Mid Term Review Mission – MTR Draft report
Grid-Connected Small-Scale Photovoltaic Systems (PIMS#4998
United Nations Development Programme
GCSSPV Project
- Egypt -

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October 31 – 2019

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Acronyms and Abbreviations

AFD	Agence Française de Développement (French Agency for Development)
AfDB	African Development Bank
AIB	Association of Issuing Bodies governing the European Energy Certificate System (EECS)
BOO	Build, Own and Operate
CAPMAS	Egyptian Central Agency for Public Mobilization and Statistics
CC	Combined Cycle
CDM	Clean Development Mechanism
CO	UNDP Country Office
CO_2	Carbon dioxide
CSP	Concentrated Solar Power
EE	Energy Efficiency
EEAA	Egyptian Environmental Affairs Agency
EECS	European Energy Certificate System
EEHC	Egyptian Electricity Holding Company
EEIGGR	UNEP/GEF Energy Efficiency Improvement and Greenhouse Gas Reduction Project
EETC	Egyptian Electricity Transmission Company
EEU	Energy Efficiency Unit
EEUCPRA/EgyptERA	Electric Utility and Consumer Protection Regulatory Agency
EFI	Egyptian Federation of Industry
EGP	Egyptian Pound
EU	European Union
FSM	Financial Support Mechanism
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GoE	Government of Egypt
GoO	Guarantee of Origin
GT	Gas turbine
HBRC	Housing and Building National Research Center
HQ	UNDP Headquarters
IEA	International Energy Agency
ICT	Information and Communication Technology
IDSC	Information and Decision Support Centre
IMC	Industrial Modernization Centre of the Ministry of Industry and Trade
IRENA	International Renewable Energy Agency
JCEE	Egyptian-German High-Level Joint Committee for Cooperation on Renewable Energy, Energy Efficiency and Environmental Protection
LOLE	Loss of Load Expectation
LNG	Liquefied Natural Gas
MMBtu	Million British Thermal Units
M&E	Monitoring and Evaluation
MoEE	Ministry of Electricity and Energy
MoFA	Ministry of Foreign Affairs
MoTI	Ministry of Trade and Industry
MRV	Monitoring, Reporting and Verification

NAMA	Nationally Appropriate Mitigation Action
NG	Natural Gas
NGO	Non-Governmental Organization
NREA	New and Renewable Energy Authority
O&M	Operation & Maintenance
PB	Project Board
PIR	Project Management Unit
PPG	Project Preparation Grant
PPP	Purchasing Power Parity
Pt	Piaster (1/100 of Egyptian Pound)
PV	Photovoltaic
QPR	Quarterly Progress Report
RCU	UNDP Regional Coordination Unit
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
RE	Renewable Energy
REMIS	Renewable Energy Management Systems
RESCO	Renewable Energy Service Company
RTA	Region-Based Technical Advisor (UNDP)
ST	Steam turbine
SWH	Solar water heater
TPR	Tripartite Review
TTR	Terminal Tripartite Review
TWh	Terawatt hour
WB	World Bank
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

1. Executive Summary

1.1 Project Information Table

Table 1 Project Information Table

Project Information	
UNDP PIMS ID	4998
GEF ID	5064
Title	Grid-Connected Small-Scale Photovoltaic Systems
Countries	Egypt
UNDP-GEF Technical Team	Energy, Infrastructure, Transport and Technology
Project Implementing Partner	Government
Joint Agencies	*(not set or not applicable)*
Project Type	Full Size
Project Title:	Grid-Connected Small-Scale Photovoltaic Systems
UNDAF Outcome(s):	Environment and Natural Resources Management
UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:	Growth is inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded.
Expected CP Outcome(s):	The Government of Egypt, private sector and civil society have complied with Multilateral Environmental Agreements, adopted policies, and implemented operational measures towards a green and sustainable economy and society including, EE, RE, low carbon cleaner technologies, SWM, POPs, ODS, and carbon finance mechanisms.

Executing Entity/Implementing Partner: Industrial Modernization Centre of the Ministry of Industry and Foreign Trade

Implementing Entity/Responsible Partners: United Nations Development Programme

Brief Description

The Project will catalyse the development of decentralised, grid-connected, small-scale renewable energy (RE) power generation market in Egypt, solar PV in particular. The target is to facilitate the installation of at least 4 MW_p of new decentralised private PV capacity during the lifetime of the Project, resulting in direct GHG reduction benefits of 66 kilo-tonnes of CO_{2eq}. Complementary indirect mitigation benefits are expected from the sustained market growth of the PV market after the Project with estimated GHG reduction of about 0.6-0.7 million tonnes of CO_{2eq}.

Programme Period:	2015-2020
Atlas Award ID:	00080742
Project ID:	00090324
PIMS #	4998
Start date:	March, 2015
End Date	March 31, 2020
Management Arrangements	NIM
PAC Meeting Date	29 March 2015

Total resources required	US$ 33,796,364
Total allocated resources:	US$ 33,796,364
• Regular UNDP (TRAC-Cash)	US$ 50,000
• UNDP projects (Parallel)	US$ 400,000
• Other:	
○ GEF (cash)	US$ 3,536,364
○ Egypt ERA (Parallel)	US$ 15,000,000
○ MoEE (Parallel)	US$ 10,000,000
○ EEU (Parallel)	US$ 4,110,000
○ IMC (in-kind)	US$ 500,000
○ RCREEE (in-kind)	US$ 200,000

Breakdown in Page 53

1.2 Project Description and Objectives

The objective of the Project was to remove any barriers to increase power generation by small, decentralized, grid-connected PV systems implemented by households and small- and medium-size enterprises, including industrial, commercial and public buildings and schools. The Project strategy is presented in a logical framework approach. The essence of this approach is that the outputs are clustered into four outcomes, which together will achieve the Project objectives as follows:

Outcome 1: A total of 4 MW_p of small PV systems (of a few kW each) installed based on an easily replicable and scalable system design.

The activities under Outcome 1 will build on and complement the plans of Egypt ERA to introduce a Guarantee of Origin (GoO) and a net-metering scheme to provide adequate financial incentives to the private sector to invest in small-decentralized PV power generation. Most of Outputs under Outcome 1 are related to the implementation of a series of pilot projects in industrial, commercial, institutional/public and residential buildings.

Outcome 2: A supportive policy, institutional and regulatory framework for providing a basis for sustainable growth of the small, decentralized RE (in particular PV) power generation market.

The activities under this outcome support the establishment and implementation of an enabling legal and regulatory framework to promote small, decentralized, grid-connected power generation from PV systems.

Outcome 3: Strengthened domestic supply chain and quality control system, including, as applicable and increasing domestic manufacturing/assembly of PV panels.

Given the absence of adequate financial or fiscal incentives to implement PV projects in Egypt on a larger scale, there is not yet a real market for small PV systems in Egypt. The activities under this outcome focus on ensuring that the demand sought to be created by this and other supporting initiatives can be met by competitively-priced, good-quality PV systems and related after-sales services so as to sustain customer satisfaction and positive market growth.

Outcome 4: A financing framework and a network of local financial institutions to facilitate the financing of small, decentralised PV systems for a broad range of consumers.

Component 4 focuses on leveraging financing for the required investment of PV systems for those customers who may not be in a position to finance the investment cost on their own.

The whole project is expected to reduce greenhouse gas emissions via the removal of barriers to widespread application of a decentralised PV-based grid-connected power generation solution. In terms of quantitative results and indicators, the Project targets a direct reduction of 66 kilotons of CO_{2eq} over the 20-year default lifetime of the investments made during project implementation and an indirect impact of at least 0.6 million tonnes of CO_{2eq} over the 20-year default lifetime of the investments made within 10 years after the Project end.

1.3. Project Progress Summary

- The PV Pilot project component has achieved significant results in a majority of the priority sectors: (i) industrial (16 projects); (ii) commercial (5 projects); (ii) tourism 7 projects; (iv) residential (2 projects); and (v) public buildings (6 projects) for a total investment of nearly 1.6 million USD inclusive of the grant component corresponding to 35%.

  Egypt-PV has supported the installation of 62 of the implemented PV Plants (inclusive of 37 Pilots) in 5 different sectors with total capacity of 2,20 MWp and a GHG emissions reduction of 2,039 Tones/year equivalent CO2. Some projects received TA only and others TA and grant (37). The Project involved facility owners, official responsible and different stakeholders to introduce the Project and raise their awareness and interest to install solar plants to generate electricity and reduce the CO2 emissions.

  At midterm a series of 13 events were carried out. Other outreach tasks and activities were achieved: (i) web-based PV hub and associated data base design and implementation in progress; and (ii) Public Awareness-Raising and Marketing Campaigns to promote the 4 MWp programme objective and support the implementation of the planned Guarantee of Origin and net-metering schemes; (iii) Egypt-PV supported some project beneficiaries (e.g.: Carrefour and JW Marriot) to conduct marketing events for celebrating the final installation of PV plants.

  As an indirect impact in 2018 the Electricity Distribution Companies (EDC) reported "since 2014 (after the Project approval) 25 MW PV were installed and connected to the grid". This number has increased to reach 30 MW in 2019.
  In addition, Binban (Assouan Gouvernorat) the largest solar farm in the region has been installed with a capacity of 1600 MW (32 solar stations) has been commissioned, and 17 solar stations with a total of 830 MW are in progress. The 17 additional stations will be fully operation before end of 2019.

- All this in addition to training sessions and workshop to: (i) Sharm El-Sheikh hotel sector; (ii) PV manufacturers-Assemblers supply chain; (iii) 7 commercial banks; (iv) El Wadi El Gadied Governorate involving the engineers syndicate; (vi) Society of Engineers; for a total of 348 trainees (inclusive of 26% females).

1.4. MTR Ratings & Achievement Summary Table

Table 2 provides information on achievements and results Outcomes-based. The Evaluator strongly recommends paying attention to Table 3 in the core report to look at the Output-based achievements and results. Details are comprehensively highlighted in Table 5, section 4.

The whole project implementation is rated **Highly Satisfactory**.

Table 2 Summary of Outcomes/Outputs-based MTR Evaluation and Rating

Objective	Indicator	End-of-Project Targets	R
Project Progress and Rating:			
At midterm the Project overpassed its target in term of GHG emissions reduction by 70% with a total (spread on 20 yrs) of 112 kilotons rather than 66 kilotons as per the Project Document. Indirect emissions reduction cannot be estimated at midterm because indirect emissions are estimated based on the assessment of the impacts achieved after at the end of the Project timeframe. But at midterm, but indications are that the Project will be on target. On the other hand, almost all activities under each Outcome are on progress and some of them are already completed. See Outputs-bases evaluation below.			**HS**

OUTCOME 1	Indicator	Planned End of Project Targets	R
Outcome 1: A total of 4 MW_p of small PV systems (of a few kW each) installed based on easily replicable and scalable system design.	Capacity installed and electricity generated. GHG emissions reduction	At least 4 MW_p of installed rooftop PV capacity, producing 6,000 MWh of electricity per year. More than 1,000 households and SMEs together benefitting from PV-generated electricity.	
Outcome 1 Progress and Rating: Based on the Output-based review the Evaluator is confident that Outcome 1 will be achieved without any major shortcoming. At midterm the Project reached 55% of its target in term of MW installed power, and overpassed its target in term of GHG emissions reduction.			HS
Implementation Progress Rating Outcome 1: Outcome 1 is expected to achieve or exceed all its end-of-project targets, without any major shortcomings. The progress towards the objective can be presented as "good practice".			HS
Outcome 2	Indicator	Planned End of Project Targets	
Outcome 2: A supportive policy, institutional and regulatory framework for providing a basis for sustainable growth of the small, decentralised RE (in particular PV) power generation market.	Extent to which policies and regulations for decentralized RE and PV in particular are adopted and enforced.	The required financial and fiscal incentives and enabling technical requirements for grid connection effectively implemented and supported by the required laws and regulations, providing a basis for continuing market growth after the Project with a growth rate of at least 20% per year observed at the end of the Project.	HS
Outcome 2 Progress and Rating: All seven Outputs under Outcome 2 are in progress and under control towards complete realization by the end of the Project timeframe. Two key priorities the Project addressed and/or supported over the last 3 years: - The shifting from the ''Feed in Tariff'' for smaller PV installed capacities to net metering calculation. Furthermore, it extends the applicability of the net metering to capacities up to 20 MW. Egypt-PV is coordinating with the regulatory agency to issue a guideline for the net metering procedures and its applications. - The second one is related to Electricity Tariff. The Project supported the public utility toward the 10% tariff increasing in July 2019.			
Implementation Progress Rating Outcome 2: Outcome 2 is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective can be presented as "good practice".			**HS**
Outcome 3	Indicator	Planned End-of-Project Targets	R
Outcome 3: Strengthened domestic supply chain and quality control system and, as applicable, increasing domestic manufacturing and/or assembly of PV	Level of customer satisfaction on the quality, pricing and ease of purchasing a PV system,	Customers should be able to purchase a PV system and have it installed through a 'one-stop shop' model at competitive prices and the established quality control systems, ensuring adequate quality and customer satisfaction for both the hardware and the installation services (including required after-sales	HS

panels.	having it installed and obtaining the required after-sales services.	services).	

Outcome 3 Progress and Rating: HS

Outcome 3 is on the right way for a full implementation on target without major shortcoming. Before installing PV projects, the Egypt-PV strategy has been to strengthen the supply chain. At midterms key tasks has been achieved in this regard:

- The Technical Quality criteria for designing and installing PVs.
- PV guidelines for supporting customers (project beneficiaries) at the initial stage. The designing and installation stages are available on the Egypt-PV website.
- 51 PV suppliers are on the website list and comply with the minimum criteria set by Egypt-PV.
- There is a growing interest from suppliers to join the list.
- Selection and quality criteria are revised and improved on a regular basis.
- A training manual has been developed for PV Engineers/installers.
- Training sessions and workshop have been carried out 348 trainees (inclusive of 26% females).

Implementation Progress Rating Outcome 3 S

The Outcome 3 is expected to achieve most of its end-of-project targets, with only minor shortcomings, if any.

Outcome 4	Indicator	Planned End of Project Targets	R
A financing framework and a network of local financial institutions to facilitate the financing of small, decentralised PV systems for a broad range of consumers.	Volume of financing leveraged for small-decentralised PV investments from financing entities active in Egypt.	At least USD 10 million by the end of the Project.	S

Outcome 4 Progress and Rating: S

Outcome 4 is a very important Outcome to secure the sustainability of PV development and the expected countrywide replication. The Evaluator makes a recommendation is this regard with the aim of developing an FSM or using existing financial mechanism(s) already developed by other international organizations in Egypt.

The Project achieved some key outputs:

- A simple and friendly user online interface PV projects financial calculator.
- Egypt PV has signed a protocol with one of the biggest Egyptian banks (Bank Misr) to give support for proving loans to PV projects.
- A training manual has been developed for bankers: Financial feasibility and awareness training conducted for 11 different banks.
- A framework for financial support of PV-Systems was sector-based developed taking into consideration social and economic impact and investment attractiveness.
- Egypt-PV is providing technical support to three banks to install PV in their own buildings and branches.

Implementation Progress Rating Outcome 4 S

The Outcome 4 is expected to achieve most of its end-of-project targets, with only minor shortcomings, if any. Work in progress and the Evaluator made a specific recommendation to this end.

1.5. Recommendations and Conclusion

1.5.1 Recommendations

Based on the one-week mission, documents available, and meetings with stakeholders and the Evaluation Team Leader experience in project evaluation and RE development, the following recommendations could be considered.

NOTE: The Project deals with 4 relevant components, which have been evaluated Outcome-based as HS and S in term of Effectiveness. Based on lessons learned and the moving needs for PV, the Evaluator recommends to revisit its implementation strategy, especially through a better integration of Outcomes 1,3 and 4.

Details related to Recommendations are highlighted at Section 5.

Recommendation 1: Pilot Projects sector-based strategy review

Recommendation 2: Study Review of financial facilities

Recommendation 3: Renewable Energy Management Information System (REMIS) Design and Implementation

Recommendation 4: Information Sharing and Dissemination through and International Conference

Recommendation 5: Project Timeframe Extension of 18 months

1.5.2 Conclusion

Based on the results and the excellent rating at midterm, and despite delays for starting up the Project, the Evaluator is confident the Objectives/Outcomes are expected to achieve or exceed the end-of-project targets, without major shortcomings and the whole results can be presented as “good practice”. The progress at midterm is likely securing the rest of the Project although the huge effort to be rolled out during the upcoming two years. The small number of recommendations is an indicator of the excellent project performance. If the Project takes into consideration the recommendations it is likely to exceed its targets in numerous ways. The Project duration extension is important especially for developing the long-term Financial Support Mechanism and the Renewable Energy Management Systems which are both required to secure the sustainability of the promising PV development in Egypt.

2. Introduction

2.1. Purpose of the MTR and objectives

As per the MTR Guidelines (UNDP), the MTR must assess the progress towards the achievement of the Project objectives and outcomes as specified in the Project Document, and assess early signs of the Project’s success or failure; with the goal of identifying the necessary changes to be made in order to set the Project on-track to achieve its intended results. The MTR also review the Project’s strategy and its risks to sustainability. To this end, Section 5 is related to recommendations and is of the utmost importance for adaptive management to improve the Project over the second half of its lifetime regardless of the Project evaluation rating.

2.2. Scope & Methodology

The Evaluator is required to carry out the MTR in line with the UNDP guidelines, which are regularly updated.

Accordingly, with the stated methodology the MTR complies with the collaborative and participatory approach for ensuring close engagement with key participants including the Commissioning Unit (PMU), the RTA, the involved UNDP Country Office(s), government counterparts (GEF Operational Focal Point (OFP), and other Key Stakeholders. The MTR team is required by the TORs to comply with the detailed methodology and data collection methods as highlighted in the UNDP MTR Guidelines 2019 (ref. Footnote below[1]).

In accordance with the UNDP-Evaluation Guidelines, independent consultants must carry out the MTR, taking into consideration the following limitations and requirements:

The Evaluation Team:

1. Must present information that is complete and fair in its assessment of the strengths and weaknesses, so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. The MTR team should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect the people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. If evidence of wrongdoing is uncovered while conducting evaluations, such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations must be sensitive to and address issues of discrimination and gender equality. They should with all stakeholders, be in line with the UN's Universal Declaration of Human Rights. Evaluators should avoid offending the dignity and self-respect of those persons with whom they come in contact during the course of the evaluation. Knowing that the evaluation might negatively affect the interests of some stakeholder; evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. The MTR team is responsible for the performance and product(s), the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

It is not unusual to face a situation where one facet or a sub-component of the Project has not performed as intended. The MTR report is required to assess how the Project should be undertaken with an adaptive management methodology to achieve the intended outcomes and overcome pitfalls in line with the Project Document expectations. As a result, the MTR

[1] http://web.undp.org/evaluation/guideline/documents/PDF/UNDP_Evaluation_Guidelines.pdf

exercise can improve the sustainability aspect, the underlined benefits, strengthen the institutional support and the long-term financial support as well.

To this end, the list of recommendations is of the utmost importance. Finally, the MTR should likely aid in the overall enhancement of the UNDP CO programming.

The Grid-Connected Small-Scale Photovoltaic Systems Project (Egypt-PV) funded by Global Environmental Facility (GEF) and the United Nations Development Programme (UNDP) approved in March 2015 (GEF approval) but the Project has been formally launched in June 2017 after signature of the project document in December 2016. The inception stage took place in January 2018. The inception report covers a 7-month period July 2017 – January 2018, which is considered to be a Project inception period. The Project is now in its second year of implementation. In line with the UNDP-GEF Guidance on MTRs, this MTR process was initiated after the submission of the second Project Implementation Report (PIR 2019). The MTR is planned to be completed by the end of November 2019.

2.3. Structure of the MTR report

The MTR report should comply as well as possible with the MTR Guidelines requirements. In order to comply with the stated table of contents, the MTR report must include the following Sections:

1. Executive Summary
2. Introduction: Purpose of the MTR and Methodology
3. Project Description and Background Context
4. Main Findings - Project Design- Strategy and Outputs-based Rating
5. Conclusion and Recommendations.

In the Evaluator's standpoint, the Sub-section related to Recommendations is the most important added value of the MTR report.

Others: A series of Appendices required for supporting the MTR report.

The Evaluator has not to pointed out that Section 4 and 5 are of the utmost importance.

3. Project Description and Background Context

3.1. Development Context.

3.1.1 Environmental and Socio-economic

The Egypt-PV project is in line with the UNDP Development Context by dealing with GHG emissions reduction in coherency with a series of other UNDP's projects at different stage of implementation as highlighted in the sub-section below.

As ruled by the NREA and IRENA[2], the Egypt is the most populous country in North Africa and the Arab region and home to one of the fastest-growing populations globally. The rapidly swelling number of inhabitants has led to a rapid increase in energy demand, putting a strain on the country's domestic energy resources even amid substantial recent offshore natural gas finds. As fuel shortages heightened in

[2] IRENA/ NREA Renewable Energy Outlook: Egypt 2022-2035: https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2018/Oct/IRENA_Outlook_Egypt_2018_En.pdf
Issued in 2018.

2014, the country's electricity generating capacity struggled to keep pace with rising energy demand. Egypt's economic development hinges on the energy sector, which represents 13.1% of overall gross domestic product (GDP).

To meet burgeoning energy demand, the Egyptian government has pursued an energy diversification strategy, known as the Integrated Sustainable Energy Strategy (ISES) to 2035, to ensure the continuous security and stability of the country's energy supply. This strategy involves stepping up the development of renewable energy and energy efficiency, in part through vigorous rehabilitation and maintenance programmes in the power sector. Egypt is, therefore, committed to the widespread deployment of renewable energy technologies.

To date (2018), the country's total installed capacity of renewables amounts to 3.7 gigawatts (GW), including 2.8 GW of hydropower and around 0.9 GW of solar and wind power. As specified in the ISES to 2035, the Egyptian government has set renewable energy targets of 20% of the electricity mix by 2022 and 42% by 2035.

3.1.2 Institutional Challenge and Policies

The GHG emissions[3] from electricity generation in 2011/2012 were over 74 million tonnes of CO_{2eq}[4]: i.e. 40% of all energy-related GHG emissions, or 33% of Egypt's total anthropogenic GHG emissions. The total energy-related GHG emissions in 2011/2012 is estimated as 182 million tonnes of CO_{2eq}, placing Egypt among the top 20 GEF programme countries globally.[5] Thus, any successful carbon mitigation activities in Egypt will also have a significant impact on GHG emissions in the global context.

Egypt has been experiencing a significant power shortage in recent years. Blackouts had previously been confined to rural areas, where the grid quality is lower and power supply tends to be restricted first when there are supply-demand imbalances. However, the appearance of load-shedding in the major cities is indicative of increasingly severe problems. Although power cuts in 2011/2012 have been blamed primarily on a lack of fuel rather than a lack of power generation capacity, it is a combination of both. Statements by the Minister of Electricity in 2014 indicate that consumers will experience power outages of up to six hours a day this summer[6].

In order to keep up with demand, the sixth Five Year Plan of the Government of Egypt (2007-2012) included construction of new combined cycle gas power plants with a total capacity of 3,000 MW at El Atf, Sidi Krir, El Nubaria and Kuriemat, and new conventional steam units with a total capacity of 4,000 MW at El Tebein, Cairo West, Abu Kir and El Sokhna. Delays in the Abu Kir and El Sokhna projects and the cancellation of Newibaa project, in addition to unexpectedly high summer temperatures in the past few years, resulted in drastic shortages of electricity supply. Therefore, a "fast track programme" for constructing gas turbines with total installed capacity of 2,600 MW was implemented in 2011/2012 to meet the peak demand during the summer.

[3] Cf : Grid-Connected Small-Scale Photovoltaic Systems Project Document

[4] Calculated on the basis of the fuel consumption data reported in the EEHC Annual Report, 2011/2012. The CAPMAS 2013 Statistical Yearbook provides a figure of 67.66 Mtonnes of CO_2, which likely consists of the GHG emissions from EEHC-managed power plants only.

[5] http://www.iea.org/publications/freepublications/publication/KeyWorld2013.pdf

[6] http://www.egyptindependent.com/news/minister-power-outage-could-reach-6-hours-daily-due-fuel-shortage

The seventh Five Year Plan (2012-2017) foresees the construction of 12,400 MW of new thermal power capacity, of which the 3,000 MW combined cycle plants in North Giza (1, 2, 3) and Banha and the 3,900 MW conventional steam unit plants in El Suez, South Helwan and Safaga are envisaged to be built, owned and operated by the EEHC, while the private sector will be invited to build, own and operate a 3 x 750 MW combined cycle power plant in Dayrout, a 2 x 650 MW steam power plant at Kena and a 3 x 650 MW steam power plant in El Ayat.

The total investment is the construction of the listed power generation projects in the seventh Five Year Plan have been estimated as being approximately EGP 77 billion (USD 11.2 billion), of which the EEHC and its affiliated companies are expected to finance EGP 43 billion and the private sector the remaining EGP 34 billion.

Apart from Law 102, which was adopted in 1986 and which established the New and Renewable Energy Authority (NREA), there is no specific renewable energy law in Egypt (at the time of the Egypt-PV project design). The new Electricity Law, which has been drafted but which has not yet entered into force, does include, however, several provisions to determine how the next phases of renewable development should proceed in Egypt.

Article 45 of the draft law sets out the process for the procurement of electricity from renewable energy sources using several options, including competitive bidding and feed-in tariffs. The intention is to use competitive bidding for larger projects on state-owned land together with complementary (to the extent feasible) criteria for the domestic content of such projects to support the development of a national RE industry. This competitive bidding is also expected to inform the Government about the prices that developers will accept, thereby providing a basis for feed-in tariffs to be introduced and applied later for smaller projects. For wind energy, projects subject to feed-in tariffs are expected to be those with capacity less than 50 MW, while for solar PV the limit is likely to be smaller.

Article 46 of the draft Electricity Law requires the holders of transmission and distribution licenses to connect renewable generators to their networks and to make the required investments to strengthen their networks to facilitate this.

Articles 47-50 of the draft law include provisions for the establishment of a Renewable Energy Fund, with the main purpose to compensate the Egyptian Electricity Transmission Company (EETC) for the extra costs of purchasing electricity from RE power producers. The Fund is foreseen to be financed mainly from the State budget, with its statutes and governance to be defined in a separate Decree. In earlier talks, the EU has expressed interest in supporting the establishment of such a Fund and may still do so.

In the UNDP-GEF perspective and its Development Objective:

The specific Renewable Energy (RE) related components of the Project, particularly on grid-connected small-scale PV systems are included in the GEF-UNDP Egypt-PV project as baseline activities.

The Project will contribute to GEF Climate Change Focal Area Objective #3, to plays an indispensable role not only in combating global climate change but also in addressing energy access, energy security, environmental pollution and sustainable development. In accordance with the adopted strategy, the GEF support under this objective will expand beyond the creation of enabling policy and the regulatory environment and will also invest in renewable energy projects that will lead to a step-change in the deployment and diffusion of reliable, low-cost renewable energy

technologies. In addition, the UNDP-implemented, GEF-financed project will promote local SMEs to enhance their technical capacities to provide installation, operation and maintenance services for renewable energy technologies.

The specific outcomes of the GEF-5 (at the time of the Project Design stage) climate change strategy that the Project is addressing include:

- Favourable policy and regulatory environment created for renewable energy investments.
- Investment in renewable energy technologies increased; and
- **GHG emissions avoided**

3.2. Problems that the Project sought to address

As clearly pointed out in the Project Document, a number of steps have already been taken by the Government of Egypt to create an enabling framework for accelerating the development of renewable energy power generation, including small-scale decentralized PV systems, but more remains to be done. Each of these barriers highlighted below are comprehensively addressed under Outcome 1 to 4.

Among the remaining key barriers and support needs that the UNDP-implemented, GEF-financed project seeks to address are:

- Legal and regulatory barriers: While the new draft Electricity Law includes several provisions that are essential to boost renewable energy development in Egypt, there are several items of secondary legislation that still need to be prepared after the adoption of the law to facilitate the actual implementation of the proposed measures. New secondary legislation may be required, for instance, for obliging the distribution companies to install meters or second meters for consumers with PV systems and giving them the authority to charge customers based on net-metering rather than gross-metering. This requires the modification of distribution companies' standard contracts and eventually their charters, as they were originally established as entities that could strictly sell electricity to consumers and not to purchase.
- Technical barriers: Complementary technical assistance may be required to review and adjust the grid code and required technical criteria for PV products offered on the market to match the specific characteristics of the power supply system in Egypt.
- Financial barriers: There are currently no attractive financing mechanisms available through which households can obtain financing for small-scale renewable energy projects by using a PPA or a Renewable Energy Certificate as security. Low-income households often do not have the financial documentation or loan histories required by the banks to issue loans. The interest rates of the currently available consumer loans in Egypt reach 10-15% per year, and are therefore unattractive for financing RE projects that require long-term financing at moderate interest rates (as with the case of financing larger power plants).
- Information/Awareness and Perception Barriers: There is little awareness with regards to renewable energy amongst the public and in the private sector. Although many citizens and institutions support the idea of the development of renewable energy in general, many of them do so without having adequate awareness and education about the characteristics of these products and the possibility of using renewable energy as a deliberate consumer choice.

- Capacity barriers and weak supply chain: In the absence of a well-developed PV market, the capacity for building, installing and maintaining PV systems in Egypt is still low. Furthermore, there is a lack of suppliers, competition and marketing and no adequate maintenance or repair services, thereby making potential owners wary of long-term ownership.
- Lack of adequate quality control: Equipment suppliers import products of varying quality levels. Since no systematic quality control mechanism yet exists, all kind of products and systems may be brought into the market with an objective of making short-term profits without considering market sustainability. As such, consumers face a high risk of acquiring systems that do not meet the expected performance. Energy standards for different type of products have been adopted, but the controls on domestic production and imports are not yet adequately organised.

3.3. Project Description Objective and Strategy for Achieving the Expected Results

The objective of the Project is to remove the barriers that restrict increased power generation by small, decentralized, grid-connected PV systems implemented by households and small- and medium-size enterprises.

To achieve this objective, the Project strategy builds on the planned Government initiatives to develop a market for small, decentralized renewable energy power generation by ensuring adequate returns on targeted private sector investments. In particular the implementation strategy focuses on 5 priority sectors:

- Commercial buildings and facility
- Industrial buildings and facilities
- Residential Buildings
- Public Buildings
- Tourism sector

The sector-based implementation strategy in, in essence, supported by a series of pilot projects through a budget provision of 2.3 mil. USD shared down more or less equally (Table 3), and the provision of a full-fledged technical assistance and guidance to project beneficiaries and equipment suppliers.

The Project catalyses the development of decentralized, grid-connected small-scale renewable energy (RE) power generation market in Egypt and the solar PV in particular. The target is to facilitate the installation of new decentralized private PV, resulting in direct GHG reduction. Complementary indirect mitigation benefits are expected from the sustained market growth of the PV market after the Project with estimated GHG reduction at least 0.6 to 0.7 million tons of CO2 eq.

In term of results connected to development objectives, the Project seeks to establish a basis for sustainable market growth by:

- Supporting the design, purchase and installation of the first PV systems as an easily replicable model.
- Establishing an enabling policy and institutional and regulatory framework to provide the basis for sustainable market growth of small, decentralized RE (primarily PV) applications and for attracting adequate financing for the required investments.
- Strengthening the supply chain by building the capacity of the key supply-side stakeholders such as system designers, equipment vendors and installers to offer competitively-priced, good-quality products and services to the targeted stakeholders (including required after-sales services) and by introducing adequate quality control

mechanisms to build up customer confidence and positive customer experiences of small, decentralized PV systems.

- Facilitating the establishment of a financing framework and a network of local financial institutions to support the development of the decentralized PV market by providing long-term financing on attractive terms for PV investments and, as applicable, dedicated funds especially for those households which, without a previous credit history and/or required collateral, may face difficulties in convincing the banks of their credit-worthiness.
- In term of quantitative results, the Project target is to facilitate the installation of at least 4 MWp of new decentralized private PV capacity during the lifetime of the Project, resulting in direct GHG reduction benefits of 66 kilotons of CO2eq. Complementary indirect mitigation benefits are expected from the sustained market growth of the PV market after the Project with estimated GHG reduction of about 0.6-0.7 million tonnes of CO2eq.

3.4. Project Implementation Arrangements

The Project Management arrangement is seemingly efficient and collaborative for planning and making the follow-up of on-going activities. Section 4.4.1 provides details on the management arrangement.

The Industrial Modernization Centre (IMC) of the Ministry of Industry and Foreign Trade implements the Project. UNDP is accountable for the disbursement of funds and the achievement of the Project goals, according to the approved work plan.

Other key implementation partners are:

- Ministry of Electricity and Renewable Energy
- Ministry of Foreign Affairs
- National NREA
- Energy Efficiency Unit of the Cabinet of Ministers
- The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE)

3.5. Project Timing and Milestones

The GEF Secretariat approved the Egypt-PV project in March 2015, but because of some major disturbance in Cairo, but in practice, , the Project has been launched July 2017 when the UNDP CO jointly signed up the Project document with the Egyptian Government in 2016. The inception phase lasted till February 2018 while the first project work plan has been approved. The current Project Manager has been hired in July 2018 and the full-fledged PMU team members were all hired on January 2018.

The PIR 2018 and PIR 2019 were timely issued. The Evaluator is grateful to the Project Manager for having issues with the PIR 2019 prior to the midterm evaluation.

The Midterm evaluation has been carried out on target at the end of August 2019.

In accordance with the planning, the Project is expected to conclude December 2021 but the Evaluator recommends an extension of 18 months. If the GEF Secretariat approves the recommendation and that the Egypt-PV project should then conclude at the end of September 2021.

3.6. Main stakeholders

Main Implementing Partner

- Industrial Modernization Centre, Ministry of Industry (IMC)

Other Implementing partners:
Ref. para. 3.4 above.

The Evaluator met with the Head of IMC (Dr. Amr Taha, Executive Director, IMC). He is also member and Head of the Advisory Board). The collaboration and support are seemingly working appropriately and efficiently.

4. Main Findings - Project Design- Strategy and Outputs-based Rating

4.1 Main Findings

Evaluation Results at a Glance

At midterm, based on the MTR mission and project material review and analysis, the whole result of Egypt-PV Project has surpassed expectations. The Objective/Outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. Although the good performance, the Egypt-PV project needs some minor improvements and update to its integrated strategy; the improvement of some Outputs, in particularly in regard to the sustainable financial support mechanism; and some adjustments to budget provisions breakdown.

The whole project rating is **Highly Satisfactory**.

Timely Project

The Project design is based on the PIF drafted in 2010-2012. The Project has been approved in April 2015. Because the Project is mainly related to the PV technologies, the latest improvement in terms of cost of the PV technology between 2012 (PIF) and the effective project start-up in May 2017, both cost and technology features have changed especially in regard to equipment cost and quality in Egypt. In other words, the Egypt-PV project took advantage of the significant delay (5 year) between the PIF stage (project basis) and its implementation in 2017 making more cost-effective the installation of the small-scale rooftop Grid-Connected Small-Scale Photovoltaic Systems (significantly lower than 20 MW). In addition, the PV life cycle has been significantly improved. Even 5 years ago the cost of similar PV panels was two times higher.

Project Sector-based Strategy

As per the Project document, the Egypt-PV project aims at removing the barriers to the increase of power generation by small, decentralized, grid-connected PV systems implemented by households and small- and medium-size enterprises. The Project strategy is in phase with the planned Government initiatives to develop a market for small, decentralized renewable energy power generation. For that purpose, the underline strategy aimed at securing an adequate return on targeted private sector investments, and also promote RE investment in public buildings.

The Project made the strategic decision to target five priority sectors and the related budget line (72600) has been broken down accordingly as follows: (i) Commercial Buildings (15%); (ii) Public Buildings (20%); (iii) Industrial sector (20%); (iv) Tourism Sector (15%), and (v) Residential Sector (15%) for a total investment (grant) of 2,300,000USD.

The Project should also consider having sub-target of public buildings to support some demonstration projects in public schools, in addition to the efforts already rolled out in some private schools. The issue of public schools' involvement is related to a lack budget provision of the public school sector for investing in PV stations. Because of the educative and outreaching impact of mini-PV stations in public schools, the Project could contribute to the removal of some social and environment concerns in remote areas and small cities. Many

options can be considered for going further. The Evaluator made a recommendation to this end.

Based on lessons learned and the growing need for PV, the Project should maybe revisit its implementation strategy under Outcome 1 (Pilot Projects). The industrial sector response already reached the target expected at the end of the Project timeframe. The Tourism, and the Public Sectors were also responding positively during the midterm, but others sectors (Commercial and Residential) were not responsive. Two options can be considered for going forward the remaining duration of the framework: 1) improve the TA efforts and financing support to reach the stated targets where the Project slightly underperform; or 2) reset the target to support the most responding sectors with the aim of securing (and increasing) achievements of energy savings and the target of 4MW (preferably overpass the target). The Evaluator makes a specific recommendation in this regard.

Strengthened Domestic Supply Chain – Outcome 3

As per the Project design the Egypt-PV project should address the issue of domestic supply chain and quality control system with the aim of increasing the market-share of domestic manufacturing and/or assembly of PV panels.

At midterm the Project focused its support to PV suppliers/manufactures towards quality control and light ''marketing'' support. Equipment manufacturers are, in practice, PV ''assemblers'' rather than real manufacturers. Based on the global context it is well known that major PV cells manufacturers are located in East Asia. The majority of the top ten manufacturers are Chinese as a bulk of the global solar panels are manufactured there. East Asia has become the solar manufacturing hub of the world and the latest emerging trend shows that companies outside of China are gradually starting to emerge. Figure beside is the PV Panels top ten manufacturers in the world.

Top Solar Panel Manufacturers in 2019

2018 RANK	COMPANY	HEADQUARTERS
1	JinkoSolar	China
2	JA Solar	China
3	Trina Solar	China
4	LONGi Solar	China
5	Canadian Solar	Canada
6	Hanwha Q-CELLS	South Korea
7	Risen Energy	China
8	GCL-SI	Hong Kong
9	Talesun	China
10	First Solar	USA

The focus on quality control and improvement proved to be a good strategy. Such an approach should continue, but there is a limit to the amount of training that can be provided with regards to increasing quality of the parts and cases during the upcoming three years. On the other hand, from a market-share standpoint, the Evaluator does not point out any critical requirement or need for supporting market development in Egypt. The PV market is in an intensive growth phase and manufacturers/assemblers are, in essence, in a position to develop their market on a competitive base.

In such circumstance, the Project should, perhaps, revise its strategy with regard to its support for PV supply Chains by redirecting some budget provisions to other activities. The Evaluator makes a recommendation to this end.

Financing Framework Outcome 4

At midterm just a few activities have been carried out in regard to the financial support mechanism (FSM) framework. The Project should do more especially for supporting the PV market development in the residential sector and public buildings. The RESCO (Renewable Energy Service Company) is an attractive business model for supporting the market development in budgeted sector (public) and multi-residential buildings (private) as well. The joint support with the Public Electricity Utility companies is a supplementary option that could be considered.

In addition, the Advisory Board members clearly pointed out during the evaluation meeting[7] that there are numerous funds available in Egypt for supporting investment in EE and RE. Most are useful for large-scale PV projects (20MW and more), but seemingly they are not very helpful for developing small-scale PV projects. Financing conditionalities and other requirements are the highlighted constraints by the Advisory Board Members. The Project should do more under Outcome 4 with the aim of removing the investment barriers and supporting PV manufacturers/Assemblers and renewable energy companies for developing the PV market as a sustainable impact of the Egypt-PV project. The Evaluator makes a recommendation in this regard.

Sustainable growth of the small decentralised RE (in particular PV) power generation market together with related market monitoring mechanisms

The issue of results monitoring is very crucial if the Project wants to have a long-term and sustainable impact in Egypt. Under its Outcome 1 target, the PV project already supported the installation of 67 pilot projects; at the end of the Project timeframe the number of pilot project could reach 150 and maybe more.

At the moment the NREA (responsible for the RE sector) did not have the appropriate tools for proceeding with distance data gathering and analysis at the central level. Because the NREA is the key Egypt-PV Project partner, the NREA should host the PV central data-collecting centre connected to each PV station by the 4G real-time communication links. All PV stations have already been installed with data gathering and control equipment; it is built-in the pilot project.

The Project should revise some Outputs under Outcome 2 to invest a significant budget provision for implementing the PV monitoring system and database to secure the operation and maintenance (O&M) of PV stations supported by the Project. In addition, such a real-time monitoring system should be connected to all major PV projects to be installed after the end of the PV Project timeframe with the aim of collecting accurate and reliable data on the PV station performance failure and variation. Reliable information could help the PV station owners to keep the performance at the expected level as per the specifications and point out the low-quality PV equipment, if any. At the moment, in accordance with the Project Document, the PV-Project intends to outline a Monitoring Plan. In the Evaluator's view it is not what is the most useful because monitoring PV in real-time is more than just a ''paper work'' in term of usefulness. The Evaluator makes a recommendation in this regard.

Information Sharing and dissemination: A budgeting issue

The Evaluator looked at the remaining budget provisions. At this point in time, the Project disbursed only 22% of the total budget provision. Per se it is not a concern because a significant amount is already committed for additional (over the 67 Pilots already installed) Pilot projects to reach and preferably overcome the stated target (4MW). Generally, the

[7] The Evaluator asked for a special Advisory Board meeting with the aim of getting their valuable feedback on the most appropriate FSM on August 27.

whole budget provision is appropriate for a full achievement of all Outcomes although the UNDP CO could consider some adjustments to a few budget lines with the aim of implementing recommendations.

On the other hand, the Evaluator is concerned on the remaining budget provision for workshops and information-sharing/dissemination (+/- 26,000$ remaining). The UNDP CO could consider transferring some amounts from other Outputs budget lines for increasing the workshops budget provision under key Outcomes. As an instance, the Project design (Prodoc) did not encompass the required budget provision for the Project Closure Workshop. If the Project performs as expected, the UNDP CO should organize an International (regional) Closure Workshop for sharing its results, lessons learnt and its experience is the field of small-scale grid-connected PV Station installations; as well as the sustainable dissemination and replication of PV projects. The Evaluator makes a recommendation to this end.

4.2 Project Design and Strategy

4.2.1 Sector-base Strategy outlined in 2014 could be revisited

The primary objective of this project is, among others, to remove the barriers with the aim of increasing the power generation by small, decentralized, grid-connected PV systems implemented by households and small- and medium-size enterprises.

The Project strategy builds on the planned Government initiatives to develop a market for small, decentralized renewable energy power generation by ensuring adequate returns on targeted private sector investments through tradable Guarantee of Origin (GoO) certificates in combination with a net-metering scheme for the highest tariff category residential and commercial customers.

These mechanisms will be complemented by the initial market support to be provided by the UNDP CO with GEF grant financing together with its financing partners as highlighted in the Project Table of Information in the first section of the MRE report. The GEF provides a grant of financial support 3,536,364$ and the government side is expected to provide a significant co-financing of 25,000,000$.

The Project strategy is presented in a logical framework approach, which is the basic table the MTR Evaluator will use (cf. MTR report Section 4.3) to proceeding with the Outcomes/Outputs-base evaluation and rating. The essence of this approach is that the 25 outputs are clustered by 4 Outcomes, which together will achieve the Project objective.

By the end of the Project timeframe (5 years), the Project seeks to facilitate the installation of at least 4 MW_p of new, decentralized PV capacity and to establish a basis for sustainable market growth by:

- Supporting the design, purchase and installation of the first series (Pilots) of PV systems as an easily replicable model to reach the target of 4 MW_p of total installed PV capacity by the end of the Project.
- Establishing an enabling policy and institutional and regulatory framework to provide the basis for sustainable market growth of small grid-connected, decentralized RE (primarily PV) applications and for attracting adequate financing for the required investments.
- Strengthening the supply chain by building the capacity of the key supply-side stakeholders such as system designers, equipment vendors and installers to offer competitively-priced, good-quality products and services to the targeted stakeholders (including required after-sales services) and by introducing

adequate quality control mechanisms to build up customer confidence and positive customer experiences of small, decentralized PV systems.

- Facilitating the establishment of a finance framework and a network of local financial institutions to support the development of the decentralized PV market by providing long-term financing on attractive terms for PV investments and, as applicable, dedicated funds especially for those households which, without a previous credit history and/or required collateral, may face difficulties in convincing the banks of their credit-worthiness.

In accordance with the quantitative objectives and the above highlighted goals, the Project sub-strategy aimed at focusing on five building sectors for investing the budget provision of 2,300,000$: (i) Commercial Buildings; (ii) Public Buildings; (iii) Industrial sector; (iv) Tourism Sector; and (v) Residential Sector.

The sector-based PV market response has been different of expectations as per the priority sectors.

Sector	Planned	% of total Grant budget line	Achieved	Achieved % of column 1
Ind.	460,000 $	20%	432 975 $	19%
Comm.	345,000 $	15%	132 500 $	6%
Public	460,000 $	20%	213 000 $	9%
Tourism	345,000 $	15%	235 000 $	10%
Resident.	345,000 $	15%	12 400 $	1%
Ad hoc	345,000$	15%	0 $	0%
Total	2,300,000 $	100%	1,137,475 $	45%

Table 3 Achieved Grants Breakdown Structure

On the other hand, the Project had a good performance in terms of the number of pilot projects already installed at midterm.

- Outcome 1: 67 PV Plants in 5 different sectors;
- Total capacity 2,20 MWp installed, or 55% of the stated target;
- Total grant deliveries of 1,137,475$, or 45% of the whole grant budget line.
- The Industrial and Tourism sectors overpassed the midterm target with more than 50% of the planned investment at the end of the Project timeframe, while the residential, commercial and public sectors did not reach the 50% target at midterm. The performance is even worst in the residential sector.

4.2.2 Project Design

For reaching its strategic objectives, the Egypt-PV project is focussing on four key Outcomes and 25 Outputs as follows:

- Outcome 1: A total of 4 MW_p of small PV systems (of a few kW each) installed based on easily replicable and scalable system design.
- Outcome 2: A supportive policy, institutional and regulatory framework for providing a basis for sustainable growth of the small, decentralized RE (in particular PV) power generation market.
- Outcome 3: Strengthened domestic supply chain and quality control system, including, as applicable, increasing domestic manufacturing/assembly of PV panels
- Outcome 4: A financing framework and a network of local financial institutions to facilitate the financing of small, decentralised PV systems for a broad range of consumers.

In addition to the strategic objective highlighted at Section 4.2.1, the Egypt-PV project should achieve the following target in term of GHG emissions reduction:

- Direct Impact: 66 kilotons of CO_{2eq} over the 20-year default lifetime of the investments made during project implementation.
- Indirect Impact: At least 0.6 million tonnes of CO_{2eq} over the 20-year default lifetime of the investments made within 10 years after the Project end.

The MTR Evaluator is required taking into consideration these quantitative targets, as well than the target related to PV installed power (4 MW) to foresee if the Project is in a position, based on its progress at midterm, to likely reach the targets with or without minor shortcomings. Detailed results review, analysis and rating in Section 4.3 intend answering this question.

4.2.3. Results Framework Coherency and Performance

Through its four components, the whole Egypt-PV project framework is coherent with the approved objectives: '' to remove the barriers with the aim of increasing the power generation by small, decentralized, grid-connected PV systems."

Revisit the coherency of Outcome 3.5

In term of quantitative results, the Project is performing well and the Evaluator is confident that the desired objectives and outcomes can be achieved, without shortcomings, if the Project revises the Output 3.5 related to monitoring. ''Agreed methodology, institutional arrangements, procedures and mechanisms for effective market monitoring, producing regular annual market monitoring reports and able to continue such monitoring after the end of the UNDP-implemented, GEF-financed project.''.

In the Evaluator's view the PV market development is not the key issue in 2019. The Output 3.5 is coherent with the objective of Outcome 3, which is: '' Strengthened domestic supply chain and quality control system, including, as applicable, increasing domestic manufacturing/assembly of PV panels'', but the methodology is questionnable: The Eypt-PV intends to outline a sort of market development monitoring plan, a report more or less useful. On the other hand and most importantly, is to monitor the performance of PV equipment over time within the whole PV life cycle which is likely decreasing each year by a certain percentage (as a rule not more than 0.8%/yr). Based on specifications of major PV manufacturers from abroad, assuming PV panel degrades at 0.8% per year thereafter, it would still be operating at slightly more than 80% efficiency by year 25.

Rather than spending money for outlining the PV market development, it would be more coherent with the objective of Outcome 3 to monitor the performance of installed equipment and new PV installed after the end of the Project timeframe. The Evaluator recalls that Outcome 3 intended to deal with the '' supply chain and quality control system'', not with issues related to market development monitoring.

Revisit the Coherency of Output 4.1 and 4.4

The other lack of coherence under Outcome 4 is related to Outcome 4/Output 4.1: '' Required background studies, analysis and initial drafting of the proposed financing scheme(s) and support for required follow-up consultations with the financing entities interested in developing the scheme further.''; and Output 4.4 ''. Monitoring the Impact and Performance of the Financing Schemes Introduced.''

The Evaluator's reading of the Output 4.1 is going to the outline and feasibility study of an FSM rather than designing a spreadsheet (*.xls) for evaluating financial and performance of PV projects. This does nothing to detract from the pertinence and usefulness of such a spreadsheet. At midterm, the Project did not address the issue of the FSM, did not prepare any sort of catalogue for the financial facilities or the development funds made available on the Egyptian market for EE and RE project financing to private and public project proponents and/or investors.

On the other hand, Output 4.4 intends dealing with the monitoring of PV panels cost and adjustment over time. This is an interesting issue but the added value of such a monitoring under Outcome 4 is questionable.

4.3 Progress towards Results Outcomes and Outputs Analysis

This Section of the MTR report is the most important one for evaluating and rating the Outcomes/Outputs-based project implementation. The Evaluator met with key decision-makers and stakeholders, as well than high-level officials and a few projects beneficiaries (2 sites[8]). Mission Agenda is located in Appendix 4. In addition, the Evaluator met many times with the PMU, the PM and team members for collecting the reliable data and crosschecking information with regard to implementation process and results.

4.3.1 Implementation Progress and Ratings

The following table is essential to ruling on the Egypt-PV implementation performance and achievements. In addition to the results review pertaining to targets and objectives, the table 4 below rates the efficiency and effectiveness of each Outcome. The rating is in line with the UNDP-GEF MTR Evaluation Guidelines highlighted in the MTR TORs (Appendix 1):

Table 4 Definition of Ratings for Progress Towards Results

Definition of Ratings for Progress Towards Results: (one rating for each outcome and for the objective)		
6	Highly: Satisfactory (HS):	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".
5	Satisfactory (S):	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS):	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU):	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U):	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU):	The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets.

[8] Carrefour City Center, Maadi and JM Marriot Hotel, Cairo.

The weight (between 1 to 6) corresponding to each Output is based on results and achievements toward targets. The Outcome is rated on the average rating of the build-in Outputs under each project component (Outcome).

Although Table 5 is slightly long, the Evaluator recommends reading it very carefully for understanding the rational and the evidence-based evaluation, at least for quantitative results.

Table 5 Outcomes/Outputs-based MTR detailed Evaluation

Title: Grid-Connected Small-Scale Photovoltaic Systems	**Indicator**	**End of Project Targets**	**Results/Achievements at Midterm**	**Rating**	
Objective			MTR team Comments and Evaluation/results/Progresses at Mid-Term	Qualitative	
Reducing greenhouse gas emissions by the removal of barriers to widespread application of decentralised PV-based power generation.	Amount of reduced CO_2 emissions by the investments facilitated by the Project.	Direct: 66 kilotons of CO_{2eq} over the 20-year default lifetime of the investments made during project implementation. Indirect: At least 0.6 million tonnes of CO_{2eq} over the 20-year default lifetime of the investments made within 10 years after the Project end.	At midterm the Project surpassed its target in terms of GHG emissions reduction by 70% with a total (spread on 20 yrs) of 112 kilotons rather than 66 kilotons as per the Project Document. Indirect emissions reduction cannot be estimated at midterm because indirect emissions are estimated based on the assessment of the impacts achieved after at the end of the Project timeframe. On the other hand, almost all activities under each Outcome is progressing and some of them are already completed. See Outputs-bases evaluation below. NOTE: The Evaluator points out the quality and reliability of evidence-based data/information made available by the PMU.	HS	
Outcomes	Indicator	End of Project Targets	Results/Achievements at Midterm	Progress Rating	
				Rating	**Rating Mark**

Outcome 1: A total of 4 MW_p of small PV systems (of a few kW each) installed based on easily replicable and scalable system design.	Total capacity of installed rooftop PV systems by the private sector and electricity generated. GHG emission reduction through the investments facilitated by the Project.	At least 4 MW_p of installed rooftop PV capacity, producing 6,000 MWh of electricity per year. More than 1,000 households and SMEs together benefitting from PV-generated electricity.	Based on the Output-based review the Evaluator is confident that Outcome 1 will be achieved without any major shortcoming. Main Findings: - For reaching its target in term of PV power installed the Project made the decision to focus on five key sectors (% in parenthesis is the pilot project budget line breakdown structure): industrial (20%), public buildings (20%) residential (15%), commercial (15%), tourism (15%) and a provision for adhoc projects (15%). The granted budget provision has been broken down to highlight priority sectors and the investment cost-intensiveness. - Such an implementation of a sector-based strategy has been efficient since the Project achieved 55% of its target in terms of MW installed power, and surpassed its target in terms of GHG emission reduction. (cf: first box the Whole Project Outcome) - The expected production of PV pilots installed is 12 GWh/yr, once more significantly over the target.	**HS**	5.8
Output 1.1: Finalised design of the support scheme to facilitate market take-off of 4 MW_p PV power generation (rooftop) systems.	Project Design of financial support Scheme (*xls): done	**All done and updated as required:** ▪ Determining the proposed budget for each sector. ▪ Detailed description for technical and financial support schemes for all the targeted sectors. ▪ Eligibility criteria for selection of the pilot projects. ▪ Plan for the expected number of projects to be installed, capacity, grant, and leverage in each sector for each year separately. ▪ Expected leverage over the four years of the Project. ▪ Updating the technical and financial support schemes for 2019,		**HS**	**6**

		based on the Egyptian PV market after 2018 pilot projects.		
	Budget Allocation	▪ Developing and periodically updating budget allocation that determine the budget for each activity of Egypt-PV.		
	Publishing and Announcing Egypt-PV Grant	• The advertisement announced the opening of the grant written in Arabic, and it was also published on Egypt-PV Facebook page. ▪ The method of applying for the grant is online applications available for each sector on Egypt-PV website. ▪ All the applications were filtered and classified according to Egypt-PV eligibility criteria for each sector published on Egypt-PV website, and were presented in the advisory board meetings to determine the accepted pilot projects.		
Output 1.2: A manual and template for PV system design and installation (with a link to Output 3.1), including sizing, orientation, technical requirements and economics to be released as a hard copy, internet-based and/or eventual smartphone application.	Minimum Technical Requirements	**All done and updated as required:** ▪ Developing Egypt-PV Minimum Technical Requirements and Guideline for PV systems design and installation. Updated in 2019 ▪ Developed Egypt-PV offers template, to improve the quality of the technical offers. ▪ Document is published and available online on Egypt-PV website.	**HS**	**6**
	Recommended List of System Integrators	▪ Egypt-PV held a working session with 42 service providers. A survey of solar projects in Egypt was done and their geographical distribution. ▪ List of Requirements for joining Egypt-PV list of system integrators was developed and published for the companies to apply. The first list was developed in 2018 including 21 suppliers, then the list was updated periodically based on the new applications. • The list includes 50 recommended suppliers.		

Output 1.3: An established PV/project support centre (including dedicated website + hotline).	Develop a web-based PV hub and associated data base	**Work in progress.** It's expected that the Hub-web will be launched in the first quarter of 2020. ▪ The Hub will provide useful information for clients to support implementation of PV projects. Meanwhile, the platform allows PV installer companies, certified by New and Renewable Energy Authority (NREA), to submit installation requests to distribution companies and to follow up the requests electronically. ▪ A request for proposal (RFP) for Web Based PV Hub & Database Development was published on February 18th, 2019. As a respond 8 proposals were submitted	**S**	**5**
Output 1.4: Public awareness-raising and marketing campaigns to promote the 4 MW_p programme and support the implementation of the planned GoO and net-metering schemes.		**13 events Already held and 3 others are planned by the end of 2019.** ▪ Egypt-PV is supporting the facilities of the installed PV projects to conduct events for celebrating the installation of the plants. 2 events were held for the official commissioning of 2 outstanding PV projects in Cairo (Carrefour and JW Marriot). ▪ A series of 11 events Conferences (2) related to (i) First RE Energy Development within the IRENA framework and with NREA, the key PV project impl. partner; (ii) and Green Banking Conference under the valuable patronage of the Governor of the Central Bank and participation of the ADB.; and Workshops (9) **PV Website and Social Media and Publications:** ▪ Egypt-PV website (www.egypt-pv.org) was developed. ▪ Social Media: Egypt-PV Facebook page and LinkedIn ▪ Set up of the PV Call center ▪ A long series of 3 printed materials and 2 others are in preparation. The Evaluator attended to the PV project official commissioning ceremony at the Carrefour City Center, Maadi. The General Director of Carrefour Egypt co-shared chaired the ceremony with the PV Egypt Project Manager (Dr. Hend). The UNDP Assistant- Resident Representative made a short presentation. A MOU for replication by Carrefour in other sites was duly signed. The ceremony in the Carrefour premise was impressive and showed exemplary effort.	**HS**	**6**

Output 1.5: Two in-depth reviews and evaluations of the progress of the 4 MW_p programme.	First PV Projects Implementation Review 2017-2019 Second PV Projects Implementation Review 2019-2021	**Task Completed** A detailed study was conducted to evaluate the achievement progress of Egypt-PV pilot projects till July 2019. Including; the procedures followed by Egypt-PV technical team to ensure the technical quality of the Projects, technical and financial achievements, comparison between the planned vs. the actual results, and the impacts of these pilot projects on the public level, lessons learned and recommendations for further development of the scheme. *The Evaluator points out the quality, details and accuracy of data on 17 PV projects already implemented in 2018 and 42 PV projects in 2019. Very good work.* **Planned completion: 2021**	**HS**	**6**
Output 1.6 Project midterm and final workshop to present and discuss the results and potential next steps.	▪ The Project Midterm Workshop is not yet held. The WS is planned by the end of the Year for presenting the Midterm result and Evaluation and more importantly to discuss the up-dated Project Strategy. ▪ The Project closing Workshop-Conference will be held 2 months prior the Project termination. The Evaluator recommends organizing an Intentional (regional) Conference for the Project closure with the aim of sharing the Egyptian experience and lessons learned.		**N.A.**	
Implementation Progress Rating Outcome 1			**HS**	**Total: 29** **Av. 5.8**
Outcome 1 Implementation Efficiency Rating: Although the time lost during the first year, the actual results in term of pilot projects MW installed, GHG emissions reduction as well as Output-based results and achievements the Evaluator rate the Outcome 1 implementation efficiency **HS**.			**HS**	
Outcome 1 Implementation Effectiveness Rating: The Egypt-PV Project made a few assumptions for breaking down the sector-based pilot project targets. Two sectors (Ind. and Tourism) performed over the midterm expectations and three (Commercial, Public Buildings) performed slightly under the midterm target and the residential sector performed significantly under the target. The Evaluator makes a recommendation to revisit the sector-based target or the implementation strategy. For this reason, and in general, Outcome 1 is on the right path toward a successful			**S**	

implementation, the implementation effectiveness is rated S because there is a risk of minor shortcoming(s) if the sector-based approach is be revisited and adjusted.					
Outcomes	**Indicator**	**End of Project Targets**	**Results/Achievements at Midterm**	**Progress Rating**	
				Rating	**Rating Mark**
<u>Outcome 2:</u> A supportive policy, institutional and regulatory framework for providing a basis for sustainable growth of the small, decentralised RE (in particular PV) power generation market.	Extent to which policies and regulations for decentralized RE and PV in particular are adopted and enforced.	The required financial and fiscal incentives and enabling technical requirements for grid connection effectively implemented and supported by the required laws and regulations, providing a basis for continuing market growth after the Project with a growth rate of at least 20% per year observed at the end of the Project.	There are two key priorities the Project addressed and/or supported over the last 3 years: - The shifting from the ''Feed in Tariff'' for smaller PV installed capacities to net metering calculation. Furthermore, it extends the applicability of the net metering to capacities up to 20 MW. Egypt-PV is coordinating with the regulatory agency to issue a guideline for the net metering procedures and its applications. - The second one is related to Electricity Tariff. The Project supported the Public Utility towards the 10% tariff increasing in July 2019. In addition, the Monitoring Reports for the PV installed plants has been issued (quarterly) and technically/financially supported by Egypt-PV to measure the performance of those plants including recommendations for better performance, such reports are issued quarterly for each plant. The result monitoring is a very important task with the aim of providing evidences of the cost-effectiveness and technical performance of PV equipment. The Evaluator makes a recommendation to this end. All seven Outputs under Outcome 2 are in	**HS**	

			progress and under control towards their full achievement by the end of the Project timeframe.		
Output 2.1: Finalised implementation decrees.	Meetings with MOE, Egypt ERA, NREA, Distribution companies. Policy paper to facilitate third party finance. Egypt-PV Injected Energy KPIs through checklists and minimum technical requirements documents	Finalised implementation decrees and other required documents for ensuring the full implementation of Output 2.1 is on the right way to be achieved without major shortcoming. Completed and updated on regular basis. The policy paper has been developed and presented to the Advisory Board of the Project to be presented to the Ministry of Electricity next month. The policy paper deals with: - Continuously subsidies reforming, particularly for energy-intensive consumers. - Financial feasibility for roof-top PV systems for different categories of consumption under net metering schemes. - KPIs and incentives for distribution companies based on the energy injected from small scale PV systems. - Aggregated net-metering which allows clients to set-off their consumptions in multiple locations or from multiple generation sites. - Streamline and clarify of grid connection rules. - Recommendations for policies and measures to promote up scale of roof-top systems. In progress. Estimated completion date is the end of 2020.	**HS**	**6**
Output 2.2: Completed Analysis of Eventual Technical Constraints in		Activities under Output 2.2 are in progress. The Project is expected to reach full completion without any major shortcoming(s) before the end of the Project timeframe, in 2020.	HS	6

Connecting small, Decentralized PV systems to the Grid.	Meetings with MOE, Egypt ERA, NREA, Distribution companies to complete analysis of eventual technical constraints in connecting small, decentralized PV systems. Abiding with the national grid code and using it for Egypt-PV technical guideline (minimum technical requirements)	NREA requested the Project to provide the needed support to restructure its PV department. Egypt-PV is working on this task in collaboration with NREA. Provision of advice and lead on promotion of roof-top PV systems in progress. The grid connection code is highly critical requirement. Work in progress to be completed in line with the international best practice in 2020.		
Output 2.3: Recommendations for Eventual Grid Strengthening needs.	Supporting large-scale buildings in the technical study of integrating small PV systems.	Work in progress, all documents completed by the end of 2019. The Project is still working with national and international consultants for technical studies toward the smooth integration of small plants within large-scale buildings.	**S**	**5**

Output 2.4: Completed Analysis of the Current Building Regulations.	Preparation of small-scale PV systems code by HBRC in coordination with the Project and technical committee from Experts and Egyptian universities and ministries. Assign consultancy to develop conceptual design for the different components and assist in bidding for an energy efficient street lighting system powered by solar energy.	Work in progress. Completion expected by the end of the Project timeframe. The Egypt-PV Project provides TA to Housing and Building National Research Center (HBRC) but gives the lead to HBRC. Such a task requires a significant effort in terms of coordination. There is a risk that all parties did not enforce the needed adjustments to the building code.	**S**	**5**
Output 2.5: Drafted amendments to the existing laws and regulations and eventual	Adequate quality control of the PV systems offered	Work in progress until the end of the Project timeframe. The Evaluator is confident that Output 2.5 will be achieved without major shortcoming. For that purpose the Project is currently dealing with: - Issuance of a ministerial decree for the prepared (upcoming) PV	**HS**	**6**

new regulations to ensure adequate quality control of the PV systems offered in the market and their installations.	in the market and their installations.	code. - Proposal (together with drafted legal and regulatory provisions) for the likely required complementary financial and fiscal incentives. - Work in progress with international and national consultants to create framework for the utilization different applications of PV systems, working with the new capital for street lighting designs is an initial phase.		
Output 2.6: Finalized Proposal for Eventually Required Complementary Financial and Fiscal Incentives	Finalized technical and other quality criteria for the PV systems	Work in progress. To be completed by the end of 2020. The PV Project is still working on technical specifications and other quality criteria for the PV systems (including inverter and grid connection) and quality installations requirements. The PV systems suppliers and installers are required to comply with to benefit of the UNDP-GEF-grant and other related Government support.	**S**	**5**
Output 2.7: Assessments and Recommendations for Waste Management and Recycling Options for the PV systems		The Evaluator has not been informed of significant progress. On the other hand, such a situation is not an issue because the waste management procedures and wastes disposal systems were not the first priority from the Project start-up to midterm. The Project confirms its commitment: the waste management plan will be addressed by the end of the Project timeframe. Faced with such a situation the rating is not applicable at this stage.	**N.A**	
Implementation Progress Rating Outcome 2			**HS**	**33** **Average 5.5**
Outcome 2 Implementation Efficiency Rating: Outcome 2 is expected to achieve most of its end-of-project targets, with only minor shortcomings, if any, taking into consideration that Outcome 2 is a huge and complex paper work to be achieved through a continuous collaborative approach, which is calling for the involvement of many entities and stakeholders, the Evaluator rates the implementation efficiency with the mark **S** because these Outputs take more time than expected to be achieved and agreed by all parties. The Evaluator is confident that the Outcome 2 will be achieved, maybe with a slightly shortcoming(s) out of the control of the PV Project, by the end of the Project timeframe.			**S**	

Outcome 2 Implementation Effectiveness Rating: Regulation, PV Code and Quality requirements, Guidelines for integrating PV and Net-Metering systems to the grid, financial and fiscal incentives are of the upmost relevance. The Evaluator rates the effectiveness of Outcome 2 **Highly Satisfactory.**				**HS**	
Outcomes	**Indicator**	**End of Project Targets**	**Results/Achievements at Midterm**	**Progress Rating**	
				Rating	**Rating mark**
<u>Outcome 3:</u> Strengthened domestic supply chain and quality control system and, as applicable, increasing domestic manufacturing and/or assembly of PV panels.	Level of customer satisfaction on the quality, pricing and ease of purchasing a PV system, having it installed and obtaining the required after-sales services.	Customers able to purchase a PV systems and have it installed through a 'one-stop shop' model at competitive prices and the established quality control systems, ensuring adequate quality and customer satisfaction for both the hardware and the installation services (including required after-sales services).	Outcome 3 is on the right way for a full implementation on target without major shortcoming. - The Technical Quality Criteria and outlined checklist for the PV systems has been used for designing and installing the series of pilot projects. - The simple client guideline for customers who wants to install PV system was revised by Advisory board the designing and installation stages are available on the Egypt-PV website. - The number of register companies in the recommended list of suppliers has reached 51 suppliers who met the minimum criteria set by Egypt-PV. - Following the large media coverage achieved for the JW Marriot project inauguration, there is a growing interest from suppliers to join the list. - Selection and quality criteria are revised and improved on a regular basis taking into consideration the cost adjustment and technology breakthrough in regard to equipment and communication. - A training manual has been developed for	**HS**	

			Engineers involved in PV project design and installation. - Egypt PV joined forces with UNDP-GEF Energy Efficiency Project in conducting a 3-day training workshop (22 engineers working for 22 hotels located in Sharm El-Sheikh hotel sector) on design and implementation of LED/PV projects in the hotel sector. - Egypt-PV carried out training for 95 Engineers under the umbrella of the Cooperation protocol focusing on training and capacity building, which has been signed between Egypt-PV and the Egyptian Engineers Syndicate.		
Output 3.1: Finalised technical and other quality criteria for the PV systems (including inverter and grid connection), installations and PV system suppliers and installers to benefit from the UNDP-implemented, GEF-financed project and related Government support.	Minimum Technical Requirement & technical specifications Guide	Completed: A quality-controlled technical document that provides installers and clients with the min. accepted requirements (both technically & financially) in order to guarantee the most optimum performance for on-grid PV projects either within the awarding/tendering/implementation phases. Ready, approved by NREA and available on Egypt-PV website. Continuously updated and reflected on implementing projects through "Learn-by-Doing" concept.			
	Small-scale PV Projects User Manual	Completed: Increasing the role of the public towards understanding PV systems through being more engaged for the purpose of public and individual's awareness, who wish to know more about grid-tied PV systems like how it works, simple capacity sizing, regulations, selecting a company, profitability, etc. It's ready and being published on Egypt-PV's platforms.		HS	6
	List of Recommended System Integrators	Completed: A list of 50 suppliers and installers who met and complied with the min. requirements of both NREA and Egypt-PV project with the aim of maintain and or improve quality and credibility to end users. Continuously updated reflecting companies' performances.			

	Technical & Financial Offer Template	Completed: A guiding template provides essential data that should be available to have professional technical & financial offers submitted to clients or to Egypt-PV at project evaluation stage. Improved experiences and integrity of suppliers, installers offering their services to end-users. Regularly updating technical and commercial requirements as per market changes.		
	Projects Acceptance Checklist	Completed: A technical check-list document that's provided to installers prior to installation to follow, consider and fill to facilitate the inspection/evaluation of PV systems after installation and to guarantee projects' good operation and personnel safety. Checks to be done by Egypt-PV.		
Output 3.2: Finalised training programme and training materials to train the Key Stakeholders (including system suppliers and installers tailored for youth, men and women) on the adopted technical and other quality criteria as a prerequisite for offering their products and services for the implementation of the 4 MW_p programme and benefit from other financial and fiscal incentives.	Hands-on training on Installation of on-grid PV Systems.	Completed: Provide more skilful installers, engineers and technicians to the PV market: In collaboration with NREA, a total of 225 trainees received a 5 days hands-on installation of grid-tied systems, where 13 companies of Egypt-PV's recommended suppliers received the training.	HS	6
	Basics of PVs training at El Wadi El Gadied.	Completed: Capacity building of professionals at an Upper Egypt centre to ultimately lead to more decentralized job creation in those markets. A total of 90 trainees at the Engineers Syndicate received a 5-day training and certificates of attendance about basics of PV systems.		
	Banks PV Trainings	Completed: Basics of PV systems with focus on feasibility and profitability training was provided through Egypt-PV to a total of 11 trainees plus certificates of attendance from 7 different banks. Due to better understanding of PVs and their economics, banking sector has been issuing and developing incentives and financing mechanisms to PV systems (refer to output number 4).		
	Basics of PVs training to Egyptian Society of Engineers.	Completed: Egypt-PV signed a cooperation protocol with the ESE for the		

	Future and Current Developments of Capacity Building Programs Design	capacity building of their engineers, where Egypt-PV started with 22 trainees received the training so far resulting in the likely social impact on job creating and rising awareness to PV basics. In Progress: PV accredited trainings to be developed and delivered by Egypt-PV, where trainees will have a different learning experience through focus on regulations, technical, business and market aspects using PV simulation software and be qualified to either joining solar energy companies or start up their own business. By end of 2019, 100 senior students, fresh graduates and junior engineers.		
Output 3.3: A Quality-controlled PV suppliers' and installers' Database	List of Recommended System Integrators. ToR (already issued) The Domestic Manufacturing and/or Assembly of the Solar PV System Components and Local Supply Chain Study.	Completed: A list of 50 suppliers and installers who met and complied with the minimum requirements of both NREA and Egypt-PV project to maintain quality and improve credibility to end users. Continuously updated reflecting companies' performances. In progress: An RFP/call for local or international consultants with the aim of generating a full-scale report of solar PV local manufacturing assessment generating data base and map of domestic manufacturers, potential of each components' category, support scheme for manufacturing improvement. Improved PV systems supply chain in Egypt and ultimately lead to quality and integrated manufacturing. Upcoming: Finalize and announce ToR/program results to stakeholder for an improved supply chain, quality of local products to meet regional and international standards and map of potential investments in target groups of system components.	HS	6
Output 3.4: Finalised design of a permanent quality control and certification scheme for both the hardware and installations	ToR (to be issued) scheme of improving the quality criteria and certification of on-grid systems	In progress, planned to be completed in 2020 without shortcoming: In progress (planned to be completed in 2020): In collaboration with NREA and other stakeholders, an RfP/call for international consultants has been issued for the purpose of developing an entirely new certification scheme for on-grid installers; including updated SSPV (small-scale solar PV) grid code, installers' evaluation and registration exam with the aim of maintaining and updating standards of installers and projects reflecting a better quality of PV systems.	HS	6

	suppliers & installers	Planned to regularly maintain and update this scheme till meeting international standards and code of practices of PV systems by the NREA.		
Output 3.5: Agreed methodology for effective Market Monitoring	PV-Hub established and a "one-stop Centre''	Not yet started: A web-based Hub that aims to create data base of PV market and PV installers; facilitate many processes such as, but not limited to, approving suppliers, installers registration and evaluation of installers' requests to tie PV systems to the grid. Already awarded to ALKAN TELECOM, where first phase of a trial platform to be launched in January 2020. A "one-stop Centre" towards a rapid market acceleration, projects implementation with better public awareness and stakeholders of all markets through credibility. The Evaluator makes a recommendation to revisit Task 3.5 with the aim of setting up a centralized platform to collect data and information on PV station performance.	N.A.	
Output 3.6: Complementary training for different professional groups, such as architects, building engineers and construction companies	Capacity and skills updated	Not yet started: Planned in 2020 A sort of training update of previous training delivered under Output 3.2. Priority targets are the same: - Hands-on Installation of on-grid PV Systems - Banks PV Trainings - Basics of PVs training at El Wadi El Gadied - Basics of PVs training to Egyptian Society of Engineers	N.A.	
Output 3.7: Rising public awareness and marketing support.	Small-scale PV Projects User Manual. ToR (already issued) The Domestic Manufacturing	This sub-task has been seemingly addressed under Output 3.1 and 3.3.	N.A.	

	and/or Assembly of the Solar PV System Components and Local Supply Chain Study			
Implementation Progress Rating Outcome 3: The objective/Outcome 3 is expected to achieve most of its end-of-project targets, with only minor shortcomings, if any.			HS	24 Average 6
Outcome 3 Implementation Efficiency Rating: Three of the seven tasks are already completed. Three are in progress, and two are yet to start. The Evaluator noted that one task is likely similar to other tasks already achieved under tasks 3.1 and 3.3. The Project Manager should revise the redundancy tasks under 3.7 and make the needed adjustment, if any.			S	
Outcome 3 Implementation Effectiveness Rating: Training and capacity building activities of a large spread of stakeholders and practitioners are in line with the Project framework in regard to quality strengthened of the supply chain. All are relevant at the exception of task 3.7 (Public rising awareness and marketing support.), which is seemingly a sort of replication of similar activities carried out under Outcome 3.1 and 3.3			S	
Outcomes	Indicator	End-of-Project Targets	Results/Achievements at Midterm	Implementation Progress Rating Rating / Rating mark
<u>Outcome 4:</u> A financing framework and a network of local financial institutions to facilitate the financing of small, decentralised PV	Volume of financing leveraged for small-decentralised PV investments from financing	At least USD 10 million by the end of the Project.	Outcome 4 is a very important Outcome to secure the sustainability of PV development and the countrywide replication. In the Project Document the Evaluator makes a recommendation with regard to the aim of developing an FSM or using existing financial mechanism(s) already developed by other	S

systems for a broad range of consumers.	entities active in Egypt.		international organizations in Egypt. - A simple online financial calculator was developed on Egypt-PV website the calculator is updated with the changes of the tariff. The calculator conducts simple estimate for the capacity of the solar plant, payback period, average cost, IRR and required area. - Egypt PV has signed a protocol with one of the biggest Egyptian banks (Bank Misr) to give support for financial mechanisms in the bank for solar loans. - A training manual has been developed for bankers. Training on the financial feasibility for bankers has been conducted to 11 different banks (1 trainee from each bank) held in Cairo, at the bank's union centre. The objective of the training is to raise the awareness of the bankers with the aim of facilitating access to PV projects and learn more about the feasibility of PV projects. - A framework for financial support of PV-Systems was developed sector-based, taking into consideration social and economic impact and investment attractiveness. - Egypt-PV is providing technical support to three banks to install PV in their own buildings and branches. Such a strategic approach intended to raise the awareness of the bankers to facilitate financing in the future for similar PV installations.		
Output 4.1: Required Background		All completed: The background study is related to PV projects already implemented:		HS	6

Studies and Analysis of the Proposed Financing Scheme(s)	Financial Tool Online Calculator Collaboration with Banks & financial institutions	- Total installed Capacity 8.27 MWp (2.380 MWp installed, 3.214 MWp in the process of installation and 2.68 MWp committed projects) - Total Investments: 1,139,000 USD financial support by the Project - Leverage: 6,240,000 USD A financial tool has been developed for measuring the financial feasibility for the solar projects, this tool is very detailed in terms of the financial ratios, cash flows, tariff prices and most of the parameters that have impact of the Project feasibility. An online financial calculator was developed and available on Egypt-PV website. The calculator is updated with the changes of tariffs and it indicates the capacity of the solar plant, payback period, average cost, IRR and required area. This tool is created for simple direct awareness for people who seek only initial costs before making any decision or taking further steps regarding installing solar energy plant. Banks and financial institutions are the primary gear for accelerating the market so meeting with them and convince them with the financial scheme will be very positive thing Egypt-PV has worked with 3 major banks to give the technical support and study their financial mechanism with the Project financial grant Egypt PV has signed a protocol with one of the biggest Egyptian banks (Bank Misr) to give support for financial mechanisms for solar loans.		
Output 4.2: Involvement of local community associations to act as intermediaries, helping to promote the lending mechanism and support the Projects.	Involvement of local community and associations to act as intermediaries, helping to promote the lending mechanism and support the Projects.	Ongoing: Project arranged meetings with the local community and associations. The local community role is essential for supporting the Project as they can expedite goal completion in more efficient ways, so several meetings and focus groups have been conducted for their involvement. Also, the dissemination of Egypt-PV success stories of the five sectors is critical factor for the promotion of lending mechanism. The evaluator does not clearly understand the relevance of such an activity to develop or use a PV financial mechanism in addition the ‘‘grant mechanism’’ promoted by the PV Project. If the aim is to enable an easier access to commercial financing, the first	MS	4

		step is to revisit the existing mechanisms and evaluate their usefulness and relevance toward the sustainable replication of PV projects.		
Output 4.3: Technical due diligence of projects proposed for financing, and training of the staff of the participating banks on technical aspects of the Projects.	Feasibility Studies Trainings	Ongoing until the end of the Project framework: In the Evaluator's understanding, the purpose of Output 4.3 is to facilitate access to some financing mechanisms or simply commercial loans. Again, the first step must be to understand the existing mechanism, conditionalities, collateral requirements, terms of payments, attractive interest rate, etc. Completed: A training manual has been developed for bankers. - Trainings on the financial feasibility for bankers has been conducted to 11 different banks (1 trainee from each bank) held in Cairo, at the bank's union centre. The objective of the training is to raise the awareness of the bankers to facilitate solar loans and learn more about the feasibility. The three days training was given, covering most of the basics of PV systems and the methodology of plant calculation, their capacity to assess the reliability and relevance of feasibility studies money and the cash flow generated by the PV project.	HS	6
Output 4.4: Monitoring the impact and performance of the financing schemes introduced.	Financial PV project reports	Ongoing (quarterly) until the end of the Project framework: The PV Project stated '' The announcement of the prices and financial mechanisms has lowered the prices of the PV systems in some sectors by more than 14%''. At midterm, the PV Project did not implement any other FSM other than the ''grant mechanism''. On the other hand, the leveraging of about 6 is an objectively positive result, perhaps even an outstanding result, although the ''grant mechanism'' is not sustainable.	HS	6
Output 4.5: Final report on results, experiences, lessons-learned and recommendations for further work as it concerns the Project as a	Final report	The final report will be drafted more or less two months before the Project closure. The Evaluator will never stress enough the utmost importance of the Project Final Report (FPR), especially in the situation where the Project reached the target in term of performance and achievements. The FPR	N.A.	

whole.		is the best way to share this success with other countries. That is the reason why the Evaluator recommends organizing an International Conference to disseminate positive results and experiences accumulated through the Project. The report must be of the highest quality in terms of editing as well as in its contents.		
Implementation Progress Rating Outcome 4: The Outcome 4 is expected to achieve most of its end-of-project targets, with only minor shortcomings, if any.			S	21 average 5.25
Outcome 4 Implementation Efficiency Rating: At midterm the Egypt-PV project should focus on Outcome 4 with the aim of developing a sustainable FSM. On the other hand, the Project developed an operational tool for evaluating the financial performance of PV projects, which is required to quickly assessing the financial viability of upcoming PV projects.			S	
Outcome 4 Implementation Effectiveness Rating: An additional effort must be granted to Outcome 4 towards the assessment of the existing financial mechanisms and development funds that can be connected and be helpful in terms of support for PV development after the Egypt-PV project timeframe. It is of the utmost importance.			S	

4.3.2. Remaining barriers to achieving the Project objective

At the preliminary stage of the Project implementation in 2018, the Egypt-PV project carried out a market study and barrier removal assessment.

Table 6 Barriers Removal Progress

Status in 2015 - Key barriers pointed out in the Project Document were the following	Remaining Barriers at midterm 2019
• Legal and regulatory barriers: While the new draft Electricity Law includes several provisions that are essential to boost renewable energy development in Egypt, and for obliging the distribution companies to install meters or second meters for consumers with PV systems and giving them the authority to charge customers based on net-metering rather than gross-metering.	Two key priorities the Project addressed and/or supported over the last 3 years: The shifting from the ''Feed in Tariff'' to smaller PV installed capacities to net metering calculation. Furthermore, it extends the applicability of the net metering to capacities up to 20 MW. Egypt-PV is coordinating with the regulatory agency to issue a guideline for the net metering procedures and its applications. The second one is related to Electricity Tariff. The Project supported the public utility toward the 10% tariff increasing in July 2019.
• Technical barriers: Complementary technical assistance may be required to review and adjust the grid code and required technical criteria for PV products offered on the market to match the specific characteristics of the power supply system in Egypt.	To be removed: The grid connection code is a critical requirement. Work in progress to be completed in line with the international best practice in 2020. Outcome 3 is on schedule for full implementation without any major shortcoming. In addition, the Technical Quality criteria and outlined checklist for the PV systems has been used for designing and installing the series of pilot projects. Selection and quality criteria have been revised and improved on a regular basis taking into consideration the cost adjustment and technology breakthrough in regard to equipment and communication. A training manual has been developed for Engineers involved in PV project design and installation.
• Financial barriers: There are currently no attractive financing mechanisms available through which households can obtain financing for small-scale renewable energy projects by using a PPA or a Renewable Energy Certificate as security. Low-income households often do not have the financial documentation or loan histories required by the banks to issue loans. Interest rate under 8%. The interest rates of the currently available consumer loans in Egypt reach 10-15% per year, and are	The interest rate is currently (2019) under 8% in 2019 but the installation of grid-connected PV-Station did not take off, even the Egypt-PV Project provides a grant of XX % in the residential sector. The identified barriers for boosting the demand in the residential sector scaling up were not the right ones. In essence, key barriers remain the equipment supply and installation costs. The residential market will likely grow up as the cost decrease.

therefore unattractive for financing RE Projects that require long-term financing at moderate interest rates (as with the case of financing larger power plants).	In other sectors (tourism, industrial, commercial) the market is appropriately responding (cf.: Table 3: Achieved Grants Breakdown Structure) while the public sector (budget institutions) remains dependant of the grant mechanism.
• Information/Awareness and Perception Barriers: There is very little general awareness of renewable energy amongst the public and in the private sector. Although many citizens and institutions support the idea of the development of renewable energy in general, many of them do so without having adequate awareness and education about the characteristics of these products and the possibility of using renewable energy as a deliberate consumer choice.	Barrier already removed in target sectors. Egypt-PV project carried out a long series of media events, workshops and conferences over the last two-years. To make sure on the Awareness and Perception barriers, the Project should carry out a survey but the Evaluator does make such a recommendation because of the PV market growth rate in Egypt is quite significant: as per the Public utility company, last year about 22MW grid-connected PV were installed and this year it reaches 50MW.
• Lack of adequate quality control: Equipment suppliers import products of various quality levels. Since no systematic quality control mechanism yet exists, all kind of products and systems may be brought into the market with an objective of making short-term profits without considering market sustainability. As such, consumers face a high risk of acquiring systems that do not meet the expected performance. Energy standards for different type of products have been adopted, but the controls on domestic production and imports are not yet adequately organised.	To be removed: under Outcome 3 (look at Technical barriers removal above). It is well known that in the initial years of operation, PV panels typically undergo short-term degradation ranging from less than 1% to 3%. After that, the performance declines by an average of 0.8% to 0.9% each year to reach about 80% performance after 20 years. There is still a risk of PV panel degradation could be higher than expected. With the aim of mitigating that risk, the Evaluator recommends the rollout of the Renewable Energy Management Information Systems to monitor the performance in real-time over the upcoming 20 years.

4.3.3 Financial Mechanism for PV development

With the aim of providing a financial support to sector-based target beneficiaries, the Egypt-PV projects proceed as follows:

- Egypt-PV has signed a protocol with a major commercial bank of Egypt. The Bank Misr agreed to give support for ‘’solar loans '' in line with the framework of the Central Bank of Egypt (CBE) initiative to support small-medium sized enterprises (SMEs). The CBE initiative aims at fighting unemployment, increasing the gross domestic product (GDP), and achieving sustainable development.
- Bank Misr provides distinct financing schemes ranging from one million Egyptian pounds up to 20 million Egyptian pounds at a special rate of 5% to match SMEs aspirations. The new programs are offered through specialized units located across the bank's extensive network of branches.
- The Misr Bank’s sector-based financial support takes into consideration social and economic impact and investment attractiveness.

At the midterm stage the Evaluator noted that the Grant Financial Mechanism implemented through the budget line 72600 (2.3 mil USD) has been the key and attractive financial mechanism. The grant provided to sector-based beneficiaries was conditional to a series of criteria. Grants were provided as follows:

- Tourism-Industrial and commercial sectors:
  In 2018: 250$ per kW with a maximum of 150kW or a grant ceiling of 37,500 $. It is more or less corresponding to 25% of per unit kW installed cost.
  Residential sector:
- In 2018: 250$ per kW with a maximum of 10kW and a grant ceiling of 2,500 $ corresponding to about +/- 25% based of per unit kW cost.

In 2019 the grant scheme has been revised as follows:

- 250$ per kW with a maximum of 150kW and a grant ceiling of 37,500 $ or about +/- 25% of per unit (kW) cost in the tourism sector.
- 200$ per kW with a maximum of 150kW and a grant ceiling of 30,000 $ or about +/- 20% kW of the per unit (kW) cost in the Commercial sector.
- 200$ per kW with a maximum of 150kW and a grant ceiling of 20,000 $ or about +/- 15% per unit (KW) cost in the industrial sector.
- 200$ per kW with a maximum of 10kW and a grant ceiling of 2,000 $ or about +/- 20% of the per unit cost in the residential sector.

In regard to public buildings the ceiling is 50% or a ceiling of 50,000$.

4.4. Project Implementation and Adaptive Management

GEF projects tend to be overdesigned at certain times, due to an inability to adapt to a new situation or context within the target country, sometimes the Project design needs minor improvements to be viable in terms of the approved objectives. Adaptive Management softens the common criticism to reflect reality; Project Documents are too stringent for such cases. On the other hand, it is important to be aware of the changes allowed and levels of authority required for approval.

The evaluator does not consider the delay for launching the Egypt-PV project as an exercise of Adaptive Management. The Project did its best to make up for lost time during the Project start-up time, which was expected in March 2015.

The Project Manager and the Project Board made the decision to put the emphasis on the implementation of an impressive series of Pilot Projects and the provision of support to equipment suppliers. As a result, the issue related to the rollout of a sustainable financial support or mechanism (Outcome 4), the PV panels quality and performance follow-up or monitoring has not yet been implemented because of the highest scale of priority has been granted to Outcome 1. The evaluation considers such a decision as a relevant Adaptive Management approach. On the other hand, the work in regard to Renewable Energy Management Systems and the Financial Mechanism remains to be achieved. That is mainly the reason why the Evaluator recommends a duration extension.

Another Adaptive Management improvement of the Project framework is the set-up on the Advisory Board, sort of high-level official coming from different horizons, but all involved in the energy sector. Such an Advisory Board was not planned for within the Project Document. Again, thanks of the Adaptive Management, the Project Manager took a critical step in setting up the Advisory Board, because of the

experience and credibility of those members, the Project received access to a variety of vital institutional organisations in Egypt for support.

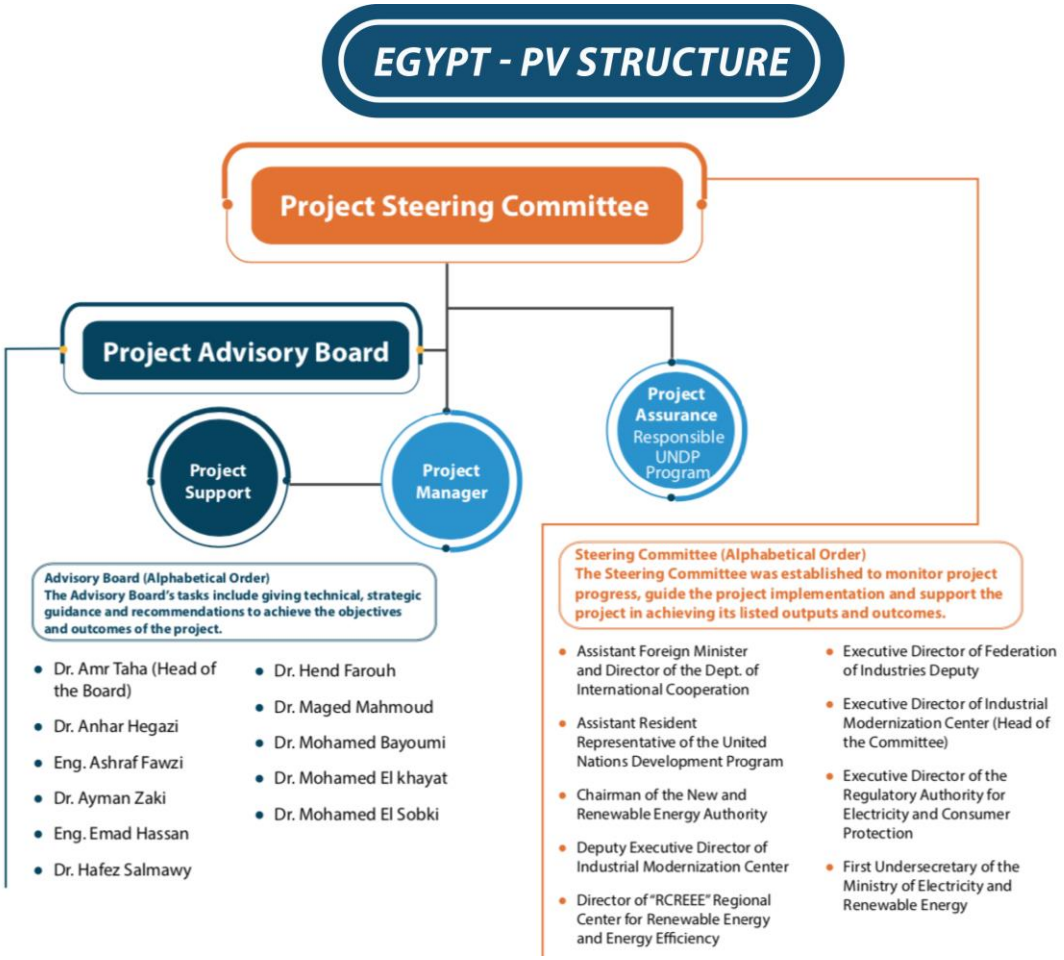
The Adaptive Management approach is rated Satisfactory.

4.4.1 Management Arrangements

The Project is being implemented under the UNDP National Implementation Modality. The Industrial Modernization Centre of the Ministry of Industry and Trade (IMCI) is the implementing partner. The UNDP CO is fully committed for supporting the PMU in the most efficient and responding way.

The Advisory Board involved key institutional officials and stakeholders. List of AB is attached at Appendix 5. The AB meets on a monthly basis.

The Project Management Board (18 members) met for the first time in September 2017. Meetings are held almost each month.



The Project Management Unit (PMU) involved 7 full-time team members, in addition to the Project Manager. The whole team was on duty in January 2018.

4.4.2 Work planning

Work planning is being carried out in a manner, which is consistent with the ProDoc and GEF-UNDP guidelines. In particular, it is conducted on the basis of annual work plans (AWPs), which are reviewed and approved by the Project Board. The detailed Annual Work Plan is formulated in the form of the Project Implementation Plan that incorporates key features.

The AWP 2018 provides details on:

- Expected Results: Components 1 to 4 detailed Activities and Results.
- Components-based Yearly Budget
- Planned Results in cross-cutting issues
- Planned Annual M&E Plan
- Update on Risks Management
- Communication Plan
- IATI and quality assurance
- Lesson Learning
- Sustainability & Scaling up

4.4.3 Finance and co-finance

The table below highlights a worrying situation in regard to GEF financing disbursement. At midterm the total GEF funding disbursement is achieved at only 22%. The Egypt-PV project activity planning must de slightly accelerated during the upcoming two years. The design and pilot implementation of the REMIS centre, as well than the review and evaluation of available financial support mechanism are key activities to speed up. Another series of PV Pilot Projects must be implemented because pilot projects are the best means to demonstrate the efficiency, reliability

(quality improvement and monitoring) and national usefulness of solar energy to targets sectors and as a result to increase the nationwide awareness and secure the sustainability of project outcomes.

On the other hand, the whole co-financing picture is attractive. At midterm, the Egypt-PV Project reached 68% of the expected target.

At the end of the day, the Evaluator is confident that the GEF budget provision will be used in the most appropriate manner over the upcoming 2 or 3 years. The low level of disbursement at midterm is a signal for speeding up, but not a bad indicator of the Project performance because of the whole PMU team has been involved only since January 2018.

The Co-financing is rated Satisfactory.

Table 6 Financing and Co-Financing at midterm Table of Co-financing

	Commitment USD	At Midterm August 2019 USD	Comments (if needs be)
GEF	3,536,364	1,414,461	22%
UNDP(parallel)	400,000	400,000	100%
Regular UNDP(Track cash)	50,000	12,397	24%
Egypt ERA(Parallel)	15,000,000	13,014,370	87%
MoFE(Parallel)	10,000000	5,800,000	58%
EEU(Parallel)	4,110,000	2,000,000	47%
IMC (in-kind)	500,000	22,510	4.5%
RCREEE (in-kind)	200,000	200,000	100%
TOTAL	33,796,364	22,863,738	68%

4.4.4 Project monitoring and evaluation systems

The PMU and the UNDP CO managed to issue the AWPs by the end of each year, and the PIRs in line with the Project Document and GEF requirements. The Evaluator points out that the PIR 2019 has been issues prior the Evaluator site presence. This is already a good indicator of performance in regard to project monitoring. The PMU reports its progress to Project Management Board on a monthly basis. The Project monitoring is also reliant on the technical and institutional inputs of the Project Advisory Board.

The UNDP CO and the PM made available on request data on results in terms of energy savings and GHG emission reductions, as well as all other quantitative results. It is also an indicator of reliable project monitoring. For the purpose of the midterm evaluation, the Egypt-PV project drafted a comprehensive outputs-based report on results and achievements updated at midterm.

The Evaluator did not notice any lack or misinterpretation of information in regard to the actual impact and progress of the whole project.

Finally, and not the least, the Egypt-PV Project carried out the MTR as scheduled in July 2019. The International independent Evaluator conducted a two-week MTR mission in July 2019. The UNDP CO as well than the PMU provided a constant and transparent support to the MTR Evaluator.

The M&E task is rated Highly Satisfactory.

4.4.5 Stakeholders' engagement

The Egypt-PV project has been launched with a significant delay. The Project would not been in a position to undertake an endeavour of this magnitude and make up for lost time without the collective and cooperative efforts of all parties involved. The number (18) of reputable participants on the Project Management Board as well as the Advisory Board, confirm the effective engagement of stakeholders and decision-makers. This is a significant indicator of key stakeholder interest and engagement.

The Stakeholders Engagement is rated Highly Satisfactory.

4.4.6 Reporting

Such as it is for other GEF-UNDP projects, the Project Manager is preparing annual progress reports as well as PIRs (early July). PIRs follow the standard UNDP/GEF format and provide general ratings. The Implementing Partner, the Project Manager, UNDP Country Office Programme Officer, Project Implementation Partner and the Regional Technical Advisor made comments on implementation progress. The reports provide information on planned and implemented activities. However, the PIR template deals with progress and issue based outcomes only.

Because the Project manager is aware of such a lack of detailed information in the Outcome-based PIR, the Egypt-PV project team prepared a comprehensive achievement report as of July 2019. Such a detailed Outputs-based review is relevant for better understanding of the Project Implemented Environment.

The reporting process is rated Highly Satisfactory.

4.5. Sustainability

In this section of the MTR report, the Evaluator is required to deal with four priority topics as follows:

- Financial risks to sustainability
- Socio-economic risks to sustainability
- Institutional framework and governance risks to sustainability
- Environmental risks to sustainability

In accordance with the GEF MTR guidelines, the rating scale of Sustainability components is as follows: 4 (likely), 3 (moderately likely), 2 (moderately unlikely) and 1 (unlikely).

Based on the desk review of various project documents (Appendix 6), meetings with stakeholders and the Egypt-PV project team and the UNDP CO, the Evaluator is required to answer the following question:

Sustainability: To what extent do the financial constraints, institutional frameworks, governance, socio-economic development, and environmental risks impede the sustainability of various results achieved by the Egypt-PV project?

4.5.1. Financial risks to sustainability

Question: What is the likely availability of financial and economic resources being available once the GEF assistance ends considering that potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that could be adequate financial resources for sustaining project's outcomes? On the other hand, if the cost of capital exceeds the limits and increases exponentially in upcoming years, the situation could be perilous with regards to investing in solar energy.

Answer: Likely, because the Project made the demonstration of the cost-effectiveness of PV investment. The investment cost per kW installed is decreasing over the years, the quality of PV panels rises because of frequent technology breakthroughs. Finally, and more importantly, because the public utility has increased electricity tariff, and the rollout of net-metering scheme to provide adequate financial incentives to the private sector to invest in small-decentralized PV power generation.

Question: What is the likelihood of the financial support mechanism established by the Project being sustainable (meaning that the FSM will continue to operate and function beyond the lifetime of the Project)?

Answer: N.A. The Egypt-PV project did not design or implement a real financial support mechanism until now. The Project has signed a protocol with a major commercial bank of Egypt for providing ''solar loan'' at a discount rate (5%). This is a good starting point but not enough to be sustainable. The Evaluator makes a recommendation in this regard. A clear answer to that question would be available at the end of the Project timeframe. At this point in time, the Evaluator notes this point as Not Applicable.

4.5.2. Socio-economic to sustainability

Question: Are there any social or political risks that may jeopardize the sustainability of project outcomes? What is the risk that the level of stakeholder ownership, including ownership by Public Utility and Government, and other Key Stakeholders will be insufficient to allow for the Project outcomes/benefits to be sustained?

Answer: Moderately Unlikely. Because the Project Beneficiaries are public buildings, industrial facilities, commercial buildings, and the huge tourism sector, the geo-political and/or social risk is low but still existing (cf 2011-2014).

Question: Do the various Key Stakeholders see that it is in their interest that the Project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long-term objectives of the Project? Are the lessons learned being documented by the Project Team on a continuous & consistent basis and being shared/ transferred to appropriate parties who could benefit from the Project and potentially replicate and/or scale it in the future?

Answer: Likely: interest will continue and should even increase as the electricity tariffs are increasing. The probability of a drop in tariffs is non-existent. The regulation related to Net-Metering is the key secondary regulation for securing the attractiveness and interest for solar energy in Egypt.

4.5.3. Institutional framework and governance risks to sustainability

Question: Do the legal frameworks; policies; governance structures and processes pose risks that may jeopardize the sustenance of project benefits? While assessing this parameter, also consider if the required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Answer: Unlikely: Again, if there isn't any similar (2011-2014) governance crisis in Egypt, it is quite likely that the sustenance of the current benefits and the possibility of increasing these benefits can be achieved. In the GEF/UNDP's views, the benefit is related to GHG emission reduction. On the national side the benefits are more related to economic development and the enhancement of the energy supply security. Advantages and benefits are likely sustainable on both sides.

Question: To what extent has the Project managed to improve or contribute to legal frameworks related toward the sustainable PV power stations development in Egypt?

Answer: Likely: As mentioned in a previous section (Table 7 Outcomes/Outputs-based MTR detailed Evaluation under Outcome 2), since August 2017 the regulatory agency has switched from the Feed-in Tariff for smaller capacities to net metering (20 MW). Egypt-PV is coordinating with the regulatory agency to issue a guideline for the net metering procedures and its applications. A policy paper has been developed and presented to the Advisory Board on the Project to be presented to the Ministry of Electricity next month. The decisive factor for securing and broadening investment in PV stations (<20 MW) is the Electricity Law enforced in August 2018. It is the general legal framework for the electricity sector for decades to come. The law provides for open market for electricity generation and distribution. Because of the open market, the extension and replication of private PV Stations project is now possible and promoted.

4.5.4. Environmental risks to sustainability

Question: Are there any environmental risks that may jeopardize the sustenance of the Project outcomes?

Answer: Moderately Unlikely: As a rule, PV stations are environment-friendly projects. But not all levels of risk can be negated especially in regard disposal of PV cells and panels after their life cycle. Environmental issues related to Solar Panels exist. They cannot be stored in landfills without protections against contamination. They contain toxic metals like lead, which can damage the nervous system, as well as chromium and cadmium, known carcinogens that can leak out of existing e-waste dumps into drinking water supplies. The Egypt-PV project will deal with that risk under Outcome 2 (Output 2.7: Assessments and Recommendations for Waste Management and Recycling Options for the PV systems). At midterm, activities under Output 2.7 are not yet launched.

5. Recommendations and Conclusion

5.1 Recommendations

Based on the one-week mission, documents available, and meetings with stakeholders and the Evaluation Team Leader's experience in project evaluation and RE development, the following recommendations can be considered.

NOTE: The Project deals with 4 relevant components, which have been Outcome-based evaluated as HS and some S in term of Effectiveness. Based on lessons learned and the moving needs for PV, the Evaluator recommended a revisit of the implementation strategy, especially through better integration of Outcomes 1,3 and 4.

Recommendation 1: Pilot Projects sector-based strategy review

Outcome 1 is the most visible project components, a sort of extended showcase for scaling up the grid-connected small PV stations development in Egypt. The work done to date has been exceptional and is highly commended. The industrial sector response has reached the end of the Project timeframe target. Two sectors did not perform as expected (Residential and Commercial). In the Main Finding section 4.1, the Evaluator mentioned that at midterm there were two options to be considered: 1) improve the TA efforts and financing support (grant) with the aim of reaching the stated targets where the Project slightly underperformed; or 2) reset the target to support the most responsive sectors with the aim of securing (and increasing) achievements of energy savings and the target of 4MW (preferably overpass the target). The Evaluator recommends a combination of both options.

The average project-based grant is more or less 30% of the PV project cost. If the residential sector did not respond as much as other sectors, it is perhaps because of residential building owners are not willing to invest in a grid-connected PV-Station. Faced with such a situation, the Project has implemented PV stations in the residential sector though community-based or residential compound-based projects (only 2). Although such a residential market approach was relevant, the result was quite minimal. The compound-based approach is both effort and time consuming for the PV Project Team members and PV Contractors or Suppliers. The Evaluator recommends simply dropping the residential sector and transferring the budget provision to another sector, such as the Tourism sector, which is a very important economic sector in Egypt.

The industrial sector has shown the best performance to date. At midterm the Project reached the expected target in the industrial sector. For that reason, the Evaluator does not recommend increasing effort or the budget in the industrial sector, and maybe lessening the grant contribution (%) to PV project costs in that sector.

The public building sector is a difficult market because the governmental bodies facing major budget constraints, which is a significant barrier to PV Station development in that sector. Because of the educational and awareness impacts, the Project could improve its efforts toward the PV development in the school sector. The grant contribution could be more attractive in that sector.

The evaluator doesn't understand why the commercial sector was unresponsive, despite the successful PV Project implementation in Carrefour Shopping Mall. The Project must point out the issue, and take action in terms of market development for improving this sector's performance.

Recommendation 2: Review study of financial facilities

The whole project integrated strategy should result in a better interaction between all project components, especially 1,3 and 4. Under Outcome 4 the Project should carry out a survey and review study of financial facilities already available in Egypt. All international donors are present on the Egyptian market. Some members of the Advisory Committee mention that many financing supports are already in place. The Project should identify the most convenient financing facilities and revisit the way they could get involved for supporting a few pilot projects as co-financer. Such an approach should aim at creating the enabling conditions to finance PV projects after the completion of the Egypt-PV project . The first step is the review study that is to be carried out as soon as possible.

Recommendation 3: Renewable Energy Management Information System (REMIS)

The second integrating concern is related to Outcome 3 (Strengthened domestic supply chain and quality control system). The Renewable Energy Management Information System is a basic tool for scaling up the PV station development on a long run. In addition, the REMIS allows a reliable follow-up of the equipment performance over the years. The first step is to proceed with a feasibility study with the aim of implementing an integrated REMIS of Pilot PV Stations. The data gathering (distance reading) and analysis centre should be hosted by the NREA. The Project should provision a significant percentage of the remaining budget under Component 4 to cover the cost of the feasibility study, and the installation of the small-scale Pilot REMIS connected to all PV Stations installed by the Project. If the Project faces a lack of budget for implementing the pilot small-scale REMIS, the detailed feasibility study should be attractive to some other international donors pointed out under Outcome 4 as mentioned above.

Recommendation 4: Information Sharing and Dissemination

Project Document (3.2 Total Budget and Workplan) did not encompass the needed budget provision for the Project Closure Workshop. If the Project performs as expected, the UNDP CO should organize an International (regional) Closing Workshop for sharing its results, lessons learned and its experience in the field of small-scale grid-connected PV stations installation as well as the sustainable dissemination and replication of PV projects. The Evaluator recommends transferring the required budget provision from another budget line to organize the international/regional Egypt-PV project closing Conference.

The Evaluator looked at the remaining budget provisions. At midterm, the Project disbursed only 22% of the total budget provision. In accordance with the Adaptive Management approach promoted by the UNDP, the Project could surely find out the needed resources for the closing conference and some other workshops.

Recommendation 5: Project Timeframe Extension

UNDP CO could consider applying to UNDP GEF management in New York for a one-off 18 months extension. Rather than closing on March 2020 the Project should end in September 2021. Such an extension is needed with the aim of: (i) implementing the updated and integrated implementation strategy; (ii) to set up the Renewable Energy Management Systems (REMIS); and maybe more importantly (iii) proceeding with the financial facilities Review and Analysis Study for involving the international donors community in the long-run PV development strategy through a sustainable financial mechanism. In addition, the GEF Secretariat should take into consideration the uncontrollable delay occurred in 2015 and 2016 because of the political instability in Cairo at that time.

5.2 Conclusion

Based on the results and the excellent rating at midterm, and despite delays for starting up the Project, the Evaluator is confident the objectives/Outcomes are expected to achieve or exceed the end-of-project targets, without major shortcomings and the entirety of the results can be presented as “good practice”. The progress at midterm is likely to secure the rest of the Project, although a huge effort has to be rolled out during the upcoming two years. The small number of recommendations is an indicator of excellent project performance. If the Project takes into consideration recommendations it should likely exceed its targets in many ways. The Project duration extension is important especially for developing the long-term Financial Support Mechanism and the Renewable Energy Management Systems which are both required to secure the sustainability of the promising PV development in Egypt.

Appendix

Appendix 1: MTR ToR (excluding ToR annexes)

UNDP-GEF Midterm Review
Terms of Reference
Grid-Connected Small-Scale Photovoltaic Systems

1. INTRODUCTION

This is the Terms of Reference (ToR) for the UNDP-GEF Midterm Review (MTR) of the full-sized project titled: **Grid-Connected Small-Scale Photovoltaic Systems** (PIMS#**4998**) implemented through the Industrial Modernization Centre of the Ministry of Trade and Industry, which is to be undertaken in 2019. The Project started on the 6 December 2016 and is in its third year of implementation. In line with the UNDP-GEF Guidance on MTRs, this MTR process was initiated before the submission of the second Project Implementation Report (PIR). This ToR sets out the expectations for this MTR. The MTR process must follow the guidance outlined in the document Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects(http://web.undp.org/evaluation/documents/guidance/GEF/mid-term/Guidance_Midterm%20Review%20_EN_2014.pdf

2. PROJECT BACKGROUND INFORMATION

The Project was designed to remove the barriers to increased power generation by small, decentralized, grid-connected PV systems implemented by households and small- and medium-size enterprises. The Project strategy builds on the planned Government initiatives to develop a market for small, decentralized renewable energy power generation by ensuring adequate returns on targeted private sector investments through tradable Guarantee of Origin (GoO) certificates in combination with a net-metering scheme for the highest tariff category residential and commercial customers. These mechanisms will be complemented by the initial market support to be provided by the UNDP-implemented, GEF-financed project together with its financing partners.

The Project will catalyze the development of decentralized, grid-connected small-scale renewable energy (RE) power generation market in Egypt and the solar PV in particular. The target is to facilitate the installation of at least 4 MWp of new decentralized private PV capacity during the lifetime of the Project, resulting in direct GHG reduction benefits of 66 kilotons of CO2eq. Complementary indirect mitigation benefits are expected from the sustained market growth of the PV market after the Project with estimated GHG reduction of about 0.6-0.7 million tons of CO2eq.

3. OBJECTIVES OF THE MTR

The MTR will assess progress towards the achievement of the Project objectives and outcomes as specified in the Project Document and assess early signs of project success or failure with the goal of identifying the necessary changes to be made in order to set the Project on-track to achieve its intended results. The MTR will also review the Project's strategy, its risks to sustainability.

4. MTR APPROACH & METHODOLOGY

The MTR must provide evidence-based information that is credible, reliable and useful. The MTR Consultant will review all relevant sources of information including documents prepared during the preparation phase (i.e. PIF, UNDP Initiation Plan, UNDP Environmental & Social Safeguard Policy, the Project Document, project reports including Annual Project Review/PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the Consultant considers useful for this evidence-based review). The MTR Consultant will review the

baseline GEF focal area Tracking Tool submitted to the GEF at CEO endorsement, and the midterm GEF focal area Tracking Tool that must be completed before the MTR field mission begins.
The MTR consultant is expected to follow a collaborative and participatory approach[9] ensuring close engagement with the Project Consultant, government counterparts (the GEF Operational Focal Point), the UNDP Country Office(s), UNDP-GEF Regional Technical Advisers, and other Key Stakeholders.
Engagement of stakeholders is vital to a successful MTR.[10] Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to;
Egypt Industrial Modernization Centre (IMC), The New and Renewable Energy Authority (NREA), The Ministry of Electricity and Energy (MoEE), Egyptian Environmental Affairs Agency, as well as government and private sector representatives for housing, Industry and tourism sectors.
Additionally, the MTR Consultant is expected to conduct field missions within Cairo and surrounding satellite cities

The final MTR report should describe the full MTR approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the review.

5. DETAILED SCOPE OF THE MTR

The MTR consultant will assess the following four categories of project progress. See the *Guidance for Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for extended descriptions.

i. Project Strategy

Project design:

- Review the problem addressed by the Project and the underlying assumptions. Review the effect of any incorrect assumptions or changes to the context to achieving the Project results as outlined in the Project Document.
- Review the relevance of the Project strategy and assess whether it provides the most effective route towards expected/intended results. Were lessons from other relevant projects properly incorporated into the Project design?
- Review how the Project addresses country priorities. Review country ownership. Was the Project concept in line with the national sector development priorities and plans of the country (or of participating countries in the case of multi-country projects)?
- Review decision-making processes: were perspectives of those who would be affected by project decisions, those who could affect the outcomes, and those who could contribute information or other resources to the process, taken into account during project design processes?
- Review the extent to which relevant gender issues were raised in the Project design. See Annex 9 of *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for further guidelines.
- If there are major areas of concern, recommend areas for improvement.

Results Framework/Logframe:

- Undertake a critical analysis of the Project's logframe indicators and targets, assess how "SMART" the midterm and end-of-project targets are (Specific, Measurable, Attainable, Relevant,

[9] For ideas on innovative and participatory Monitoring and Evaluation strategies and techniques, see UNDP Discussion Paper: Innovations in Monitoring & Evaluating Results, 05 Nov 2013.
[10] For more stakeholder engagement in the M&E process, see the UNDP Handbook on Planning, Monitoring and Evaluating for Development Results, Chapter 3, pg. 93.

Time-bound), and suggest specific amendments/revisions to the targets and indicators as necessary.
- Are the Project's objectives and outcomes or components clear, practical, and feasible within its time frame?
- Examine if progress so far has led to or could in the future catalyse beneficial development effects (i.e. income generation, gender equality and women's empowerment, improved governance etc...) that should be included in the Project results framework and monitored on an annual basis.
- Ensure broader development and gender aspects of the Project are being monitored effectively. Develop and recommend SMART 'development' indicators, including sex-disaggregated indicators and indicators that capture development benefits.

ii. Progress Towards Results

Progress Towards Outcomes Analysis:

- Review the logframe indicators against progress made towards the end-of-project targets using the Progress Towards Results Matrix and following the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects*; colour code progress in a "traffic light system" based on the level of progress achieved; assign a rating on progress for each outcome; make recommendations from the areas marked as "Not on target to be achieved" (red).

Table. Progress Towards Results Matrix (Achievement of outcomes against End-of-project Targets)

Project Strategy		Indicator[11]	Baseline Level[12]	Level in 1st PIR (self-reported)	Midterm Target[13]	End-of-project Target	Midterm Level & Assessment[14]	Achievement Rating[15]	Justifica for Rati
Objective:		Indicator (if applicable):							
Outcome 1:		Indicator 1:							
		Indicator 2:							
Outcome 2:		Indicator 3:							
		Indicator 4:							
		Etc.							
Etc.									

Indicator Assessment Key

Green= Achieved	Yellow= On target to be achieved	Red= Not on target to be achieved

In addition to the progress towards outcomes analysis:
- Compare and analyse the GEF Tracking Tool at the Baseline with the one completed right before the Midterm Review.
- Identify remaining barriers to achieving the Project objective in the remainder of the Project.
- By reviewing the aspects of the Project that have already been successful, identify ways in which the Project can further expand these benefits.

[11] Populate with data from the Logframe and scorecards
[12] Populate with data from the Project Document
[13] If available
[14] Colour code this column only
[15] Use the 6 point Progress Towards Results Rating Scale: HS, S, MS, MU, U, HU

iii. Project Implementation and Adaptive Management

Management Arrangements:

- Review overall effectiveness of project management as outlined in the Project Document. Have changes been made and are they effective? Are responsibilities and reporting lines clear? Is decision-making transparent and undertaken in a timely manner? Recommend areas for improvement.
- Review the quality of execution of the Executing Agency/Implementing Partner(s) and recommend areas for improvement.
- Review the quality of support provided by the GEF Partner Agency (UNDP) and recommend areas for improvement.

Work Planning:

- Review any delays in project start-up and implementation, identify the causes and examine if they have been resolved.
- Are work-planning processes results-based? If not, suggest ways to re-orientate work planning to focus on results?
- Examine the use of the Project's results framework/ logframe as a management tool and review any changes made to it since project start.

Finance and co-finance:

- Consider the financial management of the Project, with specific reference to the cost-effectiveness of interventions.
- Review the changes to fund allocations as a result of budget revisions and assess the appropriateness and relevance of such revisions.
- Does the Project have the appropriate financial controls, including reporting and planning, that allow management to make informed decisions regarding the budget and allow for timely flow of funds?
- Informed by the co-financing monitoring table to be filled out, provide commentary on co-financing: is co-financing being used strategically to help the objectives of the Project? Is the Project Team meeting with all co-financing partners regularly in order to align financing priorities and annual work plans?

Project-level Monitoring and Evaluation Systems:

- Review the monitoring tools currently being used: Do they provide the necessary information? Do they involve key partners? Are they aligned or mainstreamed with national systems? Do they use existing information? Are they efficient? Are they cost-effective? Are additional tools required? How could they be made more participatory and inclusive?
- Examine the financial management of the Project monitoring and evaluation budget. Are sufficient resources being allocated to monitoring and evaluation? Are these resources being allocated effectively?

Stakeholder Engagement:

- Project management: Has the Project developed and leveraged the necessary and appropriate partnerships with direct and tangential stakeholders?
- Participation and country-driven processes: Do local and national government stakeholders support the objectives of the Project? Do they continue to have an active role in project decision-making that supports efficient and effective project implementation?
- Participation and public awareness: To what extent has stakeholder involvement and public awareness contributed to the progress towards achievement of project objectives?

Reporting:

- Assess how adaptive management changes have been reported by the Project management and shared with the Project Board.
- Assess how well the Project Team and partners undertake and fulfil GEF reporting requirements (i.e. how have they addressed poorly-rated PIRs, if applicable?)
- Assess how lessons derived from the adaptive management process have been documented, shared with key partners and internalized by partners.

Communications:

- Review internal project communication with stakeholders: Is communication regular and effective? Are there Key Stakeholders left out of communication? Are there feedback mechanisms when communication is received? Does this communication with stakeholders contribute to their awareness of project outcomes and activities and investment in the sustainability of project results?
- Review external project communication: Are proper means of communication established or being established to express the Project progress and intended impact to the public (is there a web presence, for example? Or did the Project implement appropriate outreach and public awareness campaigns?)
- For reporting purposes, write one half-page paragraph that summarizes the Project's progress towards results in terms of contribution to sustainable development benefits, as well as global environmental benefits.

iv. Sustainability

- Validate whether the risks identified in the Project Document, Annual Project Review/PIRs and the ATLAS Risk Management Module are the most important and whether the risk ratings applied are appropriate and up to date. If not, explain why.
- In addition, assess the following risks to sustainability:

Financial risks to sustainability:

- What is the likelihood of financial and economic resources not being available once the GEF assistance ends (consider potential resources can be from multiple sources, such as the public and private sectors, income generating activities, and other funding that will be adequate financial resources for sustaining project's outcomes)?

Socio-economic risks to sustainability:

- Are there any social or political risks that may jeopardize sustainability of project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other Key Stakeholders) will be insufficient to allow for the Project outcomes/benefits to be sustained? Do the various Key Stakeholders see that it is in their interest that the Project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long-term objectives of the Project? Are lessons learned being documented by the Project Team on a continual basis and shared/ transferred to appropriate parties who could learn from the Project and potentially replicate and/or scale it in the future?

Institutional Framework and Governance risks to sustainability:

- Do the legal frameworks, policies, governance structures and processes pose risks that may jeopardize sustenance of project benefits? While assessing this parameter, also consider if the

required systems/ mechanisms for accountability, transparency, and technical knowledge transfer are in place.

Environmental risks to sustainability:

- Are there any environmental risks that may jeopardize sustenance of project outcomes?

Conclusions & Recommendations

The MTR Consutlant will include a section of the report setting out the MTR's evidence-based conclusions, in light of the findings.[16]

Recommendations should be succinct suggestions for critical intervention that are specific, measurable, achievable, and relevant. A recommendation table should be put in the report's executive summary. See the *Guidance For Conducting Midterm Reviews of UNDP-Supported, GEF-Financed Projects* for guidance on a recommendation table.

The MTR Consultant should make no more than 15 recommendations total.

Ratings

The MTR Consultant will include its ratings of the Project's results and brief descriptions of the associated achievements in a *MTR Ratings & Achievement Summary Table* in the Executive Summary of the MTR report. See Annex E for ratings scales. No rating on Project Strategy and no overall project rating is required.

Table. MTR Ratings & Achievement Summary Table

Measure	MTR Rating	Achievement Description
Project Strategy	N/A	
Progress Towards Results	Objective Achievement Rating: (rate 6 pt. scale)	
	Outcome 1 Achievement Rating: (rate 6 pt. scale)	
	Outcome 2 Achievement Rating: (rate 6 pt. scale)	
	Outcome 3 Achievement Rating: (rate 6 pt. scale)	
	Etc.	
Project Implementation & Adaptive Management	(rate 6 pt. scale)	
Sustainability	(rate 4 pt. scale)	

6. TIMEFRAME

The total duration of the MTR will be approximately **22 days** over a time period of **12 weeks** starting 1 June 2019 and shall not exceed five months from when the consultant(s) are hired. The tentative MTR timeframe is as follows:

[16] Alternatively, MTR conclusions may be integrated into the body of the report.

ACTIVITY	NUMBER OF WORKING DAYS	COMPLETION DATE
Select MTR Consultant		1 June 2019
Prep the MTR Consultant (handover of Project Documents)		15 June 2019
Document review and preparing MTR Inception Report	*4 days*	21 June 2019
Finalization and Validation of MTR Inception Report- latest start of MTR mission		7 July 2019
MTR mission: stakeholder meetings, interviews, field visits	*4.5 days*	17 July 2019
Mission wrap-up meeting & presentation of initial findings- earliest end of MTR mission	*0.5 day*	17 July 2019
Preparing draft report	*10 days*	10 August 2019
Incorporating audit trail from feedback on draft report/Finalization of MTR report)	*3 days*	30 August 2019
Preparation & Issue of Management Response		15 September 2019
Expected date of full MTR completion		30 September 2019

Options for site visits should be provided in the Inception Report.

7. MIDTERM REVIEW DELIVERABLES

#	Deliverable	Description	Timing	Responsibilities
1	**MTR Inception Report**	MTR Consultant clarifies objectives and methods of Midterm Review	No later than 2 weeks before the MTR mission: 21 June 2019	MTR Consultant submits to the Commissioning Unit and project management
2	**Presentation**	Initial Findings	End of MTR mission: 17 July 2019	MTR Consultant presents to project management and the Commissioning Unit
3	**Draft Final Report**	Full report (using guidelines on content outlined in Annex B) with annexes	Within 3 weeks of the MTR mission 10 August 2019	Sent to the Commissioning Unit, reviewed by RTA, Project Coordinating Unit, GEF OFP
4	**Final Report***	Revised report with audit trail detailing how all received comments have (and have not) been addressed in the final MTR report	Within 1 week of receiving UNDP comments on draft 30 August 2019	Sent to the Commissioning Unit

*The final MTR report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.

8. MTR ARRANGEMENTS

The principal responsibility for managing this MTR resides with the Commissioning Unit. The Commissioning Unit for this project's MTR is UNDP Egypt.

The commissioning unit will contract the consultants and ensure the timely provision of per diems and travel arrangements in Egypt for the MTR Consultant. The Project Team will be responsible for liaising with the MTR Consultant to provide all relevant documents, set up stakeholder interviews, and arrange field visits.

9. TEAM COMPOSITION

The independent consultant will conduct the MTR. The consultant cannot have participated in the Project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project's related activities.

The selection of consultant will be aimed at maximizing the overall qualities in the following areas:

- A Master's degree in Environmental Economics and Management/Energy/Engineering, or other closely related field. **(25%)**
- Work experience in in the area of renewable energy and in particular photovoltaic systems for at least 10 years; (**25%**)
- Recent experience with result-based management evaluation methodologies; **(20%)**
- Experience working with the GEF or GEF-evaluations**; (10%)**
- Experience UNFCCC and GHG emissions calculations; **(5%)**
- Competence in adaptive management, as applied to GEF climate change projects **(5%)**
- Experience working in *Arab States*; **(5%)**
- Demonstrated understanding of issues related to gender and promoting Investment in Renewable Energy Technologies; experience in gender sensitive evaluation and analysis. **(5%)**
- Good command of English language is a must

10. PAYMENT MODALITIES AND SPECIFICATIONS

- 10% of payment upon approval of the final MTR Inception Report
- 40% upon submission of the draft MTR report
- 50% upon finalization of the MTR report

11. APPLICATION PROCESS[17]

Recommended Presentation of Proposal:

a) **Letter of Confirmation of Interest and Availability** using the template[18] provided by UNDP;
b) **Personal History Form** (P11 form[19]);
c) **Brief description of approach to work/technical proposal** of why the individual considers him/herself as the most suitable for the assignment, and a proposed methodology on how they will approach and complete the assignment; (max 1 page)

[17] Engagement of the consultants should be done in line with guidelines for hiring consultants in the POPP: https://info.undp.org/global/popp/Pages/default.aspx

[18] https://intranet.undp.org/unit/bom/pso/Support%20documents%20on%20IC%20Guidelines/Template%20for%20Confirmation%20of%20Interest%20and%20Submission%20of%20Financial%20Proposal.docx

[19] http://www.undp.org/content/dam/undp/library/corporate/Careers/P11_Personal_history_form.doc

d) **Financial Proposal** that indicates all-inclusive fixed total contract price and estimates for all other travel related costs (such as flight ticket, per diem, etc.), supported by a breakdown of costs, as per template attached to the Letter of Confirmation of Interest template. If an applicant is employed by an organization/company/institution, and he/she expects his/her employer to charge a management fee in the process of releasing him/her to UNDP under Reimbursable Loan Agreement (RLA), the applicant must indicate at this point, and ensure that all such costs are duly incorporated in the financial proposal submitted to UNDP.

Application deadline: 15 May 2019
All application materials should be submitted to:

Procurement Unit
Email: Procurementnotice.egypt@undp.org
Incomplete applications will be excluded from further consideration.

Criteria for Evaluation of Proposal:

Only those applications which are responsive and compliant will be evaluated. Offers will be evaluated according to the Combined Scoring method – where the educational background and experience on similar assignments will be weighted at 70% and the price proposal will weigh as 30% of the total scoring. The applicant receiving the Highest Combined Score that has also accepted UNDP's General Terms and Conditions will be awarded the contract.

Appendix 2: Table of Results: Outcomes/Outputs

Project Results Framework

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: The Government of Egypt, private sector and civil society have complied with Multilateral Environmental Agreements, adopted policies, and implemented operational measures towards a green and sustainable economy and society including, EE, RE, low carbon cleaner technologies, SWM, POPs, ODS, and Carbon Finance Mechanism.					
Country Programme Outcome Indicators: NA					
Primary applicable Key Environment and Sustainable Development Key Result Area (same as that on the cover page, circle one): 1. **Mainstreaming environment and energy** OR 2. Catalysing environmental finance OR 3. Promote climate change adaptation OR 4. Expanding access to environmental and energy services for the poor.					
Applicable GEF Focal Area Objective: GEF-5 FA Objective # 3 (CCM-3): "Promote Investment in Renewable Energy Technologies"					
	Indicator	**Baseline**	**Targets** **End of Project**	**Source of verification**	**Risks and Assumptions**
Project Objective[20] Reducing greenhouse gas emissions by the removal of barriers to widespread application of decentralised PV-based power generation.	Amount of reduced CO_2 emissions by the investments facilitated by the Project.	0	Direct: 66 kilotonnes of CO_{2eq} over the 20-year default lifetime of the investments made during project implementation. Indirect: At least 0.6 million tonnes of CO_{2eq} over the 20-year default lifetime of the investments made within 10 years after the Project end.	Project monitoring reports and final evaluation. As applicable, post-project market monitoring and evaluations.	Adoption of a supportive regulatory framework for the GoO and net-metering schemes and other related financial incentives in order to create a sufficiently attractive revenue stream for targeted PV investments and facilitate the required grid connections.
Outcome 1:[21] A total of 4 MW_p of small PV systems (of a few kW each) installed based on easily replicable and scalable system design.	Total capacity of installed rooftop PV systems by the private sector and electricity generated by them.	Negligible (significantly less than 100 kW_p per year)	At least 4 MW_p of installed rooftop PV capacity, producing 6,000 MWh of electricity per year. More than 1,000 households and SMEs together benefitting from PV-generated electricity.	Project market monitoring reports and final evaluation.	As above.
	Indicator	**Baseline**	**Targets** **End of Project**	**Source of verification**	**Risks and Assumptions**

[20] *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR*

[21] *All outcomes monitored annually in the APR/PIR. It is highly recommended not to have more than 4 outcomes.*

Outcome 2: A supportive policy, institutional and regulatory framework for providing a basis for sustainable growth of the small, decentralised RE (in particular PV) power generation market together with related market monitoring mechanisms.	Extent to which policies and regulations for decentralised RE and PV in particular are adopted and enforced.	Draft Electricity Law and draft implementation degrees for GoO and net-metering scheme prepared. Draft grid code finalised, but final approval pending.	The required financial and fiscal incentives and enabling technical requirements for grid connection effectively implemented and supported by the required laws and regulations, providing a basis for continuing market growth after the Project with a growth rate of at least 20% per year observed at the end of the Project.	Official Gov't publications. Project final evaluation. Post-project monitoring, as applicable.	The proposed legal and regulatory improvements passing swiftly through the Government approval process Required sustainability and predictability of the legal and regulatory acts (and the related financial and fiscal incentives) to prevent damaging 'stop and go' dynamics.
Outcome 3: Strengthened domestic supply chain and quality control system and, as applicable, increasing domestic manufacturing and/or assembly of PV panels.	Level of customer satisfaction on the quality, pricing and ease of purchasing a PV system, having it installed and obtaining the required after-sales services.	No well-established PV supply-side and quality control mechanism to facilitate easy purchasing of a PV system and guaranteeing its quality.	Customers able to purchase a PV system and have it installed through a 'one stop shop' model at competitive prices and the established quality control system, ensuring adequate quality and customer satisfaction for both the hardware and the installation (including required after-sales services).	Regular annual consumer surveys. Local and international PV market reviews. On-site inspections of the installations and the system performance.	Adequate market size to support the mobilisation of the supply-side. Adequate number of companies and trained individuals to ensure adequate supply of the required products and services and adequate price competition.
Outcome 4: A financing framework and a network of local financial institutions to facilitate the financing of small, decentralised PV systems for a broad range of consumers.	Volume of financing leveraged for small decentralised PV investments from financing entities active in Egypt.	Practically 0 aside from some demo projects.	At least USD 10 million by the end of the Project.	Annual project implementation reviews and final evaluation.	Adequate demand for, and competitively-priced financing products able to provide, long-term financing. Banks' requirements for securities within clients' limits.

Outcome 1: A total of 4 MW_p of small PV systems (of a few kW each) installed based on easily replicable and scalable system design.	**Outcome 2:** A supportive policy, institutional and regulatory framework for providing a basis for sustainable growth of the small, decentralised RE (in particular PV) power generation market.	**Outcome 3:** Strengthened domestic supply chain and quality control system and, as applicable, increasing domestic manufacturing and/or assembly of PV panels.	**Outcome 4:** A financing framework and a network of local financial institutions to facilitate the financing of small, decentralised PV systems for a broad range of consumers.

Output 1.1: Finalised design of the support scheme to facilitate market take-off for the first 4 MW_p of small decentralised privately-owned PV power generation (rooftop) systems, including finalisation of procedures and required templates to apply for this support.	**Output 2.1:** Finalised implementation decrees and other required documents for ensuring fully-operationalised guarantee of origin and net-metering schemes for selected tariff categories are in place to support small decentralised PV installations.	**Output 3.1:** Finalised technical and other quality criteria for the PV systems (including inverter and grid connection), installations and PV system suppliers and installers to benefit from the UNDP-implemented, GEF-financed project and related Government support.	**Output 4.1:** Required background studies, analysis and initial drafting of the proposed financing scheme(s) and support for required follow-up consultations with the financing entities interested in developing the scheme further.
Output 1.2: A manual and template for PV system design and installation (with a link to Output 3.1), including sizing, orientation, technical requirements and economics to be released as a hard copy, internet-based and/or eventual smartphone application.	**Output 2.2:** Completed analysis of eventual technical constraints in connecting small, decentralised PV systems to the grid and updating the related technical guidelines (or grid code), as needed, to overcome those constraints and to scrutinise the connections with support of the local electricity distribution companies.	**Output 3.2:** Finalised training programme and training materials to train the Key Stakeholders (including system suppliers and installers tailored for youth, men and women) on the adopted technical and other quality criteria as a prerequisite for offering their products and services for the implementation of the 4 MW_p programme and benefit from other financial and fiscal incentives.	**Output 4.2:** Involvement of local community associations to act as intermediaries, helping to promote the lending mechanism and support the Projects.
Output 1.3: An established PV/project support centre (including dedicated website + hotline) to share and manage information on the 4 MW_p programme and advise and guide potential clients through the different steps of applying for the available support and the design, purchase and installation of a PV system.	**Output 2.3:** As applicable, recommend-ations for eventual grid strengthening needs and/or new guidelines for grid and load management for integrating small, decentralised PV systems into the power system on a larger scale.	**Output 3.3:** A quality-controlled PV suppliers' and installers' database (as applicable, including also pre-tendered prices to be updated at regular intervals) with at least 5 pre-screened and trained system suppliers and 20 installers that have obtained a quality certificate (or recognition) to offer their services to the PV projects supported by the UNDP-implemented, GEF-financed project (with an emphasis on a 'one stop shop' approach).	**Output 4.3:** Technical due diligence of projects proposed for financing, and training of the staff of the participating banks on technical aspects of the Projects.
Output 1.4: Public awareness-raising and marketing campaigns to promote the 4 MW_p programme and support the implementation of the planned GoO and net-metering schemes.	**Output 2.4:** Completed analysis of the current building regulations for both construction and management of the buildings to identify any barriers to widespread implementation of rooftop PV systems in residential buildings + proposed amendments and measures to remove or overcome those barriers.	**Output 3.4:** Finalised design of a permanent quality control and certification scheme for both the hardware and installations, with related market surveillance and enforcement mechanisms and institutional arrangements to facilitate their effective implementation after the Project.	**Output 4.4:** Monitoring the impact and performance of the financing schemes introduced**.**

Output 1.5: Two in-depth reviews and evaluations of the progress of the 4 MW_p programme and issues faced (prior to the standard mid-term and final evaluations), including customer satisfaction surveys, technical and supply-side analysis, lessons-learned and recommendations for further development of the scheme.	**Output 2.5:** Drafted amendments to the existing laws and regulations and eventual new regulations to ensure adequate quality control of the PV systems offered in the market and their installations.	**Output 3.5:** Agreed methodology, institutional arrangements, procedures and mechanisms for effective market monitoring, producing regular annual market monitoring reports and able to continue such monitoring after the end of the UNDP-implemented, GEF-financed project.	**Output 4.5:** Final report on the results, experiences and lessons-learned and recommendations for further work as it concerns the Project as a whole.
Output 1.6 A project mid-term and final workshop to present and discuss the results and potential next steps.	**Output 2.6:** Finalised proposal (together with drafted legal and regulatory provisions) for the eventually-required complementary financial and fiscal incentives and other measures (such as RE purchase obligations of national electric utilities, mechanisms for administering and setting national feed-in tariffs, etc.) to support sustainable growth of the small, decentralised PV market after reaching the initial 4 MW_p target.	**Output 3.6:** Complementary training and other capacity development programmes for different professional groups, such as architects, building engineers and construction companies, to promote decentralised PV power generation in new buildings through integrated building and PV system design.	
	Output 2.7: An assessment and recommendations for waste management and recycling options for the PV systems and their components upon reaching the end of their lifetimes (including, as needed, related drafting of new regulations/amendments to the existing legislation addressing the issue).	**Output 3.7:** Public awareness-raising and marketing support, including**,** as applicable, support for the establishment of a local Solar Energy Industry Association, which can continue the policy dialogue and operate as a knowledge management hub and training centre for further promotion of both the solar power generation and solar thermal markets. The awareness campaign will be tailored to the needs of specific groups such as men, women, youth, etc	

Appendix 3: Rating Scale

Ratings for Progress Towards Results: (one rating for each outcome and for the objective)		
6	Highly Satisfactory (HS)	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".
5	Satisfactory (S)	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS)	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU)	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U)	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU)	The objective/outcome has failed to achieve its midterm targets, and is not expected to achieve any of its end-of-project targets.

Ratings for Project Implementation & Adaptive Management: (one overall rating)		
6	Highly Satisfactory (HS)	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The Project can be presented as "good practice".
5	Satisfactory (S)	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
4	Moderately Satisfactory (MS)	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
3	Moderately Unsatisfactory (MU)	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
2	Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
1	Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Ratings for Sustainability: (one overall rating)		
4	Likely (L)	Negligible risks to sustainability, with key outcomes on track to be achieved by the Project's closure and expected to continue into the foreseeable future
3	Moderately Likely (ML)	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
2	Moderately Unlikely (MU)	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
1	Unlikely (U)	Severe risks that project outcomes as well as key outputs will not be sustained

Appendix 4: Achieved Mission Agenda

National Project
Grid Connected Small Scale Photovoltaic Systems
Mid Term Evaluation

Proposed Agenda

Day (1)
Sunday 25th August 2019

Venue: UNDP, Industrial Modernization Centre (IMC) and Egypt-PV office

Time	Proposed Activities
7:30 – 9:00	Meeting with Dr. Mohamed Bayoumi, UNDP Assistant Resident Representative and Dr.Hend Farouh Egypt-PV Manager Venue: Pyramiza Hotel
9:00- 10:00	Meeting Ms Hofa El-Shawady Director of GEF Unit in EEAA Venue: Sofitel Hotel
11:00 -12:00	Meeting with the Implementing Partner Dr. Amr Taha, Executive Director, IMC
12.00 – 1.00	Moving to Egypt-PV office
1:00 - 5:30	Meeting with Egypt-PV Manager, Dr.Hend Farouh and Egypt-PV team and Eng. Ashraf Fawzi, IMC focal point Presentation of Egypt-PV project achievements Outcome 1 (5 outputs) Outcome 2 (7 outputs) Outcome 3 (7 outputs) Outcome 4 (4 outputs) Venue: Egypt PV Premises

Day 2

Monday 26th August 2019

Venue: - New Cairo then 6th of October (Egypt-PV implemented Projects)
Egypt-PV office

Time	Proposed Activities

9.00	Pick up from Hotel to the sites
10:00 -11:30	Meeting to launch the first PV pilot project and MOU signature for replication by Carrefour (list of attendees is attached) - Meeting with Carrefour District Maintenance Manager Eng. Hossam Khalil - Meeting with the deputy manager Egyptian Solar System Integrator Eng. Mark Samir Ayad Venue: Carrefour City Center, Maadi
12.00 – 1.30	Meeting with the Sustainability Advisor of the chairman of the New Capital Dr. Mohmedi Eid Meeting with the the chairman of the New Capital Minister Gen. Zaki Abdin Venue: New Capital Administrative offices, New Cairo
1.30 – 3.00	Site visit to JW Marriot Hotel - Meeting with advisor of Minster of Tourism Eng. Emad Hassan - Meeting with JW Marriot Manger Eng. Nabil Abo Kalam Meeting with the Gree Solar System Integrator Mananger Mr. Atef Yaaqoup

Day 3

Tuesday 27th August 2019

Venue: Egypt-PV office

Time	Proposed Activities
9.00	Pick up to Egypt-PV office
9:30 -10:30	Meeting with the Executive Chairman of New and Renewable Energy Authority Dr. Mohamed Khayat Venue: Egypt PV Project Prémisses
10:30 -1.00	Meeting with Egypt-PV advisory Board (list of members is attached) Venue: Egypt PV Project Prémisses
1.00 – 1.30	Lunch Break
1.30 – 3.00	Presentation by the Main National Consultant of Egypt-PV Dr. Ahmed Huzzayin

	Venue: Egypt PV Project Prémisses
3.00 – 4.00	Meeting with Dr.Hend Farouh Egypt-PV Manager and Eng. Ashraf Fawazi, IMC focal point Venue: Egypt PV Project Prémisses

Day 4

Wednesday 28th August 2019

Venue: Egypt-PV office	
Time	**Proposed Activities**
	Working on the findings

Day 5

Thursday 29th August 2019

Venue: Egypt-PV office	
Time	**Proposed Activities**
10.30 – 11.00	Conference call with SGP national Project Manger Dr. Imad Adly
Closing Meeting at UNDP	
11.30 – 12.30	Meeting with UNDP resident Ms. Randa Abo Hossn
12.30 – 1.00	Conference call with representative of Green Economy Fund Facility Eng. Ashraf Zaitoun
1.00 – 3.00	Meeting with Dr. Mohamed Bayoumi, UNDP Assistant Resident Representative and Dr.Hend Farouh Egypt-PV Manager Venue: UNDP office

List of attendees
Meeting at Carrefour

1. Jean Luc Graziato
   Carrefour Egypt Country Manager at Majid Al Futtaim Retail

2. Taoufik Belkadi El Haloui
   VP Sourcing & Marketing at Majid Al Futtaim Retail

3. Mohamed Hassan
   GM Business Development

4. Hossam Khalil
   District Maintenance Manager

5. Salma Fathy
   Head of communications at Majid Al Futtaim Retail

6. Ayesha Osman
   Communications Manager at Majid Al Futtaim Retail

Appendix 5 Advisory Board Members

1. **Dr. Amr Taha (Head of Advisory Board)**
   Executive director of Industrial Modernization Centre

2. **Dr. Anhar Hegazi**
   Member of the board of Directors of the Egyptian Electricity Regulatory Agency "Egypt Era
   Member of the board of the Egyptian Environmental Affairs Authority "EEAA", part of the steering committees for different UNDP funded projects on energy efficiency "EE", renewable energy "RE" and climate change".

3. **Eng. Ashraf Fawzi**
   Energy Efficiency Manager –Industrial Modernization Centre

4. **Dr. Ayman Zaki**
   Former Technical Capacity Building Director–Industrial Modernization Centre

5. **Eng. Emad Hassan**
   Energy advisor to the Minister of Tourism in Egypt

6. **Dr. Hafez Salmawy**
   Professor of energy engineering at Zagazig University, Egypt
   He is a consultant at the World Bank for Energy Reform, European Commission as well as the regional center for renewable energy and energy efficiency "RCREEE

7. **Dr. Hend Farouh**
   National Project Manager

8. **Dr. Maged Mahmoud**
   Technical Director of the Regional Center for Renewable Energy and Energy Efficiency (RCREEE)

9. **Dr. Mohamed Bayoumi**
   Assistant Resident Representative and Environment Team Leader in UNDP Egypt

10. **Dr. Mohamed El Khayat**
    Executive Chairman, New and Renewable Energy Authority, NREA
    Chairperson of Renewable Energy and Energy Efficiency Committee, League of Arab State, LAS.

11. **Dr. Mohamed El Sobki**
    Professor Energy Planning (since 2004), Cairo University
    Advisory Board (2011-current), for the joint master program "Renewable Energy and Energy Efficiency for the Middle East and North African (MENA) region" -**(REMENA)**
    (Cairo University, Egypt and Kassel University Germany)

Appendix 6: List of documents reviewed

List of requested documents:

1. Project Identification Framework (PIF)
2. GEF Request for CEO Endorsement
3. UNDP Project Document
4. Project Inception Report
5. Project Implementation Report (PIR) 2018 and PIR 2019.
6. Finalized GEF CCM Tracking Tool at CEO endorsement and midterm
7. Minutes of Project Board meetings
8. Various documents available on the Egypt-PV website
9. Executive Board of the United Nations Development Programme, the United Nations Population Fund and the United Nations Office for Project Services
   Country programme document for Egypt (2018-2022)

Appendix 7: Signed UNEG Code of Conduct form

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence, and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals, and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

MTR Consultant Agreement Form

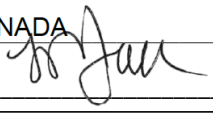
Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: Louis-Philippe LAVOIE

Name of Consultancy Organization (where relevant): INDIVIDUAL CONSULTANT

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at CANADA *(Place)* on OCT. 31-2019 *(Date)*

Signature: 

Appendix 8: Signed MTR final report clearance form

(to be completed by the Commissioning Unit and UNDP-GEF RTA and included in the final document)

Midterm Review Report Reviewed and Cleared By:

Commissioning Unit

Name: ___Mohamed Bayoumi, ARR, UND Egypt_____

Signature: _____ MR _____ Date: 12/11/2019_____

UNDP-GEF Regional Technical Advisor

Name: ___Saliou Toure_____

Signature: _____ Date: 12 Nov 2019_____

Appendix 9 MTR Audit Trail Form

UNDP-GEF MTR Report Audit Trail Template

Note: The following is a template for the MTR Team to show how the received comments on the draft MTR report have (or have not) been incorporated into the final MTR report. This audit trail should be included as an annex in the final MTR report

To the comments received on (*date*) from the Mid-term Evaluation of (*project name*) (UNDP Project ID-*PIMS #)*

The following comments were provided in track changes to the draft Midterm Review report; they are referenced by institution ("Author" column) and track change comment number ("#" column):

Author	#	Para No./ comment location	Comment/Feedback on the draft MTR report	MTR team response and actions taken
Dr. Hend Project Manager	1	p. 22 and page 27	I reviewed the report and I have very minor comments: [if !supportLists]- [endif]Page 22: Residential Investment 91,000 USD (4 %) instead of 12,400 (1%) [if !supportLists]- [endif]Page 27: Expected Annual Production from all the projects 12 **G**Wh/year instead of 12 **M**Wh/year	done
Mogamed Bayou UNDP CO Cairo	2		The main observation is the project start and closing dates which need to be fixed. You will need to complete the attached MTR audit trail template	done
	3	Page 12	Project signature date : ''after signature of the project document in December 2016''	done
	4	Page 13	Year of a series of power cuts: '' Although power cuts in 2011/2012 have been blamed primarily on a lack of fuel rather than a lack of power generation capacity, it is a combination of both. Statements by the Minister of Electricity in 2014 indicate that consumers will experience power outages of up to six hours a day this summer''	done
	5	Page 17	Name of the ministry: '' Ministry of Electricity and Renewable Energy '' ''	done
	6	Page 17	Date of signature: '' , the Project has been launched July 2017 when the UNDP CO jointly signed up the Project document with the Egyptian Government in 2016.''	done

	7	Page 17	The ending date: '' In accordance with the planning, the Project is expected to conclude December 2021 but the Evaluator recommends an extension of 18 months.''	done

Appendix CCM GEF CC Tracking Tool

Special Notes: reporting on lifetime emissions avoided
Lifetime direct GHG emissions avoided: Lifetime direct GHG emissions avoided are the emissions reductions attributable to the investments made during the project's supervised implementation period, totaled over the respective lifetime of the investments. Lifetime direct post-project emissions avoided: Lifetime direct post-project emissions avoided are the emissions reductions attributable to the investments made outside the project's supervised implementation period, but supported by financial facilities put in place by the GEF project, totaled over the respective lifetime of the investments. These financial facilities will still be operational after the project ends, such as partial credit guarantee facilities, risk mitigation facilities, or revolving funds. Lifetime indirect GHG emissions avoided (top-down and bottom-up): indirect emissions reductions are those attributable to the long-term outcomes of the GEF activities that remove barriers, such as capacity building, innovation, catalytic action for replication. Please refer to the following references for Calculating GHG Benefits of GEF Projects. Manual for Energy Efficiency and Renewable Energy Projects Revised Methodology for Calculating Greenhouse Gas Benefits of GEF Energy Efficiency Projects (Version 1.0) Manual for Transportation Projects For LULUCF projects, the definitions of "lifetime direct and indirect" apply. Lifetime length is defined to be 20 years, unless a different number of years is deemed appropriate. For emission or removal factors (tonnes of CO_2eq per hectare per year), use IPCC defaults or country specific factors.

General Data	Target at CEO Endorsement	Notes
Project Title	Grid-Connected Small-Scale Photovoltaic Systems	
GEF ID	5064	
Agency Project ID	4998	
Country	Egypt	
Region	MENA	
GEF Agency	UNDP	
Date of Council/CEO Approval	April 8, 2013	Month DD, YYYY (e.g., May 12, 2010)
GEF Grant (US$)	3 536 364	
Date of submission of the tracking tool	June 1, 2014	Month DD, YYYY (e.g., May 12, 2010)
Is the project consistent with the priorities identified in National Communications, Technology Needs Assessment, or other Enabling Activities under the UNFCCC?	1	Yes = 1, No = 0
Is the project linked to carbon finance?	0	Yes = 1, No = 0
Cofinancing expected (US$)	31 460 000	

Objective 1: Transfer of Innovative Technologies		
Please specify the type of enabling environment created for technology transfer through this project		
National innovation and technology transfer policy		Yes = 1, No = 0
Innovation and technology centre and network		Yes = 1, No = 0
Applied R&D support		Yes = 1, No = 0
South-South technology cooperation		Yes = 1, No = 0
North-South technology cooperation		Yes = 1, No = 0
Intellectual property rights (IPR)		Yes = 1, No = 0
Information dissemination		Yes = 1, No = 0
Institutional and technical capacity building		Yes = 1, No = 0
Other (please specify)		
Number of innovative technologies demonstrated or deployed		
Please specify three key technologies for demonstration or deployment		
Area of technology 1		
Type of technology 1		specify type of technology
Area of technology 2		
Type of technology 2		specify type of technology
Area of technology 3		
Type of technology 3		specify type of technology
Status of technology demonstration/deployment		0: no suitable technologies are in place 1: technologies have been identified and assessed 2: technologies have been demonstrated on a pilot basis 3: technologies have been deployed 4: technologies have been diffused widely with investments 5: technologies have reached market potential
Lifetime direct GHG emissions avoided		tonnes CO_2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO_2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO_2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO_2eq (see Special Notes above)

Objective 2: Energy Efficiency		
Please specify if the project targets any of the following areas		
Lighting		Yes = 1, No = 0
Appliances (white goods)		Yes = 1, No = 0
Equipment		Yes = 1, No = 0
Cook stoves		Yes = 1, No = 0
Existing building		Yes = 1, No = 0
New building		Yes = 1, No = 0
Industrial processes		Yes = 1, No = 0
Synergy with phase-out of ozone depleting substances		Yes = 1, No = 0
Other (please specify)		
Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Lifetime energy saved		MJ (Million Joule, IEA unit converter: http://www.iea.org/stats/unit.asp) Fuel savings should be converted to energy savings by using the net calorific value of the specific fuel. End-use electricity savings should be converted to energy savings by using the conversion factor for the specific supply and distribution system. These energy savings are then totaled over the respective lifetime of the investments.
Lifetime direct GHG emissions avoided		tonnes CO_2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO_2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO_2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO_2eq (see Special Notes above)

Objective 3: Renewable Energy		
Please specify if the project includes any of the following areas		
Heat/thermal energy production	0	Yes = 1, No = 0
On-grid electricity production	1	Yes = 1, No = 0
Off-grid electricity production	0	Yes = 1, No = 0
Policy and regulatory framework	5	0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)	5	0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building	4	0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Installed capacity per technology directly resulting from the project		
Wind		MW
Biomass		MW el (for electricity production)
Biomass		MW th (for thermal energy production)
Geothermal		MW el (for electricity production)
Geothermal		MW th (for thermal energy production)
Hydro		MW
Photovoltaic (solar lighting included)	4.000	MW
Solar thermal heat (heating, water, cooling, process)		MW th (for thermal energy production, 1m² = 0.7kW)
Solar thermal power		MW el (for electricity production)
Marine power (wave, tidal, marine current, osmotic, ocean thermal)		MW
Lifetime energy production per technology directly resulting from the project (IEA unit converter: http://www.iea.org/stats/unit.asp)		
Wind		MWh
Biomass		MWh el (for electricity production)
Biomass		MWh th (for thermal energy production)
Geothermal		MWh el (for electricity production)
Geothermal		MWh th (for thermal energy production)
Hydro		MWh
Photovoltaic (solar lighting included)	120 000.000	MWh
Solar thermal heat (heating, water, cooling, process)		MWh th (for thermal energy production)
Solar thermal power		MWh el (for electricity production)
Marine energy (wave, tidal, marine current, osmotic, ocean thermal)		MWh
Lifetime direct GHG emissions avoided	66 024	tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided	-	tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)	636 813	tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)	668 496	tonnes CO2eq (see Special Notes above)

Objective 4: Transport and Urban Systems		
Please specify if the project targets any of the following areas		
Bus rapid transit		Yes = 1, No = 0
Other mass transit (e.g., light rail, heavy rail, water or other mass transit; excluding regular bus or minibus)		Yes = 1, No = 0
Logistics management		Yes = 1, No = 0
Transport efficiency (e.g., vehicle, fuel, network efficiency)		Yes = 1, No = 0
Non-motorized transport (NMT)		Yes = 1, No = 0
Travel demand management		Yes = 1, No = 0
Comprehensive transport initiatives (Involving the coordination of multiple strategies from different transportation sub-sectors)		Yes = 1, No = 0
Sustainable urban initiatives		Yes = 1, No = 0
Policy and regulatory framework		0: not an objective/component 1: no policy/regulation/strategy in place 2: policy/regulation/strategy discussed and proposed 3: policy/regulation/strategy proposed but not adopted 4: policy/regulation/strategy adopted but not enforced 5: policy/regulation/strategy enforced
Establishment of financial facilities (e.g., credit lines, risk guarantees, revolving funds)		0: not an objective/component 1: no facility in place 2: facilities discussed and proposed 3: facilities proposed but not operationalized/funded 4: facilities operationalized/funded but have no demand 5: facilities operationalized/funded and have sufficient demand
Capacity building		0: not an objective/component 1: no capacity built 2: information disseminated/awareness raised 3: training delivered 4: institutional/human capacity strengthened 5: institutional/human capacity utilized and sustained
Length of public rapid transit (PRT)		km
Length of non-motorized transport (NMT)		km
Number of lower GHG emission vehicles		
Number of people benefiting from the improved transport and urban systems		
Lifetime direct GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct post-project GHG emissions avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (bottom-up)		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emissions avoided (top-down)		tonnes CO2eq (see Special Notes above)

Objective 5: LULUCF		
Area of activity directly resulting from the project		
Conservation and enhancement of carbon in forests, including agroforestry		ha
Conservation and enhancement of carbon in nonforest lands, including peat land		ha
Avoided deforestation and forest degradation		ha
Afforestation/reforestation		ha
Good management practices developed and adopted		0: not an objective/component 1: no action 2: developing prescriptions for sustainable management 3: development of national standards for certification 4: some of area in project certified 5: over 80% of area in project certified
Carbon stock monitoring system established		0: not an objective/component 1: no action 2: mapping of forests and other land areas 3: compilation and analysis of carbon stock information 4: implementation of science based inventory/monitoring system 5: monitoring information database publicly available
Lifetime direct GHG emission avoided		tonnes CO2eq (see Special Notes above)
Lifetime indirect GHG emission avoided		tonnes CO2eq (see Special Notes above)
Lifetime direct carbon sequestration		tonnes CO2eq (see Special Notes above)
Lifetime indirect carbon sequestration		tonnes CO2eq (see Special Notes above)

Objective 6: Enabling Activities		
Please specify the number of Enabling Activities for the project (for a multiple country project, please put the number of countries/assessments)		
National Communication		
Technology Needs Assessment		
Nationally Appropriate Mitigation Actions		
Other		
Does the project include Measurement, Reporting and Verification (MRV) activities?		Yes = 1, No = 0