (M)	There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/or the project may face only moderate risk.
Low Risk (L)	There is a probability of up to 25% that assumptions may fail to hold or materialize, and/or the project may face only low risks.