Final Report - Terminal Project Evaluation

Improving the energy efficiency of Lighting and other Building Appliances
UNDP and
The Ministry of Electricity and Renewable Energy (MoERE)

Cairo – December 28 - 2018

Project Title: Improving the energy efficiency of lighting and other building appliances

The IEELA Project is a Project that assists the Government of Egypt (GoE) with the aim or objective to facilitate a comprehensive market transformation of the Egyptian market towards the use of more energy efficient electrical appliances at a level where cost-efficiency is proven. This is achieved through the combination of regulatory tools such as minimum energy performance standards (MEPS) and information labels, enhanced public awareness, capacity building and attractive financing mechanisms.

Description	Details and Data
UNDP Project ID	00075645
UNDP PIMS Number	4231
Project starting date	June 1st, 2010
Estimated end date	September 30, 2015 (extended up to the end of 2018)
Total allocated resources (USD)	19,505,000
UNDP contribution (USD) co-financing	400,000
GEF contribution (USD)	4,450,000
Government of Egypt contribution (USD)	12,000,000
In-kind (USD)	1,430,000
Other (USD)	1,225,000
Executing Entity/Implementing Partner	Ministry of Electricity and Energy
Implementing Entity/Responsible Partners	Egyptian Electricity Holding Company

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Foreword

The improving the energy efficiency of Lighting and other Building Appliances project is a $4.45 million GEF project, underway since mid-2010. The project has a series of 5 key implementation partners (governmental and private), and is being implemented by UNDP and the MoERE. The Terminal Evaluation report covers Egyptian IEELA project activities undertaken from 2010 to the end of November 2018[1].

The evaluation team wish to mention the time and effort expended by all project participants and stakeholders, especially the PMU and the UNDP CO, during the site presence[2] (Oct-Nov. 2018) and after for efficiently and readily sharing the required information in the most transparent way.

Although the too brief duration of the terminal evaluation mission (5 w-d), the evaluator met with key implementation partners, series of stakeholders, project beneficiaries and experts in Cairo. In particular, the Evaluator wishes to thank the Project Management Unit (PMU)[3] for arranging mission logistics, itinerary and stakeholder interviews as well as the valuable administrative support provided at all stages by the UNDP CO in Cairo.

Among others, the readiness to provide additional information and rescheduling meetings when needs be is a clear demonstration of their willingness to conclude with the project in the most relevant manner in accordance with the GEF requirements as managed by the UNDP country office[4] and the Regional Technical Advisor[5] based in Istanbul. It is also important to mention the readiness of all national key implementation partners to support and provide on time the relevant inputs at all stages of terminal evaluation process.

The evaluation team hopes the FINAL version of the TE report is in line with expectations and will contribute to the successful conclusion of the Project, and more importantly to go further toward the development of new EE project initiatives[6] based on lessons learnt over the last 8 years.

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December 28, 2018.
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[1] The IEELA full-sized project was expected to be implemented from 2010 to 2015, but the UNDP and GEF Secretariat approved the duration extension 2015-2018. Such a decision allowed the project to be completed in line with objectives.
[2] Terminal Evaluation mission carried out from October 28 to November 2 2018).
[3] Key PMU's standing experts are : Moustafa Al Sammany (S&L), Dr. Kamilia Youssef, Lighting Consultant, and Eng. Viola Zaklama, Deputy Project Manager-EEP. Because of the absence of the Dr. Ibrahim Yassin, the DPM, Mrs. Zaklama provided her full-time support at all stages of the evaluation mission.

[4] Dr. Mohamed Bayoumi, Assistant Resident Representative-UNDP attended the kick-off meeting (Oct. 28) and the closing meeting on Nov. 1. The UNDP Deputy Resident Representative-UNDP, Mr. Sylvain attended the closing meting too.
[5] The RTA (Mr. Saliou Touré) partly participated to closing meeting by Skype on Nov. 1.
[6] The GEF approved the UNDP project so called PV-project (Grid connected Small-scale PV systems). Most of the lessons learnt and recommendations could be useful to UNDP and the hosting institution (Industrial Modernization Centre of the Ministry of Industry and Foreign Trade in implementing the new PV project.

List of Acronyms

A/C	Air Conditioning
AFD	Agence Française de Développement
ACRI	Arab Climate Resilience Initiative Regional (UNDP)
CFL	Compact Fluorescent Lamp
CGC	Credit Guarantee Company
CHP	Combined Heat-Power Generation
CO	UNDP Country Office
CO_2	Carbon Dioxide
EE	Energy Efficiency *or* Energy Efficient
EEAA	Egyptian Environmental Affairs Agency
EEC	Energy Efficiency Centre
EEHC	Egyptian Electricity Holding Company (formerly EEA, Egyptian Electricity Authority)
EEIGGR	Energy Efficiency Improvement & Greenhouse Gas Reduction
EEU	Energy Efficiency Unit
EEUCPRA	Egyptian Electric Utility and Consumer Protection Regulatory Agency
EFI	Electronics for Imaging
ETI	Egyptian Federation of Industry
EGP	Egyptian Pound
Egypt ERA	Egyptian Electric Utility and Consumer Protection Regulatory Agency
EOP	End of the Project
EOS	Egyptian Organization for Standard Quality
ESCO	Energy service company
EU	European Union
FREEME	Promotion of Renewable Energy and Energy Efficiency in Morocco through Micro-Finance
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	Greenhouse Gas
GJ	gigajoule (= 10^9 Joule)
GLS	General Lighting Service (designation of the incandescent lamp standard)
GoE	Government of Egypt
GWh	gigawatt-hour (= 10^9 watt-hour)
IEA	International Energy Agency
IEE	Industrial Energy Efficiency
IEELA	Improving the energy efficiency of Lighting and other Building Appliances (Egypt)
IFC	International Finance Corporation
IMC	Industrial Modernization Centre
JCEE	German-Egyptian Joint Committee on EE
KfW	Kreditanstalt für Wiederaufbau
kWh	kilowatt-hour
LE	Egyptian pound
MDG	Millennium Development Goal
M&E	Monitoring and Evaluation
MED-ENEC	Energy Efficiency in the Construction Sector in the Mediterranean
MEPS	Minimum Energy Performance Standards
MoF	Ministry of Finance
MSEA	Ministry of State for Environmental Affairs
MTE	Mid-Term Evaluation
MTI	Ministry of Trade and Industry
Mtoe	million tonnes of oil-equivalent
MTR	Mid-Term Review

MoEE	Ministry of Electricity and Energy
MoER	Ministry of Electricity and Renewable Energy
MoFA	Ministry of Foreign Affairs
MoTI	Ministry of Trade and Industry
MWh	megawatt-hour (= 10^6 watt-hour)
NAMA	Nationally Appropriate Mitigation Action
NEEAP	National Energy Efficiency Action Plan
NGO	Non-Governmental Organization
NIM	National Implementaion Manual
NMM	New Market Mechanism
NREA	New and Renewable Energy Authority
PDF	GEF project preparation and development facility
PMU	Project Management Unit
PPM	Project Planning Matrix
ProDoc	Project Document
PSC	Project Steering Committee
PV	Photo Voltaic Cells.
RCREEE	Regional Centre for Renewable Energy and Energy Efficiency
RFP	Request for Proposal
S&L	Standards and Labeling
SEC	Supreme Energy Council
SGP	GEF Small Grants Programme
SME	Small and Medium-sized Enterprise
t	tonne; kt, Mt (kilo tonnes, and mega tonnes)
TE	Terminal Evaluation
ToR	Terms of Reference
TOU	time-of-use
TV	Television
TWh	terawatt-hour (= 10^{12} watt-hour)
UNDP	United Nations Development Programme
UNDP CO	United Nations Development Programme Country Office
UNDESA	United Nations Department for Economic and Social Affairs
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
USD	US Dollar
VSD	Variable Speed Drive

Executive Summary

Project Description

This report summarizes the findings of the desk review stage and the five-day mission conducted in Cairo starting on October 29, 2018. For those who would like to focus on key findings, it is recommended to focus on Section 3 and 4 of the draft report. Section 1 and 2 contains information on the project already known by all project partners.

The objective of the project is to improve the energy efficiency of end-use equipment, namely building appliances and lighting systems, manufactured and marketed in Egypt. The implemented activities aim at transforming the market towards energy efficient appliances, reinforcing the existing labeling and standardization schemes, implementing new schemes, and ensuring the sustainability of energy efficiency measures developed during the project time-frame. At different stages of the project implementation timeframe, the IEELA project also intended to explore and test different financial incentives to energy end-users and carried out the needed extensive public outreach campaigns.

The IEELA Project aimed at supporting the Government of Egypt (GoE) through the MoERE with the objective of facilitating a comprehensive market transformation of the Egyptian market towards the use of more energy efficient electrical appliances and lighting systems when the cost-effectiveness is proven. This is achieved through the combination of regulatory tools such as Minimum Energy Performance Standards (MEPS) and information labels, enhanced public awareness, capacity building and the set-up of an attractive financing mechanisms for pilot projects and the extended replication stage. In addition, the project aimed at strengthening the regulatory and institutional framework, develop monitoring and enforcement mechanisms, and provide training to public authorities and other relevant stakeholders. At different stage of the project implementation timeframe, the IEELA project also intended to explore and test different financial incentives complemented by extensive public outreach campaigns.

As per the Project Document (2010), the direct incremental reduction of GHG emissions was estimated to 0.95 million tons of CO_{2eq} by the end of the project and a cumulative indirect GHG emissions reduction of at least 53 million tons of CO_{2eq} by 2025. In addition, it was expected that over than 80% of the appliances sold in the Egyptian market should comply with the requirements of MEPS and labeling schemes already enforced and others standards developed because of the current project implementation.

The IEELA encompasses three key Outcomes:

Outcome 1: Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.

Outcome 2: A comprehensive S&L scheme for building appliances developed and effectively implemented.

Outcome 3: Sustained project results

A series of quantitative and qualitative Outputs and performance indicators are built-in under each Outcome. Appendix 2 is the table of expected outputs. While UNDP CO and MoERE are both GEF implementing partners of the of IEELA, UNDP assumes the overall management of the Project under the direction of the NPD from EEHC. The UNDP RTA was a key support for monitoring and providing constant assistance to the project team.

The ProDoc for IEEI was signed in April 2010; the Inception Phase of the Project, however, did not commence until May 2011.

Evaluation Rating Table

The whole project performance is rated **Highly Satisfactory** because of its achievements with no shortcomings. ……

Outcomes	Relevance	Efficiency	Effective-ness	Overall Rating
Outcome 1: Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.	6	5	6	**5.7(HS)**
Outcome 2: A comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.	6	5	6	**5,7(HS)**
Outcome 3: Sustained project results	6	5	6	5,7 (HS)

Table 1 Summary Evaluation of Project

Project Sustainabiliy

The project overall evaluation of Sustainability is rated **Likely** because of the outstanding impact of the LED market transformation (Outcome 1) and the improvement of the S&L regulation which is now dealing with 9 additional appliances (Outcome 2). In addition (cf section 3.6 under Outcome 3) the institutional arrangement should last for long because of the Ministerial decree intending to secure the sustainability beyond project lifetime for enforcing the Standards and Labeling Program. In regards to financial issues the Project supported and did work closely with the financial mechanisms already in place for further EE developments: The Green Fund of the CIB; the Green Fund of the EBRD; and the Small and Medium size enterprises of the social security fund.

Summary of conclusion, recommendations and lessons learned

Because of the greatest performance of the market transformation of EE lighting systems and the impact of new MEPS and the related labelling system, the target of GHG emissions reduction has been drastically better: being 17 times better than expected. The Pilot projects components performed much better with 43 pilot projects rather than 22 as expected. Most of the pilot project have been replicated by the pilot project beneficiaries, which is also impacted the whole Project impacts in terms of energy savings and GHG emissions. Finally, because of the new energy efficient LED bulbs, one can expect that those improvements to lighting systems in buildings and street lighting is sustainable for the upcoming 10 years.

The economic impact is also a component of the sustainability. By reducing the energy bill of office buildings, commercial facilities and street lighting systems, the project can make available more money for new investments, especially in shopping malls and supermarkets. In term of replication, a similar project dealing with the same three Outcomes could be replicated in all countries where the cooling load (AC) is intensively used because of about 50% reduction of the heat lost of the lighting systems. For all these reasons, including the performance of project team members, and because the

project did not face any shortcoming, the project earned the perfect rating: Highly Satisfactory.

Replicability

Based on the outstanding results and impacts of the IEELA project, the Evaluator assesses the ''replicability'' of such a project framework very relevant in many other countries where the cooling load of buildings has a significant impact on the energy consumption. Pilot projects made the demonstration that the achieved energy saving from the LED lighting systems improvement drastically impacted the cooling systems due to the reduction of heat losses. As a result, the lighting systems improvement reduced by about 50% the total energy consumption of the cooling load. It was found in some cases that the total % of saving is lower as per the energy demand shared between lighting and cooling and the final usage of both systems.

The second key Outcome related to S&L and MEPS, could be aptly replicated in countries where the electric appliances market is big and significantly growing because of the economic development.

Because the project has been successfully implemented in Egypt, the replicability is rated **Likely** in a similar context.

Lessons Learned

Lighting load and Cooling Load

The project component 1 related the market transformation through the extended usage of LED lighting systems can reduce the lighting systems energy consumption by about 50% when the energy end-user replaces the CFL by the LED technology. If the LED replaces an incandescent bulb the lighting load is reduced by about 90%. All this was already well known, at least by the energy managers, but the project allowed figuring out the impact on the AC systems of office buildings and more importantly in super markets. The practice pilot project carried out by the IEELA showed that 50% of the energy savings are derived from the reduction of the cooling load, and 50% from the lighting load.

Investment Cost

Although the interest rate was high in Egypt over the last 5 years (about 20%), the private companies (building owners and supermarket) where the pilot project has been implemented, decision makers made the decision to extend and replicate the pilot project because of the low-cost investment and the very short payback period, most of the time shorter than 6 months. This is especially true for the private sector. The UNDP and the Project Steering Committee made an innovative decision by allowing the private sector access to the needed grant (25%). Such a decision started up the investment process and the replication of pilot projects.

Recommendations

Keep the focus on limited range of technologies

Many projects failed because the project proponent wanted to support a large spread of technologies in the building sector. Such an approach is quite risky because of the cost issue and the time needed for introducing and demonstrating the relevance of these technologies and most importantly the demonstration of their cost-effectiveness. For example, in the building sector it is quite easy to focus on the lighting systems or the AC equipment and energy management. Avoid dealing with the envelop of the building because the payback period is most of the time longer than 10 years. In the industrial

sector, keep the focus on energy management and electric motors or boilers with steam or hot water distribution systems. As a rule, the investment is quite low and the technology is well known by local practitioners.

Secure the Sustainability of the Institutional Support to S&L Development and Enforcement

The project overall evaluation of Sustainability has been rated ''Likely'' among others because of the improvement of the S&L regulation which is now dealing with 9 additional appliances (Outcome 2). The institutional arrangement already set up alson by the project should last for long after the project closing with the aim of supporting the extended rollout of the Ministerial decree which intends securing the sustainability beyond project lifetime for enforcing and developing the Standards and Labeling Program.

1. Introduction

1.1 Purpose of the Terminal Evaluation

The overall purpose of the evaluation is to measure the effectiveness and efficiency of project activities in relation to the stated objectives endorsed by the GEF (2010), including any changes agreed upon with regards to outputs, timeframe, project implementation and any other results.

The terminal evaluation (TE) has the following complementary purposes:

a) To promote accountability and transparency, and to assess and disclose the levels of success the project has achieved;
b) To synthesize lessons learned that might help improve the selection, design and implementation of further similar GEF activities.
c) To provide feedback on issues that could be recurrent across the portfolio and need attention. In addition to implement improvements with regards to previously identified issues.

It is not unusual to face the situation where for one facet or sub-component of the project did not perform as per expectations. Consequently, the terminal evaluation (TE) is also required to assess how the project undertook an adaptive management methodology to improve the outcome of the project following its mid-term review (and the improved strategy), in addition to drawing lessons that can both be used to improve the sustainability of benefits from this project and, at the end of the day, to aid in the overall enhancement of the UNDP CO programming.

In essence, the Terminal Evaluation serves as an agent of change and plays a critical role in supporting accountability. The emphasis of the evaluation mainly focused on major issues and challenges the project has had to overcome over the last years:

- **Project Indicators:** The evaluation assessed the achievement towards indicators related to expected outcomes, planned duration budget and co-financing of the project.
- **Implementation:** The evaluation assessed the implementation of the project in terms of quality and timeliness of inputs and efficiency, the effectiveness of activities carried out and the responses to evaluation recommendations made during the mid-term evaluation in May 2014.
- **Project Outputs, Outcomes and Impact:** The evaluation assessed the outputs and impact toward the defined outcomes (3) achieved by the project as well as the likely sustainability of project results.

At the stage of the TE, the evaluation team mainly dealt with issues related to the sustainability of the major outcomes, likely replication of similar project initiatives, the project implementation scheme and lessons learnt.

1.2 Evaluation Team, Scope, Planning & Methodology

The terminal evaluation team encompasses two members:

- Louis-Philippe Lavoie, FE Team Leader (TL) and international energy efficiency (EE) expert in the building sector and EE financial mechanisms.

In accordance with the contract duly signed in October 2018, the evaluation team expects to carry out the TE tasks (desk review/field mission/reports draft and final) by the end of December 2018.

The detailed planning of TE field mission achieved is highlighted in Appendix 1.

In term of methodology, the TE team complies with four phases as defined in the GEF Guidelines as follows:

- **Brief Pre-evaluation**: Learning on the UNDP and the National EE and CC policies. Information can be readily found on the UNDP CO website and others such as but not limited to Ministry of Electricity and Renewable Energy, the project hosting ministry (http://www.moee.gov.eg/english_new/home.aspx).
- **Preparatory**: In essence, the preparatory stage deals with the comprehensive desk review of key documents produce by the project from 2010 to 2018. List of materials reviewed is in the Appendix 3.
- **FE Implementation**: Mainly related to the field mission (5 w-d in October). Because of the time constraint (short field mission) the TE team has not been in a position to return to visit the UNDP Regional Office in Istanbul, but on the last day of the field mission the Evaluator arranged a Skype call with the RTA as a final debriefing and a final debriefing meeting at the UNDP CO on the last day of the field mission. From his home-office, the TE TL prepared the draft report in August 2017. The draft report has been submitted to UNDP CO on November 30 taking into consideration comments provided by the UNDP CO, the RTA and the project management unit (PMU), as well as comments of numerous project partners and stakeholders.
- **Post-evaluation**: Taking into consideration the usefulness of the Terminal Evaluation Report, especially in terms of lessons learned and recommendations made towards the future development of similar projects and cooperation with relevant authorities and shareholders as a result of the IEELA project, the Evaluator recommended that the UNDP CO and the PMU organize grand project closing workshop, a sort of media event, with the aim sharing the significant results and most importantly to promote the replication of pilot projects in the whole country over the upcoming years. Such an event should be scheduled in early December 2018.

This evaluation report is presented as follows:

- Project description and development context, inclusive of the track record of the project initiative and overview of project implementation from the commencement of operations in 2010 until October 2018 and its achieved results and impacts;
- Review of project results based on project design and execution;
- Conclusions and recommendations that can increase the performance of similar project in Egypt;
- Lessons learned from the project implementation (2010-2018).

This evaluation has taken into consideration and complied with the GEF Guidelines[7] below and his extended experience in that field for conducting Terminal Evaluation.

[7] http://web.undp.org/evaluation/documents/guidance/GEF/UNDP-GEF-TE-Guide.pdf

Key Issues Addressed:

The GEF Monitoring and Evaluation Policy specifies that the Terminal Evaluation shall assess, at a minimum:

- The achievement of outputs and outcomes and provide ratings for the targeted objectives and outcomes;
- The likelihood of sustaining the achieved outcomes at project termination, and provide ratings for the aforementioned outcomes.

The Evaluation tasks of a GEF funded project explores five major criteria:

I. **Relevance**: The extent to which the activity is suited to local and national development priorities and organizational policies, including changes over time.
II. **Effectiveness**: the extent to which an objective has been achieved or how likely it is to be achieved.
III. **Efficiency**: The extent to which results have been delivered with the least cost to resources as possible.
IV. **Results**: The positive and negative, foreseen and unforeseen, changes and effects produced by a development intervention. In GEF terms, results include direct project outputs, short- to medium-term outcomes, and longer-term impacts including global environmental benefits, replication effects and other local effects in line with the project Outcomes as highlighted in the Project Document (2010).
V. **Sustainability**: The likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.

The Terminal Evaluation serves as an agent of change and plays a critical role in supporting accountability. The emphasis of the evaluation mainly focused on major issues and challenges the project had to deal with over the previous years:

- **Project indicators:** The evaluation assessed the Milestones toward indicators related to expected outcomes, planned duration and budget and co-financing of the project.
- **Implementation:** The evaluation assessed the implementation of the project in terms of quality and timeliness of inputs and efficiency, the effectiveness of activities carried out and the responses to evaluation recommendations highlighted in the mid-term evaluation report in May 2014.
- **Project outputs, outcomes and impacts:** The evaluation assessed the outputs, outcomes and impacts achieved by the project as well as the likely sustainability of project results. This is the core component of the TE rating.

In addition, the evaluation team dealt with issues related to the sustainability of the major outcomes, the likely replication of similar project initiatives, the project implementation scheme and the lessons learnt which is of the upmost importance for further development in the same field.

2. Project description - Development context and Adaptive Management

2.1 Background of the UNDP/MoERE Project Initiative, Rational and Overview and Constraints

Egypt is a rapidly industrializing country with booming electricity consumption increase[8] by 150% from 2000 to 2016 while the total primary energy supply (Mtoe) to the whole country was increasing at the same rate over the same period of time. Over the same timeframe, the GHG emissions increased by 104%, which is significantly lower than the electricity demand (TWh) or the primary energy supply (Mtoe).

By the time of the project initiation (2010), Egypt's GHG emissions of the energy sector were 188.4 Mt/yr CO_{2eq}[9] opposite to 204 Mt/yr[10], that is to say a slightly increase by 8.5%. For the purpose of the TE of the impact on GHG emissions reduction it is important to opposite the rate of GHG emissions increased from 2010 to the end of 2016 (latest available and reliable data) the electricity consumption has increased from 130 to 170 TWh, that is to say an increase of 30%.

Such a discrepancy between the rate of growth of GHG emissions (8.5%) and the rate of electricity consumption (30%) points out a better performance which is in essence, the impact of the development of gas-fired power plants and also of a higher efficiency at the energy end-user's level. The latest NAMA report[11] estimated the impact of the lighting systems improvement (nationwide LED roll-out) result to a total energy saving in 2017 of 4.35 TWh, and 5.4 TWh in 2018 (estimate). In other words, one can say that the IEELA project impacted the electricity consumption by about 4%, or a demand equivalent of 1,040 MW, which is the equivalent of a full-sized cold-fired plan. This is a significant impact of the lighting systems improvement.

Since early 2010 a series of measures were undertaken supported with the activities of aligning the S&L legislative framework with European Union and strengthening the institutional capacity of relevant institutions such as the MoERE, the Egyptian Organization for Standards & Quality (EOS) and the General Organization for Export &Import Control (GOEIC) both under the Ministry of Trade and Industry. The IEELA project equipped three laboratories under the MOTI with quality and reliable testing equipment to monitor the compliance of a series of appliances to new S&L requirements.

The impact of the S&L component is quite difficult to accurately figure on a short term because such a regulation takes time to be fully implemented and impacts are spread on long run. For this reason the S&L component could not show, a meaningful savings and cutting down emissions within the IEELA project timeframe. Look at Section 3 of the report for having an estimate of the long-term impact of the S&L component.

[8] Statistics IEA 2016 : https://www.iea.org/countries/Egypt/
2000 to 2016 : Electricity Consumption : from 67 TWh to 170 TWh, and the Energy supply from 40 Mtoe to 86 Mtoe.
GHG emissions (Eq. CO2) from 100 to 204 Mt over the same period of time (2000-2016).
[9] Prodoc 2010, page 13.
[10] Statistics IEA 2016 : https://www.iea.org/countries/Egypt/
[11] Nationally Appropriate Mitigation Actions (NAMA), High Efficiency Lighting Transformation, Egypt : Nov. 2018.

2.2 Track record from PIF (2009) to CEO's approval (2010) and the Project start-up

Project Design 2009-2010

In order to prepare a project for Improving the Energy Efficiency of Lighting and Appliances in Egypt, a "Request for Project Preparation Grant (PPG) has been summited to the GEF dated April 2009.

The timeframe for project preparation was envisaged to be between April 2009 to June 2010. The project design (PPG) was financed as follows:

- Total full-sized project preparation costs and financing to be a total of 250.000 USD, of which 150.000 USD to be GEF support and 100.000 USD to be co-financing.

The Project Document and the GEF-4 Request for CEO Endorsement were submitted by the GEF focal point (Ministry of Environment) and officially approved on June1st, 2011 by the GEF Secretariat.

Inception Stage

Although the Project officially started up June 1st 2011, the Inception report was submitted on February 2012, somewhat in late mainly because of the context of a fluid and, in many respects, turbulent institutional and policy environment. As a rule the Inception Stage should be launched at the very beginning of the project, and preferably spread on 3 or 4 months only. Taking into consideration the social and politic context, one can say that the PMU did its best to start up the project.

Implementation Partners

The project was to be implemented by the United Nations Development Programme (UNDP) with financing support provided by the Global Environment Facility (GEF) with the following implementing partners:

Ministry of Electricity and Renewable Energy and Egyptian Electricity Holding Company (EEHC) formerly EEA, Egyptian Electricity Authority under the MoERE, acting as the hosting entity and NPD;

- Egyptian Electricity Authority (EEA);
- Egyptian Electric Utility and Consumer Protection Regulatory Agency (EEUCPRA);
- Ministry of Trade and Industry (MoTI) and the Egyptian Organization for Standardization and Quality (EOS);
- Ministry of Foreign Affairs (MoFA);
- Egyptian Federation of Industry (EFI) and the Private Sector;
- Ministry of State for Environment Affairs – Egyptin Environment Affaires Agency (EEAA).

2.3 Adaptive Management at Year 2 of the Project Timeframe

The first Project Implementation Report (PIR) submitted at the end of 2012 was prepared for covering the term 2011-2012 and rated the project as moderately satisfactory with a Risk Rating ''High''. Other annual PIR were submitter on a regular basis from 2010 to 2018. From 2013 and in subsequent years, the PMU used the MsW format for the PIR, which is much more convenient than the standard Excel file because a narrative presentation of activities progress is easier to assess through a table connected to the project logical framework submitted in the Prodoc (2010).

As mentioned in the first PIR 2012, the project arranged the first steering committee meeting (PSC) on May 2012 more than a year after the official project start-up date (June 1st 2010). Such a situation is quite unusual because the PSC is the project board responsible monitoring the project progress, guide the project implementation and support the project in achieving its outputs/ outcomes and approving the work plan and key decisions. Again, such a situation occurred because of the difficult context in Cairo at that time. The political situation and national instability in Egypt have slowed project implementation but some development outcomes have been achieved and rated by all parties as ''moderately satisfactory'' in the PIR 2012.

In 2013 the hosting entity (MoERE – EEHC) proceeded with a few adjustments to the PSC by assigning a high level and capable National Project Director (the first Undersecretary of State of the Ministry of Electricity and Energy to replace the Deputy Director of EEHC. As from this moment, activities were rescheduled, especially sub-activities under Outcome 1. Decisions were made on time and the PSC meetings were held on a regular basis. Activities related to Outcome 2 (S&L scheme for building appliances) were already in progress although the EE lighting market transformation related to Outcome 1 did not yet take off in accordance with the planning.

The project underperformance is justified by the difficult context in Cairo in 2011 and 2012 significantly impeded the implementation progress because the extended roll-out of EE lighting systems (market transformation) required investments (private and public) in addition to technical and financial supports embedded in the project design (Prodoc 2010). The context at that time was not very attractive to investors private or public.

On the other hand, such a situation allowed the PMU rescheduling and speeding up activities, and justified its request for a duration extension (18 months), and most importantly to focus the project Outcome 1 and the pilot component on the new and more efficient lighting systems technology, that is to say, the LED lighting rather than the CFL as mentioned in the Prodoc.

At the project design phase (2009-2010) LED lighting systems were much costlier than CFL, and not very yet popular to residential or commercial energy end-users. Even the technology of street lighting systems was still based on low-pressure sodium lamps because the powerful LED lamps were more or less not available on the market place in Cairo.

Since activities related to Outcome 1 (EE Lighting Market Transformation) were delayed for nearly 2 years (2011-2012) the PMU and the PSC made the decision to focus on the new technology by promoting the LED lighting systems for residential, commercial and street lighting systems. In other words, the time somewhat lost to start up a series of pilot projects has been beneficial toward the expected project impact in term of energy savings and GHG emissions reduction because of the more widely available and less costly new LED technology in and later. Consequently, the IEELA project embarked on the mainstream of the promising LED technology and did not support any pilot projects using CFLs. By shifting to LED technology, the project (EEHC - PMU and UNDP) demonstrated the usefulness of the ''adaptive management'' within the boundary of defined project outcomes. The ''Adaptive Adjustment'' was not only related to technology, but also to pilot projects financial support to be extended to private sector.

Both decisions made at the end of 2013 secured the good project achievements toward its DO objectives and expected impact in terms of GHG emissions and EE lighting systems market transformation in Egypt under Outcome 1. If the project did not shift to LED technology the impact under the Outcome 1 would have been more or less 50% lower.

At Year 2013, the project management has been altered by the departure of experts associated with the two main project components (transformation to energy efficient lighting and promotion of energy efficient home appliances). Fortunately, they were replaced just two months later and consequently the updated organogram (Appendix 4) has been approved.

Finally, according to the MTR (2013) recommendation, the PSC and UNDP approved the duration extension and the financial support to private and public sector for implementing a series of EE lighting systems pilot projects: A good decision at the right time.

The MTR (2013) granted the rating MS in regard to IP and DO performance. In 2014 and later, until the end of 2017, all parties (UNDP-PMU/EEHC and RTA) rated the project as ''Satisfactory'', thus reflecting its good performance toward objectives. Details related to achievements and impacts are highlighted in Section 3 below.

2.4 Costs Sharing - Project start and duration

On 1st of June 2010 the project has been approved by the GEF Chief Executive Officer in. In practice the project implementation started up on June 1st 2011 and the mid-term evaluation was envisaged by the end of 2013. The project closing date was planned for June 2015.

GEF support of $4.45 million has been provided to support these activities, which will be co-financed by UNDP ($400,000), the Egyptian Government partners and others co-financed with a $14.655 million contribution for a total of $19.505 million. The costs-sharing is evaluated in Section 3.

In accordance with the MTR, the project duration has been extended by 18 months, thus the final closing date is the end of 2018.

2.5 Problems that the project sought to address and project beneficiaries

Based on the previous UNDP-GEF project[12], the current EE project (IEELA) focuses on appliance energy efficiency, S&L and energy efficient lighting[13].

First, the project aims at filling the gaps in the monitoring of S&L schemes implemented as a result of the first project (2003-2010). Those gaps include, in particular, a lack of mandatory energy consumption testing for domestic products and a critical lack of market monitoring of retail stores. Moreover, the S&L schemes need to be extended beyond the 5 products targeted in the EEIGRR project (CFLs, refrigerators and freezers, washing machines, air-conditioners and electric water heaters). The institutional framework for S&L scheme monitoring had to be reinforced and a mechanism for the regular review and updating of S&L schemes had to be implemented.

Second, the project focuses on the development of the energy efficient lighting market because of the good results that were obtained in this sector during the EEIGRR project.

[12] The Energy Efficiency Improvement and Greenhouse Gas Reduction project was closed in April 2010.
[13] Cf: MTR report May 2014, page 13.

A lot has to be done in this sector, in particular undertaking awareness-raising activities to reinforce consumers' confidence in the benefits of energy efficient lighting products. The regulatory framework for promoting EE lighting also has to be reinforced and studies carried out to ensure that the energy efficient lighting products meet consumers' expectations. Finally, financial schemes needed to be implemented to promote a favorable investment framework.

The three sectors targeted by the project (cf.: PIF 2009) are the residential sector (39.2% of total electricity consumption), street lighting systems (6.2%) and building lighting (7.8%). The Supreme Energy Council has also identified the three sectors as priority EE interventions. Scenarios developed in 2010 by the Egyptian-German Joint Committee on RE (JCREE) show that the residential sector accounts for more than 19% of Egypt's energy demand, and that the demand in this sector is likely to increase by 4% per year up to 2030.

2.6 Development Objectives and Baseline

The proposed project intended to complement efforts rolled-out by the previous project (EEIGGR) by speeding up the market transformation and significantly increase the use of energy efficient electric appliances, lighting systems such as street lighting, lighting in public commercial and household sector, as well as in industry as well as by supporting the expansion and introduction of specific financing mechanisms to support these efforts. The IEELA was also an integral part of a larger programmatic effort of the GEF in Egypt to improve the energy efficiency of the Egyptian economy.

As defined in the Project Document the objective of the project is "to improve the energy efficiency of end-use equipment, namely building appliances[14] and lighting systems manufactured, marketed and used in Egypt". It has been broken down into three outcomes:

- The first outcome focuses on EE lighting market development.
- The second S&L schemes through the update the MEPs of a series of electric appliances and the related appropriate labeling system at the retail market level.
- The third Outcome deals with the increase of information available for adaptive management and replication, and for measuring the impact of the project on the sustainability of project results.

These outcomes have been divided into numerous outputs. The table below, extracted from the Project Document, summarizes these outcomes and indicators. Detailed Outputs are highlighted in the evaluation table in Section 3. In addition, key national data related to GHG emission baseline are highlighted in Section 2.2.

Outcomes	Indicator
Project Objective To improve the energy efficiency of end-use equipment, namely building appliances and lighting systems manufactured, marketed and used in Egypt	The level of compliance of the targeted appliances with the adopted minimum energy performance standards (*a priori* the MEPS to be adopted in Egypt are expected to be in line with those adopted in the EU)
	Amount of reduced CO_2 emissions compared to the projected baseline
Outcome 1	Total volume or the market share of the CFLs and

[14] 5 appliances :CFLs, refrigerators/freezers, washing machines, air-conditioners and electric water heaters not adequately enforced and monitored yet. The GEF granted the project with a budget provision of $700,000 for testing equipment.

Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.	other EE lighting appliances in Egypt. NOTE: In practice, CFL lamps were replaced by LED lamps which is a more efficient technology.
Outcome 2 A comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.	The status and content of the legal and regulatory acts and the agreed implementation arrangements dealing with appliance minimum energy performance standards (MEPS), labeling schemes and their enforcement. The share of non-compliant products.
Outcome 3 Sustained project results	The level of information available for adaptive management and for measuring the impact of the project. The status of recommendations contributing to institutional sustainability.

Table 2 Monitoring indicators (Project Document)

2.7 Baseline

The baseline has been developed in 2009 at the project preparation stage, nearly 10 years ago. The table below highlights key elements of the baseline such as submitted in the project document. It should help to better understand steps overcome during the last 9 years. The Outcome-based expected results are presented in Section 2.6 below. The detailed evaluation of results is presented in Section 3.

Product	Baseline assumption (2009)	Target (2020)
Refrigerators and freezers	On average refrigerators and freezers sold in Egypt attain an energy efficiency index of 55% (i.e. an EU energy label class A)	All refrigerators and freezers sold in Egypt attain an energy efficiency index of <42% (i.e. an EU energy label class A+ or better)
Incandescent lamps (GLS) and Compact Fluorescent Lamps (CFLi)	GLS account for 94% of all screw- and bayonet-based lamps sales (i.e. of the total of GLS and CFLi sales)	GLS account for 42% of all screw- and bayonet-based lamps sales (i.e. of the total of GLS and CFLi sales) and CFLi or alternative technologies that are equally or more efficient account for the rest. Note, that the expectation is that sales of GLS would be completely phased out by July 2020 so there would be no legal GLS sales in 2021
Linear Fluorescent Lamps (LFL) and ballasts	On average fluorescent lamps and ballasts sold in Egypt are respectively 10% and 30% less energy efficient than the minimum requirements specified in the EU Directive (COMMISSION REGULATION (EC) No 245/2009 of 18 March 2009)	All fluorescent lamps and ballasts sold in Egypt meet the energy efficiency requirements set out in the EU Directive (COMMISSION REGULATION (EC) No 245/2009 of 18 March 2009)
HID lamps and ballasts	On average High-intensity Discharge Lamps (HID) lamps and ballasts sold in Egypt are respectively 20% and 15% less energy efficient than the minimum requirements specified in the EU Directive (COMMISSION REGULATION (EC) No 245/2009 of 18 March 2009)	All HID lamps and ballasts sold in Egypt meet the energy efficiency requirements set out in the EU Directive (COMMISSION REGULATION (EC) No 245/2009 of 18 March 2009)
TVs	On average TVs sold in Egypt are 15% less energy efficient than the minimum requirements specified in the EU Directive (COMMISSION REGULATION (EC) No 642/2009 of 22 July 2009)	All TVs sold in Egypt meet the energy efficiency requirements set out in the EU Directive (COMMISSION REGULATION (EC) No 642/2009 of 22 July 2009)
Room air	On average RACs sold in Egypt	All RACs sold in Egypt either meet the energy

conditioners (RAC)	are 25% less energy efficient than the minimum target requirements	efficiency requirements that are likely to be set out in the pending EU Directive or if such as a Diretcive is not published for wahtever reason have an energy efficiency ratio (as measured according to the ISO standard) that is of >3.0 W/W
Fans	On average fans sold in Egypt are 20% less energy efficient than the minimum target requirements	All fans sold in Egypt meet the energy efficiency requirements that are likely to be set out in the pending EU Directive. If for some reason this is not adopted it is assumed that the target efficiency threshold would correspond to the proposal in the draft Directive.
Washing machines	On average washing machines sold in Egypt are 15% less energy efficient than the minimum target requirements	All washing machines sold in Egypt meet the energy efficiency requirements that are likely to be set out in the pending EU Directive. If for some reason this is not adopted it is assumed that all washing machines would meet the requirements of the EU energy label class A.

Table 3 Baseline 2009

2.8 Expected Original Results

According to the Project Document, the impact of GEF intervention and eventual replication during 10 years of GEF project influence period was estimated to enable the energy end-users to realize under component 1 and 2:

Outcome 1: a direct incremental reduction of GHG emissions by 0.95 million tons of CO_{2eq} by the end of the project and estimated cumulative indirect GHG emission reduction of at least 53 million tons of CO_{2eq} by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 60%.

Outcome 2: Over 80% of the appliances sold in the Egyptian market are in compliance. The quantitative impacts were updated in 2018 to figure the further savings and GHG emissions reduction.

Outcome 3: The annually information on the sale of each of the targeted appliances as per energy performance is updated based on information released from the national authorities. A permanent Committee has been formed at the Ministry of Electricity and Renewable Energy for regular meetings of all stakeholders responsible of monitoring the S&L Program to update the situation of the Program, the compliance with the adopted standards and any encountered issues.

NOTE1: The major difference between the PIF/Prodoc and the actual situation is in regard of the promoted lighting technology: LED rather than CFS lamps.

NOTE 2: Detailed outputs are highlighted in Section 3 in the evaluation table.

3. Findings and Evaluation Rating

3.1 Project Design / Formulation and Updating

The first outcome of the project focuses on the development of the EE lighting market. The choice of this strategic sector is relevant since it accounted for 25% of total energy consumption in the country in 2010. Technologies for EE lighting[15] are already available and their benefits have already been proven. Moreover, lighting in Egypt contributes significantly to system peak-time electricity production. Street lighting consumption in Egypt represents 6% of total electricity consumption, representing a cost of £E 2.7 billion. The outputs corresponding to the first outcome of the project tackle technical, financial and institutional aspects and can be considered as relevant to reach the outcome. Moreover, knowledge dissemination among public and private stakeholders and residents is emphasized. In regard to Pilot Projects and the grant-financing scheme the Public buildings, street buildings and the residential sector were targeted, but the residential sector is less emphasized than the two other sectors with the aim of optimizing results, TA impact and equipment costs especially through the cost-sharing financial mechanism rolled-out for the purpose of the project. *Such a component design related to Outcome 1 was relevant, easily implementable and results measurable with a satisfactory accuracy.*

The second outcome aims at developing a comprehensive S&L scheme for building appliances and underlines the necessity of monitoring the implementation of the scheme carefully. The effectiveness of an S&L scheme is crucial for the transformation of a market towards the development of energy efficient appliances. In addition, because the project design encompassed a significant budget provision for improving the accuracy and efficiency of three testing facilities, the project has been useful to equipment importers and national manufacturers by scaling down delays for equipment approval.

The third outcome addresses the question of the sustainability of the project results. The outputs focus on different aspects: financial sustainability, institutional integration of the project outcomes, and introduction of a monitoring system to better reflect the evolution of the market in the long run.

The design of the outputs is generally satisfactory, although the MTR report mentioned that another output could usefully be added to tackle more precisely the importance of awareness activities. The MTR pointed out the fact that there is no sustainable EE market transformation if there is no demand from consumers. By experience one knows that such demand can be triggered by raising consumer awareness of the tangible benefits of EE appliances and efficient lighting systems.

At the time of the terminal evaluation, the Evaluator would like to mention that the PMU systematically tackled the result in regard to LED lamps market transformation from 2014 to 2018. The result is impressive: the project contributed to raise the market size of LED lamps to about 85 Million lamps a year in 2018, thus far exceeding the project target of 35 million units as requested in the Prodoc.

On the other hand, the result of Outcome 2 related to S&L is much more difficult to assess because the impact of updated regulation is spread on a long run.

[15] Again, it is important to mention that at the time of project design (2010), the LED technology was not so extended. The prodoc dealt with the CFL lamps as the most appropriate technology to promot. The UNDP and the PMU made the appropriate decision in 2014 to shift the technology focus from CFL to LED. It is an example of ‘’adaptive management’’ which rendered the project so successful.

The Evaluator does not point out any crucial weakness except the selected lighting technology. Although the CFL lighting technology was appropriate at the PIF and PPG stage (2009) such a technology was not the best to promote at the implementation stage because the new technology (LED) has been made available at a reasonable cost in Egypt in 2014 and later. The UNDP/PMU made the needed adjustment.

The main strength of the project is its grant financial mechanism by providing 25 to 50% of the full-sized pilot projects, including the private sector. Actually, rather than 22 pilot projects, the IEELA implemented 43 EE lighting pilot projects.

NOTE: some pilot projects implementation partners implemented more than only one project.

3.2 Stakeholders Participation and Institutional Arrangements

The project implementation phase appropriately relied on a large and diverse range of private and public stakeholders. Taking into consideration meetings with some of them, positive comments and the number of pilot projects and replications is a tangible evidence of the efficient and effective cooperation and coordination between the stakeholders and the PMU.

3.2.1 Public sector

The EE project is well integrated with the key Government structures at national level, and also at sub-national level with the Governorates, with the appropriate institutions/stakeholders being involved. The main stakeholders, such as the Ministry of Electricity and RE, the Ministry of Housing, the Egyptian Organization for Standards and the Energy Efficiency Unit of the Cabinet of Ministers are well integrated in the project. Secondary stakeholders, such as the Ministry of Endowment and the National Council of Women, are also involved. The Ministry of Local Development and Ministry of Finance are currently cooperating with the Ministry of Electricity and Energy on a programme of energy efficient street lighting under the project. The Ministry of Tourism has also been involved for implementing and replicating EE Lighting pilot projects in hotels all over Egypt.

The MoTI has been involved as a key implementation partner for upgrading three testing laboratories in the Cairo area and as co-financer in regard to new testing rooms. The project financed installation of the new testing laboratories while the beneficiaries provided in kind contribution through sites and staff allocation.

A long list of public and para-public energy end-users were involved in the pilot projects component and training deliveries. The financial mechanism (50% of the investment cost with a cap of $25,000) and the technical support made possible the implement of the following EE Lighting pilot and replication projects:

- The New Urban Communities Authority.
- Bibliotecha Alexandria.
- Centre for Environment and Development for the Arab Region and Europe.
- Ministry of Foreign Affairs.
- Cairo Airport.
- Ministry of Petroleum.
- Cabinet of Ministers.
- Ministry of Finance.
- The multi-storey parking in Cairo Governorate.
- Two of the largest government newspapers in Egypt.
- B-Tech Appliances Mega Store.

- El Karma Residential compound.
- The Media Production City.

3.2.2 Private sector

Cooperation with private sector has been effective and relationships with the private sector companies working on energy efficient lighting and home appliances are in a direct continuation of EE activities initiated from 2010 by the previous project (EEIGGR).

A forum for private companies working on energy efficient lighting has been set up and private companies participate in training workshops and meetings with the EE project representatives, which shows their willingness to participate in the market transformation. Also, the private sector has been given time slots to present its products in the training workshops.

Manufacturers of LEDs, such as VENUS and Philips[16], sold about 85 million LED bulbs a year in 2017 and both participated in a campaign aimed at raising consumer awareness on the benefits of LEDs.

A series of pilot projects has been implemented by the private sector with the financial and technical support of the grant[17] financial mechanism:

- Commercial Bank of Egypt.(*)
- Alexandria Bank.
- JW Marriott &Conrad Hotels.(*)
- Metro Super market one of the largest chain of super markets of Egypt.(*)

(*) Interviewed during the TE site presence at the end of October 2018.

3.2.3 The Project Steering Committee (PSC)

The first steering committee meeting (PSC) has been held on May 2012 a year after the official project start-up date (June 1st 2010). In 2013 the hosting entity (MoERE – EEHC) proceeded with a few adjustments to the PSC by assigning a high level and capable National Project Director, the first Undersecretary of State of the Ministry of Electricity and Energy, to replace the Deputy Director of EEHC. The PSC held meetings on a regular basis and minutes were circulated to UNDP CO and the Regional Office.

All comments gathered lead to believe that the PSC was appropriately responding and decisions were made on time. The PSC involves key players:

- The Egyptian Environmental Affairs Agency (EEAA)
- The Egyptian Federation of Industry (EFI)
- The Ministry of Electricity and RE and the EEHC (Egyptian Electricity Holding Company formerly EEA, Egyptian Electricity Authority). A high level EEHC's manager is acting as chairman of the PSC.
- UNDP CO.
- The Project Manager

Please find the updated project Organogram at Appendix 4.

NOTE: The Project Manager participates as a non-voting member in the PSC meetings and is also responsible for compiling a summary report of the discussions and conclusions of each meeting. The Chairman of the Egyptian Electricity Holding Company chairs the PSC. The Evaluator observed that the new Project Board (2013) plaid a critical role in project monitoring and evaluation of quality by assuring these processes and products, and using evaluations tools

[16] Both manufacturers were interviewed during the field visit in October 2018.
[17] The financial mechanism granted 25% of the investment with a cap of $30,000

(reporting, minutes and PIRs) for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. Based on the approved Annual Work Plan, the Project Board can also avoid any significant deviations from the original plans.

3.2.4 Project Management Unit

In accordance with the Prodoc, the Project Management Unit (PMU) sets up by project hosting entity was responsible to ensure adequate organizational structure and systems for facilitating implementation. The Project Manager (PM) heads the PMU, supported by a capable Deputy PM and a few experts and limited team members as highlighted in by the organogram above. In addition, adequate numbers of technical experts in different disciplines and project management experts/consultants with expertise in project, finance, energy, legal matters, etc. were associated on a short-term basis depending upon the workload.

The Evaluator met with all standing team members for assessing the involvement and their contribution to the achievement of Outcomes and Outputs. At a glance, taking into consideration the short site presence the Evaluator has been impressed by the technical capacity of three key team members: (i) the S&L Technical Coordinator and, (ii) the EE Lighting systems experts; and (iii) the Deputy Project Manager[18]. The time more or less wasted between the official start-up date (June 2010) and the involvement of a new NDP has been recovered because of their dedication and capability. UNDP and the RTA maintain the oversight on and manage the overall project budget. They were responsible for monitoring the project implementation, timely reporting of the progress to GEF as well as organizing mandatory and non-mandatory evaluations (e.g.: PIF and MTR). It also supports the Implementing Partners (local executing agencies in GEF terminology) in the procurement of the required expert services and other project inputs and administers the required contracts.

Furthermore, it can support the co-ordination and networking with other related initiatives and institutions in the country. Because of the outstanding capacity of the Project Officer and his dedication from the earliest stage of the project design (9 years ago) until the full project completion has been a valuable contribution to the whole project spread on 8 years. The Deputy UNDP Representative also attended the closing meeting at the UNDP office; this is another evidence of the dedication of the UNDP CO at all stages of the project implementation. In addition, the UNDP CO complied with its co-financing commitment (ref. section 3.3 below).

3.3 Review of the planned costs and disbursements

3.3.1 Costs Outcomes-based at project completion (2018)

Table 4 below highlights the GEF's funding disbursements current status opposite to the planned budget (2010).

The MTR report (May 2014) raised a significant concern because 2 years after the project start-up (Oct. 2010) the project did not comply the planned disbursements. At the end of Year 2, the disbursement was planned to reach $2,662,200 (58%) rather than only 10% such as it was, for many reasons, at the of MTR May 2014. First, the political instability in the country during the first two years had slightly reduced the importance attached by the Government to EE. Second, organizational disturbances related to the political situation

[18] Unfortunately, the PM, Dr. Ibrahim Yassin was not available during the site presence because of some serious health problem. However he attended the final wrap-up meeting at the UNDP CO on Nov. 1 2018.

have altered the implementation of the project. Nevertheless, at the same time, the project has proven itself to be effective and efficient, given the difficult context, with a few achievements, especially related to Outcome 2, the S&L component because of the excellent cooperation between the various project stakeholders involves in the enforcement of S&L in Cairo area.

From 2014 and later the EEHC and the PMU efficiently speeded up the implemention pace to reach the target toward the defined outcomes and budget. At the EOP results and impacts were achieved and, at the end of the day, the project performed accordingly with expectations since the planned budget has been disbursed at 98%.

The MTR report submitted at the end of 2013 highlighted the poor project performance in term of disbursements. At mid-term the IEELA project disbursed 10% only of the whole GEF grant. Such a situation was, among others, the result of the inefficient project start-up because of the political contetext at that time. The situation changed in 2014 by the involvement of a new National Project Director.

Details related to costs breakdown are highlighted in Appendix 5.

Table 4 below shows the drastic improvement in regard to budget management. At the project completion, 89% of the GEF's grant was disbursed accordingly to targets set in the project document (2010).

Description	Planned Budget Target (USD)	Achieved at the end of October 2018 (USD)		Comments
Outcome 1: Accelerated growth of the EE lighting market in Egypt	1,790,000	2011-2017 2018 (Jan.-Sep.) 2018 (Oct.) **TOTAL**	1,179,860 399,093 18,293 **1,597,247**	
Outcome 2: A comprehensive S&L scheme for building appliances developed and effectively implemented	2,000,000	2011-2017 2018 (Jan.-Sep.) **TOTAL**	1,500,665 257,239 **1,757,904**	
Outcome 3: Sustained project results	300,000	2011-2017 2018 (Jan.-Sep.) **TOTAL**	273,556 36,690 **310,246**	The over expenditures of this outcome is due to miss allocation of some payments that has been charged on outcome 2 instead. The adjustment will be reflected in the January-December CDR
Project Management	460,000	2011-2017 2018 (Jan.-Sep.) 2018 (Oct.) **TOTAL**	269,169 69,189 7,058 **345,417**	
	4,550,000	Total till end of Oct. 2018	**4,010,816**	

Table 4 Costs/Achieved Disbursements of UNDP/GEF Funding

3.3.2 Co-financing planned and achived

Co-financing is a key data and a valuable indicator to assess the country-drivenness toward the implementation of the whole project. As per the Project Document the total co-financing was estimated at $15,055,000 broken down between the UNDP CO contribution for $400,000 and the country-counterpart of $14,655,000, which is a significant co-financing taking into consideration the nature of the project (Market Transformation and S&L regulation and M&E). Because of the street lighting pilot project (5km: Road going to Airport) which has resulted in a significant energy savings (more than 50%) the Ministry of Energy and Electricity and EEHC made the decision to invest about 117 million $ to extend the LED Lighting systems to major roads and streets. Mainly because of such a full-scale project the total co-financing is nearly ten times more than expected in the project document. Even in absence of this huge co-financing (MoEE/EEHC) the co-financing of all parties would have been in accordance with the initial co-financing commitment of more than 15 million $. This is a very significant result.

Co-financing Partners	Co-financing Commitment ($USD) Prodoc: June 2010	Achieved Co-financing ($USD) TE: October 2018	Comments
UNDP	400,000	390,000	
MoEE/EEHC (Cash)	12,000,000	12,000,000 117,000,000	Distribution of CFLs & Street lighting. Additional cost sharing (Distribution of LED Lamps, National Street Lighting Program, National Awareness Campaign)
MoEE/EEHC (In-kind)	230,000	800,000	Salaries of assigned personnel from the Egyptian Holding Electricity Company
NREA	1,200,000	1,200,000	Premises for establishing the testing laboratories, salaries of assigned personnel
MDG-F	500,000	200,000	
GTZ-JCEE	100,000	100,000	Printing material, joint awareness workshops and media campaigns, two workshops with the Ministry of Tourism to promote EE& RE in the hotels sector
MED-ENEC	625,000	625,000	Joint training workshops, supporting the development of the National Energy Efficiency Action Plans (NEEAP1 & NEAP2), developing the Energy Efficiency building code for the Arab Region with the effective participation of the Housing and Building Research Center of Egypt, International Symposia, Regional Workshops, National Consultations, Investors Meetings Energy Days for awareness raising, exchange of experience among experts of the MED ENEC Program.
TOTAL	15,055,000	132,317,925	

Table 5 Co-financing planned and achieved

3.4 Project Implementation

3.4.1 Monitoring and evaluation activities and feedback loop

The Government provided the Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP (including GEF) funds according to the established procedures set out in the programming and finance manuals. The audit conducted by the legally reputable commercial auditor as per the NIM audit regulation. The financial auditing has been done on target and in accordance with the usual procedure.

A series of 7 Progress Implementation Reports (2012 to 2018) were prepared by the PMU. Shortcomings and problems were highlighted but from 2010 to 2013, the adaptive management has been very weak.

The turning point comes at the time of MTR carried out on schedule. In accordance the with UNDP/GEF's compulsory requirement, the mid-term evaluation process has been driven by an independent international evaluator. The MTR concluded that the IEELA project needs drastic improvements in term of management, adjustment to the PPM. The project did not need any adjustment to outputs except the required duration extension and the shifting the lighting technology from CFL to LED lighting bulbs and systems.

Another monitoring tool was the involvement of two standing sub-committees: (i) The Standards Committed driven by the EOS; and (ii) The Lighting Committee. Both were very useful to monitor the implementation process and technologies.

One can say that the whole M&E activity forced the decision makers (UNDP/EEHC and the PSC) to take action for improving the project performance. The terminal evaluation was also carried out on schedule in October/November 2018.

All this shows that the project monitoring activity and the feedback loop were in place despite the poor performance of the project during its first 2 years (2010-2013). During that phase, it was almost like the PSC was more or less not in position to take action and make decision. The situation has been improved in 2013 and the project did perform as per expectation, and even better in 2014 and later.

3.4.2 Adaptive management connected to M&E activities and issues

To be fair, for appropriately dealing with the evaluation of the adaptive management undertaken during the whole project timeframe, the evaluator must split the project in 2 phases: Phase 1 before the MTR (2010-2013); Phase 2 after the MTR (2014-2018).

Because of the questionable project performance in Phase 1, the MTR granted the IEELA project overall rating as "Moderately Satisfactory" in terms of i) relevance; ii) Impacts; iii) Outcomes achievement; and iv) outputs effectiveness. On the other hand, PIR 2012-2013 granted the IP performance as MS and later PIR 2014to PIR 2018 rated the IP as ''Satisfactory because the project was on the right was to achieve its Dos among others, because of the adaptive management: PSC performance improvement, the new NPD and the decision related to the lighting technology. Because of the improved management at the PSC level and the high capacity level of the PMU, both in term of management and technics, the whole project IP has been rated Satisfactory by the UNDP (PIRs: 2014 – 2018).

The MTR report concluded as follows:

‘’ *Quality control has to be reinforced and testing facilities could be expanded to other appliances such as fans, pumping motors and kettles. It is furthermore recommended to work with the IT/telecommunications sector to further explore the potential for EE in this sector. Concerning street lighting, some pilot/demonstration projects in this field might be considered.”*

The Evaluator noted that most of key recommendations have been enforced all the way from 2014 to 2018.

3.5 Project Results toward Outcomes achievement

Section 3.4 deals with the Outcome-based assessment of the IEELA Project achievements and shortcomings, if any. In accordance with recommendations made by the MTR evaluation (end of 2013) most of recommendations were applied without any adjustments to DOs and defined Outputs and expected impacts. Those targets remained unchanged although the weakness of the project implementation over the first 2 years of the project implementation. The decision made (2014) to extend the project duration allowed to recovering the time lost and, at the end of the day, to reach the targets defined in the project document and even more.

In the first step, the Evaluator proceeded with a comprehensive analysis and review of energy savings and GHG emissions reduction based on an intensive desk review, and the one-week site presence in Cairo at the end of October 2018.

3.5.1 Energy Savings / GHG Emissions Reductions Breakdown

A series of yearly PIRs reports (7 reports) were submitted to the UNDP CO and the RTA to track results and progress. PIRs reports, especially after 2013 were comprehensive enough to assess results and rate the performance. Final results are summarized in PIR 2018. The very detailed results and impacts are highlighted at Appendix 6.

3.5.1.1 Impact on the national electricity demand and consumption

The project managed to achieve its development objective as per the end of project target level compared to the base line level and the set targets. It has largely contributed to advocate on the importance of energy efficiency at the National level leading to tangible results translated by a remarkable decrease in the Electricity consumption and the associated decrease of fuel consumption and CO2 emissions.

Based on the yearly indices released by the power sector through its annual statistical report 2016/2017, the % increase of peak load has recorded 0.68% (16/17-15/16) compared to 4.23% (15/16-14/15) respectively the energy consumption has dropped from 6.39% to -3% and the fuel consumption has drastically dropped from 6.09% to 0.82%. The % of residential consumption out of the total consumption has dropped from 47% to 42%.

3.5.1.2 Compliance to MEPs

As for the compliance of the appliances sold with the developed MEPS, the results of the tested appliances at the three testing laboratories[19] (New & Renewable Energy Authority, the General Organization for Import and Export Control, the Egyptian Organization of

[19] The Evaluator visited these testing facilities in Cairo area in October 2018.

Standards as well as the released labels through the Energy Efficiency Unit of The Egyptian Organization for Standards are confirming that all tested appliances for which MEPS have been developed are now complying with these MEPS. The target was to improve and update 5 MEPS for 5 appliances but the IEELA developed and updated 9 MEPs, which is better than expected. The target related to compliance was 80% of selected equipment to comply with new MEPs. Because of new testing equipment and improvements to testing facilities (3 sites highlighted above) all (100%) targeted appliances (9) must comply with the related MEPs[20]. Three laboratories are now very well equipped for testing and certifying the compliance of import and local manufactured appliances in a short delay.

3.5.1.3 EE Lighting Systems

At the end of the project timeframe (expected in 2015) the market transformation of EE lightening bulbs should reach (the target) an annual sale of 35 Million LEDs[21] but in 2018 the total sales were about 85 million LED bulbs[22]. The target has been drastically overpassed.

In addition, the Project has developed technical specifications for all types of used LED lighting systems sold out in Egypt in accordance with the international standards. Fewer than 10% of LED bulbs of all the random samples tested at the end of the project show non-compliance. Most of the non-compliant bulbs are locally manufactures (more or less handicraft) other than the two largest manufacturers (Philips and Venus).

3.5.1.4. Pilot Projects and Replication

The IEELA project implemented and co-financed a total of 43 pilot projects rather than only 22 as expected in the prodoc. The total financial contribution of the project was based on 25% cost-sharing for the private sector and 50% for the first phase of the project with a ceiling of 0.5 Million L.E per project and has been raised to 0.750 L.E per project for the second batch of projects following the devaluation of the Egyptian pound to 50% of its value against the USD which targeted the governmental sector.

Such a financial support has been the trigger for starting up the demonstration and later pushing on the replication of numerous full-scaled projects by the pilot beneficiaries. Table below highlights the replication effect of pilot projects by the private and public sector. The evaluator visited 3 pilots projects during his short site presence: Marriot Hotel, Metro Supermarket and CEDARE and Alexandria Bank (Cairo branch).

[20] Electric Fans, TVs, Ovens, Dishwashers, Vacuum cleaners, pumps, Air conditioner with inverter compressors, microwaves and water heaters.

[21] As mentioned before, the prodoc (2010) was dealing with CFLs rather than LEDs. The decision has been made in 2014 to shift from CFLs to LEDs.

[22] The baseline 2010 estimated the CFLs market to 25 million units a year.

Pilot Beneficiaries	Pilot site	Replication	Comment
New Urban Communities Authority (NUCA)	1	All admin buildings and street lighting in new Cities	Belongs to Ministry of Housing and main counterpart to promote converting to LED in residential compounds
Administrative Control Authority	1	Promoted replication in all government buildings	Mandated to fight corruption in the Government and it was meant to demonstrate why government should procure more expensive lighting systems without being questioned
Alex. Chamber of Commerce	1	Main partner in promoting efficient lightings in shops and supermarkets in Alexandria	
Cairo Chamber of Commerce	1	Main partner in promoting efficient lightings in shops and supermarkets in Cairo	
Egyptian Organization For Standardization & Quality	1	Host of energy efficiency testing laboratories	Belongs to Ministry of Industry
Egyptian Touism Federation	1	Main partner in promoting efficient lighting systems in Tourism Sector	
Consumer Protection Agency	1	Main partner in promoting energy efficiency in commercial facilities to reduce operational costs for the benefit of the consumer	
Co-Operation Company for Petrol	1	Replication in 22 gas stations and admin buildings.	First gas station to convert to LED even before private sector such as Exxon Mobil and Shell
North Cairo Electricity Distribution Company	1	Replication in most of the electricity sector administrative buildings	
Ministry of Civil Aviation,Cairo International Airport (Hall 1&3)	1	Additional terminals and street lighting,Replication in all Egyptian airports is currently under consideration	
Egyptian Hotels Association	1	Main partner in prompting efficient lighting in hotels	
Cairo International Convention Centre	1		First conference center
Regulatory Agency Building	1		Project premises that implemented all possible energy management systems
New & Renewable Energy Authority NREA	1	Host of the energy efficiency testing labs	
Egyptian Parliament	1	Landmark building that is visited by all government entities and MPs from all over Egypt	
Egyptian Media Production City	1		First premises related to cinema locations
Cabinet Ministers (Information and Decision Support Center)	1	All Ministers HQs have converted to LED	
Bibliotheca Alexandrina	1		First library to convert to LED
Social Fund For Developmentof SMEs	1	Converting its premises in all governorates in Egypt	
Al-Ahram News paper Main Building	1	Supported a large awareness campaign on efficient lighting	Largest Government owned newspaper in Egypt and supported a large awareness campaign on efficient lighting
Akhbar El-Youm News Paper Building	1		Second Largest Government owned newspaper in Egypt
Egyptian Engineers Syndicate	1		Hosted training courses for electrical engineers on design and implementation of efficient lighting systems
Ministry of Communication (te data)	1	Main counterpart in approaching tele-communication companies	
Ministry of Foreign Affairs (MoFA)	1		Main UNDP counterpart, host of GEF Political Focal Point , head of Egyptian negotiation delegation to UNFCCC
Ministry Of Local Development - Cairo Governorate	1		
Ministry of Finance (Tower no. 2)	1	Following this pilot, the Ministry Issued a Long Term Agreement with a LED supplier for government bodies to purchase LED without bidding	
Ministry Of Supply & Internal Trading (Supermarket - Bakery - Grocery)	1	Ministry of Supply has included LED lamps to be part of the items that can be procured on ration cards	
Center For Environment & Development For The Arab Region & Europe (Cedare)	1		First admin building to convert to LED in Egypt and host of UNDP Country Office as well as CIB Hegaz Branch
Alexandria Bank (El-Gomhouria Building & Cairo Branch)	1	Replicated in more than 70 of its branches while all of the new branches will be lightened by LED.	Second Bank to convert to LED
CIB Bank- ElHegaz Branch	1	Replication in 200 branches all over the country 160 Retrofitting & 40 new Branches).	First Bank to convert to LED as part of CEDARE building
Conrad Hotel	1	Replication in 13 Hilton Chain hotels	First hotel to convert to LED
JW Marriott Resort	1	Replication in 18 Marriott hotels	First resort to convert to LED
B-tech Megastores	1	Replication in 40 branches	First eclectic appliance shop to convert to LED
El-Salam Shoping Center	1	Replication in 6 branches out of 8	First shop to convert to LED
Metro Market (Maadi)	1	Replication in 120 branches, admin buildings	
Karma Residential Compound	1	Replication in Karma 2 and Karma 3 compounds and Beverly Hills	First residential compound in Egypt to convert to LED
Ahmed Shafik Road	1		
Gezira Sporting Club		still under implementation	First sports field in Egypt to be converted to LED
El-Zohour Club	1		First sporting club to convert its street lighting to
Banque Misr Club	1		First social club in Egypt
Baheya Hospital	1		First NGO owned hospital
Ain Shams Specialized Hospital	1		First Government owned hospital
El-Tahrir and Omar Makram garage	1	Replication in multi-story garages in Cairo is under consideration	First Multistory garages owned by Governorate of Cairo
Exxon Mobil Oil Main Building	0	Replication: 3 terminals,30 gas stations, and 20 mini-market in gas stations	First Oil and Gad company to convert premises to LED
Raya Holding Telecommunication Company	0	Replication in all of its branches	It followed Orange and Vodafone with technical assistance from the project
Carrefour Hyper markets	0	Replication in 40 Branches	Second Supermarket to convert to LED
Mac Donalds	0	Replication in 40 branches	First fast food chain to convert to LED
Orange Telecommunication Company	0	Replication in all of its branches	First tele-communication company to convert to LED. Vodafone followed
1: implemented pilot projects (43Pilot Projects)			
0 :Provided technical support			

Table 6 Pilot Projects and Replication

3.5.1.5 Other relevant actions undertaken because of the Project

The Governmental sector is responding to the instructions of the Cabinet in reducing the lighting consumption and transforming their inefficient lighting systems to efficient ones, the Project has largely contributed to this achievement through the implemented pilot projects targeting the public and governmental sector.

The implementation of 23 pilot projects in the public and governmental sectors have succeeded in stimulating the replication or numerous EE projects by the private sector and the up scaling of EE lighting projects in the sector where the pilot project has been implemented, especially for the street lighting where more than 100 M$ has been invested by the government.

In addition to the replication effect of pilot projects in the public sector (Street Lighting), EE lighting systems were installed by the private sector through 8 projects (Banks, Hotels, Supermarkets and Residential Compounds).

Because of the IEELA project all Ministries and Municipalities are now referring to the issued MEPS in their tender documents, which was not the case previously.

Based on the achieved energy savings at the Ministry of Finance, the ministry has issued a tender for central purchase of LED lighting equipment and succeeded to obtain competitive prices from vendors, to date all governmental entities are to buy their efficient lighting equipment through the central purchase agreement of the Ministry of Finance.

The National Efficient Street Lighting Program implemented by the Ministry of Electricity & Renewable Energy, The Minister of Local Development, the Ministry of Finance with the support of the project is progressing well, the Ministry of Finance has released the second tranche of the allocated amount (see Table above) to implement the second phase of the Program.

The national awareness media campaign launched by the Ministry of Electricity & Renewable Energy and supported by the Project for promoting energy efficiency and conservation among customers has largely succeeded in increasing their awareness. The Project has contracted a research company for assessing the impact of this campaign. The decrease in the residential consumption out of the total consumption is confirming that the campaign has reached its target.

Due to the success of the campaign in raising customer awareness, a second campaign has been launched in 2018.

The Ministerial decree for banning the import of GLS with wattage higher than 40 watt has succeeded to move the market towards the use of LED lamps rather than GLS. The market size of the different LED lamps in Egypt is approaching almost 100 million Lamps and luminaires, based on estimated figures from suppliers, more accurate figures will be obtained from the LED Lighting market study that is currently under implementation.

The decree issued by the Minister of Industry and Foreign Trade to raise the minimum set point temperature of air conditioners from 16 degree to 23 degree has contributed to lower the percentage of consumption since every increase in the temperature by one degree is increasing the consumption of the air conditioner by 3% to 5%.

The project is still coordinating with the Energy Efficiency Unit established at EOS and supporting its work in releasing the EE labels and more in providing the necessary support towards coordinating between the Unit and the different stakeholders responsible of monitoring and enforcing the S&L Program where a mechanism has been developed

with the Energy Efficiency Unit of the EOS for monitoring and checking the veracity of energy efficiency labels affixed to household appliances in the market.

MEPS have been developed for a larger number of electrical appliances based on the results of the conducted market studies including electrical fans, dish washers, electrical ovens, vacuum cleaners, televisions, water pumps, fractional motors, tank less water heaters and microwaves.

Establishment of energy efficiency testing laboratories at each of the Egyptian Organization for Standards, the General Organization for Import and Export Control and the New & Renewable Energy Authority. Because of the Project the improved laboratories are more efficiently and swiftly testing both performance and efficiency to verify the compliance with the developed MEPS and level of efficiency as per the affixed label on the appliance.

The new Ministerial decree issued 2017 for enforcing the standards and labels Program is to sustain for the added MEPS.

The Electricity law encompasses a chapter on energy efficiency.

The project has largely contributed to create job opportunities and improve the social conditions by decreasing the electricity bills of a large number of customers that responded to the energy efficiency tips.

3.5.1.6 EE Lighting Direct and Indirect GHG emissions reduction

Direct GHG emissions reduction are from the implementation of pilot projects (public and private: See table above) and the replication (causality 60%) without the GEF's co-financing by the pilot beneficiaries where have been implement the pilots:

Initiative	Amount of CO2(MTons) Year 2018	Accumulated Amount of CO2(MTons) Years 2015-2018(within the project time timeframe) NOTE 1	Accumulated 2019-2025 CO2 (Mt) Direct extended impacts	Total Cumulative 2015-2025 (MtCO2)
Street Lighting	0.69	1.74	4.83	6.57
Led Market Transformation Attributed to the project Causality factor 60%	0.548	1.476	3.83	5.30
Total (NOTE 2)	1.238	3.216	8.666	11.88

Table 7 Direct GHG Emissions Reduction

NOTE 1: The first pilot projects were implemented in 2015 and later.
NOTE 2: The target set in the Prodoc was 0.95 Mt. The project over performed with 11.88 Mt. Even within the time boundary (project timeframe), the GHG emissions reduction of 11.88 MtCO2 is more than 3 times higher than expectations.

The Indirect GHG emissions reduction resulting of the market transformation others than replication of pilots by the pilot project beneficiaries:

Initiative	Amount of CO2(MTons) Year 2018	Accumulated Amount of CO2(MTons) Years 2015-2018	Cumulative Indirect MtCO2 2019-2025	Total Cumulative 2015-2025 (MtCO2)
Led Market Transformation Causality factor 60%	0.822	2.214	5.75	7.96

Table 8 Indirect GHG Emissions Reduction

3.5.1.7 S&L (MEPS) GHG Emissions Reduction

S&L and MEPs are regulations having a direct impact on a long term. To assess the impacts due to applying the Energy Efficiency Standards & label Program (EES&L) of the selected appliances and estimate the annual electricity saving, the following assumptions were taken into consideration:

- The energy efficiency levels value[23] (A, B, C, D, E) for each product as given in the EE standard and label.
- The tested sample for each appliance from the testing facility in EOS, NREA & GOIEC.
- The market volume for each appliance is aggregated from the annual reports of Central Agency for Public Mobilization & Statistics (CAPMAS).

The expected savings are calculated according to the following methodology:

- Calculate the difference between each level of the tested model compared to MEPS (E Level).
- Assuming the annual production of each product is under the MEPS and are labelled according the tested samples Energy Label levels.
- The expected savings are calculated based on the difference of Label levels to MEPS and the number of products of each level.

The Table below is the GHG emissions reduction for the selected 7 appliances[24].

Expected Savings (GWh) and GHG avoided									
Year	**AC**	**Fridge**	**Washers**	**WH**	**Fans**	**Dishwasher**	**TV**	**Total**	**Total**
								GWh	GHG MtCO2
2010/2011	**159.0**	**767.0**	**18.7**	**369.6**	**-**	**-**	**-**	**1314.2**	0.71
2011/2012	**146.2**	**853.3**	**37.6**	**212.8**	**-**	**-**	**-**	**1249.9**	0.67
2012/2013	**103.4**	**889.7**	**46.3**	**191.3**	**-**	**-**	**-**	**1230.7**	0.66
2013/2014	**68.5**	**932.8**	**108.0**	**171.6**	**-**	**-**	**-**	**1280.8**	0.69
2014/2015	**170.7**	**954.6**	**98.7**	**177.3**	**-**	**-**	**-**	**1401.2**	0.76
2015/2016	**92.6**	**1098.3**	**82.1**	**189.5**	**106.2**	**1.3**	**-**	**1570.1**	0.85
2016/2017	**294.9**	**1116.2**	**82.4**	**185.3**	**127.9**	**2.6**	**145.9**	**1955.3**	1.06
Total	1035.3	6611.8	473.8	1497.3	234.1	4.0	145.9	10002.2	5.4

Table 9 MEPs Energy Savings and GHG emissions

NOTE 1: Data related to appliances expected sales is not quite accurate to take it into consideration. The figured impact in terms of savings and GHG is based on proven results within the project timeframe from 2010/2011 to 2016/2017.

3.5.2. Abatement Cost

As a result of the implementation spread on 10 years of EE lighting systems and S&L of 7 appliances improvements, the total direct extended GHG emissions reduction is 17.27 MtCO2[25]. This amount is related to pilot project impact up to 2025, and the impact of the S&L component within the project timeframe. The evaluator does not recommend

[23] The rating highlighted on the Label (sticker) is broken down in 5 level of performance: A is the best.
[24] 1) AC ; 2)refrigerator ; 3)Cloth Washers; 4) Water Heater; 5)Fans; 6) Dishwashers; and 7)TV sets
[25] The grid emission factor employed is 0.56 tCO_2eq/kWh, the one used for estimating the impact in the Prodoc.

extending (2019 to 2015) the impact of the S&L component because data related the market growth of the targeted appliances is not an accurate or reliable data.

The abatement cost based on the GEF's financing is therefore 0.26 USD per tCO_2. It is a very good result mainly justified by the low cost of EE improvements and the large market penetration of the LED lighting systems.

3.6 Overall project results and rating toward Outcomes

Project Objective

The project is to facilitate a comprehensive market transformation of the Egyptian market towards the use of more energy efficient electrical appliances at a level where cost-efficiency is proven. This is to be achieved through the combination of regulatory tools such as Minimum Energy Performance Standards (MEPS) and information labels, enhanced public awareness, capacity building and attractive financing mechanisms. The project will strengthen the regulatory and institutional framework, develop monitoring and enforcement mechanisms, and provide training to public authorities and other relevant stakeholders. It will explore and test different financial incentives complemented by extensive public outreach campaigns.

It is important to mention that the evaluator rated the project performance against the Project Results Framework approved in the Project Documents (2010).

Each outcome was evaluated against the following criteria as required by the GEF Guidelines as follows:

- *Relevance* – the extent to which the outcome is suited to local and national development priorities and organizational policies, including changes over time;
- *Effectiveness* – the extent to which an objective was achieved or how likely it is to be achieved;
- *Efficiency* – the extent to which results were delivered with the least costly resources possible.

The Project outcomes were rated based on the following scale:

- *6: Highly Satisfactory (HS)*: The project has no shortcomings in the achievement of its objectives;
- *5: Satisfactory (S)*: The project has minor shortcomings in the achievement of its objectives;
- *4: Moderately Satisfactory (MS)*: The project has moderate shortcomings in the achievement of its objectives;
- *3: Moderately Unsatisfactory (MU):* The project has significant shortcomings in the achievement of its objectives;
- *2: Unsatisfactory (U)* The project has major shortcomings in the achievement of its objectives;
- *1: Highly Unsatisfactory (HU):* The project has severe shortcomings in the achievement of its objectives.

The whole project IP performance is rated **Highly Satisfactory (HS)** because there is no shortcoming and the project reaches the target on all planned outputs under the expected three Outcomes. In addition the Project appropriately recovered the time more or less lost during the first two years. The PMU and the UNDP CO made a major decision by shifting the CFL technology to LED technology. Such a decision had a major impact on the final successful and full achievement and much more toward the energy savings and GHG

emissions reduction targets. The other major decision made by the project is related to the grant financial mechanism, which allows the Project to provide a grant to some pilot projects driven by the private sector. The unusual extended replication of pilot must also be pointed out and another justification for granting the Project with the best IP rating HS. Finally because of the improved S&L regulation for a series of the most popular electric appliances can secure the sustainability of the whole project.

For more details related to Outcomes-based review and evaluation look at Appendix 6. Table 10 below summarizes the TE rating matrix.

Outcomes	Relevance	Efficiency	Effective-ness	Overall Rating
Outcome 1: Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.	6	5	6	**5.7(HS)**
Outcome 2: A comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.	6	5	6	**5,7(HS)**
Outcome 3: Sustained project results	6	5	6	5,7
Monitoring and Evaluation	6	5	6	5,7(HS)
Overall Rating	**5.7**	**5**	**6**	**5.6(HS)**

Table 10 Summary Evaluation of Outcomes-based Matrix

Overall Project Results at EOP	Achieved
Intended EOP Outputs:	Quantitative expected outputs reached more than intended at EOP: - GHG reduction: 17.28Mt rather than 0.95 - Pilot Projects: 43 rather than 22 - MEPs and S&L regulation: more than the expected target, 7 rather than 5 appliances - Market transformation: 85 millions units a year rather than 35 million. - Co-financing significantly exceeded targets
Direct emissions reduction (associated with demo projects)	3.216 MtCO2
Cumulative indirect emissions reduction due to project's pilots, and replication (causality 60%) of pilot projects	7.96 MtCO2
Ratings	
✓ **relevance: 6**	The project has no shortcomings in the achievement. The delay (phase 1: 2010-2013) for getting results has been recovered from 2015 to 2018.Rated **HS** because the Project address the right issues through Appliances S&L and the large implementation of the latest efficient lighting technology (LED)
✓ **efficiency: 5**	The project has no shortcomings in the achievement. The delay (phase 1: 2010-2013) for getting results has been recovered from 2015 to 2018. The efficiency is rated **S** because of the shortcoming and delay from 2010 to 2013.
✓ **effectiveness: 6**	Data provided to evaluators encompass a list of 43 buildings and lighting systems (e.g.: Street Lighting Systems having contributed to the result. Because of the usefulness of components 1-2 and the development of new testing facilities the evaluator rated the effectiveness **HS**.
✓ **Key Outcome overall rating: 6**	In regard to CO2 and energy saving the project performed over all expectations. the project is a successful project rated **HS** as a whole.

Table 11 Overall Project Results at EOP

In practice, the overall project result in term of energy savings and GHG emissions reduction is better than the expected results.

Justification for the HS rating through the Project Outputs and Related Target(s) / Sub-target(s) achievements.

Outcome 1: Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative. RATED HS

- By the time the project document was prepared, the end of project target level was to reach an annual sale of 35 Million CFLs. It came that during the early stages of project

implementation, the LED technology substituted the CFL technology. The Project has developed technical specifications for all types of used LED lighting systems used in Egypt in accordance with the international specifications. The Project has provided technical assistance to the entities implementing efficient lighting projects for preparation of tendering documents developed by the project taking into consideration the technical specifications as well as the general conditions that will provide a high level of guarantee for a high-quality low-cost LED lighting equipment.

- The recommended list of suppliers developed by the Project is requested by many entities to assist them in tendering procedures, the list is announced on the project web site. On the other hand, new suppliers are requesting from the project to be included in this list, today many new suppliers have been added to the list once providing the project with the test results performed at one of the three accredited testing laboratories.
- The Project Implemented and co-financed number of pilot projects reached more than 43 projects that have been carefully selected, the total financial contribution of the project was based on 25% cost sharing for the private sector and 50% for the first phase of the project with a ceiling of 0. 5 Million L.E per project and has been raised to 0.750 L.E per project for the second batch of projects following the devaluation of the Egyptian pound to 50% of its value against the USD which targeted the governmental sector. Refer to above Table 6 for the list of Pilot Projects.
- The replication and upscaling of these implemented projects, in addition to the different awareness activities that the project has implemented during its life time targeting the residential sector through awareness sessions, awareness campaigns, social media has contributed to raise the market size of LED lamps to nearly 100 Million Lamps including different types of lamps over the last 3 years, thus far exceeding the project target.
- Results of these pilot projects have been documented as success stories in informative brochures largely disseminated in the seminars, workshops and to customers of the same sector to encourage them implementing this type of projects based on the successful achievements.
- The project has succeeded to demonstrate that based on the results of the achieved pilot projects that investment in these types of projects is technically and economically justifiable when the energy savings are in the range of 25% - 40% and the payback period varies in most of the cases between less than a year to one and half, which is a relatively short payback period compared to other EE technologies.
- The Project has provided only technical assistance to a large number of entities through walk-through audits and techno-economic feasibility studies.
- Based on the provided technical assistance and the expanding demand for converting to efficient lighting, the Commercial International Bank (CIB) of Egypt which was the first bank to convert all its branches, launched an Energy Efficiency Green credit line facility (The Bank Green Fund) for encouraging the bank customers (Corporates and retailers) implementing EE lighting projects. The Bank has requested the project to act as the technical advisor for the fund, and has signed an MOU with the project in this regard. CIB has referred two hotels; one factory and one residential compound to the project to prepare the techno-economic study and are currently negotiating with the CIB their loans.
- The United Nations Industrial Development Organization (UNIDO) through the Energy Efficiency in Industrial Sector Project has requested the project to provide technical assistance for conducting lighting audits and techno economic feasibility studies in two large factories for improving their lighting systems.
- The Project is also providing technical assistance to the tourism sector where a series of events for presenting integrated solutions of EE and RE, are jointly organized by the Ministry of Electricity & Renewable Energy represented by the Project and the Joint

Egyptian-German Committee on Energy Efficiency (JCEE) of the GIZ, and the Ministry of Tourism represented by the Green Unit of the Ministry, the first event was organized in Cairo addressing the investors of Marsa Alam Region, the results were very encouraging more than 6 hotels requested the technical assistance of the project in conducting EE lighting audits, this first event has sounded well where the second event is to take place in Hurghada by December 2018 to be followed by other two events planned at Sharm El Sheikh and possibly Cairo. The project is also promoting funding through the established credit lines in CIB and EBRD.

- The project has also approached one of the sectors that was not previously targeted (sporting clubs) due to the subsidized electricity tariff, while there is large potential for savings. A study has been conducted at one of the largest sporting clubs in Cairo with recommendations that are currently being discussed on gradual phase out of metal halide and sodium lighting systems for courts and street lighting.
- The Project has convinced EBRD GEEF credit line for energy efficiency to include efficient lighting systems, which has approved funding the first lighting project in Egypt for El-Raya chain of supermarkets and is currently negotiating with the bank. The project has also referred another chain of hypermarket to leasing company and is currently negotiating a loan to convert all its branches to LED.
- The project has designed a sign of recognition that has been handed to entities that have implemented EE lighting Projects and the sign has been displayed in a visible place including Cairo Airport.
- In a joint event, attended by the Minister of Electricity in Feb 2018, the Project awarded ten large Private Sector companies members of the American Chamber of Commerce Trophies as recognition of their efforts in converting their premises into efficient lighting.
- A similar event is to be organized at the Ministry of Foreign Affairs where one of the pilot projects has been implemented for awarding the Governmental entities that transformed their lighting systems to efficient ones.
- The project is cooperating with the GEF/UNDP project entitled small scale PV systems interconnected to the grid to provide technical assistance for implementing Efficient lighting projects prior to PV projects.
- Due to all its outstanding achievements, the Project has been awarded the Emirates Energy Award and received Special Recognition Award in a large ceremony organized by the Dubai Supreme Energy Council in Dubai in October 2017.
- Through the cooperation between the Egyptian power sector and both Saudi Arabia and Sudanese power sectors, the project has been requested to transfer its expertise and experience in the field of energy efficiency to engineers of both countries working in this field.
- In order to overcome lack of reliable data, the Project has recruited a national consulting firm to conduct LED lighting Market Survey. The main objective of this consultancy is to assess the status of the market transformation to LED lighting systems provide detailed analysis of the market size for different types of LED lighting products including lamps, panels and longitudinal lamps and degree of saturation based on extensive surveys and data collected from identified entities that might have some data on the market size data whether governmental entities or lighting systems suppliers.
- The Project has also contracted a local consultant to prepare a NAMA document that quantifies GHG gas reduction, demand and energy savings from lighting market transformation in Egypt.
- The document analysed the high efficiency lighting systems market data; estimated the demand reduction and energy saving from high efficiency market transformation to develop a comprehensive NAMA design document and measurement reporting of a

Monitoring and Verification system.

- The project has partnered with many stakeholders involved in the field of energy efficiency: the Egyptian Electricity Holding Company; the Egyptian Electricity Transmission Company; the Electricity Distribution Companies; the Egyptian Organization for Standards and Quality (EOS); the General Organization for Import and Export Control ;the Industrial Control Authority; the GEF Small Grants Programme; the New and Renewable Energy Authority (NREA); the Electric Utility and Consumer Protection Regulatory Agency (EEUCPRA); the Egyptian Consumer Protection Agency (CPA); the Commercial Chambers in Egypt; the Private Sector and NGOs.
- The project signed Memorandums of Understanding (MOUs) with governmental, non-governmental, international, public and private sector organizations, including the UN Global Compact, the Egyptian Engineering Syndicate, the Consumer Protection Agency, in order to expand project outreach, create greater resonance, and ensure project sustainability.

Outcome 2: A comprehensive S&L scheme for building appliances developed and effectively implemented.

The previous energy efficiency and Greenhouse reduction project had dealt with the S&L scheme for five electrical appliances. The current IEELA project intended to expend the S&L scheme for series of residential electrical appliances selected based on market studies.

In 2018, more than 9 MEPS for electrical appliances have been developed: Electric Fans; TVs; Ovens, Dishwashers; Vacuum cleaners, pumps; Air conditioner with inverter compressors; microwaves; and hot water heaters. MEPS have been developed in cooperation between the project Outcome 2 team members and the Egyptian Organization for Standards (EOS) through different technical committees assigned for the adaptation of international MEPS to local conditions. The number of developed MEPS is by far exceeding the number of what was proposed in the project document (5 appliances).

Based on Ministerial decrees, the RFP procedures have been rolled out by the PMU for supplying and installation accurate, reliable and efficient new testing equipment and additional rooms and laboratories at the premises of monitoring authorities. The Evaluator visited all new testing facilities highlighted below:

- Three Energy Efficiency Testing Laboratories established at the General Organization for Export and Import Control: electric water pumps, electric oven and the fractional motors in addition to the upgrade of the existing power motor testing laboratory to test efficiency as well as performance.
- Two Energy Efficiency Testing Laboratories established at the New and Renewable Energy Authority: Dish washers while the Air conditioner with inverter compressor was completed in 2018.
- Three Energy Efficiency Testing Laboratories established at the General Organization for Standards: Electric fans, televisions and the last, one vacuum cleaners, is almost completed.
- The Energy Efficiency testing laboratory for LED Lamps is under installation at the General Organization for Export and Import Control and expected to be operational by end of 2018.

The Project is assisting the Energy efficiency department established at EOS for enforcing the issued ministerial decrees for monitoring and inspecting the status of S&L Program

implementation. The project is coordinating the MEPPs enforcement through regular meetings (technical committees) involving key stakeholders and practitioners.

- The Ministerial decree issued in 2017 for enforcing the previous ministerial decree is granting the Energy Efficiency Unit of the Egyptian Organization for Standards (EOS) the task to issue the energy efficiency labels for all imported and local manufactured appliances as well as imposing penalties in case of non-compliance. The proposed system developed jointly between the project and the EE unit of the General Organization for Standards for monitoring the program implementation has faced some coordination challenges: the project is currently supporting the Unit and the monitoring authorities by upgrading the existing systems to enable the effective cooperation between EOS, GOIEC, CPA and ICA with the aim of mitigating issues faced by the program by defining a specific role to each of the stakeholders.
- The labels issued by the EE Unit at EOS, with a reference bar code available to all S&L monitoring bodies have result in an improved level of efficiency for all tested appliances.
- Since the development of MEPS in year 2003 and through the first phase of the current project, the significant number of tested appliances dealt with: 1,549 air conditioners, 3,415 refrigerators, 2,122 washing machines and 628 water heaters. It is important to mention that the new testing facilities and equipment managed to scale down the testing delay; which has been highly appreciated by importers and local manufacturers.
- The Project delivered many training sessions to train 300 salesmen of appliances, lighting and air conditioners in Cairo and Giza Governorates. Training sessions were related to Energy Efficiency Standards and Labels with the aim of providing reliable and comprehensive information on the label reading to buyers of these appliances. More than 300 salesmen in Cairo and Giza governorates have been trained at a first phase through 10 sessions. Based on the successful results of the first phase, the training sessions were replicated in other governorates Tanta, Mansoura, Fayoum and Suez.

Outcome 3 Sustained project results

The IEELA project dealt with the level of information available for adaptive management and for M&E of impacts as follows:

- In addition to information released from stakeholders concerning annual information on the sale of each of the targeted appliances the Component 3 (Outcome 3) enabled a tight cooperation between the project and different relevant authorities responsible of monitoring the Standards and Labelling Program.
- The Project team compiled data provided by the Central Agency for Public Mobilisation and Statistics (CAPMAS) and analysed the data in correlation with the results of tested appliances at each of the three testing laboratories to prepare a study and gather information on the sale of targeted appliances broken down by their level of efficiency. Such a follow-up managed to secure the sustainability of project outputs.
- The Capacity building through the training session deliveries and workshops to employees of municipalities and governmental entities was dealing with EE auditing or standards and labels usefulness and procurement procedures.
- The training sessions to salesmen (300) managed to inform salesmen on the importance of the labelling systems of electrical appliance with the aim of sharing this crucial information to read the label and to take it into consideration when customers want buying new appliances.
- The awareness initiatives have been rolled out in cooperation with the Ministry of Electricity and Renewable Energy to educate consumers on the benefits of energy efficiency and energy management as well as the best practices that resulted in energy

savings in a way or another. The Project used different medias and communications links (e.g.: among others the project web site and Facebook) and activities, including the organization and participation in numerous seminars and events in Cairo and other governorates.

The Project designed and published various promotional materials including brochures, posters, flyers, and informative tips, and case studies) distributed nationwide to a range of target groups, including government decision makers, the private sector, and the general public. In addition, the Project designed stickers and signs showing that the building is using LED largely distributed to all facilities that converted their premises to LED among other at the Airport, the largest telecommunication company in Egypt, the gas stations and many governmental buildings.

- Promotional campaigns have been organized by involving university students, youth volunteers (more than 100 volunteers), trained by the Project to increase public awareness on energy efficiency at the community and grass-roots level through social and sporting clubs, shopping malls, supermarkets, and places of worship.
- The Watty El Watt (Facebook page) was spreading the basic knowledge on Energy Efficiency and Conservation through daily posts that raised a great interest.
- The Memorandums of Understanding (MoUs) duly signed between the Project and governmental, non-governmental, international, public and private sector organizations, including the UN Global Compact; the Egyptian Engineering Syndicate; the Consumer Protection Agency, and most recently, Al Ahram Media Organization (Egypt's largest and oldest national public sector media organization in order to expand project outreach, create greater resonance, and ensure project sustainability.

The IEELA project Outcome 3 also dealt with recommendations with the aim of securing the institutional sustainability of new regulation and the EE equipment market transformation. The project results are expected to be more sustainable through the following institutional mechanisms as follows:

- The EE departments that have been established in the various departments of the power sector. These departments have been established at the Ministry of Electricity and Renewable Energy with the support of the World Bank, also at the Egyptian Electricity Holding Company and at the level of the 9 electricity distribution companies.
- The clause on Energy Efficiency included in the Electricity Law intends to secure the rollout and sustainability of the EE actions/requirement and behaviours.
- The Cabinet of Ministers instructions addressed to all ministries and governors to reduce lighting consumption in all governmental offices and replace existing lighting systems by LED ones.
- The Standing Committee that has been set up at the Central purchase program of the Ministry of Finance to include only efficient equipment in all governmental procurement.
- MEPS that have been developed, the large number of testing laboratories and the monitoring systems for S&L program that has been developed by the project in cooperation with the Egyptian Organization for Standards (EOS).
- The Ministerial decree intending to secure the sustainability beyond project lifetime for enforcing the Standards and Labelling Program for the additional 9 MEPs.
- The project results are expected be sustained through the following financial mechanisms supported by the Project: The Green Fund of the CIB; the Green Fund of the EBRD; and the Small and Medium size enterprises of the social security fund.

3.7 Country ownership and impact in term of sustainability

3.7.1 Sustainability

In assessing the sustainability of the Project[26], the evaluator asked, "how likely will Project outcomes (from the log-frame of the 2010 (Appendix 2) be sustained after termination of the Project". Sustainability of these objectives was evaluated in the context of financial resources, socio-political risks/institutional framework, and the environmental factors, using a simple ranking scheme:

- *Likely (L=4):* very likely to continue and resources in place;
- *Moderately Likely (ML=3):* model is viable, but funding or resources may not be in place;
- *Moderately Unlikely (MU=2):* model is not viable or needs changing; and/or resources not in place; and
- *Unlikely (U=1):* model is not viable and resources are not in place.

The project overall evaluation of Sustainability is rated **Likely** because of the outstanding impact of the LED market transformation (Outcome 1) and the improvement of the S&L regulation which is now dealing with 9 additional appliances (Outcome 2). In addition (cf section 3.6 under Outcome 3) the institutional arrangement should last for long because of the Ministerial decree intending to secure the sustainability beyond project lifetime for enforcing the Standards and Labeling Program. In regards to financial issues the Project supported and did work closely with the financial mechanisms already in place for further EE developments: The Green Fund of the CIB; the Green Fund of the EBRD; and the Small and Medium size enterprises of the social security fund.

[26] Same methodology used for the MR 2013. The Table is updated in accordance with results at EOP timeframe

Planned Outcomes	Assessment of Sustainability at EOP	Sustainability at EOP
Outcome 1: Accelerated growth of the EE lighting market in Egypt	• *Financial Resources*: Financial resources were available from the implementing partners, especially the MoERE/EEHC which invested 117 million USD in the street lighting systems based the pilot project and in line with the targets of the EE Law and regulations to reduce energy intensities of lighting systems in public building and street lighting; • *Socio-Political Risks*: The Cabinet of Ministers instructions addressed to all ministries and governors to reduce lighting consumption in all governmental offices and replace existing lighting systems by LED ones and the set-up of the Standing Committee at the Central purchase program of the Ministry of Finance to include only efficient equipment in all governmental procurement. • *Environmental Factors*: Reduced energy consumption and GHG emissions is a consequence of strengthened institutional-regulatory framework and the market transformation. ***Overall Rating Sustainability Outcome 1***	L (4) L(4) L(4) **L (4)**
Outcome 2: Comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.	• *Financial Resources*: Financial resources were available with government agencies (Egyptian Organization for Standards for modernizing the MEPs testing facilities through a co-financing and investment of 1.2 million USD in addition to the GEF's financing for providing a series of testing equipment. • *Socio-Political Risks*: By matching the new MEPs with the international regulation and rolling out the reliable and transparent testing procedures in accordance with the international best practices, the Project mitigated the risk of corruption for approving new electric appliances on the national market, both imported or produced in Egypt. • *Institutional Framework and Governance*: The EE departments that have been established in the various departments of the power sector strengthen the institutional framework. These departments have been established at the Ministry of Electricity and Renewable Energy with the support of the World Bank, also at the Egyptian Electricity Holding Company at the level of the 9 electricity distribution companies. • *Environmental Factors*: Reduced energy consumption and GHG emissions are a consequence of enhanced testing capacity and testing the reliable and more accurate teting and reporting procedures. Such a better performance of the testing facilities, by shortening the approval delays, has a direct positive impact on the economic environment in Egypt because imported electric appliance can now reach the market more swiftly (approval delay: 1 week rather than 1 month). ***Sustainability Rating of Outcome 2***	L(4) L(4) L(4) L(4) **L(4)**
Outcome 3: Sustained project results	Because of the full achievement of Outcome 1 and 2 in regard to market transformation and the S&L regulation frameworks and additional MEPs developed by the Project, the impact and result, as well than further development is rated **Likely**	L(4)

Table 12 Assessment of Sustainability for Objectives

3.7.2 Replicability

Based on the outstanding results and impacts of the IEELA project, the Evaluator assesses the ''replicability'' of such a project framework very relevant in many other countries where the cooling load of buildings has a significant impact on the energy consumption. Pilot projects made the demonstration that the energy saving the LED lighting systems is about 50% of the energy savings, and 50% is from the cooling systems because of the reduction of the heat losses of the lighting systems.

The second key Outcome related to S&L and MEPS, could be aptly replicated in countries where the electric appliances market is big and significantly growing because of the economic development.

Because the project has been successfully implemented in Egypt, the replicability is rated **Likely** in a similar context.

4. Conclusion, Recommendations and Lessons learned

4.1 Conclusion

Although the project faced a difficult context at the kick-off and inception stages from 2010 to 2013 the project recovered and reached all Outcomes and achieved Outputs and even more in terms of market transformation and MEPS regulation. The approved target was to extend the efficient lighting bulbs to 35 million unit a year and the project drastically overcame it to reach about 85 million LED bulbs sold on the national market and 7 new or improved MEPS rather than 5. In addition, the project has significantly improved the efficiency and accuracy of the testing procedures of MEPs compliance. The time required to test the compliance has been significantly reduced and the automated reporting tools allowed the testing laboratories (3 sites[27]) to match the tested equipment EE performance with the labelling system.

Because of the greatest performance of the market transformation of EE lighting systems and the impact of new MEPS and the related labelling system, the target of GHG emissions reduction has been drastically better: being 17 times better than expected. The Pilot projects components performed much better with 43 pilot projects rather than 22 as expected. Most of the pilot project have been replicated by the pilot project beneficiaries, which has also impacted the whole Project impacts in terms of energy savings and GHG emissions. Finally, because of the new energy efficient LED bulbs, one can expect that those improvements to lighting systems in buildings and street lighting is sustainable for the upcoming 10 years.

The economic impact is also a component of the sustainability. By reducing the energy bill of office buildings, commercial facilities and street lighting systems, the project can make available more money for new investments, especially in shopping malls and supermarkets. In term of replication, a similar project dealing with the same three Outcomes could be replicated in all countries where the cooling load (AC) is intensively used because of about 50% reduction of the heat lost of the lighting systems. For all these reasons, including the performance of project team members, and because the project did not face any shortcoming, the project earned the perfect rating: Highly Satisfactory.

[27] EOS, NREA & GOIEC

4.2 Lessons Learned

4.2.1 Lighting load and Cooling Load

The project component 1 related the market transformation through the extended usage of LED lighting systems can reduce the energy consumption by about 50% when the energy end-user replaces the CFL by the LED technology. If the LED replaces an incandescent bulb the energy saving is about 90%. All this was already well known, at least by the energy managers, but the project allowed figuring out the impact on the AC systems of office buildings and more importantly in super markets. The practice pilot project carried out by the IEELA showed that 50% of the energy savings are derived from the reduction of the cooling load, and 50% from the lighting load.

4.2.2 Investment Cost

Although the interest rate was high in Egypt over the last 5 years (about 20%), the private companies (building owners and supermarket) where the pilot project has been implemented, decision makers made the decision to extend and replicate the pilot project because of the low-cost investment and the very short payback period, most of the time shorter than 6 months. This is especially true for the private sector. The UNDP and the Project Steering Committee made an innovative decision by allowing the private sector access to the needed grant (25%). Such a decision started up the investment process and the replication of pilot projects.

4.3 Recommendations

4.3.1 Keep the focus on limited range of technologies

Many projects failed because the project proponent wanted to support a large spread of technologies in the building sector. Such an approach is quite risky because of the cost issue and the time needed for introducing and demonstrating the relevance of these technologies and most importantly the demonstration of their cost-effectiveness. For example, in the building sector it is quite easy to focus on the lighting systems or the AC equipment and energy management. Avoid dealing with the envelop of the building because the payback period is most of the time longer than 10 years. In the industrial sector, keep the focus on energy management and electric motors or boilers with steam or hot water distribution systems. As a rule, the investment is quite low and the technology is well known by local practitioners.

4.3.2 Secure the Sustainability of the Institutional Support to S&L Development and Enforcement

The project overall evaluation of Sustainability has been rated ‘’Likely’’ among others because of the improvement of the S&L regulation which is now dealing with 9 additional appliances (Outcome 2). The institutional arrangement already set up alson by the project should last for long after the project closing with the aim of supporting the extended rollout of the Ministerial decree which intends securing the sustainability beyond project lifetime for enforcing and developing the Standards and Labeling Program.

A1: Field Mission Agenda October 2018

Mr. Louis-Philippe Lavoie's visit to Egypt agenda

DATE	TIME	VENUE	PURPOSE	PARTICIPANTS
28th October, 2018	9:30 -16:00	Energy Efficiency Project	Welcoming the evaluator and overview of the Project achievements vis a vis outcomes and outputs	Dr. Mohamed Bayoumi, Assistant Resident Representative-UNDP Eng. Viola Zaklama, Deputy Project Manager-EEP Dr. Kamilia Youssef, Lighting Consultant-EEP Eng. Mostafa Al Sammany, Standards and Labels Program Director-EEP
29th October, 2018	11:00- 12:30	Center for Environment and Development for the Arab Region and Europe (CEDARE)	Learn about a Pilot project implemented in a Private administrative building + CIB branch that initiated the larger project to cover all CIB Branches	Dr. Nadia Makram, CEO - CEDARE Mr. Ashraf Atef, Regional Director of Finance, Administration and Human Resources-CEDARE Eng. Viola Zaklama, Deputy Project Manager - EEP
	13:00- 14:30	New & Renewable Energy Authority (NREA)	Visiting the testing laboratories at NREA	Mr. Ahmed Shaaban, AC Testing Lab Supplier (BETA Electronics) + working team at AC laboratories Eng. Viola Zaklama, Deputy Project Manager -EEP Eng..Moustafa El Sammany, Standards and Labels Program Director-EEP
	15:00- 16:00	Philips Company	Meetings with suppliers, how the LED market evolution has been achieved and what are the main	Mr. Moahmed Abo El Azayem, Country Leader North East Africa-Philips Lighting

			problems faced during transformation and how to remedy	Eng. Viola Zaklama, Deputy Project Manager-EEP

30th October, 2018	9:30- 10:30	PV Project	Presenting the case of a successful EE lighting initiative in an administrative building (NUCA) Ministry of Housing	Dr. Hend Farouh, UNDP-GEF PV Project Manager and Former Head of Sustainable Development Unit in New Urban Community Authority (NUCA) Eng. Viola Zaklama, Deputy Project Manager -EEP
	11:00-12:30	Commercial International Bank (CIB)	Learning about the CIB Green Credit Line initiative	Eng. Adel Ashmawy, Sems,Fi & Country Risk Sector Head, Credit & Investment Exposure Management-CIB Eng. Viola Zaklama, Deputy Project Manager -EEP
	13:00-16.00	Energy Efficiency Project	Discussing the methodology adopted for GHG calculations Meeting with one of the manufacturers (Venus) with the largest share of LED market in Egypt	Eng. Ehab El Masry, Climate Change Mitigation/Renewable Energy/Energy Efficiency Expert Eng. Viola Zaklama, Deputy Project Manager -EEP Dr. Kamilia Youssef, Lighting Consultant-EEP Eng. Mostafa Al Sammany, Standards and Labels Program Director-EEP Mr. Ahmed Mosaad, Marketing Manager-Venus Company
31th October, 2018	9:00 – 10:00	Meeting with Joint Committee on Renewable Energy, Energy Efficiency and Environmental Protection (JCEE) / Gesellschaft für Internationale Zusammenarbeit (GIZ)	Overview of joint activities between GCEE/GIZ and the project	Dr. Nikolaus Supersberger, Head of Project, JCEE-GIZ Mr. Torge Stehnken, Junior Advisor- JCEE/GIZ Eng. Emad Hassan, Energy Advisor to the Minister of Tourism Eng. Viola Zaklama, Deputy Project Manager -EEP

	11:30 -12:30	Egyptian Organization for Standards & Quality (EOS)	Visiting the testing laboratories	Eng Amgad Sedrak, General Manger of testing laboratories & Supervisor of Energy Efficiency Unit-EOS Mr. Reda Rashed,Vacuum Cleaner Testing Lab Supplier (BTC) Eng. Mostafa Al Sammany, Standards and Labels Program Director-EEP
	12:30 – 13:30	General Organization for Export &Import Control (GOEIC)	Visiting testing laboratories	Eng Ibrahim Abd El Sammie, Vice Chairman GOEIC Eng. Ahmad Ghazi, General Manager of testing laboratories-GOEIC Eng. Mostafa Al Sammany, Standards and Labels Program Director-EEP
	14:00-15:30	JW Marriott	Visit of the first hotel to convert its lighting system to LED	Eng. Nabil Abu Kalam, Director of Engineering-JW Marriott Eng. Mostafa Al Sammany, Standards and Labels Program Director-EEP
1st November, 2018	9:00 -10:00	Egyptian Environmental Affairs Agency (EEAA)		Mrs. Hoda El Shawadfy Director, GEF Unit, EEAA Eng Viola Zaklama, Deputy Project Manager -EEP
	13:00-14:00	Metro Supermarket	Visit to one of the Metro Supermarkets that has converted to LED and learn about Metro initiative to convert all its premises, supermarkets and warehouses to LED	Mr. Seif El Batanony, Corporate Affairs Manager - Al Mansour Co. for Financial Investments Eng. Viola Zaklama, Deputy Project Manager -EEP
	14.30-15:30	UNDP	Wrap up meeting	Dr. Mohamed Bayoumi, Assistant Resident Representative-UNDP Mr Sylvain Merlen Deputy Country Director UNDP Egypt Dr. Ibrahim Yassin, Project Director-EEP Eng. Viola Zaklama, Deputy Project Manager EEP

A2: Project Log-Frame /Outcomes and Outputs

1. PROJECT RESULTS FRAMEWORK:

This project will contribute to achieving the following Country Programme Outcome as defined in CPAP or CPD: Sustainable management of environment and natural resource incorporated into poverty reduction strategies/key national development frameworks and sector strategies					
Country Programme Outcome Indicators: Access to cleaner energy services and low-emission technology including renewable energy, energy efficiency and/or advanced fossil fuel technologies promoted					
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. Catalyzing environmental finance OR 3. Promote climate change adaptation OR 4. Expanding access to environmental and energy services for the poor.					
Applicable GEF Strategic Objective and Program: GEF's Strategic Programme #1 of GEF-4 on "Promoting Energy-Efficient Buildings and Appliances".					
	Indicator	**Baseline**	**Targets End of Project**	**Source of verification**	**Risks and Assumptions**
Project Objective[28] To improve the energy efficiency of end-use equipment, namely building appliances and lighting systems manufactured, marketed and used in Egypt	The level of compliance of the targeted appliances with the adopted minimum energy performance standards (*a priori* the MEPS to be adopted in Egypt are expected to be in line with those adopted in EU.)	From 10% to 50% higher energy consumption (depending on the appliance) when comparing to the planned MEPS (for further details see Annex 7-4).	Over 80% of the appliances sold in the Egyptian market are in compliance with the requirements of those MEPS and labeling schemes that are expected to be in force by the end of the project (for further details see Annex 7-5).	Market monitoring and compliance checking reports produced in the frame of the project	Effective implementation and enforcement of the adopted EE policies
	Amount of reduced CO_2 emissions compared to the projected baseline	See the baseline scenario presented in Annex 7-4.	Direct incremental reduction of GHG emissions **by 0.95 million** tons of CO_2eq by the end of the project and estimated cumulative indirect GHG emission reduction of at least 53 million tons of CO_{2eq} by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 60%.	Market monitoring reports and official energy statistics. Post project market monitoring and evaluations	See above
Outcome 1[29]	Total volume or the market share of the	CFLs: No new MEPS adopted + annual sale of 25	CFLs: Annual sale of **35 million CFLs reached by 2015**	Market monitoring reports	Competitive prices and consumers' trust on the

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

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

Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.	CFLs and other EE lighting appliances in Egypt	million CFLs reached by 2015 as a result of a continuing natural growth. LFLs and HIDs: No new EE requirements formally adopted and reflected in public procurement processes.	resulting from project's market promotion activities + new MEPS adopted for completely phasing out incandescent light bulbs as per the schedule elaborated in Annex 7-5. LFLs and HIDs (street Lighting): The second set of EU consistent EE requirements have entered into force[30] , they are reflected in the technical specifications for public procurement and less than 10% of the random samples tested show non-compliance.		quality and performance of EE lighting Availability of different EE lighting products that meet the needs of consumers for different lighting applications
Outcome 2 A comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.	The status and content of the legal and regulatory acts and the agreed implementation arrangements dealing with appliance minimum energy performance standards (MEPS), labeling schemes and their enforcement. The share of non-compliant products.	Minimum energy performance standards and/or labeling schemes developed and adopted for 5 appliances (CFLs, refrigerators/freezers, washing machines, air-conditioners and electric water heaters), but not adequately enforced and monitored yet.	Strengthened implementation, enforcement and market monitoring of the S&L schemes **adopted for the first five appliances** to cover both import and local production as demonstrated by verified annual statistics on the sale of the different appliances sold as per the different energy classes. **Expanded S&L, implementation, enforcement and market monitoring schemes formally adopted for new appliances consisting** of: TVs and their accessories, information and communication appliances (ICT), stand-by power, external power supply (EPS), electric fans and electric motors as per the schedule presented in Annex 7-5. Fewer than 10% of all the random samples tested at the	Official Gov't publications Local and international testing reports Project reports and **final evaluation**	Interest of the key policy makers and Government entities to strengthen, expand and ensure effective implementation and enforcement of the new S&L schemes

[30] for further details see page 43

			end of the project show non-compliance.		
Outcome 3 Sustained project results	The level of information available for adaptive management and for measuring the impact of the project. The status of recommendations contributing to institutional sustainability.	Insufficient information for adaptive management and for measuring the impact of the project. Insufficient institutional mechanisms in place to ensure sustainability of project results.	Annually updated information on the sale of each targeted appliance as per its energy performance class and the level of compliance with the adopted standards and regulations available. **Sustained institutional and financial mechanisms in place** to promote the market for EE appliances and related market monitoring.	Annual project market monitoring reports Project final evaluation	Agreements and institutional arrangements for regularly obtaining the required market data in place Successful completion of the prior project activities

Project Outputs and Related Target(s) / Subtarget(s)

Outcome 1 Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.	**Outcome 2** A comprehensive S&L scheme for building appliances developed and effectively implemented.	**Outcome 3** Sustained project results
Output 1.1 An enabling regulatory framework for phasing out energy inefficient lighting, including the adoption of: • New laws and/or regulations by the end of the project, which will gradually force all inefficient lighting appliances that don't meet the adopted MEPS out of the market by the end of 2020; and • As applicable, complementary regulations and/or standards to ensure other required minimum quality and other characteristics of the lighting products offered to the market in terms of power factor, lifetime, minimizing the environmental impacts ("recyclability") etc. and/or new regulations for passing adequate and credible information on these characteristics to the targeted clients by product labels.	**Output 2.1** Monitoring and data collection studies for end-use sales and appliance energy use in the residential and commercial sector, including: • annual sales data on all targeted appliances (divided by their energy consumption classes); and • finalized monitoring and statistical studies for estimating the share of different appliances in the current electricity consumption of the residential and commercial sectors and the average number and energy consumption of the appliances currently in use (with updated information for the appliance stock model)	**Output 3.1** An updated baseline study, against which the impact of the project can be measured.
Output 1.2 Innovative and attractive financing mechanisms in place to support and leverage financing for EE lighting and other related EE investments, including the continuation and expansion of the Government-supported CFL incentive programs and the EE loan schemes with complementary funding leveraged for that purpose during project implementation.	**Output 2.2** A detailed proposal for a strengthened compliance checking and enforcement scheme for both locally produced and imported products that are subject to already adopted S&L schemes (including required legal amendments to effectively follow-up non-compliance)	**Output 3.2** A permanent market monitoring system for assessing the impact of the project and to provide a basis for identifying new energy saving opportunities, EE policy measures and programs with finalized market monitoring methodology and agreements with the key stakeholders to submit the required initial market data. The system is to regularly provide updated information on
Output 1.3 Improved energy management of public buildings by appointment and capacity building of energy managers and improvement of the public procurement processes by ensuring that by	**Output 2.3** Established institutional mechanism and finalized implementation arrangements for monitoring, enforcing and regularly updating the S&L schemes,	

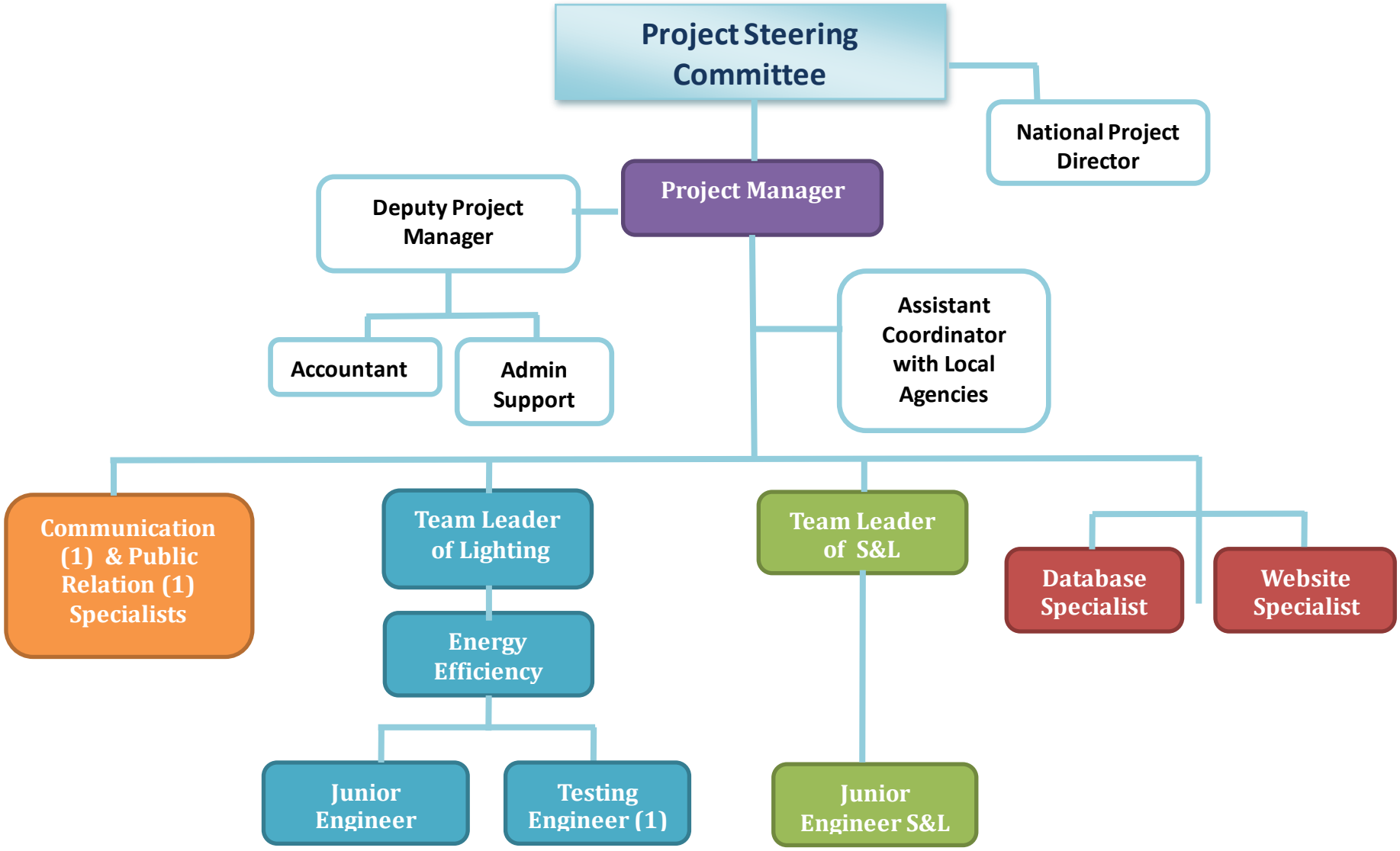
the end of the project: • Main buildings of at least 2 ministries have trained energy managers and an adequate energy management system in operation; and • Coherent technical specifications and related guidance for the procurement of energy efficient lighting and, as applicable, other electric office appliances have been adopted for all public buildings and street lighting,	including training of all key staff of the public entities responsible for the implementation of these schemes.	annual sales of different appliances per agreed energy classes of all targeted appliances.
Output 1.4 Updated guidelines and regulations for implementing energy efficient street lighting with related capacity building and awareness raising of the municipal authorities responsible for that by ensuring that by the end of the project: • A specific unit in the Ministry of Local Development to supervise the promotion of energy efficient street lighting established; • Coherent technical specifications, procedures and guidance for the procurement of energy efficient street lighting have been formally adopted and introduced to all municipalities; and • Municipal authorities responsible for planning and procuring street lighting (covering at least 50 % of the Egyptian market) have been trained on how to reduce the energy consumption of street lighting, while not compromising on the lighting performance and the overall costs.	*Output 2.4* ***A detailed proposal and draft legal documents for an expanded, mandatory EE S&L scheme for the agreed new appliances with concluded stakeholder consultations***	**Output 3.3** Project mid-term evaluation and other required reviews, including annual reports from continuing monitoring of and evaluation of all the financial support programs facilitated by the project.
Output 1.5 A completed study on improving the energy efficiency of lighting in industry elaborating the options, applicable technologies and required other measures to improve energy efficiency of industrial lighting with related recommendations and awareness raising materials	*Output 2.5* ***Upgraded testing facilities with adopted testing standards, trained staff and internationally verified testing procedures and results for checking compliance of all targeted appliance groups with the adopted standards and labelling schemes.***	**Output 3.4** Further elaboration and financing leveraged for applicable financial support mechanisms (including, as applicable, carbon finance) to continue the implementation of EE investments
Output 1.6 Joint marketing / public awareness campaigns with local lamp manufacturers and vendors, including at least 3 market segment-specific marketing and awareness raising campaigns targeting i) the residential sector; ii) public buildings and offices; and iii) street lighting with the co-financing share of these campaigns reaching 50% at a minimum. (For each segment, the most effective means of communication will be selected: that may include the use of TV (for the residential sector in particular), advertisements and articles in newspapers and magazines as well as separate information leaflets and posters.)	*Output 2.6* ***Specific promotional campaigns, dedicated websites and other materials to raise public awareness about adopted S&L schemes and, as applicable, to expedite the phase-out of old, inefficient appliances, including:*** • Delivery of joint marketing campaigns with the manufacturers and retail chain highlighting the EE aspects and the life-cycle costs approach, including, as applicable, booklets, billboards, newspaper advertisements, TV spots, flyers, internet etc.; • A dedicated web site established to support consumers' choice with an emphasis on energy	**Output 3.5** Strengthened institutional and inter-agency co-ordination mechanism, including capacity building of the Technical Secretariat of the Supreme Energy Council and the EE Unit at the Cabinet of Ministers, to support further energy efficiency policy measures.

	efficiency and regularly updated with test results and other product information, pricing, easy to use calculation tools, etc.; • As applicable, specific promotional campaigns to expedite the phase-out of old, inefficient appliances	
Output 1.7 Improved quality control system and, as applicable, complementary procurement support to provide non-partial information to the targeted customers on the quality and performance of the lamps, including: • a mandatory or voluntary scheme with an adequate verification system adopted for displaying information about the performance and other agreed quality parameters/indicators of different lighting products in place by the end of the project (supported by required legal or regulatory acts); • The share of random samples that fail to meet their announced performance and other quality parameters show a decreasing trend reaching less than 10% by the end of the project; and • A web-site, specific publication or other information platform supported by corresponding testing arrangements (and financing for that) in place to provide comparative and non-partial information to the targeted customers about the performance and other quality parameters of the different brands and types of lighting products.	*Output 2.7* ***Trained sales staff in the main retail stores (complemented, as applicable, by specific incentives such as premiums for the sales personnel for the sale of EE products) to market the products on the basis of their energy performance and related life-cycle costs beside other characteristics.*** ***(To be verified by random visits to check to what extent energy efficiency and life-cycle cost reduction aspects are highlighted in the marketing strategy of the retail chain and its staff).***	**Output 3.6** Final project report consolidating the results and lesson learnt from the implementation of the different project components and recommendations for the required next steps.
Output 1.8 All local manufacturers are exposed to information and capacity building to improve the quality of their products		
Output 1.9 A finalized study and proposal for the different options to manage and recycle the components and/or materials of the lighting appliances that have reached the end of their lifetime.		

A3: List of Documents reviewed

- Project Implementation Review report 2012 to 2018.
- Project Document 2010
- Mid-term Review 2013
- Inception Report 2012
- Project Identification Form 2008
- Request Project Preparation Grant 2009
- Project Approval EE Project DOA 2010
- Steering Committee approving the extension minutes 2015.
- NAMA - HEL Transformation, Egypt, Ihab Elmassry, 5Nov18 AE- Final

A4: Project Organogram



A5: Project Cost Breakdown Structure

Award ID:	00060162	Project ID(s):	00075645
Award Title:	Egypt - Improving the energy efficiency of lighting and other building appliances		
Business Unit:	*EGY10*		
Project Title:	Country Name Project Title: **Egypt - Improving the energy efficiency of lighting and other building appliances**		
PIMS no.	**4231**		
Implementing Partner (Executing Agency)	**Ministry of Electricity and Energy (MoEE)**		

GEF Outcome/Atlas Activity	Responsible Party/ Implementing Agent	Fund ID	Donor Name	Atlas Budgetary Account Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	See Budget Note:
OUTCOME 1: Accelerated growth of the EE Lighting Market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.	**MoEE**	**62000**	**GEF**	71200	International Consultants	42 000	42 000	42 000	12 000	10 000	148 000	1
				71300	Local Consultants	36 800	36 800	36 800	36 800	36 800	184 000	
				71400	Contractual services – individuals	120 000	120 000	120 000	120 000	120 000	600 000	
				71600	Travel	2 000	2 000	2 000	2 000	2 000	10 000	
				72100	Contractual services – companies	60 000	60 000	60 000	60 000	60 000	300 000	2
				72200	Equipment	100 000	50 000	50 000			200 000	5
				72400	Grants		65 000	65 000	65 000	65 000	260 000	6
				74200	Printing and publication costs	4 000	4 000	4 000	4 000	4 000	20 000	3
				74500	Miscellaneous	3 600	3 600	3 600	3 600	3 600	18 000	
				75700	Training workshops and meetings	10 000	15 000	15 000	5 000	5 000	50 000	4
					sub-total GEF	**378 400**	**398 400**	**398 400**	**308 400**	**306 400**	**1 790 000**	
					Total Outcome 1	**378 400**	**398 400**	**398 400**	**308 400**	**306 400**	**1 790 000**	
OUTCOME 2: A comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and	**MoEE**	**62000**	**GEF**	71200	International Consultants	60 000	60 000	60 000	10 000	10 000	**200 000**	1
				71300	Local Consultants	40 000	40 000	40 000	40 000	40 000	**200 000**	
				71400	Contractual services – individuals	89 600	89 600	89 600	89 600	89 600	**448 000**	
				71600	Travel	2 000	2 000	2 000	2 000	2 000	**10 000**	
				72100	Contractual services – companies	78 000	78 000	78 000	78 000	78 000	**390 000**	2, 8
				72200	Equipment		150 000	100 000	100 000	350 000	**700 000**	7

regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.				74200	Printing and publication costs	2 000	2 000	2 000	2 000	2 000	**10 000**	3
				74500	Miscellaneous	2 400	2 400	2 400	2 400	2 400	**12 000**	
				75700	Training workshops and meetings	6 000	6 000	6 000	6 000	6 000	**30 000**	4
					sub-total GEF	**280 000**	**430 000**	**380 000**	**330 000**	**580 000**	**2 000 000**	
		4000	**UNDP**	72100	Contractual services – companies	50 000	100 000	100 000	50 000	30 000	**330 000**	2, 8
					sub-total UNDP	**50 000**	**100 000**	**100 000**	**50 000**	**30 000**	**330 000**	
					Total Outcome 2	**330 000**	**530 000**	**480 000**	**380 000**	**610 000**	**2 330 000**	
OUTCOME 3: Sustained project results	**MoEE**	**62000**	**GEF**	71200	International Consultants	48 000		32 000		32 000	**112 000**	1
				71300	Local Consultants			8 000		8 000	**16 000**	
				71600	Travel	1 000	1 000	1 000	71200	1 000	**5 000**	
				72100	Contractual services – companies	30 000	30 000	15 000	15 000	60 000	**150 000**	2
				74200	Printing and publication costs	1 000	1 000	1 000	1 000	1 000	**5 000**	3
				74500	Miscellaneous	1 200	1 200	1 200	1 200	1 200	**6 000**	
				75700	Training workshops and meetings	1 200	1 200	1 200	1 200	1 200	**6 000**	4
					sub-total GEF	**82 400**	**34 400**	**59 400**	**19 400**	**104 400**	**300 000**	
					Total Outcome 3	**82 400**	**34 400**	**59 400**	**19 400**	**104 400**	**300 000**	
PROJECT MANAGEMENT UNIT (This is not to appear as an Outcome in the Results Framework and should not exceed 10% of project budget)	**Party 1**	**62000**	**GEF**	71400	Contractual services – individuals	65 000	65 000	65 000	65 000	65 000	**325 000**	
				71600	Travel	1 200	1 200	1 200	1 200	1 200	**6 000**	
				72200	Equipment	8 000					**8 000**	
				72400	Communication	1 000	1 000	1 000	1 000	1 000	**5 000**	
				72500	Office supplies	1 000	1 000	1 000	1 000	1 000	**5 000**	
				74500	Miscellaneous	1 000	1 000	1 000	1 000	1 000	**5 000**	
				75700	Workshops and meetings	1 200	1 200	1 200	1 200	1 200	**6 000**	4
					sub-total GEF	**78 400**	**70 400**	**70 400**	**70 400**	**70 400**	**360 000**	
		4000	**UNDP**	71400	Contractual services – individuals	13 000	13 000	13 000	13 000	13 000	**65 000**	
				74500	Miscellaneous	1 000	1 000	1 000	1 000	1 000	**5 000**	
					sub-total UNDP	**14 000**	**14 000**	**14 000**	**14 000**	**14 000**	**70 000**	
					Total Management	**92 400**	**84 400**	**84 400**	**84 400**	**84 400**	**430 000**	
					PROJECT TOTAL	**754 400**	**1 153 400**	**1 218 400**	**834 400**	**889 400**	**4 850 000**	

Budget Notes:

Number	Note
1	Including the mission (travel) costs
2	Consisting of services to be procured from both international and national companies and/or institutions to facilitate, among others, the enhancement, upgrading and quality control of the required market monitoring and other market surveillance activities, public awareness raising and marketing. The amounts reflect the relatively high costs that are typically associated with such services for more than 10 different product categories of high-volume consumer goods
3	Including awareness raising and training materials
4	Including also the costs of training workshops and stakeholder consultations meetings
5	Monitoring and testing equipment
6	Cost-sharing of demo projects
7	Hardware for upgrading the testing labs for both lighting and other appliances
8	Including cost-sharing for the contractual costs of testing lab upgrade, accreditation and cross-checking costs for both lighting and other appliances

Summary of Funds: [31]

	Amount Year 1	Amount Year 2	Amount Year 3	Amount Year 4	Amount Year 5	**Total**
GEF	690 400	1 039 400	1 104 400	770 400	845 400	**4 450 000**
UNDP	64 000	114 000	114 000	64 000	44 000	**400 000**
MoEE/EEHC (Cash)	2,000,000	2,000,000	2,000,000	3,000,000	3,000,000	**12,000,000**
MoEE/EEHC (In-kind)	46,000	46,000	46,000	46,000	46,000	**230,000**
NREA	100,000	100,000	400,000	400,000	200,000	**1,200,000**
MDG-F	100,000	200,000	200,000			**500,000**
GTZ-JCEE	40,000	30,000	30,000			**100,000**
MED-ENEC	100,000	200,000	200,000	125,000		**625,000**
TOTAL	3,140,400	3,729,400	4,094,400	4,405,400	4,135,400	**19 505 000**

[31] Summary table should include all financing of all kinds: GEF financing, cofinancing, cash, in-kind, etc. etc

A6: Detailed Project Results and Impacts

Description					
Objective **To improve the energy efficiency of end-use equipment, namely building appliances and lighting systems manufactured, marketed and used in Egypt**					
Description of Indicator	**Baseline Level**	**Midterm target level**	**End of project target level**	**Level at 30 June 2017**	**Cumulative progress since project start**
The level of compliance of the targeted appliances with the adopted minimum energy performance standards (a priori the MEPS to be adopted in Egypt are expected to be in line with those adopted in EU.)	From 10% to 50% higher energy consumption (depending on the appliance) when comparing to the planned MEPS (for further details see Annex 7-4).	*(not set or not applicable)*	Over 80% of the appliances sold in the Egyptian market are in compliance with the requirements of those MEPS and labeling schemes that are expected to be in force by the end of the project (for further details see Annex 7-5).	The project has recorded significant development impacts and succeeded in advocating the importance of energy efficiency as an effective tool to secure sustainability of electricity supply. This has been acknowledged through the following: •The Cabinet of Ministers instructions addressed to all ministries and governors to reduce lighting consumption in all governmental offices and replace existing lighting systems by LED ones. •The Ministry of Finance decision that all governmental procurement will only include efficient equipment . •The nationwide program initiated by the Ministry of electricity and Renewable Energy to improve energy efficiency of street lighting systems starting by 4 million fixtures for a three years period. •The Initiative of the Ministry of Electricity and Renewable Energy for distributing 13 Million LED Lamps to customers of residential sector.	• The project has succeeded to achieve its development objective as per the end of project target level compared to the base line level and has largely contributed to advocate on the importance of energy efficiency at the National level leading to tangible results translated by a remarkable decrease in the Electricity consumption and the associated decrease of fuel consumption and CO2 emissions . • Based on the yearly indices released by the power sector through its annual statistical report 2016/2017, the % increase of peak load has recorded 0.68% (16/17-15/16) compared to 4.23% (15/16-14/15) respectively the energy consumption has dropped from 6.39% to -3% and the fuel consumption has dropped from 6.09% to 0.82%. The % of residential consumption out of the total consumption has dropped from

				•The ministerial decree that has been issued preventing the import of GLS with wattage higher than 40 watt. •The Ministry of Electricity and Renewable Energy circular distributed to all municipalities and Ministries to strictly follow the MEPS for different types of lighting equipment in the tendering process. •The large number of Energy Efficiency Lighting Projects targeting selected entities in diversified sectors of consumption and technically supported by the project, has achieved large savings and replication level acknowledging the techno economic feasibility of these types of projects. •Following the Ministerial decree issued by the Minister of Housing and New Urban Communities to enforce the national EE street lighting code, The New Urban Communities Authority (NUCA), decided to change street lighting systems in all 26 new cities that falls under its authority to LED lighting systems. The same decision was applied to its administrative buildings and housing projects in new communities. •Several Ministries are changing lighting systems in all its buildings and several private sector entities completed up scaling and others are up scaling implementation to all its facilities. The rest are piloting with the project in selected buildings -The project assisted the Ministry of	47% to 42% • As for the compliance of the appliances sold with the developed MEPS, the results of the tested appliances at the three testing laboratories (New & Renewable Energy Authority, the General Organization for Import and Export Control, the Egyptian Organization of Standards as well as the released labels through the Energy Efficiency Unit of The Egyptian Organization for Standards are confirming that all tested appliances for which MEPS have been developed are complying with these MEPS.. • The Governmental sector is responding to the instructions of the Cabinet in reducing the lighting consumption and transforming their inefficient lighting systems to efficient ones, the Project has largely contributed to this achievement through the implemented pilot projects targeting the public and governmental sector. • The pilot projects lately implemented at the public and governmental sector have succeeded in stimulating the replication and up scaling of EE lighting projects in the sector where the pilot project has been implemented. In addition to the replication effect of pilot projects implemented at the different

				Electricity and Renewable Energy in launching its national awareness media campaign for promoting energy efficiency and conservation among customers, the campaign succeeded in increasing customers awareness and the project has assessed the impact of this campaign on changing customers behavior. •The developed MEPS for a larger number of electrical appliances : electrical fans, dish washers, electrical ovens, televisions, water pumps, fractional motors, vacuum cleaners. •The ministerial decrees that has been issued to enforce the previous decrees issued 2003-2005 obliging the importers and local manufacturers of labeled appliances to adopt the MEPS for these appliances including lighting equipment. - The decree issued by the Minister of Industry and Foreign Trade for enforcing EOS's decision to raise the minimum set-point temperature for all air conditioners in the Egyptian market from 16 degree to 21 degrees Celsius • The Unit established at the Egyptian Organization for Standards (EOS) for enforcement and monitoring the Standards and Labeling Program in coordination with the different stakeholders and supported by the provided technical and financial assistance from the project. •The new Ministerial decree that has been issued July 2017 to enforce the new labeled appliances and the	sectors of the private sector(Banks, Hotels, Super markets Residential compounds… Other successful achievements leading to replication and up scaling have been recorded at the public and governmental sectors, one can mention the Cairo airport(other terminals, road connecting airport to the ring road, the ministry building) roads ,the Ministry of Foreign Affairs (all its administrative buildings in Cairo) the Ministry of Petroleum (gas stations, administrative buildings), The National Bank of Egypt(all its branches),The Ministry of Housing and New Urban Communities (all admin buildings and street lighting systems in all new cities. The information and Decision Support Center of the Cabinet. The Ministry of Finance. • All Ministries and Municipalities are referring to the issued MEPS in their tender documents which was not the case previously. • Based on the achieved energy savings at the Ministry of Finance, this year Ministry of Finance has issued a tender for central purchase of LED lighting equipment and succeeded to obtain competitive prices from vendors, to date all governmental entities are to buy their efficient lighting equipment through the central purchase

				appliances that will be labeled in case of developing MEPS after issuing the labels. •Energy efficiency units have been established in each of the nine Electricity Distribution Companies. All these activities have achieved the following: •The peak load was reduced by 1,500 MW during 2015/2016, deferring investments needed for the construction of a power plant with 2 units 750MW each. •The market size of LED lamps has exceeded 50 million LED by end of 2016 •Almost all of the tested appliances for labeling issuance are in compliance with the developed MEPS.	agreement of the Ministry of Finance. • The National Efficient Street Lighting Program implemented by the Ministry of Electricity & Renewable Energy, The Minister of Local Development, the Ministry of Finance with the support of the project is progressing well, the Ministry of Finance has released the second tranche of the allocated amount to implement the second phase of the Program. • The national awareness media campaign launched by the Ministry of Electricity& Renewable Energy and supported by the Project for promoting energy efficiency and conservation among customers, has largely succeeded in increasing customers awareness where the project has contracted a research company for assessing the impact of this campaign on changing customers behavior. The decrease in the residential consumption out of the total consumption is confirming that the campaign has reached its target. Due to the success of the campaign in raising customers awareness. A second campaign is to be launched during the 2018 summer

					The Ministerial decree for banning the import of GLS with wattage higher than 40 watt has succeeded to move the market towards the use of LED lamps rather than GLS. • The market size of the different LED lamps in Egypt is approaching almost 100 million Lamps and luminaires, based on estimated figures from suppliers, more accurate figures will be obtained from the LED Lighting market study that is currently under implementation. The decree issued by the Minister of Industry and Foreign Trade to raise the minimum set point temperature of air conditioners from 16 degree to 23 degree has contributed to lower the % of consumption since every increase in the temperature degree by one degree is increasing the consumption of the air conditioner by 3%to5%. • The project is still coordinating with the Energy Efficiency Unit established at EOS and supporting its work in releasing the EE labels and more in providing the necessary support towards coordinating between the Unit and the different stakeholders responsible of monitoring and enforcing the S&L Program where a mechanism has been

					developed with the Energy Efficiency Unit of the EOS for monitoring and checking the veracity of energy efficiency labels affixed to household appliances in the market . MEPS have been developed for a larger number of electrical appliances based on the results of the conducted market studies including electrical fans, dish washers, electrical ovens, vacuum cleaners, televisions, water pumps, fractional motors, tank less water hters, microwaves. Establishment of energy efficiency testing laboratories at each of the Egyptian Organization for Standards, the General Organization for Import and Export Control and the New & Renewable Energy Authority. These laboratories are testing both performance and efficiency to verify the compliance with the developed MEPS and level of efficiency as per the affixed label on the appliance. The new Ministerial decree issued 2017 for enforcing the Standards and labels Program is to sustain for the added developed MEPS. The Electricity law is comprising a chapter on energy efficiency.

					The project has largely contributed to create job opportunities and improve the social conditions by decreasing the electricity bills of a large number of customers that responded to the energy efficiency tips
Amount of reduced CO2 emissions compared to the projected baseline	See the baseline scenario presented in Annex 7-4.	*(not set or not applicable)*	Direct incremental reduction of GHG emissions by 0.95 million tons of CO2eq by the end of the project and estimated cumulative indirect GHG emission reduction of at least 53 million tons of CO2eq by 2025 on the basis of a conservative policy scenario and a GEF causality factor of 60%.	Direct incremental reduction of GHG are calculated based on the following: 1-The initiative taken by the power sector for distributing 3 Million CFLs + with a cost sharing of 50% of the price lamp achieving: •486 GWh equivalent to 0.1Million ToE and 0.26 Mtons of CO2. 2-The efficient street lighting program implemented prior to the 4 Million luminaires initiatives with a provided financial support achieving: •90 GWh equivalent to 0.0192 Million ToE and 0.05 Mtons GWh equivalent of CO2. 3-The promotional campaigns for the market transformation of CFLs where the market has reached 26 Million CFLs by 2013, with a conservative approach that 10% of this figure is attributed to the promotional campaigns, calculations are based on 2.6 Million CFLs : •405.6 GWh equivalent to 0.086Million ToE and 0.215 Mtons of CO2. 4- The promotional campaigns for the market transformation of LED lamps where the market has reached 50 Million LED lamps by 2016, with a conservative approach that 10% of this figure is attributed to the promotional campaigns, calculations are based on 5 Million LED lamps: • 439 GWh equivalent to 0.092 Million	Direct incremental reduction of GHG:. In addition to the cumulative figure of 0.7696 Million Tons mentioned in the previous 2017 PIR We can add the impact of the awareness campaigns and social media on the increase of the LED market from the current figure of 100 million lamps compared to the previous figure of 50 million lamps with the same concept of 10% impact contribution, this will add another 0.2346 Million tons of CO2. Accordingly the Total direct GHG reduction compared to the projected base line will reach 1 Million Tons of CO2 higher than what was projected. Total Indirect GHG Reduction: In addition to the cumulative figure of 12.084 Million Tons mentioned in the previous 2017 PIR The total achieved GHG reduction through this year is calculated based on the decrease in Energy Consumption compared to the previous year this figure is taking into consideration all the Energy Conservation achieved through

				ToE and 0.2346 Mtons of CO2. 5- The implemented energy efficiency lighting projects (22 projects) co financed by the project as a first phase and 22 projects as a second phase: •18.8 GWh equivalent to 0.006 Million ToE and a reduction of 0.01 Million Tons of CO2. Accordimgly :Total direct GHG reduction are estimated at 0.7696 Million Tons of CO2. The Indirect GHG reduction are calculated based on the following: 1- The street Lighting Initiative taken by the power sector with the technical assistance from the project, to date 1.2 Million luminaires have been replaced out of 4 Million luminaires achieving the following , • 758.8 GWh equivalent to 0.186 Million ToE and 0.47 Mtons od CO2. The expected reduction by the end of this initiative are estimated at: 2466 GWh equivalent to 0.507 Million ToE and 1.33 Million Tons of CO2 2-The initiative taken by the power sector to distribute 13 Million LED lamps implemented in cooperation with the technical support provided by the project: •1142 GWh equivalent to 0.24 Million ToE and 0.61 Mtons of CO2. 3- The market size of the LED lamps evaluated at 50 Million LED Lamps excluding the 10% attributed to the awareness campaigns, the calculation will be based on 45 Million LED lamps •6570 GWh equivalent to 1.377 Million ToE and 4.131 Mtons of CO2. 4 - The achieved energy savings from the replication effect at each of CIB, El	the Project Initiatives, The market situation as well as the power sector initiatives The achieved energy savings as per the power sector statistical report are in the order of 6554 GWh equivalent to1. 41Million ToE and 3.534 Million Tons of CO2. Accordingly the total indirect GHG reduction has reached 11.282 Million Tons of CO2. which includes savings from LED applications and other EE measures.

				Mansour Holding Company,Alex Bank, 33 GWh equivalent to 0.086ToE and 0.017 Tons of CO2 5- The achieved energy savings from complying household appliances with MEPS are based on data provided from Egyptian industrial Federation and GOIEC on the Egyptian market size for white goods (Refrigerators, electric water heaters, AC, washing m/c) and the analysis of the testing laboratory results which are giving the directives of the market : •1.1 TWh and CO2 reduction of 0.6 MTons (2015/2016) •1.4 TWh and CO2 reduction of 0.76 Mtons (2016/2017) 5-The achieved energy savings from the decrease of the peak load by 1500 MW: •8029 GWh equivalent to 1.73 Million ToE and 4.336 Mtons of CO2..	
-	-	*(not set or not applicable)*	-	*(not set or not applicable)*	*(not set or not applicable)*
The progress of the objective can be described as:		**On track**			
Outcome 1 **Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative.**					
Description of Indicator	**Baseline Level**	**Midterm target level**	**End of project target level**	**Level at 30 June 2017**	**Cumulative progress since project start**
Total volume or the market share of the CFLs and other EE lighting appliances in Egypt	CFLs: No new MEPS adopted + annual sale of 25 million CFLs reached by 2015 as a result of a continuing natural growth.	*(not set or not applicable)*	CFLs: Annual sale of 35 million CFLs reached by 2015 resulting from project's market promotion activities + new MEPS adopted for completely phasing out incandescent	The project has developed technical specifications for efficient lighting systems including street lighting unifying these standards at the National level in conformity with the Egyptian lighting MEPS and International IEC standards. A simplified guide book has been prepared by the project to improve the public procurement process, the guide	By the time the project document was prepared, the end of project target level was to reach an annual sale of 35 Million CFLs. It came that during the early stages of project implementation, the LED technology substituted the CFL technology. The Project has developed technical specifications for all

	LFLs and HIDs: No new EE requirements formally adopted and reflected in public procurement processes.		light bulbs as per the schedule elaborated in Annex 7-5. LFLs and HIDs (street Lighting): The second set of EU consistent EE requirements have entered into force , they are reflected in the technical specifications for	book includes the different steps to be followed when procuring efficient lighting equipment, the project web site as well as the informative brochures dealt also with these useful information. The project developed a recommended list of efficient lighting suppliers after testing their products in certified laboratories that has been published in the web site as a guidance to be contacted by implementing parties of efficient lighting systems. Based on the continuous cooperation with the suppliers of efficient lighting equipment, an approximate figure of the market size of LED lamps has been estimated at more than 50 million lamps in the last couple of years which is a good indication of the market transformation. The project implemented large number of lighting audits in selected public and private sector buildings that has led to implementation of pilot projects and in many cases up scaling at the level of several companies/institutions and replications by other similar facilities. To encourage implementation of pilot projects, technical and financial assistance have been provided to a number of carefully selected entities/buildings, including both private and public sector to transform existing lighting non efficient systems to efficient lighting systems using LED. Case studies were developed to advocate for replication and up scaling The project implemented 200 audits in mosques, based on the results and recommendations of these audits, the Ministry of Electricity through one of the electricity distribution companies has signed a protocol with the Ministry of	types of used LED lighting systems used in Egypt in accordance with the international specifications. The Project has provided technical assistance to the entities implementing efficient lighting projects for preparation of tendering documents developed by the project taking into consideration the technical specifications as well as the general conditions that will provide a high level of guarantee for a high quality low cost LED lighting equipment. The recommended list of suppliers developed by the Project is requested by many entities to assist them in tendering procedures, the list is announced on the project web site. On the other hand new suppliers are requesting from the project to be included in this list, today many new suppliers have been added to the list once providing the project with the test results performed at one of the three accredited testing laboratories The Project Implemented and co financed number of pilot projects reached more than 43 projects that have been carefully selected , the total financial contribution of the project was based on 25% cost sharing for the private sector and 50% for the first phase of the project with a ceiling of 0. 5 Million L.E per project and has been raised to 0.750 L.E per project for the

			public procurement and less than 10% of the random samples tested show non-compliance.	Endowment where LED lightings projects have been implemented at 132 mosques, cost of EE lighting projects will be collected by the distribution companies through monthly installments. Pilot project sites included street lighting for residential compounds, banks, shops, supermarket chains, hotels, resorts, libraries and public and private administrative buildings. Pilot sites demonstrated an energy savings of between 25 to 40 % of total electricity consumption with a payback period of between under 1 year and a maximum of 2 years depending on the applied tariff, type of existing lighting systems, operation mode. The number of implemented lighting pilot projects technically and financially supported by the project at this stage has reached 22 projects in selected buildings, in addition to technical assistance provided to a larger number of entities that took the decision to implement by themselves based on recommendation of the techno economic feasibility of these projects as well as the documented case studies for the pilot project. - A study has been performed by a National Consulting firm for evaluating the street lighting situation in Egypt and assessing the results of the energy efficiency street lighting project, the study came out with valuable outputs and recommendations that have been shared with the decision makers of the Ministry of Electricity and Renewable Energy:. A simplified version of the Energy efficiency street lighting code has been	second batch of projects following the devaluation of the Egyptian pound to 50% of its value against the USD which targeted the governmental sector. Among the first batch pilot projects: The Commercial Bank of Egypt, Alexandria Bank, JW Marriott &Conrad Hotels, The Metro Super market one of the largest chain of super markets, The New Urban Communities Authority, Bibliotecha Alexandria, B-Tech Appliances Mega Store, El Karma Residential compound, The Centre for Environment and Development for the Arab Region and Europe The second batch pilot projects included new Ministries and new type of facilities as follows : The Ministry of Foreign Affairs, The Cairo Airport, the Ministry of Petroleum, Cabinet of Ministers, the Ministry of Finance, The Media Production City, first underground multistory parking in Cairo Governorate , two of the largest government newspapers in Egypt.There are some ongoing projects under implementation including a hospital, academic institutions and new Ministries. The total number of implemented pilot projects through the first batch reached 23 projects, the energy savings have been estimated at 12.4 Million KWh the CO2 reduction 7.171tons . The total investments 8.6 Million

				prepared by the consulant and handed to local authorities and municipalities engineers. A database model has also been developed to enable model users testing different options for street lighting energy efficiency projects needed investments and cost savings from complete programme implementation. Training material has been prepared and used for training the engineers from the electricity distribution companies and local development authorities on how to use this data base model and applying it for estimating the needed investments, energy savings and return on investments for the different street lighting improvement options. The project provided technical assistance to NUCA by contracting a specialized international consultant and a local consultant to prepare a conceptual design as well as bidding documents of the lighting system for a new street using LED and PV system that have been handed to NUCA and the project has been successfully implemented this has been followed by a decision to convert street lighting in all new 26 cities in Egypt to LED. Meanwhile, LED lighting became the default option for all new projects. The up scaling effect within the institutions that have implemented the pilot projects or based on the dissemination of the successful results has incited other entities to replicate: The following is an example of replication over the different sectors: • After participating in a pilot project at one of its branches,	L.E. and the project contribution 2.3Million L.E. The total number of implemented pilot projects through the second batch reached 20 projects that is completed in 2018, the energy savings have been estimated at 12.2 Million KWh the CO2 reduction 6.61tons . The total investments 23.3 Million L.E .and the project contribution 9.156Million L.E. The implemented projects at the first batch projects led to replication effect, the following are examples of replication in both private and public sectors: □ The International Commercial Bank of Egypt has replicated in all of its 160 branches all over the country. □ The Alex Bank has replicated in more than 60 of its branches while all of the new branches will be lightned by LED. □ One of the largest oil and gas companies in Egypt the Exxon Mobil company has replicated in all its terminals , 30 gas stations, 20 Mini markets at gas stations. □ Replication in 13 Hilton Chain hotels. □ Replication in 18 Mariott chain hotels. □ Replication in 30 Mega B Tech Appliances Megastores stores. □ Replication in 120 branches, admin buildings and warehouses of one of the largest chain of supermarkets (Metro

				Commercial International Bank (CIB) recognized the significant energy and cost savings associated with the use of energy efficient lighting, and introduced LED lighting systems in all of its 160 branches nationwide, under one contract, achieving a overall 40 % reduction in electricity consumption. • The Bank of Alexandria (ALEXBANK) participated with IEEL&A in two pilot projects changing lighting systems at two of its branches (Cairo and Gomhouria), and demonstrated significant reductions in electricity usage, and financial savings. Based on this successful experience, ALEXBANK has completed transformation of half of its branches and working on completing the other half, and adhere to LED lighting systems in all new branches. Based on the generated results from the two banks, the project will advocate for all other banks in Egypt to replicate. • The IEEL&A project provided technical support to ExxonMobil to convert lighting systems in its main building in Cairo. Accordingly ExxonMobil is currently about to complete transformation in all its facilities in Egypt, including all of its gas stations, factories and depots. Moreover internal awareness campaigns were conducted to the ExxonMobil's large network of employees to and facilitated for employees to procure LED lighting to their homes. • Metro, a famous supermarket chain in Egypt, participated with the IEEL&A project to transform to LED lighting at one of its branches in Cairo. The resulting dramatic energy and financial savings led them to decide to	super markets). • Replication in many residential compounds (Street Lighting). The following are examples of up scaling: • CIB project led to stimulated up scaling in the Central Bank of Egypt, the National Bank of Egypt HSBC Bank, Bank Misr • The initiative taken by Metro Supermarket stimulated up-scaling at Carrefour chain to implement EE lighting projects in all 13 hyper markets. Other hypermarkets in Egypt are at different phases of implemenation • Technical assistance provided to Raya Co. and awareness sessions with telecommunication Companies Orange & Raya led to transformation of (55 Orange and 40 Raya retail shops) • Technical assistance provided to two of El Gouna hotel resorts achieving successful results and stimulated up scaling in all Gouna hotels. • Provided technical assistance, 50 branches of McDonalds and nearly 60 of La Poire bakery stores and 50 On the Run shops have all transformed to LED • The success of implemented project at Al Ahram Organization which is the largest newspaper agency in Egypt, stimulated the up scaling

				streamline this transformation in all 97 branches, warehouses and administration offices, in one tender. In the tourism sector, the project has implemented pilot projects in coordination with the Egyptian Hotel Association, the Conrad Hotel, and the J.W. Marriott, achieving a 25-30% reduction in total electricity consumption. As a result, both the Conrad/Hilton and Marriott chains have decided to convert all their facilities in Egypt to LED. As a direct result of the resonance of the pilot projects among the private sector, the Carrefour hypermarket chain, Vodafone, Orange, Raya (telecommunication company) and others are converting all their branches in Egypt. American Chamber of Commerce converted all its premises in Egypt to LED with technical support from the project Residential compounds have initiated replication of converting lighting systems to efficient ones based on the large energy savings achieved in the pilot project implemented at one of the residential compounds technically supported and co funded by the project. The financial project contribution for implementation of the 22 pilot projects on the basis of 50% out of the total project cost for public sector and 25% for private sector with a ceiling of 250,000 L.E, has reached 2.4 Million L.E and the total investments allocated by the beneficiaries reached 8.5 Million L.E The total energy savings have been estimated at 12.8 Million KWh	at the second largest newspaper El Akhbar . • The implemented projects at the second batch projects led to replication effect, the following are examples of replication in governmental buildings: The success of the Pilot project implemented in terminal led to replication at the Departure Hall (Terminal 3), and street lighting for the road connecting airport to the ring road and other terminals and admin buildings. Cairo Airport Authority decided to continue converting lighting in all the remaining premises Success of the Pilot project implemented at the Ministry of Foreign Affairs building led to replication in all its other buildings. The Pilot project implemented at the Ministry of the Electricity building led to replication at the New and Renewable Energy Authority (NREA), all Electricity DCs and Production Companies, and premises of the Regulatory Agency. The Pilot project implemented in one of the Ministry of Petroleum gas stations, has been replicated in 22 gas stations and administrative buildings. The Pilot project implemented at the New Urban Community Authority main building, has have been

				equivalent to 2.7 ToE and a reduction of 7 Tons of CO2. The project has provided capacity building in the field of energy efficiency lighting systems and their different applications in the different sectors of consumption as following: •Training courses have been provided for ten engineers from each of the 9 Electricity Distribution Companies on how to implement energy efficiency lighting, and how to prepare auditing reports, as well as techno-economic feasibility analyses. •Training courses have also been conducted on design and implementation of energy efficiency lighting projects for buildings, in cooperation with the EU regional project MED-ENEC which focuses on energy efficiency measures in the construction sector. 217 O&M engineers included representatives of different ministries, local authorities and consulting firms, banks, hotels, etc.. .10 training sessions have also been conducted on energy efficiency street lighting building codes in cooperation with the HBRC. The courses were attended by 288 trainees (231 males, 57 females) from NUCA, the Electricity Distribution Companies, as well as 24 governorates. The dissemination of results through workshops, seminars and informative brochures has succeeded in enhancing replication on a larger scale over these sectors (banks, super markets, administrative buildings, residential compounds….). •Based on the successful results of the first phase of this initiative, a second	replicated in all administrative buildings in new Cities Authorities, Street lighting in 7 new cities, • The replication and up scaling of these implemented projects, in addition to the different awareness activities that the project has implemented during its life time targeting the residential sector through awareness sessions, awareness campaigns, social media has contributed to raise the market size of LED lamps to nearly 100 Million Lamps including different types of lamps over the last 3 years, thus far exceeding the project target. • Results of these pilot projects have been documented as success stories in informative brochures largely disseminated in the seminars, workshops and to customers of the same sector to encourage them implementing this type of projects based on the successful achievements. The project has succeeded to demonstrate based on the results of the achieved pilot projects that investing in this type of projects is technically and economically justified where the energy savings are in the range of 25% - 40% and the payback period varies in most of the cases between less than a year to one and half year which is a relatively short pay back period compared to other EE technologies. The Project has provided only

				phase is currently implemented targeting the governmental buildings and Ministries that has not initiated transformation yet with a financial contribution of 50% out of the total project cost but with an increased ceiling of 500 000 L.E to be raised to 750 000L.E after devaluation of Egyptian pound in October 2016.These raise in the financial contribution have been approved by the Project Steering Committee. Second phase includes Terminal 1 Cairo Airport which is currently illuminated by LED lighting, one of the leading newspapers El Ahram Newspaper has completed transforming its main building to efficient lighting systems and decided to up scale transformation in all their buildings, other newspaper El Akhbar is to achieve the same target starting by its main building. The projects are to be implemented through protocols signed between the MOERE and the IEEL&A on the one hand, and different ministries as beneficiaries on the other. More than 22 projects have been selected to benefit from this initiative based upon nomination from different ministries, the techno economic studies have been conducted and provided to beneficiaries. The total energy savings have been estimated at 15.8 Million KWh equivalent to 3.4 ToE and a reduction of 8.5 Tons of CO2 without including replication and up scaling. . • Replication of the pilot projects on a massive scale nationwide. This multiplier effect will continue to gain momentum and the project's future target of village-wide transformations to	technical assistance to a large number of entities through walk through audits and techno economic feasibility studies. Based on the provided technical assistance and the expanding demand for converting to efficient lighting, the Commercial International Bank (CIB) of Egypt which was the first bank to convert all its branches, launched an Energy Efficiency Green credit line facility (The Bank Green Fund) for encouraging the bank customers (Corporates and retailers) implementing EE lighting projects. The Bank has requested the project to act as the technical advisor for the fund and has signed an MOU with the project in this regard. CIB has referred two hotels, one factory and one residential compound to the project to prepare the techno-economic study and are currently negotiating with the CIB their loans The United Nations Industrial Development Organization (UNIDO) has requested the project to provide technical assistance for conducting lighting audits and techno economic feasibility studies in two large factories for improving their lighting systems. The Project is also providing technical assistance to the tourism sector where a series of events for presenting integrated solutions of EE and RE, are jointly organized by the Ministry

				LED lighting, soliciting and leveraging private sector corporate social responsibility involvement, will generate an even greater positive impact on efficient energy use nationwide. • Implementation of pilot projects, and the need of high quality efficient lighting products has created local manufacturing of efficient lighting equipment, today more than 10 local manufacturers are recommended by the project for producing high quality products with competitive price, creating job opportunities. The project has also recruited a consultant to perform a study on the collection and recycling of CFLs. The project is investigating implementing the study recommendations for a collection and disposal programme.	of Electricity & Renewable Energy represented by the Project and the GCEE of the GIZ, and the Ministry of Tourism represented by the Green Unit of the Ministry, the first event was organized in Cairo addressing the investors of Marsa Alam Region, the results were very encouraging more than 6 hotels requested the technical assistance of the project in conducting EE lighting audits, this first event has sounded well where the second event is to take place in Hurghada by July 2018 to be followed by other two events planned at Sharm El Sheikh and possibly Cairo. The project is also promoting funding through the established credit lines in CIB and EBRD The project has also approached one of the sectors that was not previously targeted (sporting clubs) due to the subsidized electricity tariff, while there is large potential for savings. A study has been conducted at one of the largest sporting clubs in Cairo with recommendations that are currently being discussed on gradual phase out of metal halide and sodium lighting systems for courts and street lighting . The Project has convinced EBRD GEEF credit line for energy efficiency to include efficient lighting systems which has approved funding the first lighting project in Egypt for El-Raya chain of supermarkets and

					is currently negotiating with the bank. The project has also referred another chain of hypermarket to leasing company and is currently negotiating a loan to convert all its branches to LED. The project has designed a sign of recognition that has been handed to entities that have implemented EE lighting Projects and the sign has been displayed in a visible place including Cairo Aiport. In a joint event, attended by the Minister of Electricity in Feb 2018, the Project awarded ten large Private Sector companies members of the American Chamber of Commerce Trophies as recognition of their efforts in converting their premises into efficient lighting. A similar event is to be organized at the Ministry of Foreign Affairs where one of the pilot projects has been implemented for awarding the Governmental entities that transformed their lighting systems to efficient ones. The project is cooperating with the GEF/UNDP project entitled small scale PV systems interconnected to the grid to provide technical assistance for implementing Efficient lighting projects prior to PV projects. Due to all its outstanding achievements, the Project has been awarded the Emirates Energy Award and received Special Recognition Award in a large ceremony organized by the

					Dubai Supreme Energy Council in Dubai in October 2017. Through the cooperation between the Egyptian power sector and both Saudi Arabia and Sudanese power sectors, the project has been requested to transfer its expertise and experience in the field of energy efficiency to engineers of both countries working in this field. In order to overcome lack of reliable data, the Project has recruited a national consulting firm to conduct LED lighting Market Survey,, The main objective of this consultancy is to assess the status of the market transformation to LED lighting systems provide detailed analysis of the market size for different types of LED lighting products including lamps, panels and longitudinal lamps and degree of saturation based on extensive surveys and data collected from identified entities that might have some data on the market size data whether governmental entities or lighting systems suppliers. The Project has also contracted a local consultant to prepare a NAMA document that quantify GHG gas reduction , demand and energy savings from lighting market transformation in Egypt. The document will analyze the high efficiency lighting systems market data , estimate the demand reduction and energy saving from high efficiency market transformation

					to develop a comprehensive NAMA design document and measurement reporting of a Monitoring and Verification system. The project has partnered with many stakeholders involved in the field of energy efficiency: The Egyptian Electricity Holding Company ,The Egyptian Electricity Transmission Company, The Electricity Distribution Companies, The Egyptian Organization for Standards and Quality (EOS), The General Organization for Import and Export Control ,The Industrial Control Authority, The GEF Small Grants Programme, The New and Renewable Energy Authority (NREA), the Electric Utility and Consumer Protection Regulatory Agency (EEUCPRA), The Egyptian Consumer Protection Agency (CPA), The Commercial Chambers in Egypt, the Private Sector and NGOs. The project signed Memorandums of Understanding (MoUs) with governmental, non-governmental, international, public and private sector organizations, including The UN Global Compact, The Egyptian Engineering Syndicate, the Consumer Protection Agency, in order to expand project outreach, create greater resonance, and ensure project sustainability.
The progress of the objective can be described as:		**Achieved**			
Outcome 2					

A comprehensive S&L scheme for building appliances developed and effectively implemented, matching international and regional best policy and technology practices, and with energy efficiency requirements set at a level where cost effectiveness is proven.					
Description of Indicator	**Baseline Level**	**Midterm target level**	**End of project target level**	**Level at 30 June 2017**	**Cumulative progress since project start**
The status and content of the legal and regulatory acts and the agreed implementation arrangements dealing with appliance minimum energy performance standards (MEPS), labeling schemes and their enforcement.	Minimum energy performance standards and/or labeling schemes developed and adopted for 5 appliances (CFLs, refrigerators/freezers, washing machines, air-conditioners and electric water heaters), but not adequately enforced and monitored yet.	*(not set or not applicable)*	Strengthened implementation, enforcement and market monitoring of the S&L schemes adopted for the first five appliances to cover both import and local production as demonstrated by verified annual statistics on the sale of the different appliances sold as per the different energy classes. Expanded S&L, implementation, enforcement and market monitoring schemes formally adopted for new appliances consisting of: TVs and their accessories, information and communication appliances (ICT), stand-by power, external power supply (EPS), electric fans and	The S&L that has been developed for five electrical appliances through the previous energy efficiency and Greenhouse reduction project has been expanded to cover more electrical appliances selected and prioritized based on market studies. In this regard, the consulting firm (DRTPC) a highly reputable firm in development and research from Cairo University has been contracted for conducting an assessment of household appliances energy consumption patterns based on analysis of survey data of 5000 samples in 5 governorates Cairo, Alexandria, Giza, Ismalyia and Menya, these data have been collected by a team from the Information and Decision Support Center of the Cabinet of Ministers. The report presented outputs of the appliance data collection strategy for the different household appliances including lighting, heating ,ventilation air conditioning, other household appliances such as water heaters, clothes washers, dish washers ,refrigerators deep freezers and analyzed the degree of saturation for the different appliances. The energy Consumption pattern of household appliances revealed a high consumption of TV sets and receivers (22%), Cold appliances have also a high consumption (18%), Electric water heaters consume 17%, Lighting consumes about 20 % of the	The S&L that has been developed for five electrical appliances through the previous energy efficiency and Greenhouse reduction project has been expanded to cover more electrical appliances selected and prioritized based on market studies To day, more than 9 MEPS for electrical appliances have been developed: Electric Fans, TVs, Ovens, Dishwashers, Vacuum cleaners, pumps, Air conditioner with inverter compressors, microwaves and tank less water heaters. All these MEPS have been developed in cooperation between the outcome 2 project team and the Egyptian Organization for Standards through different committees assigned for the adaptation of international MEPS with local conditions. The number of developed MEPS is by far exceeding the number of what was proposed in the project document. Based on the issued Ministerial decrees, RFP have been developed by the Project for installation of Energy Efficiency testing laboratories at the premises of monitoring authorities These include: □ Three Energy Efficiency Testing Laboratories established

			electric motors as per the schedule presented in Annex 7-5.	household energy with more than 50% using efficient lighting, Electric fans consume about 5% of the household energy, Washing machines consume 7% of monthly energy consumption, kitchen machines 3%. Based on the results of the study the project in cooperation with EOS has developed MEPS for TVs, electric fans, electrical ovens and fractional motors used in different household appliances. To date S&L have been developed in cooperation between the project and the Egyptian Organization for Standards (EOS) through local committees assigned for the adaptation of international MEPS with local conditions for the different developed MEPS and including the following: • Electrical fans. • Dish washers. • Electrical ovens. • Televisions. • Water pumps. • Fractional motors. • Vacuum cleaners. The number of developed MEPS has exceeded the number of proposed appliances as per project document and has been developed by local consultants, currently two more MEPS are being developed for ovens and tank less water heaters. Number of testing laboratories has been established at the premises of the different stakeholders, this was based on a survey conducted on the available energy efficiency testing laboratories, and approved by the project steering committee. Testing labs specifications have been developed locally without the assistance of international consultants.	at the General Organization for Export and Import Control: electric water pumps, electric oven and the fractional motors in addition to the upgrade of the existing power motor testing laboratory to test efficiency as well as performance. □ Two Energy Efficiency Testing Laboratories established at the New and Renewable Energy Authority: Dish washers while the Air conditioner with inverter compressor was completed in 2018. □ Three Energy Efficiency Testing Laboratories established at the General Organization for Standards: Electric fans ,televisions and the last one vacuum cleaners is almost completed. □ The Energy Efficiency testing laboratory for LED Lamps is under installation at the General Organization for Export and Import Control and expected to be operational by end of 2018. The Project is assisting the Energy efficiency department established at EOS for enforcing the issued ministerial decrees for monitoring and inspecting the status of S&L Program implementation, the project is coordinating through regular meetings between all involved stakeholders. • The Ministerial decree issued in 2017 for enforcing the previous ministerial decree is granting the Energy Efficiency Unit of the Egyptian Organization

				Two EE testing laboratories have been established at EOS one for electric fans and one for televisions. Two EE testing laboratories have been established at the General Organization for Export & Import Control (GOEIC): one for electric water pumps and one for electric ovens, in addition to the upgrade of the existing motor testing laboratory at (GOEIC) to test efficiency in addition to performance. EE testing lab for dish washer has been established at the New and Renewable Energy Authority, the Air conditioning testing Lab is expected to be established at NREA by the end of this year. The testing laboratory for fractional motors has been awarded, to be established at (GOEIC) and the vacuum cleaners has been advertised to be established at EOS both by the end of year 2017. The project has worked in cooperation with the energy efficiency department formed at EOS to remove barriers facing the enforcement of the previous issued ministerial decrees where the Ministerial decrees that have been previously issued for enforcement of the S&L of appliances have been modified through new decree issued 2011 enforcing the adoption of S&L and defining the role and responsibility of monitoring bodies and non-compliance penalties. Another Ministerial decree has been issued by June 2017 for enforcement of the S&L that has been developed after the issue of the 2011 ministerial decree. These amended decrees will permit	for Standards(EOS) the authority to issue the energy efficiency labels for all imported and local manufactured appliances as well as imposing penalties in case of non compliance. The proposed system developed jointly between the project and the EE unit of the General Organization for Standards for monitoring the program implementation has faced some problems, the project is currently supporting the Unit and the monitoring authorities by upgrading the existing system to allow effective cooperation between EOS, GOIEC, CPA and ICA in resolving all issues faced by the program with defining a specific role to each of the stakeholders. The issued labels issued by the EE Unit at EOS with a reference bar code available to all monitoring bodies have revealed an improved level of efficiency for all tested appliances Since the development of MEPS in year 2003 and through the first phase of the project the number of tested appliances has reached 1549 air conditioners, 3415 refrigerators, 2122 washing machines and 628 water heaters. , The Project has recruited a company for conducting training sessions to train 300 salesmen of appliances, lighting and air conditioners in Cairo and Giza

				remedial action at the point where the problem exists. The project in cooperation with the EE unit established at EOS has proposed a new system for monitoring the S&L Program implementation, accordingly EOS will issue the label based on the test results of the appliances level of efficiency, the issued labels will have a serial number and a bar code stored in a data base to allow authorized inspection authority to verify the information on the labels shown in shops. The project has assisted EOS in developing the software providing them as well as the Consumer Agency Protection with four hand held units to inspect the bar code in the market. The issued labels from the EOS Energy Efficiency unit, based on test results have revealed an improved level of efficiency for most of the tested appliances. Over the life time of the project, testing of appliances conduced either at NREA or EOS has reached : 1549 Air conditioners 3415 Refrigerators 2122 washing machines 628 water heaters. Over the past year, the level of efficiency as recorded was revealing an improvement of the level for most of the appliances as follows: Air Conditioners: total number of tested samples :282 E:201,D:31,C27, B:23,A:0 Refrigerators:total number of tested samples :181 E:0,D:16,C4, B:16,A:145 Water heaters :total number of tested samples :122 E:0,D:0,C:6, B:16,A:100	Governorates on understanding the Energy Efficiency Standards and Labels to be able to explain it to the buyers of these appliances . More than 300 salesmen in Cairo and Giza governorates have been trained at a first phase through 10 sessions. Due to the success output results of the first phase, these training sessions are currently repeated to cover salesmen in other governorates Tanta, Mansoura, Fayoum and Suez.

				The Results of the survey and assessment of household appliances energy consumption patterns based on 5000 samples in 5 governorates Cairo, Alexandria, Giza, Ismalyia and Menya gave an indication on the appliances to be selected for developing their MEPS and labels. The project has participated in the update of EE standards for refrigerators according to IEC 62552:2014. Number of workshops and seminars have been conducted as follows: - A workshop on introduction to labeling systems for engineers working for major home appliances attended by trainees from department stores to increase their awareness of EE label information in order to assist buyers in selecting the most efficient electric house hold appliances. - Also the project has organized a seminar to introduce the logic of energy efficiency standards and labels for fans and dish washers for relevant stakeholders. - The project has organized many awareness sessions in various governorates in cooperation with NGOs and CPA to inform the public on the importance of the standards and how to read the label. - The project has Organized training for shops' managers and salesmen (400 salesmen) in three governorates (Cairo, Giza and Alexandria), educating the participants on how to read and understand the energy efficiency labels placed on home appliances and how to educate customers on the benefits of efficient appliances and how to select the efficient product. A large training program will be organized to train salesmen of efficient	

				lighting equipment on how to understand the Standards and labeling program.	
The share of non-compliant products.	(not given)	*(not set or not applicable)*	Fewer than 10% of all the random samples tested at the end of the project show non-compliance.	Assisting EOS in monitoring program has led to an increase of the compliance with the developed MEPS where the level of compliance for the appliances tested at NREA and EOS has reached 100%, moreover the level of efficiency has increased for most of the labeled appliances where it has been observed that the level of efficiency has been higher than the “E” and “D” levels moving towards “A” level giving an indication that the market is moving towards the higher level of efficiencies for the labeled appliances	The analysis of tested appliances during this phase of the project revealed a significant development towards the higher level of efficiency not only all tested appliances were in compliance with the developed MEPS, but the level of efficiency was improving all over the years: For refrigerators Class A increased from 33 % to 78% in 2017. For cloth washers Class A increased from 51 % to 92% in 2017. For water heaters Class A increased from 60 % to 77% in 2017. For air conditioners Class A increased from 0 % to 3% in 2017. For new developed appliances the tested appliances in 2017 revealed the following efficiency levels: Dish washers A level 57%, B level 14%, C level 7% and E level 21%. Fans A level 75%, Clevel 7%, D level 10% and E level 10%. TVs A level 74%, B level 26%.

The progress of the objective can be described as:		On track			
Outcome 3 Sustained project results					
Description of Indicator	**Baseline Level**	**Midterm target level**	**End of project target level**	**Level at 30 June 2017**	**Cumulative progress since project start**
The level of information available for adaptive management and for measuring the impact of the project.	Insufficient information for adaptive management and for measuring the impact of the project.	*(not set or not applicable)*	Annually updated information on the sale of each targeted appliance as per its energy performance class and the level of compliance with the adopted standards and regulations available.	The annually information on the sale of each of the targeted appliances as per energy performance is updated based on information released from the General Organization for Import and Export Control (GOIEC),the Egyptian Industrial Federation as well as the effective activation of the developed Market Monitoring System that has been developed in cooperation between the project and the Egyptian Organization for Standards(EOS) with the participation of the different relevant authorities responsible of monitoring the Standards and Labeling Program. A permanent Committee has been formed at the Ministry of Electricity and Renewable Energy for regular meetings of all stakeholders responsible of monitoring the S&L Program to update the situation of the Program, the compliance with the adopted standards and any encountered issues	In addition to information released from the previous stakeholders concerning annually information on the sale of each of the targeted appliances as per energy cooperation between the project and the different relevant authorities responsible of monitoring the Standards and Labeling Program. The Project team is currently compiling data received from the Central Agency for Public Mobilisation and Statistics (CAPMAS) and is analyzing the data in correlation with the results of tested appliances at each of the three testing laboratories to prepare a study and gather information on the sale of targeted appliances and their level of efficiency the following is the project activities that will achieve sustainability of project outputs The creation of ESCOs companies. The Capacity building and provided training to employees of municipalities and governmental entities through training sessions and workshops either in the field of auditing or standards and labels. The training sessions to salesmen of electrical appliances

					for informing them on the importance of the labeling systems of electrical appliance and to understand it to be able to transfer their knowledge to buyers. - The implemented awareness initiatives in cooperation with the Ministry of Electricity and Renewable Energy to educate consumers on the benefits of energy efficiency and conservation, and practices that contribute to energy conservation , through different media and communications activities, including organizing and participating in numerous seminars and events in Cairo and other governorates. The produced printed promotional materials including brochures, posters, flyers, and informative tips) distributed nationwide to a range of target groups, including government decision makers, the private sector, and the general public. - Promotional campaigns organized using university students youth volunteers more than 100 volunteers that have been trained by the project to increase public awareness on energy efficiency at the community and grass-roots level through social and sporting clubs, shopping malls, supermarkets, and places of worship. The project web site, the face book And the Watty El Watt pages are

					spreading the knowledge of Energy Efficiency and Conservation through daily posts that have shown great interest. The Memorandums of Understanding (MoUs) signed between the project and governmental, non-governmental, international, public and private sector organizations, including The UN Global Compact, The Egyptian Engineering Syndicate, the Consumer Protection Agency, and most recently, Al Ahram Media Organization (Egypt's largest and oldest national public sector media organization in order to expand project outreach, create greater resonance, and ensure project sustainability The participation in seminars, conferences, and events to The designed sticker and sign showing that the building is using LED largely distributed to all facilities that converted their premises to LED such as The Airport, The largest telecommunication company in Egypt. The gas stations, the governmental buildings…...
The status of recommendations contributing to institutional sustainability.	Insufficient institutional mechanisms in place to ensure sustainability of project results.	*(not set or not applicable)*	Sustained institutional and financial mechanisms in place to promote the market for EE appliances and related market	The project results will be sustained through the following institutional mechanisms : -The EE departments that have been established in the various departments of the power sector, these departments have been established at the Ministry of Electricity and Renewable Energy	The project results will be sustained through the following institutional mechanisms : -The EE departments that have been established in the various departments of the power sector, these departments have been established at the Ministry of

			monitoring.	with the support of the World Bank, also at the Egyptian Electricity Holding Company and at the level of the 9 electricity distribution companies. -The clause on Energy Efficiency included in the Electricity Law. -The Cabinet of Ministers instructions addressed to all ministries and governors to reduce lighting consumption in all governmental offices and replace existing lighting systems by LED ones. -The Ministry of Finance decision to include only efficient equipment in all governmental procurement. - The different MEPS that have been developed, the large number of testing laboratories and the monitoring system for S&L that has been developed by the project in cooperation with the Egyptian Organization for Standards(EOS). - The creation of ESCOs companies that will sustain project outputs. - The Capacity building and provided training to employees of municipalities and governmental entities through training sessions and workshops either in the field of auditing or standards and labels. - The implemented awareness initiatives in cooperation with the Ministry of Electricity and Renewable Energy to educate consumers on the benefits of energy efficiency and conservation, and practices that contribute to energy conservation , through different media and communications activities, including organizing and participating in numerous seminars and events in Cairo and other governorates. - The produced printed promotional	Electricity and Renewable Energy with the support of the World Bank, also at the Egyptian Electricity Holding Company and at the level of the 9 electricity distribution companies. -The clause on Energy Efficiency included in the Electricity Law. -The Cabinet of Ministers instructions addressed to all ministries and governors to reduce lighting consumption in all governmental offices and replace existing lighting systems by LED ones. The permanent Committee that has been formed at the . -The Central purchase program of the Ministry of Finance based on the decision to include only efficient equipment in all governmental procurement. - The different MEPS that have been developed, the large number of testing laboratories and the monitoring system for S&L program that has been developed by the project in cooperation with the Egyptian Organization for Standards(EOS) The Ministerial decree that will sustain beyond project life time for enforcing the Standards and Labeling Program for the more developed MEPS. The project results will also be sustained through the following financial mechanisms: The Green Fund of the CIB The Green Fund of the EBRD, The Small and Medium size enterprises of the social security

				materials providing energy efficiency information, best practices and practical tips (including brochures, posters, flyers, and calendars) distributed nationwide to a range of target groups, including government decision makers, the private sector, and the general public. - Promotional campaigns organized using university student youth volunteers more than 100 volunteers that have been trained by the project to increase public awareness on energy efficiency at the community and grass-roots level through social and sporting clubs, shopping malls, supermarkets, and places of worship. • The web site developed by the project, www.eepegypt.org, and the 'landing pages' to document best practices and success stories, at http://projects.eepegypt.org/, - the leveraged social media in spreading awareness, including creative and interactive campaigns on digital media platforms like Facebook, Twitter and Youtube. The project has its own Facebook page; and another one for its electricity conservation campaign "Watty El Watt" (Reduce your Wattage) Both Facebook pages are fully interactive, with daily posts about project news, energy efficiency tips and success stories; as well as reaching out to viewers, and responding to any questions they may have. The Watty el Watt page held a competition on energy efficiency, with winners awarded free and complete transformation of their home lighting systems to LED. Winners submitted their electricity bills in order to calculate	fund, the Project is coordinating between these donors and the entities in need of financial support for implementation of EE projects.

				energy savings. - The produced 3 info graphic videos on energy efficiency tips for the household, released on social media. - The launched 4-month awareness campaign in the Cairo underground targeting one of the busiest lines (El Mounib-Shubra), which transports over 1.3 million passengers daily. where advertisements have been postedon the outer body of the train with the general message “Watty El Watt”, and direct messages with energy saving tips inside trains. - , The project signed Memorandums of Understanding (MoUs) with governmental, non-governmental, international, public and private sector organizations, including The UN Global Compact, The Egyptian Engineering Syndicate, the Consumer Protection Agency, and most recently, Al Ahram Media Organization (Egypt’s largest and oldest national public sector media organization, in order to expand project outreach, create greater resonance, and ensure project sustainability with considerable nationwide reach and both local and international influence). - The designed sticker and sign showing that the building is operating using LED distributed to all facilities that converted their premises to LED. - The participation in seminars, conferences, and events, including setting up project exhibitions and presentations during the World Consumer Protection Day, United Nations Day, Go Green Expo trade show, and Electricx trade exhibition for electrical appliances. The project results will also be	

				sustained through the following financial mechanisms: Sustainability will also be achieved through the Loan Guarantee Mechanism that will be sustained even after the project termination, as the agreement is signed between the Loan Guarantee Company and the Egyptian Electricity Holding Company. Other financial mechanisms are under consideration such as the EBRD fund , the line of credit for the Small and Medium size enterprises of the social security fund to facilitate financing of EE projects in the industrial sector and other sectors through soft loans and the credit guarantee companies where the project is coordinating between these donors and the entities in need of financial support for implementation of EE projects.	
The progress of the objective can be described as:		**On track**			

A7: TE Report Audit Trail

ANNEX 7: TE REPORT AUDIT TRAIL

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

To the comments received on (*date*) from the Terminal Evaluation of (*project name*) (UNDP *PIMS #)*

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

Author	#	Para No./ comment location	Comment/Feedback on the draft TE report	Evaluator response and actions taken
Saliou Touré UNDP RTA Istanbul	Dec 17-2018	General comments	- Include Outcome 3 at Table # 1 List of Outcomes. Add Appendices related to - Evaluation report clearance form - Evaluation Consultants Code of Conduct Agreement Form - Audit Trail and Management response	All done. Table 1 has been improved
Mohamed Bayoumi UNDP Program Officer (PO)Cairo	Dec 20-2018		- The PO recommended adjusting the enenrgy saving ratio between lighting systems saving and AC systems savings as an impact of the eduction of the coolong load. Based on some informations gathered in an hotel (pilot project) the ratio was 80% from AC systems and 20% from lighting systems but the average of 42 pilot projects savings was about 50% saving for each load. - The PO also suggested to beefing up the recommendation with some of the issues that you have raised in the document such as the sustainability of the institutional setup, UNDP replication of the project in other countries as well as your suggestion to what could be the next initiative for the UNDP-GEF on energy efficiency.	- The energy saving mentioned in the report is now shared 50/50 between the cooling load and the lighting load, based on the average impact of pilot projects. - The Evaluator agreed removing the recommendation related capability requirements (improvement) in other countries toward further EE project initiatives. On the other hand the Evaluator highlighted the recommendation related to the sustainability of the inter-institutional arrangements in Egypt with the supporting the enforcement of current (9 new Standards) Standards developed under the IEELA as recommended by the deputy PM. - On the other hand, the Evaluator kept the recommendation related to EE technologies which is still relevant for further development in Egypt and elswhere.
Viola Zaklasma IEELA Deputy Project Manager	Dec. 24-2018		Very minor comments on my behalf they are highlighted in red in the main document. The PM asked including a recommendation for keeping active the inter-institutional arrangement for develoipng and enforcing the new Standards and further development.	All done. Recommendation 4.3.2 is added.

A8: Evaluation Consultant Code of Conduct and Agreement Form

Evaluators:

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 imitations, findings and recommendations.

Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.

Evaluation Consultant Agreement Form[1] 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) : _____

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

Signed at place on date : Canada - December 28, 2018

Signature: _____

[1] www.unevaluation.org/unegcodeofconduct

A9: Evaluation Report Clearance Form

(to be completed by CO and UNDP GEF Technical Adviser based in the region and included in the final document)

Evaluation Report Reviewed and Cleared by
UNDP Country Office

Name: __Mohamed Bayoumi _____

Signature: ___ _____ Date: 2/1/2018 __

UNDP GEF RTA

Name: _____Saliou Toure_____

Signature:  Date: 11/01/2018