

UNIDO GEF Annual Monitoring Report FY 2018

Response ID:76 Data

1. UNIDO GEF Annual Monitoring Report II FY 2018

1. GEF ID:

4878

New Analysis Question

2. UNIDO SAP ID:

120264

3. GEF Replenishment Cycle:

GEF-5

4. GEF Focal area:

Climate Change (CC)

5. Integrated Approach Pilot (IAP) Programs (only for GEF-6 projects, if applicable)

6. UNIDO PTC Department:

Department of Energy (ENE)

7. Project Title: (*as per approved CEO Endorsement document*)

GHG Emissions Reductions in Targeted Industrial Sub-Sectors through EE and Application of Solar Thermal Systems in Malaysia

8. UNIDO Project Manager:

First name : Sanjaya

Last name : Shrestha

9. Project Manager's email:

S.Shrestha@unido.org

10. Please state the geographical location(s) of the project:

Please select one:

Country. Please state:: Malaysia

11. Please provide a project summary: (*approx. 300 words*)

Objective: To reduce GHG emissions in the country by promoting and demonstrating To reduce GHG emissions by promoting and demonstrating sector-specific thermal EE improvements and solar thermal technology utilization in the Malaysian industry. The project "GHG Emissions Reductions in Targeted Industrial Sub-Sectors through EE and Application of Solar Thermal Systems in Malaysia" is promoted as Malaysian Energy Efficiency and Solar Thermal Application (MAEESTA) project. The project is under the supervision of the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC).

Baseline: Malaysia has a good solar radiation throughout the year. In addition, the availability of various types of sub-sectors as rubber product, food and beverage, pharmaceutical, textile, chemical etc whose processes need temperature levels of which

solar thermal can be integrated, provided great opportunity for the technology implementation. Additionally, renewable energy and energy efficiency have been supported by available policies, incentives, research and small demonstration projects, with the potential to incorporate thermal energy efficiency and solar thermal technology for further technology adaptation.

Targeted results: The project seeks to bring the application and diffusions of EE and application of solar thermal in industrial (heat) processes in Malaysia to a higher level, by means of a concerted effort by a number of Malaysian organizations and institutions in a mix of policy and regulatory framework enhancement, targeted training, awareness creation and demonstrations activities. The use of solar thermal energy for industrial applications demonstrates a very new development in the industrial energy supply systems for which only some hundreds realized examples exist worldwide. Therefore, this project is crucial and incremental in realizing the high potential in utilizing solar thermal energy, reducing energy consumption and hence GHG emissions reductions in Malaysia.

The project implementation is expected to result in 3 outcomes:

1. Policy papers and financial incentives schemes established and endorsed by stakeholders.
2. Awareness and capacity building of equipment vendors, service providers, industry management, plant engineers, financial institutions in targeted industrial sub-sectors strengthened and utilized.
3. Thermal energy efficiency and solar thermal technology demonstrated and deployed in the targeted industrial sub-sectors.

2. Global Environmental Objectives (GEOs) / Development Objectives (DOs)

12. Please state the progress made in FY 2018 in achieving the intended Global Environmental Objectives / Development Objectives.

Please state the **progress rating of GEOs/DOs** (as per the rating filled in AMR Part I):

Moderately satisfactory (MS)

Please state the **progress made in the current FY in achieving the outlined GEOs/DOs**.

The global environmental objectives of the project are GHG emission reductions through a substantial reduction in fuel and electricity consumption, fuel switching by replacing fossil fuels with solar thermal energy and putting in place energy efficiency practices and measures. Till date 56 companies had been visited and engaged in the energy audit. 22 companies completed the energy audit, more than 30 potential EE measures and solar thermal integrations have been identified which contribute to lifetime CO₂ emissions reductions of 147,888.9 tonne according to PMUs records.

3. Implementation progress

13. Project Objectives and Progress

Please state the **implementation progress rating** (as per the rating filled in AMR Part I):

Moderately satisfactory (MS)

Please state the **implementation progress** made for this FY.

a) Component 1: The project is targeting 3 policy papers which include i) National Solar Thermal Roadmap, ii) Energy Efficiency and Conservation Act (EECA) which is currently being developed under MESTECC iii) Review the existing policy. The second draft of the roadmap has been circulated on 13th June 2018 and will now be further improved after comments from UNIDO Headquarters, PMU, AEE INTEC and the Task Force received. The roadmap completion was delayed from its targeted date on Feb 2018 due to the insufficient data and experience from the respective consultants to achieve the roadmap required quality. Consequences to that, the counter actions taken were organizing more workshops and conducting a survey to obtain more inputs from the industries to be included in the 2nd draft roadmap. EECA which is currently under development by the Energy Division of MESTECC will include the thermal energy. The working group for thermal is headed by the Sustainable Energy Development Authority (SEDA) and PMU through its Technical Expert has been updated with the EECA development. The draft is expected to be presented to the cabinet

by end of year 2018. MAEESTA is planning to hire a consultant for the policy review activities.

b) Component 2: The project meets most of the targets except for the number of service providers/vendor that have been trained and number of awareness seminars to be organized. For FY 2018, six awareness seminars had been organized at various locations with 198 total participants. Four one day user training, one 2 days Users training, one Experts Course 1 (Batch 3), two Experts Course 2 (Batch 2 and additional solar thermal design course) and one Financial Training have been organized. In summary, a total of 630 participants from industry, stakeholders and service provider have attended the awareness raising seminars, 198 participants participated in the user training programme, 83 participants completed the Expert Training programme. 15 companies attended the last vendors training. Awareness and capacity of all targeted stakeholders is strengthened and utilized.

c) Component 3: Out of 40 industries targeted, PMU has approached more than 50 industries for the energy audit. However, only 21 audit reports were finalized through the Expert Training Programme and Fast Track process. Additional 22 companies from Batch 3 Experts Programme just started the energy audit for the next fiscal year. As progress to date, four companies had implemented EE saving measures with savings of about 28,832.10 MWh thermal with value of MYR 4,080,488.00/year. The contributed lifetime of CO2 emissions reductions is 147,888.9 tonne. There is still no demonstration plant establish for the solar thermal integration using the project fund. One of the approved project under MAEESTA i.e. Miwa Manufacturing Sdn Bhd is still in the process of implementing the installation of solar thermal system in its factory. The other 2 high potential demonstration projects identified are by PPNJ Poultry and Meat Sdn Bhd and IOI Pan Century Oleochemicals Sdn Bhd which are foreseeing to be realized by next fiscal year.

Based on the existing achievements there will be a potential for market uptake in the future however more time is required to achieve the project targets in terms of demonstration and deployment of solar thermal technology.

4. Risk management

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

***Risks identified as per CEO Endorsement document. Please indicate in the "Risks" column if some are new/additional risks.**

	(i) Risks	(i) Risk level	(i) Mitigation measures	(ii) Progress to-date
1	Management priorities in the participating public sector and private sector organizations change over time before and during project implementation	Low risk (L)	Signing of a Terms of Reference (ToR) and Cooperation Agreement with the project partners before commencement of the project as well as Co-financing letters.	The process flow for the demonstration project has been established to define the steps to secure the project and commitments from industry and UNIDO. The process flow of the demonstration project will be presented in the coming NPSC meeting and will be shared to the industry.
2	Effective coordination between various project partners	Low risk (L)	A proper coordination will be sought through the Project Steering Committee and ad-hoc working groups per subsector or theme that can be set up as needed and by bringing in other partners and beneficiaries. The Project Management Unit (PMU) will play a key role in the coordination of these interests and	The National Project Steering Committee holds its meeting every year for the project updates and coordination. The 3rd NPSC meeting was held on 3rd and 7th of August 2017. The Technical Committee and Task Force which was established in May 2017 after the 2nd

	partners.		the coordination of these interests and channeling them into the day to day execution of the project.	NPSC meeting held in December 2016 had several meetings coordinated by the PMU.
3	Companies have doubts regarding techno-economic viability. Thus, demonstration projects are delayed, hence limiting the opportunity to disseminate success stories and to develop case studies.	Modest risk (M)	To overcome this risk, the factories selected as demonstration sites will be carefully evaluated; this will include management support, financial strength, technical backup, and replication abilities. The demonstration project proponents are anticipated to provide initial case study results and thus serve as examples for other factories to replicate. While the GEF grant will support the demonstration projects in a number of ways (including up to 20% of equipment costs), all other costs will be borne by the participating companies, thus ensuring that continued participation is in the interest of their management.	For fiscal year 2018, PMU supported the interested company to conduct detail techno economic viability study. The approach is not only focusing on the payback period but also on the Levelized Cost of Energy (LCOE) to give an idea for the long term energy saving for the company.
4	Limited number of participants interested in training and no immediate demand for services for trained experts as the growth of the market for solar thermal technology is slower than expected.	Low risk (L)	The integrated approach of the project is expected to mitigate this risk by not only promoting the technology but also creating a new market and demand for the application in heat processes in the industrial and commercial sectors. The capacity building approach adopted by the project combined with awareness campaigns and policy coordination will ensure the sustainability of the project and thus development of the solar thermal technology market in Malaysia to mitigate this risk. The capacity of SERI and the FMM Institute will be strengthened by the project so that they will continue providing support to the local experts, industries, and the training.	Currently there is low demand from the industry for the solar thermal integration due to no/low enforcement from the government for the thermal energy saving and green technology application. However with the new government targets to increase the RE share to 35% and the new act (EECA) that will be implemented next year it is expected to enhance the growth of the market for solar thermal. In terms of the capacity building, the number of participants attended the training has exceeded the targeted numbers, thus will be ready to serve the market needed in future years.
5	Incentives and the financial support system are insufficient.	Low risk (L)	The capacity of financial and governmental institutions will be strengthened on energy saving opportunities and solar thermal systems and their potentials. Grant and non-grant instruments will be developed and applied to ensure the availability of financing resources. Experiences from other countries will be shared, and results from the demonstration projects will be widely presented.	Apart from the existing financial incentive and schemes available for the thermal EE and solar thermal technology (GITA and GTFS), PMU had identified the other possible financing options for the investment such as Energy Performance Contract (EPC), Crowd funding, Venture Capitalist, Soft Loan and Fund. A list of the financial scheme is developed with a total of 10 financial providers identified. Interested industries will be matched with the suitable financial scheme based on their requirements.
6	Government financing and policy instruments for thermal energy application in industry are not effective enough to incentivize industrial stakeholders' investment in	Low risk (L)	Close coordination between policy makers and industry, through FMM, various Chambers of Commerce and Industries, etc. will aim to mitigate this risk by designing or revising financing/policy instruments that are in line with the needs of industry. Focus will be given to provide adequate support to the industries for the implementation of solar thermal energy application: better technical support, awareness raising on the consequences of climate change, zero-GHG emissions from solar energy, sufficient information on the	The national solar thermal roadmap which is being developed under the MAEESTA project will not only forecast the market potential for solar thermal but is also addressing the issues and provide solutions for the technology uptake in the market. Through the roadmap deployment, the gap for the policy instrument and financing will be reduced for the solar thermal technology implementation in the country.

	solar thermal technologies.		availability of various financing schemes, etc.	
7	Climate change risks: increased cloud cover from climate warming reducing solar radiation levels	Low risk (L)	Careful design of the solar thermal systems will be ensured during project implementation.	The energy audit was properly done to determine the energy consumption per heating process. The design for the solar thermal was stimulate based on the real daily solar irradiation data to ensure the design system size can fulfill the needs of the targeted heating process.
8				
9				
10				

15. If the project received a **sub-optimal risk rating (H, S)** in the previous PIR FY, please state the **actions taken** since then to mitigate the relevant risks.

5. Implementation and Execution issues

16. Please state any **implementation issues** occurred in overseeing and supervising during FY 2018:

Malaysia had its general election in May 2018 which brought the opposition party to power. The new government did major changes in the government structures including combining and dissolving some of the agencies and ministries and forming a new combined ministry. The Energy and Green Technology Sector of KeTTHA and the Environment and Climate Change Division of MNRE (GEF Focal Point) had been combined with MOSTI to form a new ministry called Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC). The Chairmanship of the National Project Steering Committee which was earlier shifted from KeTTHA to MOSTI is now under the purview of MESTECC. UNIDO foresee this changes will bring benefit to the project as all the relevant agencies are now under one ministry which will provide greater support to the project.

17. Please state any **execution issues** faced during FY 2018:

1. Project promotion through publication is slow however will be uptaken by the PMU staff in the upcoming FY.
2. Since more and more industries are getting aware of the the project they want to participate in the energy audit. Thus, trained trainees from the Expert Training Programmes will be utilized to support the project technical staff to carry out the energy audit.

6. Environmental and Social Safeguards (ESS)

As part of the requirements for projects, and based on the screening as per the UNIDO Environmental and Social Safeguards Policies and Procedures (ESSPP), which category is the project?

As required for all projects, please report on activities undertaken in FY 2018 to meet the ESS monitoring/management commitments made in the Project Document and/or the Environmental and Social Management Plan (ESMP).

	E&S risk	Mitigation measures undertaken in FY 2018	Monitoring methods and procedures used in FY 2018
(i) Risks identified during PIF and verified during PPG (as per the submitted ESMP)			
(ii) New risks identified during project implementation (if not applicable, please insert 'NA' in each box)			

7. Gender mainstreaming

18. Please describe the **gender considerations** mainstreamed into the CEO Endorsement:

The gender mainstreaming action is integrated into all stages of the project cycles, in particular in the training and skills strengthening activities. As per progress to date, for the user and expert training, about 88% male and 12% female had participated in fiscal year 2018.

19. Please state the **measures taken** so far, and the **results achieved** in FY 2018 against the intended gender mainstreaming actions (refer to question above):

Normally the gender for the technical expertise in industries is conquered by male. However, the project also promotes researchers and academicians to join the training programme to increase the numbers of female participants

8. Stakeholders consultation

20. Please describe the stakeholders consultations that have taken place for FY 2018?

The 3rd NPSC meeting chaired by KeTTHA was held on the 3rd and 7th August 2017.
PwC had one meeting in June 2017 and a 2 days workshop in December 2017 with the Task Force to present and to review and receive comments and inputs on the draft of the national solar thermal roadmap.
Another 2 consultation workshops were held with the stakeholders and industries on 7th December 2017 and 28th March 2018 to obtain more inputs for the solar thermal roadmap development.
The Technical Committee meeting was held on 27th July 2017 to review the demonstration project proposals for the NPSC approval.

21. Please upload the relevant consultation documents:

(Eg: Project Steering Committee minutes, Aide Memoire, Meeting Agenda, etc.)

[4878_Task_Force_Workshop_4-5_Dec_2017.docx](#)
[4878_MOM_2_TC_27_July_2017_Edited.pdf](#)
[4878_Minutes_Meeting_NPSC_3_signed.pdf](#)
[4878_Stakeholder_Workshop_for_Solar_Thermal_Roadmap_7th_Dec.pdf](#)
[4878_Summary_Expert_workshop_March_2018_Final.docx](#)
[4878_Minutes_15_June_2017_.pdf](#)

9. Knowledge Management

22. Please list the titles of knowledge management or publicity materials that have been produced for the project.

(i.e. online information exchange/sharing platforms, technical reports, project website or video links, publications, posters, flyers, etc.)

1 : MAEESTA facebook
 2 : project profile
 3 : project bunting

23. Please upload the materials mentioned above.

(i.e. photos, brochure, flyer, leaflet, feasibility studies... up to 10 files)

[4878_Project_Profile.pdf](#)

[4878_MAEESTA_Bunting_\(002\).pdf](#)

24. Please share a story on how the project has benefitted the environment and communities.

The Malaysia Energy Efficiency and Solar Thermal Application (MAEESTA) project is under the supervision of the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) and is executed by SIRIM as the national executing agency. The project is promoting and demonstrating the energy efficiency improvements and solar thermal application in heating and cooling process in Malaysia industries. The project is in the process of developing the national solar thermal roadmap for the Malaysia industries which has come out with the 2nd draft. The roadmap will be a reference document for the government to plan on the necessary policy, financial instruments and other complementary actions to accelerate the thermal energy efficiency and solar thermal integration in Malaysia. The current focus is more on the electrical energy efficiency and the policies and regulations and very least on the thermal EE and solar thermal technology adaption. The communities also enhanced their awareness and capacity building in EE and solar thermal technology through the promotion and awareness programs such as exhibitions, seminars and trainings. As per date, 630 participants and expertise from the service provider, academicians and industry through the user and expert training programmes. About 40 industries have taken part in the training programme from sub sector rubber products, food and beverage, tiles, automotive, pulp and paper, steel etc with 167 experts trained for the thermal energy efficiency and 83 for the solar thermal technology. Based on the awareness creation and involvement from the government and industry, it will ensure the efficient usage of the thermal energy and application of solar thermal system which will subsequently reduce the GHG emissions of the country.

10. Files upload (Required for PIR, MTR and TE)

25. The following information is filled as part of the:

Project Implementation Report (PIR)

26. GEF Project size:

Full-Sized Project (FSP)

27. Please upload the **Project Progress Update Report showing progress by output-level for FY 2018 (1 July 2017 to 30 June 2018):**

[4878_Project_Progress_Update_FY2018.docx](#)

28. Please upload the **updated work plan for FY 2018:**

[4878_Workplan_FY2018.docx](#)

29. Please upload any other materials you wish to share from the project:

*(i.e. feasibility study reports, technical reports, etc) **For PTC/ENV projects with SCD requirements, please upload it here.***

Please name your file "GEFID_document name".

11. Project Implementation Report (PIR)

30. Please insert information on progress, challenges and outcomes on **project implementation activities:**

In summary, there are more than 30 potential EE measures and some solar thermal integration identified through the Expert Training Programme. Four companies implemented the energy efficiency measures with total energy saving of 28,832.10

MWh with value of MYR 4,080,488.00/year. The expected lifetime of CO2 emissions reductions is 147,888.9 tonne.

PPNJ Poultry & Meat Sdn Bhd has completed the solar thermal technology implementation:

Subsector: Food (Poultry)

Process : For scalding tank

Saving : MYR 71,700/year, 1160 tonnes CO2 reduction (lifetime)

PMU has presented proposals for the demonstration project to the companies. Among the challenges identified for the demonstration project implementation are:

i) long payback period:

- most of the companies expected the payback period for the project investment below than 3 years. The solar thermal project normally has payback period of 5 years and above which is mainly due to the cheap energy price and the high collector prices as it is imported from overseas (40%-50% of the solar thermal system is from the cost of collector). PMU is putting more focus to find companies with CSR policies to commit for RE.

ii) proposals do not reach the top management

- some of the proposals prepared during the expert training programme were not address/presented to the top management. PMU has taken action to include the meeting with top management as one of the requirement for the training evaluation.

iii) uncompleted energy audit report

- some of the energy audit carried out during the expert training programme were not completed due to few factors such as no commitment from the host companies and last minutes audit work. PMU has set the audit milestone and will try to closely monitor the groups progress updates report. The host companies which show no commitment were removed from the programme and the consultants were shifted to other groups. PMU extended the dateline for the report completion and provided additional technical support to help the group to complete the energy audit report.

31. Please insert information on progress, challenges and outcomes on stakeholder engagement (based on the description of the Stakeholder engagement plan included at CEO Endorsement/Approval):

The Task Force and Technical Committee meetings were regularly conducted. On average, more than 70% members of the Task Force, Technical Committee and NPSC attended the organized meetings.

The stakeholders had shown great support for the meetings and workshop organized and provided useful comments and inputs.

32. Please insert information on progress on gender-responsive measures as documented at CEO Endorsement/Approval in the gender action plan or equivalent:

The numbers of the gender participation in the training is recorded and updated. As predicted, most of the trainings were attended by man since the energy sector is male dominated. To increase women participation, the training was also promoted to the research institution and universities.

33. Please outline knowledge activities / products (when applicable), as outlined in knowledge management approved at CEO Endorsement / Approval:

1. Improvement on the tools and slides presentation to satisfy the local needs.
 - Local experts provided inputs and suggestions to improve the tools using the local irradiation data and price.
 - The slides presentation on the expert training programme to also include the solar cooling technology.

2. The existing energy managers are in the position to expand their knowledge to make recommendations to include the thermal EE measures and solar thermal design in the energy audit reports.

12. Mid-Term Review (MTR)

30. Please indicate the committed co-finance at **CEO Endorsement (Table C)*** and the materialized co-finance** as of FY 2018. If additional sources of co-finance have been added during project implementation, please add as appropriate.

	Sources of co-finance* (i.e. National government)	Name of co-financier* (i.e. Ministry of Finance)	Type of co-financing*	Amount confirmed at CEO (USD)*	Amount materialized at MTR (USD)**
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					

31. Please upload the relevant Tracking Tool (*optional for MSP*):

Please upload the relevant Core Indicators numbers / figures as of the date of the MTR.

32. If there has been commitment in the CEO Endorsement document to submit a **Mid-Term Evaluation (MTE)**, please upload:

33. Please insert information on progress, challenges and outcomes on **stakeholder engagement** (based on the description of the Stakeholder engagement plan included at CEO Endorsement/Approval):

The Task Force and Technical Committee meetings were regularly conducted. On average, more than 70% members of the Task Force, Technical Committee and NPSC attended the organized meetings.

The stakeholders had shown great support for the meetings and workshop organized and provided useful comments and inputs.

34. Please insert information on progress on **gender-responsive** measures, indicators and intermediate results as documented at CEO Endorsement/Approval in the gender action plan or equivalent:

The numbers of the gender participation in the trainings is recorded and updated. As predicted, mostly of the training been attended with man due to the job nature is dominant by them. To increase more participation from women, the trainings also been promoted to the research institution and universities.

35. Please outline **knowledge activities / products** (based on the Knowledge management approach approved at CEO Endorsement / Approval) and lessons learned (if available):

- Improvement on the tools and slides presentation to satisfy the local needs.
 - Local experts provide inputs and suggestions to improve the tools using the local irradiation data and price.
 - The slides presentation on the expert training programme to also include the solar cooling technology.
- The existing energy managers are in the position to expand their knowledge to make recommendations to include the thermal EE measures and solar thermal design in the energy audit reports.

36. Please outline **main findings** of the **Mid-Term Review (MTR)**, i.e. key findings, recommendations and lessons learned:

13. Terminal Evaluation (TE)

Please indicate the (a) committed co-finance at **CEO Endorsement (Table C)** and (b) the materialized co-finance as of FY 2018. If additional sources of co-finance have been added during project implementation, please add as appropriate.

	(a) Sources of co-finance* (i.e. National government)	(a) Name of co-financier* (i.e. Ministry of Finance)	(a) Type of co-financing*	(a) Amount confirmed at CEO (USD)*	(b) Amount materialized at MTR (USD)**	(b) Amount materialized at TE (USD)**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Total						

Please upload the relevant Tracking Tool (TT):

Please upload the relevant **Core Indicators numbers / figures** as of the date of the TE.

Please upload the **Terminal Evaluation (TE)**:

Please insert information on progress, challenges and outcomes on **stakeholder engagement** (as evolved from the time of MTR):

Please insert information on progress on **gender-responsive** measures, indicators and intermediate results (as evolved from time of MTR), lesson learned if available:

Please outline **knowledge activities / products** (as evolved from time of MTR) and lessons learned:

Please outline **main findings** of the **Terminal Evaluation (TE)**, i.e. key findings, recommendations and lessons learned:

15. Thank You!

AMR II submission confirmation 4878