MID-term review

Improving the energy efficiency of lighting and other building appliances



MAY 2014

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# Acronyms and abbreviations

A/C air conditioning

AFD Agence Française de Développement

APR-PIR Annual Performance Report – Project Implementation Review

CFL compact fluorescent lamp

CGC Credit Guarantee Company

CHP combined heat-power generation

CO UNDP Country Office

CO2 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

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 (= 109 Joule)

GLS General Lighting Service (designation of the incandescent lamp standard)

GWh gigawatt-hour (= 109 watt-hour)

IEA International Energy Agency

IEE Industrial Energy Efficiency

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

MoFA Ministry of Foreign Affairs

MoTI Ministry of Trade and Industry

MWh megawatt-hour (= 106 watt-hour)

NAMA Nationally Appropriate Mitigation Action

NEEAP National Energy Efficiency Action Plan

NGO non-governmental organization

NMM New Market Mechanism

NREA New and Renewable Energy Authority

PDF GEF project preparation and development facility

PMU Project Management Unit

ProDoc Project Document

PSC Project Steering Committee

RCREEE Regional Centre for Renewable Energy and Energy Efficiency

S&L standards and labeling

SEC Supreme Energy Council

SGP GEF Small Grants Programme

SME small and medium-sized enterprise

t tonne

ToR Terms of Reference

TOU time-of-use

TV Television

TWh terawatt-hour (= 1012 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

# Project overview

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

|  |  |
| --- | --- |
| UNDP Project ID | 00075645 |
| UNDP PIMS Number  Project starting date | 4231  June 1, 2010 |
| Estimated end date | September 30, 2015 |
| Total allocated resources (USD) | 19,505,000 |
| UNDP contribution (USD) | 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 |
| Location | Egypt |
| Executing Entity/Implementing Partner | Ministry of Electricity and Energy |
| Implementing Entity/Responsible Partners | Egyptian Electricity Holding Company |

Evaluator: Alexandre Borde

Dates of the Mid-Term Review in the field: December 30, 2013 – January 6, 2014

**Executive Summary**

Energy efficiency (EE) is considered to be a major lever for action to enhance Egyptian energy policy, which is currently based on a system of subsidies to ensure affordable energy supply. UNDP and GEF have already assisted Egyptian energy strategy through the successful project on Energy Efficiency Improvement and Greenhouse Gas Reduction (PIMS 0452). As a follow-up, the UNDP-GEF project entitled “Improving the energy efficiency of lighting and other building appliances” started in June 2011 for a 4-year period.

The objective of the project is to improve the energy efficiency of end-use equipment, namely building appliances and lighting systems, manufactured, marketed and used 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.

The Mid-Term Review of the project was carried out in the field from December 30, 2013 to January 6, 2014 to evaluate the extent of the activities implemented so far and to provide recommendations for the second phase of the project.

**Overall findings**

The progress of the outcomes and the implemented activities reflects the involvement of numerous public and private stakeholders. The implemented activities include technical assistance for the implementation of EE activities in building lighting systems, assistance for institutional capacity building, standard and labeling (S&L) scheme development, monitoring, workshops and seminars with various stakeholders, and research on financial mechanisms to guarantee financial sustainability of the project. Two principal issues have affected the progress of the EE project.

First, the political instability in the country during the past two years has reduced the importance attached by the Government to EE. Second, organizational disturbances related to the political situation have altered the implementation of the project. For these reasons, less than 10% of the budget has been disbursed so far, which is very low for a project at this stage of implementation. At the same time, the project has proven itself to be effective and efficient, given the difficult context, with already-valuable benefits due to a high level of cooperation between the various project stakeholders. The project’s two main achievements so far have involved load shifting and load management in the Unified Power System (UPS) of the Egyptian Electricity Holding Company EEHC and the creation of energy efficiency market support (energy efficient appliances and new labeling and standardization schemes) to ensure the sustainability of energy efficiency measures.

**Key lessons**

One important lesson is the need to analyze and to understand more precisely the transformation of the market, and the extent to which energy efficient appliances are spreading. Data availability has been a challenge for the project, both for establishing the baseline (what types of appliances would be used in the market without the intervention of the UNDP-implemented, GEF-financed project) and for assessing the diffusion of energy efficient (EE) models and the degree to which EE standards are being enforced. The importance of developing a source of demand for energy efficient appliances is also crucial and thus awareness programmes have to be further developed to incentivize people to invest in EE technologies.

The project should also support the Egyptian authorities in focusing on quality assurance and quality control, particularly of domestically-manufactured appliances, to ensure better quality, in terms of expected lifetime, of the appliances. The energy efficient appliances should have a lifetime at least as long as their regular equivalents. If the energy efficient appliances acquire a reputation of unreliability, it will be impossible to create a market transformation.

Finally, the problem of the low financial disbursement rate of the project has to be carefully addressed during the second phase of the project.

**Assessment against GEF Criteria**

The table below shows the MTR ratings against the various criteria defined by the GEF.

|  |  |  |
| --- | --- | --- |
| **1. Monitoring and Evaluation** | **Rating** | **Findings** |
| M&E design at entry | 4-MS | The M&E design is very simple but its simplicity hides some difficulties in collecting relevant data, difficulties that the project is currently facing. |
| M&E Plan Implementation | 5-S | The M&E system has been adopted by the project, and there is a high level of confidence that the same system will apply when the level of disbursement increases. It is important to make sure that the M&E continues to measure the impact of the project resulting from the upcoming activities. |
| Overall quality of M&E | 4-MS | The M&E is facing the issue of data availability, in particular with respect to market data (sales of energy-efficient appliances). |
| **2. IA & EA Execution** | **Rating** |  |
| Quality of UNDP Implementation | 5-S | Despite political instability, the project has been launched and numerous activities have been implemented (though often with a delay). |
| Quality of Execution - Executing Agency | 5-S | The Ministry of Electricity and Energy has been involved in the adaptive management. |
| Overall quality of Implementation / Execution | 5-S | The low delivery rate (less than 10%) is exclusively explained by external political events but the overall quality of implementation and execution is satisfactory, in the sense that the project has done its best to implement planned activities in this difficult context. |
| **3. Assessment of Outcomes** | **Rating** |  |
| Relevance | R | There is no doubt that the project conforms with national energy strategy and with UNDP and GEF priorities. |
| Effectiveness | 4-MS | The project did not go as far as expected because of external issues affecting its effectiveness. |
| Efficiency | 4-MS | Thanks to strong cooperation between various stakeholders, financial, material and human resources have been mobilized in an efficient way. |
| Overall Project Outcome Rating | 4-MS | Even if numerous planned activities have been implemented, political instability and organizational problems have compromised the implementation of some activities. |
| **4. Impact** | 4-MS | Even though they would have been higher if all activities had been implemented as expected, economic, environmental and social impacts of the project are already observable (e.g. 26 million CFLs sold up to 2013, 300,000 tonnes of CO2 reduction). |
| **5. Sustainability** | **Rating** |  |
| Financial resources | ML | Strong cooperation with a financial partner (Credit Guarantee Company) to finance EE projects in the long run. However, the implementation of the credit line to fund energy efficiency projects (partnership with KfW, IFC and AFD) has been delayed. |
| Socio-political | MU | The first phase of the project has shown the degree to which political instability can affect project progress. Still, the project management has shown good capacity to go beyond political instabilities to continue project implementation. |
| Institutional framework and governance | L | Country ownership is good and a lot of project activities have focused on implementing a robust institutional framework for the market transformation. |
| Environmental | L | Positive environmental impacts have been proven and they are likely to be maintained in the long run. Recycling is tackled and part of the project. |
| Overall likelihood of sustainability | ML | The project addresses both effective activities with results that are directly observable and long-run activities such as awareness programmes that are necessary to ensure sustainability. Sustainability is clearly emphasized in the logical framework of the project (third outcome). |

Table 1. Rating against GEF criteria

6-HS: Highly satisfactory R: Relevant

5-S: Satisfactory NR: Non relevant

4-MS: Moderately satisfactory L: Likely

3-MU: Moderately unsatisfactory ML: Moderately likely

2-U: Unsatisfactory MU: Moderately unlikely

1-HU: Highly Unsatisfactory U: Unlikely

**Recommendations**

Concerning financial support, it is recommended to expand EE loans by significantly increasing the scale of loan guarantees with the support of the project – ideally between one- and ten-fold by identifying an international lending partner. As of December 2013, 70 loans to finance EE equipments have been contracted with 6 banks and guaranteed by the project through the Credit Guarantee Company (CGC). Some preliminary business plan might be considered to pave to way for such a scaling-up.

Moreover, new market mechanisms such as NAMAs could be explored (instead of the carbon finance originally envisaged), to continue the transformation of Egypt towards a low-carbon economy. A cost-benefit analysis of EE would be extremely useful to further support EE appliances. Cost savings for the national budget are not currently assessed in a detailed way.

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 project led to an import ban on GLS above 40W. It is recommended to go further and completely phase-out GLS above 40W. Local manufacturers have to be carefully supported towards better EE appliance calibration. Awareness programmes have already been implemented, but they have to be expanded.

Finally, it is recommended to extend the project end-date by 18 months because of the slow project start.

# Introduction

## Purpose of the evaluation

The purpose of the mid-term evaluation is to provide the relevant information to make an overall independent assessment about the past performance of the project. Particular attention is given to the impact of the project actions against its objectives, and identifying key lessons to propose practical recommendations for the second implementation period of the project.

In accordance with the Terms of Reference (ToR), the objectives of the evaluation are to assess the achievement of project results, to analyze the quality, strengths and weaknesses of the project, to review how the project team has performed to implement the project activities, and if baseline indicators were appropriate to monitor the project.

The following complementary purposes have also been addressed, such as promoting accountability and transparency, and assessing and disclosing the extent of project accomplishments. The evaluation aims also at contributing to the overall assessment of results in achieving GEF strategic objectives towards global environmental benefits.

Finally, the purpose of the evaluation is also to gauge the extent of the convergence of the EE project i) with other UN and UNDP priorities and ii) with Government policies and strategies.

## Scope and methodology

The adopted approach started by gathering as much information as possible extracted from documentation, field visits and stakeholders interviews. Information extracted was analyzed, based on the following criteria: i) relevance, ii) effectiveness, iii) efficiency, iv) sustainability, and v) impact.

Site visits, interviews and meetings were organized in Cairo. Interviews with various stakeholders were arranged via face-to-face meetings. The main stakeholders met by the mid-term reviewer were the beneficiaries of the project, the main partners, civil society organizations, and staff of executing and other relevant agencies.

The sections below explain the agenda of the mid-term review of the project and the different steps of the methodology.

### *Documentation review*

The reviewer undertook a full review of the project documentation, by analyzing the literature to identify the preliminary issues of the project. From this preliminary review, the key questions were produced for the interviews, based on the UNDP evaluation criteria and ratings, the Project Logical Framework and the evaluation questions. The list of documents reviewed is annexed at the end of the report.

### *Interviews with the projects stakeholders in Cairo*

The reviewer looked over the performance of each project component by assessing its relevance, efficiency, effectiveness, sustainability and impact. In addition, lessons learned in terms of content, quality and coordination were summarized for each component and are presented in this report.

The logical framework has been used to determine whether the originally planned objectives have been achieved, through the analysis of the outputs and the use of the monitoring and evaluation (M&E) indicators. Interviews with stakeholders were organized with the members of the Project Management Unit (PMU), and also with the execution partners, UNDP CO and regional office representative, members of Governmental institutions and Agencies, donors, the private sector and civil society. Persons interviewed are listed in an annex.

Interviews were conducted in a structured or semi-structured manner, mainly through face-to-face discussions and, in some cases, via telephone or email in order to learn about the perception of the project and its contributions to improved energy efficiency practices.

### Evaluation criteria and analysis of the collected information

GEF criteria have been taken into account to guide the mid-term review.

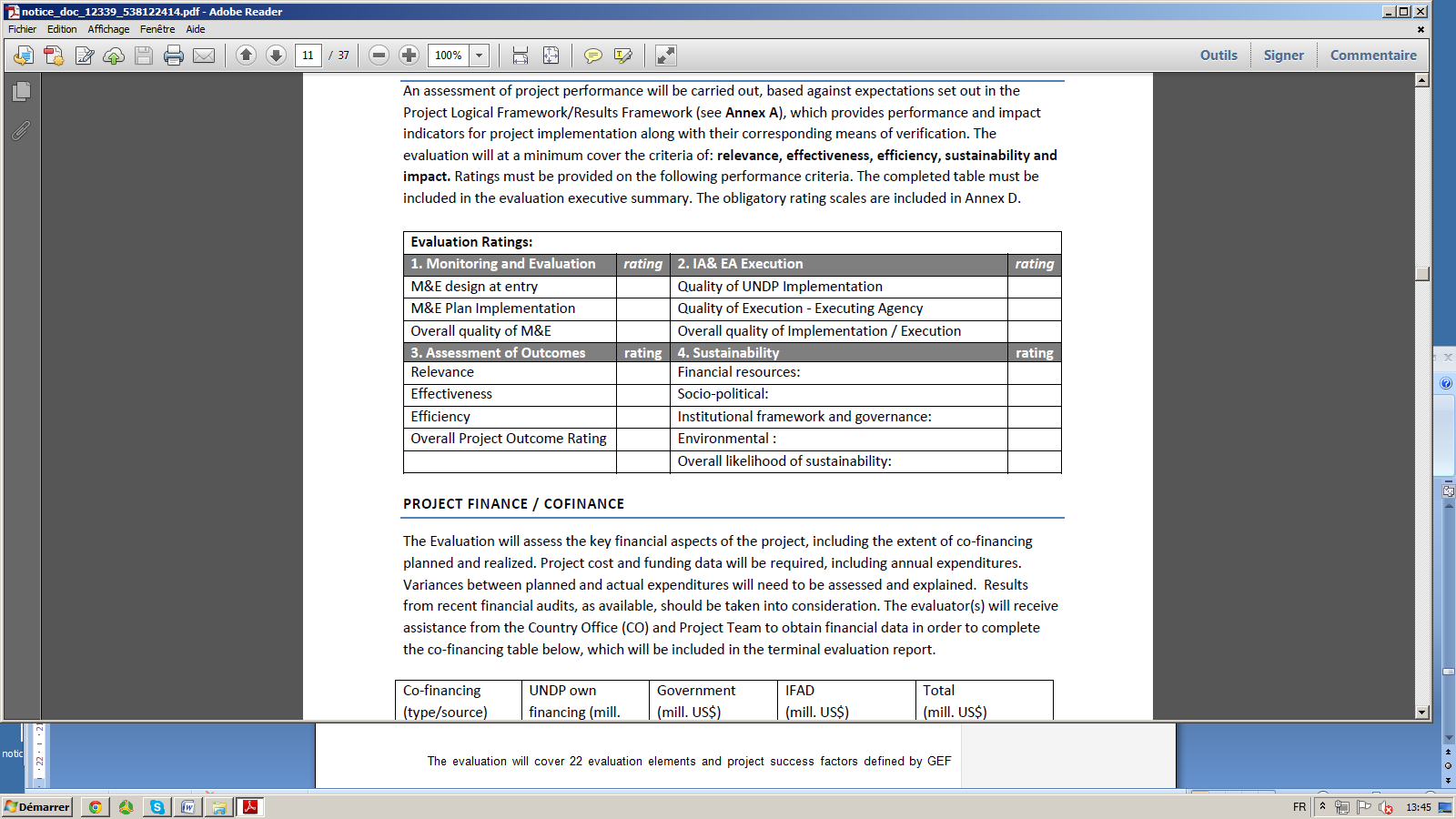


Table 2. GEF criteria

# Project description and development context

This section provides an overall description of the project: context, objectives, indicators, coordination and stakeholders. The analysis concerning all those aspects and the findings of the mid-term evaluation mission will be developed in the third section.

## Context of the project implementation

In October 2007, President Mubarak set a new national target of achieving 20% energy savings by 2020. As a result, the Egyptian Energy Strategic Plan assumed a higher profile and greater political prominence.

EE has a significant economic impact in the Egyptian context, and especially on the national budget. Energy is highly subsidized by the Government in order to guarantee access to energy for the poor. It represented USD 17 billion of subsidies in 2013, which accounted for 20% of the Government’s budget (Reuters, 2013). By increasing EE, the Government can expect to reduce the cost of subsidies and thus save money. This is particularly true in the residential sector, where subsidies are the highest, amounting to 16,650 million LE in economic subsidies according to the African Development Bank (2010).

Environmental stakes are high, since Egypt is the 14th largest source of CO2 emissions among GEF programme countries, with energy-related GHG emissions estimated to be 188.4 M tonnes of CO2eq in 2011 (IEA Key World Energy Statistics, 2013). Therefore, an increase in EE can potentially have a significant impact on global GHG emissions.

Finally, EE has also social impacts, since it is an alternative route to subsidies and can reduce the energy bill for poor consumers.

EE can be considered as a cost-effective way to ensure a reliable supply of energy and mitigate environmental impacts without compromising the economic development of the country. The convergent objectives of the Government of Egypt and of UNDP and GEF led to the design of the “Energy Efficiency Improvement and Greenhouse Gas Reduction” (EEIGGR) project. It was financed by GEF, UNDP and the Government of Egypt, and was executed by the Egyptian Electricity Holding Company (EEHC) and the Ministry of Electricity and Energy (MOEE). The project, which ended in 2010, acted on loss reduction, load management of the unified power system, EE market development, promotion of cogeneration and development of S&L schemes for energy performance. The project was successfully implemented, but weaknesses were observed – in particular, in the monitoring of the S&L schemes. There was a critical need to reinforce verification of appliance energy declarations and labels in shops to ensure market transformation and the confidence of consumers in the scheme. The current EE project builds on the results of this first project and intends to continue to support market transformation.

## Problems that the project seeks to address

Based on the previous UNDP-GEF project, the EE project focuses on appliance energy efficiency, S&L and energy efficient lighting.

First, the project aims at filling the gaps in the monitoring of S&L schemes implemented as a result of the first project. 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. 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 need to be implemented to promote a favorable investment framework.

The three sectors targeted by the project are the residential sector (39.2% of total electricity consumption), street lighting systems (6.2%) and building lighting (7.8%). The three sectors have also been identified as priority EE interventions by the Supreme Energy Council. 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.

## Immediate and development objectives, and expected results

The objective of the project is “to improve the energy efficiency of end-use equipment, namely building appliances 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 on S&L schemes and the third on the sustainability of project results. These outcomes have been divided into outputs. The table below, extracted from the Project Document, summarizes these outcomes and outputs.

|  |  |  |
| --- | --- | --- |
| **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 do not 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 through 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 annual sales of different appliances per agreed energy classes of all targeted appliances. |
| **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 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, | **Output 2.3** Established institutional mechanism and finalized implementation arrangements for monitoring, enforcing and regularly updating the S&L schemes, including training of all key staff of the public entities responsible for the implementation of these schemes. |
| **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 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 labeling 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 chains 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 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 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. |
| **Output 1.7** Improved quality control system and, as applicable, complementary procurement support to provide impartial 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) in place to provide comparative and impartial 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 learned 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. |  |  |

Table 3. Outcomes and outputs of the EE project (Project Document)

## Baseline indicators established

The purpose of the indicators is to monitor the advancement of the project and to facilitate early identification of possible risks and successful completion of the project to potentially adapt the management. For each outcome, the following indicators have been defined.

|  |  |
| --- | --- |
| **Outcomes** | **Indicator** |
| **Project Objective[[1]](#footnote-2)**  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 CO2 emissions compared to the projected baseline |
| **Outcome 1[[2]](#footnote-3)**  Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative. | Total volume or the market share of the CFLs and other EE lighting appliances in Egypt |
| **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 4. Monitoring indicators (Project Document)

An estimation of those indicators is provided annually in the Annual Project Review/Project Implementation Reports (APR/PIRs). Currently, in January 2014, two APR/PIRs are available (June 2012 and 2013).

## Project coordination

Project coordination is represented by the following scheme.

|  |  |
| --- | --- |
| **Actors** | **Responsibilities** |
| Executing agency: Ministry of Electricity and Energy. It includes a project director. | Responsible for the disbursement of funds and the achievement of the project goals |
| Project Board: includes the chairman of the EEHC and representatives from MoEE, electricity distribution companies, EEUCPRA, UNDP, EEAA, MoTI, MoFA and ETI. | Monitor the project progress, guide the project implementation and support the project in achieving its outputs/ outcomes |
| Project Management Unit (PMU), including a project manager | Day-to-day management of the project |
| Project support: international technical adviser(s) and national experts | Support for implementation of the specific technical assistance components of the project |
| Egyptian Industry Federation | Represents the view of local manufacturers and other supply chain operators |
| UNDP Egypt | Oversight and management of the overall project budget, monitoring project implementation, support of the executing agency in the procurement of the required expert services and other project inputs and administer, support for the co-ordination and networking with other related initiatives and institutions in the country |
| Local CFL and appliance industry | Support the establishment and information gathering for market monitoring, participation in the development, implementation and cost-sharing of public awareness raising, participation in consultations on further development needs of the legal and regulatory framework |

Table 5. Responsibilities of the main actors of the project coordination

## Main stakeholders

The following table lists the stakeholders involved in the project and their responsibilities as described in the Project Document.

|  |  |
| --- | --- |
| **Stakeholders** | **Responsibilities** |
| Supreme Energy Council | National energy strategies and policy design (incentives for renewable energy, private sector investment in energy services and revised energy prices for large industrial facilities and other end-users). |
| Ministry of Electricity and Energy (MoEE) | Power generation, transmission and distribution through its executing arm, the state-owned Egyptian Electricity Holding Company (EEHC). The MoEE is the executing entity and the EEHC is the implementing entity for the EE project[[3]](#footnote-4). |
| The Egyptian Electric Utility and Consumer Protection Regulatory Agency (EEUCPRA) | Ensures the availability and continuity of supply, the needs of environmental protection, the interests of the electric power consumers and the interest of the producers, transmitters and distributors. |
| The New and Renewable Energy Authority (NREA) | Expands the use of renewable sources of energy and implements projects. Involved in the testing of electric appliances for S&L regulations in its testing laboratory. |
| The Ministry of Trade and Industry (MoTI) | Linkage of the EE project with any activities associated with local industrial development and international trade. |
| Egyptian Organization for Standards and Quality (EOS) | Key actor in the introduction of new standards and certification schemes. Selection of the samples for testing from each imported batch of building appliances that are subject to mandatory S&L schemes. |
| The Egyptian Accreditation Council | Accreditation of the local testing laboratories. |
| The General Organization for Export, Import and Control,  The General Organization for Standardization  The Egyptian Federation of Industries  The Industrial Control Authority | Inspection of imported and locally manufactured equipment and checking of the presence of labels and compliance with the developed energy efficiency specifications. |
| The Egypt Industrial Modernization Center (IMC) | Implementation and coordination of the modernization of Egyptian industry under the Industrial Modernization Programme. Support to local industry to transform local manufacturing facilities to produce more energy efficient appliances, collection and storage of data on different industrial activities. |
| The Egyptian Ministry of Finance (MoF) | Key project counterparts with regard to state financial matters. |
| The Ministry of State for Environmental Affairs (MSEA)  Executing entity: the Egyptian Environmental Affairs Authority (EEAA) | Hosts the National Climate Change Focal Point, who coordinates climate change activities at the national level. |
| The Egyptian Federation of Industry | Representative of the local manufacturing industry. |

Table 6. Main stakeholders and their responsibilities (Project Document)

## Project start and duration

The project was delayed by six months because of political instability in Egypt, causing changes among the decision-makers in the energy sector. The inception report, too, was delayed by 8 months.

The end of the project is planned to be October 2015, unless the end-date is extended.

# Findings

## Project design/formulation

### Project logical framework analysis

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 accounts for 25% of total energy consumption in the country. Technologies for EE lighting 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. Public buildings, street buildings and the residential sector are targeted, the residential sector is less emphasized than the two other sectors.

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.

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, even if another output could usefully be added to tackle more precisely the importance of awareness activities. No sustainable EE market is possible if there is no demand from consumers, and such demand can be developed by raising consumer awareness of the benefits of EE appliances. However, this subject is developed under the second outcome, which is sufficient but not ideal.

### Assumptions and risks

Political risks have been critical during the inception phase of the project. Because of the political instability in Egypt, EE issues were not a priority for the Government. However, despite the difficult implementation environment, UNDP and its partners succeeded in launching the project and they have to be congratulated for doing so.

Concerning organizational risks, the project team has encountered difficulties, because of the departure of five members (two team leaders and three team members) at the time of project start-up. This may have undermined the efficiency of the project. The time needed for their replacement slowed down some activities.

Financial risks are also of great concern. Funds are necessary for the conversion of the market towards energy efficient lighting. Political instability has led to an economy-wide slowdown and a generally unattractive environment for investment. To tackle this issue, the project is searching for additional funds, and discussions are ongoing with financial institutions to set up a credit line for funding EE lighting.

### Replication approach

It is obvious that EE issues are of great concern for many GEF countries, and therefore the results of this EE project in Egypt are extremely important in terms of visibility. Strengths and weaknesses of the project have to be identified and lessons-learned will be extremely useful for implementing this type of project in other countries. Replication will depend on various factors, such as the impact of the project on national energy consumption and CO2 emissions and the creation of financial support programmes to continue the implementation of the targeted EE investments. Also, cooperation with international stakeholders (e.g. the EU-funded MED-ENEC project) favours the replication of the project in other countries.

### Linkage between projects and other interventions within the sector

A linkage with the UNDP project entitled “Low Emission Capacity Building” has been considered. This project, aiming at designing Nationally Appropriate Mitigation Actions (NAMAs) in strategic sectors, was launched in 2012. This is a four-year programme to strengthen capacities of participating countries in the following ways: develop greenhouse gas (GHG) inventory management systems; identify opportunities for Nationally Appropriate Mitigation Actions (NAMAs); design systems for measuring, reporting, and verification (MRV) of proposed actions and means to reduce GHG emissions; and facilitate the design and adoption of mitigation actions by selected industries. One of the outputs is also to implement Low Emission Development Strategies (LEDS). Advocating the use of energy efficient appliances matches the objectives of the LECB project and illustrates the mutual benefits of both projects.

A linkage could help the EE project to benefit from climate funds, especially considering the upcoming operationalization of the Green Climate Fund (GCF) by the end of 2014. In parallel with the EE project, the United Nations Industrial Development Organization (UNIDO) has launched the “Industrial Energy Efficiency (IEE)” project funded by the GEF. Cooperation on industrial lighting and S&L schemes implementation should be considered.

Moreover, the EU is supporting the second phase of the MED-ENEC project (Energy Efficiency in the Construction Sector in Mediterranean Countries). The project aims to promote energy efficiency and renewable energy systems in the building sector in targeted Mediterranean countries (Tunisia, Jordan, Morocco, Libya, and Egypt). It involves policy advice, business development, and support of large building programmes. A joint training workshop has been carried out for government and non-government engineers. The aim of the workshop was to share knowledge about EE S&L and financial mechanisms for dissemination of EE technology.

Cooperation with the FREEME Project of PlaNet Finance has also been developed, focusing on the promotion of renewable energy and energy efficiency through micro-finance. A training workshop was held by the EE project in cooperation with the FREEME project for micro-finance institution clients and for distributors of CFLs and appliances.

Finally, the project is linked with the GEF Small Grants Programme (SGP), since the Project Manager is a member in the GEF-SGP National Steering Committee and the FSP has supported several NGOs in applying for projects related to EE. In July 2013, the project supported the NGO ‘Eye of Egypt for Consumer Protection’ in preparing request documents for obtaining funds from the GEF-SGP to increase public awareness of energy efficiency labels for home appliances.

## Project implementation

### Adaptive management

As indicated in the section and risks, 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. The organogram below captures the structure of the Project Management Unit as of February 2014.

**Office Boy**

Tamer Soliman

Mosaad Ashour

**Secretary**

Iman Monir

The project management had to adapt to unexpected political changes. The project has established links with second-tier staff in partner agencies to ensure effective and sustainable work while top-tier staff turnover was rapid. The Deputy of EEHC was the National Project Director, but he could not always be available because of the political situation. He has since been replaced by Mohamed Mousa Omran, the first Undersecretary of State of the Ministry of Electricity and Energy, whose involvement is much more important and can be considered satisfactory.

**Project Steering Committee**

**Deputy Project Director**

Eng. Vilola Zaklama

**Assistant Coordinator with Local Agencies**

Eng. Salah El Fagal

**Admin**

Eng. Amel Moustafa

Eng. Marwa ElBeshri

**Accountant**

Lamia ElSheikh

**« Outcome 1 » Manager Lighting**

Dr. Kamelia Youssef

**EE Specialist**

Eng. Amel Moustafa

Eng. Marwa ElBeshri

**Dbase Specialist**

Eng. Maha Badawi

Eng. Hala Hassan

**Web Specialist**

Eng. Sherin Adly

Eng. Reem Hamdy

**Junior Eng.**

Mickel Nagi

Mamdouh Salam

**Testing Eng.**

Sayeda Khalaf

**« Outcome 2 » Manager S&L**

Eng. Ahmed Ghanem

**Junior Eng.**

Norhan Aly

Yehia El Masry

Rramez Farouk

**Project Manager Director**

Dr. Ibrahim Yassin

**National Project Director**

Eng. Mohamed Moussa

**Special Service Contracts**

**Secretary**

Iman Monir

**Office Boy**

Tamer Soliman

Mosaad Ashour

**IT**

Amr Rayan

Gender:

11 Male

12 Female

Because of the fact that the Steering Committee had difficulties meeting more than once a year, it was decided to have an Expert Working Group for the two components and advising the PMU. Thus, two expert committees within the Working Group with specialists from key institutions working on the project were established: one specialized in lighting issues and the other in S&L schemes. They have provided useful technical guidance to the project.

The project has often been requested to advise public as well as private actors and has therefore hired six engineers, responsible for conducting audits with different stakeholders and encouraging stakeholders to invest in energy efficient lighting systems.

### Stakeholders participation and partnership arrangements

The project manages to reach a large and diverse range of private and public stakeholders, and the coordination between the stakeholders is very good.

***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 Energy and Electricity, 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. Indeed, Terms of Reference have been drafted with the project’s involvement to undertake an assessment study for energy efficient street lighting systems

Some of the stakeholders have not been as involved in the project as expected. This is the case for the Ministry of Industry, for example. This is due to the delay in implementation of EE lighting in the industrial sector.

***Private sector***

Cooperation with private stakeholders is effective and relationships with the private sector companies working on energy efficient lighting and home appliances are very good. 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 CFLs, such as Arenco Company, El Sewidy Company and Osram Company, provided approximately 10,000 free CFLs to the project and participated in a campaign aimed at raising consumer awareness on the benefits of CFLs.

*NGOs*

The project has worked in cooperation with NGOs by providing technical support (tips, trainings) and facilitating access to financial support thanks to the GEF Small Grants Programme. The project has recently supported an NGO, ‘Eye of Egypt for Consumer Protection’, in preparing the request document for obtaining funds from the GEF-SGP. The NGOs involved in the project also include the Friends of Nature Association and the Old Cairo Voice for Social Development Association. Revolving funds for selling CFLs, awareness workshops and seminars, EE show rooms as well as implementation of small-scale demonstration projects are typical activities undertaken by NGOs and supported by the EE project. Discussions are ongoing to extend the network of NGOs involved in the project.

***Other partners***

GEF SGP is involved in the funding of NGO activities. The fact that the Project Manager is a member of the GEF SGP Steering Committee strengthens the link between the project and GEF SGP.

A partnership has been established between the project and the German-Egyptian Joint Committee on EE (JCEE). Several seminars and campaigns have been organized in the framework of this partnership, aimed at raising the awareness of various targeted groups (religious leaders, housewives, residential and tourism sectors, etc.) on EE and S&L schemes.

The Regional Centre for Renewable Energy and Energy Efficiency (RCREEE) is also involved in the project: a training session has been organized in cooperation with RCREEE for Sudanese engineers on subjects linked with energy auditing.

### Project finance

The delivery rate was very low by June 2012 (3% of the total budget) because of a difficult start-up. It reached 8% by June 2013 and is around 10% as of December 2013.

The table below compares the planned and actual budget for 2011, 2012 and 2013. The only funds taken into account are those from GEF and UNDP.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 2011 | | 2012 | | 2013 | |
|  | planned | actual | planned | actual | planned | actual |
| Outcome 1 | 378 400 | 1698 | 398 400 | 34 025 | 398 400 | 53 975 |
| Outcome 2 | 330 000 | 623 | 530 000 | 27 270 | 480 000 | 71 965 |
| Outcome 3 | 82 400 | 0 | 34 400 | 0 | 59 400 | 0 |
| PMU | 92 400 | 42 018 | 84 400 | 93 093 | 84 400 | 70 768 |
| Project total | 754 400 | 44 339 | 1 153 400 | 154 388 | 1 218 400 | 196 708 |

Table 7. Comparison of the planned and actual budgets for each outcome in 2011, 2012 and 2013

The table below shows the contributions of the various co-financiers and compares the planned and actual cumulative budgets.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Co-financing** | **GEF (mill. USD)** | |  | |  | | **MED –ENEC** | | **GTZ-JCEE** | | **MDG-F** | | **NREA** | | **Total (mill. USD)** | |
| **(type/source)** | **UNDP own financing (mill. USD)** | | **Government (mill. USD)** | |
|  |  | |  | |
|  |  | |  | |
|  | *Planned* | *Actual* | *Planned* | *Actual* | *Planned* | *Actual* | *Planned* | *Actual* | *Planned* | *Actual* | *Planned* | *Actual* | *Planned* | *Actual* | *Planned* | *Actual* |
| Cash | 2 834 200 | 380 436 | 292 000 | 15 000 | 6 138 000 | 12 30 0000 | 500 000 | 50 000 | 100 000 | 25 000 | 500 000 | 200 000 | (Not delivered because no labs are yet established) |  |  |  |
| In-kind support | 0 | 0 | 0 | 0 | 0 | 45 000 | 0 | 0 | 0 | 0 | 0 | 0 | 600 000 |  |  |  |
| **Total** | **2 834 200** | 380 436 | 292 000 | 15 000 | **6138000** | **12 345 000** | **500 000** | **50 000** | **100 000** | **25 000** | **500 000** | **200 000** | **600 000** |  | **10 964 200** | **13 015 436** |

Table 8. Cumulative budgets and expenditure by December 2013

The project collaborates with the Credit Guarantee Company (CGC) to guarantee EE loans and facilitate the development of a model relying on ESCOs. The mechanism is implemented through the credit guarantee company and guaranteed amounts are provided from the previous UNDP-implemented, GEF-financed EE project and leveraged by additional amounts from the credit guarantee company. As of December 2013, 70 loans have been contracted with 6 banks and guaranteed by the project through CGC

### UNDP and implementing partner coordination and operational issues

The MTR decided to rate the quality of UNDP implementation as Highly Satisfactory. The coordination and implementation of UNDP with line ministries is visible. The implementation proved to be successful, with the use of a technical sharing approach for all the different ministries involved in the project across the country. Even if the project has been disturbed by external events, the UNDP CO has managed to launch the project and to follow the work plan correctly. The 2012 PIR rating was Moderately Satisfactory, and improved to Satisfactory in 2013. The Mid-Term Review confirms this positive trend.

## Project results

Concerning the first outcome, political instabilities have slowed activities implementation, but some achievements have to be underlined. Technical assistance has been provided for designing pilot projects for replication, building on lighting audits in clubs, Government buildings, universities, hospitals, etc. Institutional aspects have been tackled. Among the activities undertaken, the project has contributed to the preparation of the Energy Efficiency National Plan up to 2015. Actions on markets for EE appliances are effective. For example, approximately 26 million CFLs have been sold to date as a result of project support activities and some useful capacity development support. The agreement brokered with manufacturers to raise the minimum temperature setting on new AC units from 16 degrees Celsius to 20 degrees should, in the long run, also have a substantive impact on emissions and may open up new opportunities for private-sector collaboration. The success of the activities undertaken is emphasized by the reduction of 0.3 million tCO2 of direct emissions (end-of-project target: 0.95 million tCO2).

As for outcome 2, planned activities have been implemented slowly because of the departure of the team leader and the 8 months needed to replace him. The main problem is the control of local market production, for which the S&L scheme implementation is difficult. In order to make the implementation sustainable, the project influenced the issuance of Ministerial Decrees related to S&L for EE appliances, defining the assigned responsibilities of each stakeholder involved in the programme and the penalties to be applied in case of non-compliance. The project has worked towards the unification of minimum energy performance standards (MEPS) for improving the technical characteristics of efficient lighting. The strong coordination with private sector stakeholders has to be underlined.

In relation to the MEPS, it is crucial to find some technical solution to reach a higher rate of compliance. For instance, a discussion has been led between manufacturers of air conditioners and the Egyptian Organization for Standards (EOS), which resulted to the decision to raise the minimum temperature setting from 16 degrees Celsius to 20 degrees. The phase of negotiation is sometimes rather lengthy to convince manufacturers to adopt a technical solution to increase EE, and therefore the rate of compliance remains quite low in some sectors, such as the air conditioners sector (25% for imported models, 7% for local models). For air conditioners, a solution proposed involved the use of inverter compressors to increase air-conditioner efficiency, but manufacturers do not approve of this approach at the moment as it would be too costly.

Concerning the third outcome, there is a lack of data concerning emission reductions achieved due to project activities. As a result, the project has launched a call for proposals for monitoring lighting systems and electric home appliances. Communication has been clearly addressed: EEHC has implemented a nationwide campaign in the Egyptian media on electricity conservation in order to promote CFLs. Media campaigns have been organized aimed at raising public awareness. Informative flyers and energy efficiency tips have also been designed and distributed.

To sum up, the project is making solid progress towards its outcomes despite a six-month delay due to political troubles in Egypt, causing changes among decision-makers in the energy sector.

The end of the project is planned in October 2015, but one can expect a postponement of the end-date due to the initial delay. This is a recommendation of the MTR.

|  |  |  |
| --- | --- | --- |
| **Outcomes** | **Indicator** | **As of January 2014** |
| **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 EU.) | * The project reviewed the technical energy efficiency specifications for home appliances based on international experience for each of the following appliance: fans (different types), inverter compressors and vacuum cleaners. The Minimum Energy Performance Standards (MEPS) for fans and dishwashers will be developed by a local consultant and the work will start by the end of August. The rate of compliance with MEPS is higher than 80% for imported appliances (refrigerators, washing machines, electric water heaters). For locally-manufactured appliances, the compliance rate is 77% for refrigerators, 95% for automatic washing machines and 80% for electric water heaters. The compliance rate for air conditioners is 25% for imported models and 7% for local models. * The project is working in cooperation with the Egyptian Organization for Standards (EOS) in revising and updating the EE specifications for efficient lighting products in compliance with international standards and unification of the standards at the national level. This includes different types of indoor and outdoor lighting as well as street lighting. * The project is also coordinating with EOS for the effective implementation of the S&L programme developed under phase 1 of the project. This work has resulted in the following achievements:   - A circular has been formally sent by the Ministry of Electricity and Energy to all Government agencies and municipalities to adopt the Minimum Energy Performance Standard (MEPS) for lighting systems in any tender documents issued for lighting systems procurement.  - Issuance of a ministerial decree for enforcing the S&L programme, defining the assigned responsibilities of each stakeholder involved in the programme and the penalties to be applied in case of non-compliance.  - Establishing an energy efficiency unit at EOS for monitoring the programme implementation in coordination with the project.  - Issuance of a Ministerial Decree to prevent the import of General Lighting Service (GLS) lamps (i.e. incandescent lamps) with a wattage greater than 40 watts.  - A decision was taken between the project, EOS and air conditioner manufacturers to raise the minimum set point for AC to 20 instead of 16 degrees Celsius; this will be followed by a Ministerial decree for enforcement.  - Cooperation with the Energy Efficiency Unit (EEU) at the Cabinet of Ministers in implementing EE measures in mosques; an official circular has been sent from the Ministry of Endowment to all mosques for strict application of these measures.  - The Ministry of Electricity and Energy, in cooperation with the project, has launched a National Campaign for EE awareness through the media. |
| Amount of reduced CO2 emissions compared to the projected baseline | The achieved energy savings have been estimated at 558,093 MWh, which equates to **0.3 million tonnes of CO2 reduction** (based on a grid emission factor of 0.54 tCO2/MWh). These savings are attributable to energy efficiency projects in street lighting, Government buildings and selling 3 million CFLs to residential customers with a 50% price subsidy provided by the Ministry of Electricity and Energy. |
| **Outcome 1**. Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative. | Total volume or the market share of the CFLs and other EE lighting appliances in Egypt | * **The estimated number of CFLs sold up to 2013 as result of the project’s market promotion activities is around 26 million**, based on figures from Income Marketing Company. * The project supported a committee from the Egyptian Electricity Holding Company and EOS to revise standard specifications for efficient lighting systems - including street lighting - and to unify these standards at the national level in conformity with the Egyptian lighting MEPS and IEC Standards. * The project has provided capacity building and training workshops in the field of lighting auditing to managers of public buildings and municipalities as follows:   - “Auditing and Energy Efficiency lighting in buildings”, 27-31 January 2013, in cooperation with the EU-funded MED-ENEC project. The training was attended by 47 trainees representing different ministries, local authorities and consulting firms.  - The project has provided training to engineers from the 9 electricity distribution companies (10 staff from each company) for conducting energy efficiency lighting audits in buildings and preparing auditing reports, including techno-economic feasibility analysis.  - The project has improved the public procurement process through preparation of a simplified guidebook including the steps to be followed when procuring efficient lighting equipment, a guidance note for the replacement of each type of lighting equipment by the respective efficient one, the testing requirements and the issued specifications for each type of efficient lighting for public buildings (inside and outside) as well as street lighting.  - Over the last year, the project has organized and supported the organization of several awareness seminars in cooperation with the National Council of Women, EEU, Ministry of Housing, etc.   * Funded by the MDG–F Joint Programme on Climate Change as well as a government contribution, the project has provided **technical assistance for transformation of lighting systems in 7 government buildings** belonging to the Ministry of Water Resources and Irrigation, the Cabinet of Ministers and the Ministry of Communication and Information Technology. * In collaboration with the Energy Efficiency Unit (EEU) in the Cabinet of Ministers and GIZ, the project implemented an energy conservation initiative targeting mosques that started with **energy audits in 100 mosques**. The results of the audits were used in the **preparation of an energy efficiency guide for improving energy efficiency in lighting systems and air conditioning systems in mosques**. The guide was circulated to all mosques in the country and was coupled with an awareness seminar for religious leaders. * The project conducted a lighting audit for one of the large sporting and social clubs in Cairo and negotiations are ongoing to implement the recommendations of the study. * The project has advertised in newspapers for companies that are interested in working on the design and implementation of energy efficient lighting system projects. The PMU met with the interested companies several times and has identified those that are willing to provide lighting audits for free and submit to end-users financial and technical proposals for retrofits. The list of companies will be uploaded to the project website to enable end-users to use this service and facilitate implementation of projects. |
| **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. | * **MEPS and labeling schemes have been developed for 5 appliances: refrigerators/ freezers, automatic washing machines, air conditioners, efficient lighting systems (CFLs and electronic ballasts), and electric water heaters**. The Ministerial Decrees for their enforcement, issued in 2003 and in 2005, are facing barriers preventing full implementation. * The project is working in cooperation with the EE Department formed at EOS to remove barriers to the enforcement of the Ministerial Decrees through the issuance of a new Ministerial Decree, issued in 2011, to regulate their enforcement. * The project is coordinating with EOS and manufacturers of air conditioners to discuss the option of reducing consumption of air conditioners by making it compulsory for all AC units entering the Egyptian market to have inverter compressor technology. Additionally, discussions are underway to mitigate the cost of this invertor compressor technology through a reduction in customs duties. * The project organized a **workshop on “Introduction to labeling systems”** in March 2013 for engineers working for major home appliance manufacturers. The workshop was attended by 11 trainees from department stores to increase their awareness of EE label information in order to assist buyers in selecting the most efficient electric household appliances. * The project reviewed the technical energy efficiency specifications for home appliances based on international experience for each of the following appliance: fans (different types), inverter compressors, vacuum cleaners, dish washers and fractional motors (single- and three-phase). * The project has selected two experts to develop EE standards and labels to start with 2 of the above appliances and the selection process is ongoing. The consultants are preparing the specifications for the testing labs to be purchased later on. |
| The share of non-compliant products. | The study initiation was delayed due to the resignation of the Outcome 2 team leader and the preparation of a new Request for Proposal - for companies instead of individual consultants - to prepare the study, which has already started and is near completion. |
| **Outcome 3**. Sustained project results | The level of information available for adaptive management and for measuring the impact of the project. | * Due to the **difficulties faced by the project in obtaining data** on the sales of efficient lighting systems and efficient household appliances and their impact on market transformation and energy savings, the project announced a Request for Proposal to develop a monitoring system for lighting systems and electric home appliances. Three offers were received, and selection has now been finalized and work will be initiated at once. The objective of this RFP is to establish a mechanism for monitoring the annual sales and electricity consumption of lighting systems and targeted home appliances and to strengthen the implementation, enforcement and monitoring of the S&L programme for efficient home appliances developed earlier during phase 1 of the project, in addition to developing a model for calculation of GHG savings. * An EE guidebook edited by the project team has been issued by the MoEE and distributed to all ministries and government bodies. * A survey is ongoing for reviewing the international experience in developing MEPS for fans, fractional motors, water pumping motors, dishwashers and vacuum cleaners, as well as the experience in establishing testing labs. * A TOR for contracting a local consultant to develop EE standards for home appliances has been issued and 3 offers have been received; evaluation of offers is ongoing. * The project has developed a Facebook page containing energy efficiency tips for the public. |
| The status of recommendations contributing to institutional sustainability. | The project is in contact with financial institutions, including KFW, IFC and AFD, to advocate for the establishment of a credit line to fund energy efficiency projects. However, the recent political instability in Egypt has delayed a decision regarding the initiation of such a fund. |

Table 9. Achievement of the outcomes updated from the latest PIR. Source: PIR 2013 and interviews for the MTR.

### Relevance

Regarding the electricity supply and demand issue, the EE project is considered as relevant. It is an appropriate solution because energy efficiency represents the most cost-effective option to reduce the growing shortages in electricity supply.

The project is consistent with national policies and strategies. Since the statement of President Mubarak in 2007 highlighting the necessity for the Egyptian Energy Strategic Plan to focus on energy saving, and despite the political situation, EE still has a crucial role in the long-term national energy strategy. The MTR confirmed this in discussions with high-level representatives from various Government bodies. Having such extensive networks in place has been instrumental in the project's successes regarding, for example, the issuance of the Ministerial Decree banning the import of high-wattage incandescent bulbs into Egypt, the Ministry of Endowment's issuance of a circular regarding energy efficiency measures in mosques, the national awareness-raising campaign, and the Ministry of Energy and Electricity's commitment to enforcing lighting minimum energy performance standards (MEPS) in all Government agencies' tenders.

Coherence with the policies and strategies of financial partners (UNDP and GEF) is obvious. The EE project follows the previous UNDP/GEF “Energy Efficiency Improvement & Greenhouse Gas Reduction (EEIGGR)” project and the succession of the two projects is coherent. The EE project aims at filling the gaps of the EEIGGR project.

Indicators for monitoring and evaluation of the project are also relevant and reflect the effectiveness of the actions undertaken. For Objective 1, the indicators were: the level of compliance of the targeted appliances with the adopted minimum energy performance standards and the amount of reduced CO2 emissions compared to the projected baseline.

For Outcome 1, it was the total volume or the market share of the CFLs and other EE lighting appliances in Egypt.

For Outcome 2, it was the status and content of the legal and regulatory acts and the agreed implementation arrangements dealing with appliance minimum energy performance standards (MEPS) and the share of non-compliant products.

For Outcome 3, it was the level of information available for adaptive management and for measuring the impact of the project and the status of recommendations contributing to institutional sustainability

These are all SMART indicators which have facilitated the assessment of progress of the project. Nevertheless, some problems were encountered when collecting the data on the sales of efficient lighting systems and efficient household appliances, and their impact on market transformation and energy savings concerning the level of information available for adaptive management for Outcome 3.

With regard to the national context, the project is relevant. The Supreme Council of Energy has been willing to develop EE programmes in the residential sector, in street lighting and Government buildings. Therefore, the EE project is perfectly consistent with this strategy. The National Energy Efficiency Action Plan (NEEAP), implemented from 2013 to 2015, also focuses on those sectors. However, on a general level, there is a need for political empowerment on energy issues. Moreover, the NEEAP needs to be further implemented and there is a strong demand from most of the partners of the project to see the project contributing to this objective as much as possible.

### Effectiveness

The effectiveness of the project depends on the quality of the PMU, which is here headed by an experienced and recognized expert, Dr Ibrahim Yassin, who worked for many years in the Government on the information system of the Egyptian grid. .

Partnerships and relations with different Government bodies and the private sector have proven to be very effective (see Section 3.3.1).

The project has a key role in helping civil society to better protect consumers because it will improve the energy efficiency of end-use equipment, namely building appliances and lighting systems manufactured, marketed and used in Egypt. This will help to slow the growth of rising domestic electricity bills.

Because of the difficult political context, a lot of output activities have needed more time than expected to be fully implemented. The inception report and the mid-term review were 8 months behind schedule. However, effective decisions, such as setting up the Expert Working Group, have been taken during the first half of the project in order to optimize the first outcomes and the project managers have to be congratulated for doing so.

### Efficiency

The support provided by the project covers some essential steps to achieving the expected results and to prepare a scaling-up. The strength of the project lies in its interventions on all aspects of market transformation, including capacity building and awareness-raising with the project partners. The combination of those different activities is needed to ensure the efficiency of the project.

However, the impacts of several EE initiatives that have been implemented under the umbrella of the GEF project (notably the initiative to sell subsidized CFLs through the electricity distribution companies) have not been thoroughly measured or quantified due to a lack of statistical data. Data collection is one of the difficulties encountered by the project, in particular concerning the sales of energy efficient lighting systems and appliances.

### Country ownership

The EE project is well integrated in the energy strategy of the country. It is perfectly in accordance with the target of reducing national energy consumption by 20% by 2020. Energy efficiency is also a necessity if the Government intends to reduce energy subsidies. Accordingly, the Cabinet considers EE as a priority:

- The Supreme Energy Council recommended the implementation of EE programmes in the residential sector and street lighting[[4]](#footnote-5) on 11 March 2009.

- There are frequent requests from the Minister of Electricity to the people to rationalize use of electricity.

- A note was sent in 2014 from the Cabinet of Ministers to all Ministries to reduce electricity consumption by 20% in all Government buildings.

- The newly-elected President of Egypt, Abdul Fattah al-Sisi, has indicated that he will push for market transformation to energy efficient lighting systems in Egypt.

The Government has been strongly involved in the project thanks to its financial participation (Section 3.2.3) and its participation in the implemented activities.

The transformation of lighting systems in Government buildings, which figures among project- implemented activities, also shows country involvement in the project.

Finally, the country ownership is ensured by the active participation of the Government in the project management. The test of ownership at the policy level will come with the adoption and enforcement of the various policy instruments, such as appropriate tariff setting, and appliance standards and labeling. Moreover, the Ministry of Electricity and Energy is responsible for the overall achievement of the project goal as executing agency. The Ministry sent a circular to all Government agencies and municipalities to adopt the Minimum Energy Performance Standard (MEPS) for lighting systems in any tender documents issued for lighting systems procurement.

### Sustainability

Regarding sustainability, UNDP has embarked, together with 5 other UN agencies, on an initiative, ‘Climate Change Risk Management in Egypt’, funded by the MDG Spanish Fund to provide policy advice and coordination efforts to the Supreme Energy Council (SEC). The programme consists of a number of activities. In one of these, UNEP and UNDP have been working together to support the Technical Secretariat of the SEC of the Cabinet of Ministers in its ongoing endeavours in reforming national energy policies, including the energy subsidy scheme and the promotion of renewable energy and energy efficiency. The joint programme is providing technical assistance to assimilate and convert the existing wealth of studies and information into policy papers for SEC as a step towards institutional transformation to an energy efficient economy, and also ensure coordination among ministries on implementing the decisions of the SEC and mobilizing additional resources to support longer-term studies serving national energy priorities. The solid institutional framework of the project favours sustainability.

Government bodies are committed to fostering EE in the long-run (Section 3.3.4). However, the EE market cannot be developed if tariff reform is not effective and if nothing is done to reduce subsidies. Sustainability of the project will be guaranteed only if electricity tariffs better reflect the costs of energy generation, energy distribution and environmental impact, which is not the case at the moment.

Financial sustainability is favoured by cooperation with a financial partner (the Credit Guarantee Company) to finance EE projects in the long run. However, the implementation of the credit line to fund energy efficiency project that was expected to be implemented in partnership with KfW, IFC and AFD has been delayed because of political instability.

Communication and awareness-raising activities have been successfully implemented (Facebook page, EE guidebook, training, etc.), which is crucial to ensuring project sustainability. An effective S&L scheme is necessary to ensure the quality of the energy efficient appliances and the confidence of consumers. Some work is still needed to support better quality control processes for some appliances, in particular those manufactured in Egypt.

### Impact

Impacts of the project are various. First, in economic terms, the markets for energy efficient appliances are growing. With the local unit in the Ministry of Local Development which supervises the promotion of energy efficient street lighting now established, the estimated number of CFLs sold up to 2013 was around 26 million as a result of the project’s market promotion activities. Indeed, the project supported a committee from the Egyptian Electricity Holding Company and EOS to revise standard specifications for efficient lighting systems - including street lighting - and to unify these standards at the national level in conformity with the Egyptian lighting MEPS and IEC Standards. The project has provided capacity building and training workshops in the field of lighting auditing to managers of public buildings and municipalities. The financial impact for the Government (the saving in energy subsidies and in avoided capacity increases) has not been clearly assessed and should be more precisely evaluated. The environmental impact has been assessed: the achieved energy savings have been estimated at 558,093 MWh, which equates to 0.3 million tonnes of CO2 reduction. The project emissions reduction target is for direct incremental reduction of GHG emissions 0.95 million tonnes of CO2eq by the end of the project and cumulative indirect GHG emission reductions of at least 53 million tonnes of CO2eq by 2025. The project has also implemented far-reaching activities, such as awareness-raising and institutional strengthening, whose consequences are not always visible in the short term.

### Cross-cutting issues

Cross-cutting issues indirectly addressed by the project include the strengthening of social benefits, as beneficiaries are households and the use of CFLs and energy efficient appliances will generate costs savings.

Within the PMU, there is gender balance, with 11 males and 12 females (as of January 5, 2014). The project has provided technical assistance to the Energy Efficiency Unit and JCEE to organize a workshop for members of the Women’s Councils from Egyptian Governorates. These workshops serve to raise women’s awareness of energy saving and energy efficient lighting systems and appliances. Although no gender assessment has been carried out, the importance of gender issues in developing an energy efficiency market seems limited.

In conclusion, the cross-cutting issues are appropriately addressed by the project.

## Monitoring and Evaluation and Reporting

The M&E design is moderately satisfactory. Even if the M&E is simple and easily comprehensible, it hides some significant challenges in measuring the indicators. Difficulties have been identified in the third outcome, obtaining data on the sales of efficient lighting systems and efficient household appliances and their impact on market transformation and energy savings. The project is aware of those challenges and has announced a Request for Proposal to develop a monitoring system for lighting systems and electric home appliances. Moreover, the M&E scheme is not sufficiently detailed and maybe too simple, which affects the assessment of outcomes.

The M&E implementation is moderately unsatisfactory. Various monitoring tools have been defined, such as field visits, spot checks, audits, PIRs, and quarterly and annual progress reports. The tools have not been entirely implemented and their ad hoc nature (for some of them) means that data collection is not necessarily standardized between surveys or across time. The M&E system is hence not as strong as it should be, which has resulted in missing information needed to quantify the impacts of the project.

# Lessons learned and recommendations

## Lessons learned

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### A need to focus on data collection

The M&E is not fully satisfactory, because the impacts of EE initiatives have not been thoroughly quantified. This is mainly due to difficulties associated with gathering the relevant quantitative data. Data collection is particularly needed to estimate the size of the Egyptian electric appliances market. For this purpose, the project has announced a call for proposal to monitor the sales of electric appliances.

### Need for awareness programmes

Additional activities need to be carried out to increase the demand for energy efficient appliances. Indeed, qualitative data show that customers are still reluctant to invest in energy efficient appliances in spite of several awareness campaigns on TV and radio, and that they are not aware of the benefits of those appliances. Stakeholders, such as NGOs and community groups, directly in contact with local populations should be encouraged to be involved in training and other awareness-raising activities. The project has already supported an NGO, ‘Eye of Egypt for Consumer Protection’, in preparing request documents for obtaining funds from the GEF-SGP, and such collaboration could usefully be expanded and extended.

The main objective of the Eye of Egypt SGP project is to build awareness for energy efficiency and, especially, the use of high-efficiency appliances. Besides locally-based activities, the project has developed a website and Facebook page that are linked to the UNDP CO webpage. The website includes some useful energy efficiency and conservation tips but some communication efforts are still needed to promote the site at the national level.

### Overcoming the poor quality of some appliances

Quality assurance and quality control should receive greater emphasis, not only for imported products, but also for domestic models. There is still a gap in the S&L schemes concerning appliances manufactured in Egypt and efforts should be made to support the local manufacturers. For locally-manufactured appliances, the compliance rate is 77% for refrigerators, 95% for automatic washing machines and 80% for electric water heaters. The compliance rate for air conditioners is 25% for imported models and 7% for local models. The project is working in cooperation with the Egyptian Organization for Standards (EOS) in revising and updating the EE specifications for efficient lighting products in compliance with international standards and unification of the standards at the national level.

### Recycling of the CFL components and materials

One has to make sure that, in the recycling of some appliances, toxic components are properly handled. As Egyptian waste management organizations are not specialized in recycling bulbs, there is a risk in handling used bulbs because of the presence of arsenic and mercury. Limiting the mercury content of the lamps to be in line with EU standards (3 mg of mercury per lamp) is also a point of discussion. The project team has approached local CFL manufacturers with a proposal to recycle burnt-out CFLs and extracting mercury from the washed glass. But they have not yet reached an agreement.

### Increase the rate of disbursement

During the first half of the project, only approximately 10% of the total budget has been spent. The political context and the delayed start-up of project activities explain this situation. It is important to concentrate on this issue during the second half by monitoring the contracts which are about to be issued and reduce the time required for disbursement.

## Recommendations

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### Consider increasing financial supporting mechanisms regarding EE loans

As of December 2013, 70 loans to invest in EE appliances have been contracted with 6 banks and guaranteed by the project through CGC. It is recommended to expand this by significantly increasing the guarantees underlying these loans, together with identifying an international lending partner (e.g. KfW). A preliminary business plan might be considered to pave the way for such a scaling-up.

### Focus on new market mechanisms such as NAMAs

Since project formulation, the context has changed for climate finance, notably with the collapse of the CDM/CER market. It is important to orient the project towards new opportunities as a substitute to the carbon markets, such as New Market Mechanisms (NMMs) and Nationally Appropriate Mitigation Actions (NAMAs) that are aligned with the priorities of the UNFCCC and the international community. This will enable Egypt to develop new projects that are supportive of a low-carbon economy.

### Provide the Ministry of Finance with a detailed cost-benefit analysis of EE

Decisions to further support EE appliances should be based on economic rationales. It is known that EE generates costs savings for the national budget (in particular, in relation to the cost of energy subsidies), but such savings are not currently assessed in a detailed way. It is recommended to undertake an in-depth economic analysis (by products and by sector) of EE measures to support the improvement of rational incentives for energy efficiency. This could assist the Government with its stated objective of revising tariffs for energy and reducing energy subsidies.

### Support investment in quality control and further appliance testing

The project originally started with the objective of helping to develop Egypt’s testing facilities, with labs for air conditioners, dish washers and refrigerators. This should be expanded to other appliances such as fans, pump motors and kettles, given the fact that budget appears to be available. Supporting the quality assurance and quality control of CFLs is also crucial.

### Assess the situation of EE in the IT and telecommunication sectors

IT and telecommunications are becoming increasingly electricity-intensive, for instance in the proliferation of data-centres. It is recommended to work with the IT/telecommunication sector to further explore the potential for EE in this sector.

### Develop a demonstration project on street lighting

Another already-addressed sector is street lighting. Some pilot/demonstration projects in this field might be considered, as pilot projects have been implemented in Government buildings for building lighting.

### Support the development of product eco-labeling in the short-term, and for buildings/sectoral eco-labeling in the mid-term

EE labeling is being implemented for some appliances through the project (refrigerators/ freezers, automatic washing machines, air conditioners, efficient lighting systems (CFLs and electronic ballasts), and electric water heaters). This should be continued for other appliances, such as pump motors. At the same time, proposing eco-labels for sectors (tourism/hotels, cement, etc.) should be considered as a mid-term objective.

### Supporting simple measures such as the phase-out of GLS and limitation of heating in AC

The project started to push for such measures, leading to the banning of above-40W imported GLS. It is recommended to completely phase-out above 40W GLS.

### Support local manufacturers in better EE appliance calibration

Local manufacturers have to be carefully supported in the context of achieving market transformation, to enable them to remain competitive in the context of the new regulations and S&L schemes. More precisely, calibration of EE appliances (CFLs, AC, refrigerators, etc.) is one of the measures to improve the quality of their products. Efforts towards such calibration should be emphasized with the local manufacturers to be able to compete with imported products.

### Expand the capacity building and awareness-raising activities

As explained in Section 4.1.2, awareness-raising programmes are crucial and have to be further developed. Communication tools have been successfully mobilized (website, Facebook page, Twitter, YouTube, etc.) but contact between the project and consumers has to be reinforced with trainings, seminars and workshops. Moreover, the communication tools should be more accessible at the national level (one should find the website more easily, for example thanks to links from other websites).

### Extension of the project duration

Project progress has been strongly affected by the external events linked with the political situation in Egypt. It is recommended to postpone the end-date so as to enable the project to carry out all the activities proposed in the project document. The MTR recommends an extension of 18 months. The success of the extension is dependent of the evolution of the political context: the hypothesis underlying this extension proposal is a stabilization of the political situation.

# Annexes

## Terms of Reference

**Objectives of the Review**

This mid-term review is initiated by UNDP Egypt and will be conducted in accordance with established UNDP-GEF procedures.

The overall purpose of the review is to assess the efficiency of the project, identify potential project design problems, assess progress towards the achievement of objectives, identify and document lessons-learned and to make recommendations to improve the project.

The mid-term review serves as an agent of change and plays a critical role in supporting accountability. Its main objectives are:

* To strengthen the adaptive management and monitoring functions of the Project;
* To ensure accountability for the achievement of the UNDP/GEF objective;
* To enhance organizational and development learning;
* To enable informed decision-making.

The mid-term review will assess the overall performance of the project against the baseline data set at the beginning of the project.

**Scope of the evaluation:**

* Review of the status of the project activities and the possibility of achieving all the outcomes in the given timeframe, taking into consideration the speed at which the project is proceeding. Review of the effectiveness of the project implementation and the use of its financial resources, including adaptive management applied for the revision of the project implementation mechanisms and other actions to overcome the obstacles identified during the implementation of the project;
* Review the current monitoring procedures and methodologies in place;
* Assessment of co-financing and leveraged resources;
* Provide recommendations for actions necessary for the long term sustainability and replicability of the achievements;
* Provide recommendations on any changes needed, including the finalization of a concrete action plan to address the eventual pending needs or possible corrective action.

**Project concept and design:**

The reviewer will assess the project design. He/she should review the problem addressed by the project and the project strategy, encompassing an assessment of the appropriateness of the objectives, outcomes, outputs, planned activities and inputs as compared to cost-effective alternatives. The executing modality and managerial arrangements should also be judged. The reviewer will assess the achievement of indicators and review the work plan, planned duration and budget of the project.

**Implementation:**  
  
The review will assess the implementation of the project in terms of quality and timeliness of inputs and efficiency and effectiveness of activities carried out. Also, the effectiveness of management as well as the quality and timeliness of monitoring and backstopping by all parties to the project should be assessed. In particular, the review is to assess the project team’s use of adaptive management in project implementation.

**Project outputs, outcomes and impact:**

The review will assess the outputs, outcomes and impact achieved by the project as well as the likely sustainability of project results. This should encompass the following:

Attainment of objectives and planned results:

* Evaluate how, and to what extent, the stated project objectives are being achieved; taking into account the “achievement indicators”. In addition, the team will assess the indicators matrix as to its utility for determining sustainability and replicability impact.

Achievement of outputs and activities:

* Assess the scope, quality and usefulness of the project outputs produced so far in relation to its expected results;
* Assess the feasibility and effectiveness of the work plan in implementing the components of the project;
* Assess the quality, appropriateness and timeliness of the project concepts, project proposals, progress reports.

In addition to a descriptive assessment, all criteria should be rated using the following divisions: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Unsatisfactory with an explanation of the rating.   
  
**Deliverables:**  
  
The main product expected from the mid-term review is a comprehensive report following the structure in Annex I and including the Table attached in Annex II on the assessment of co-financing.  
  
**Review Methodology:**

An outline of a review approach is provided below; however, it should be made clear that the reviewer is responsible for revising the approach as necessary. Any changes should be in-line with international criteria and professional norms and standards. They must be also cleared by UNDP before being applied by the evaluation team.

The review must provide evidence-based information that is credible, reliable and useful. It must be easily understood by project partners and applicable to the remaining period of project duration.  
  
The mid-term review will be based on information obtained from reviewing relevant documents to the project such as the project document, project brief, Annual Project Reports /Project Implementation Reports (APR/PIR), minutes of Project Board Meetings, Project Technical Reports and minutes from relevant meetings.

The reviewer should also rely on information gathered through meetings and interviews with target beneficiaries and project staff, including Government officials, and/or consultants. Interviews should include Egyptian Environment Affairs Agency, UNDP and key stakeholders. The methodology that will be used by the reviewer should be presented in the report in detail. It shall include scrupulous information on documentation review, interviews held; field visits; participatory techniques and other approaches for the gathering and analysis of data.

The evaluation should provide as much gender-disaggregated data as possible.  
  
The methodology to be used by the review team should be presented in the report in detail. It shall include information on:

* Documentation reviewed;
* Interviews;
* Field visits;
* Questionnaires;
* Participatory techniques and other approaches for the gathering and analysis of data.

Although the reviewer should feel free to discuss with the authorities concerned, all matters relevant to its assignment, it is not authorized to make any commitment or statement on behalf of UNDP or GEF or the project management.

**Implementation Arrangements:**

UNDP Egypt will contract the consultant and be responsible for liaising with the project team to set up stakeholder interviews, arrange field visits, and coordinate meetings with the Government Officials. The Project Management Unit will provide the evaluator will relevant project documentation and will accompany the evaluator in the meetings, as deemed necessary.   
  
**Timing and Duration:**

In total the evaluation timeframe is one month, incorporating circulation of initial reports for comments. The evaluation consultancy will be for 14 working days within the period of 45 days and the activities of the evaluator are broken down as follows:

* Desk review 2 working days;
* Meetings with the stakeholders 6 working days;
* Writing draft report 4 working days;

Finalization of the evaluation report (incorporating comments received on first draft) 2 working days.

## List of persons interviewed

|  |  |  |
| --- | --- | --- |
| **Name** | **Position** | **Contact** |
| **UNDP-GEF** | | |
| **Dr. Ibrahi Yassin Mahmoud** | UNDP GEF, project manager | 23422923  [ibrahim.yassin.mahmoud@gmail.com](mailto:ibrahim.yassin.mahmoud@gmail.com) |
| **Dr. Emad Adly** | GEF SGP, national coordinator Egypt | 25161519  [emada@unops.org](mailto:emada@unops.org) |
| **Mohamed Bayoumi** | UNDP, assistant resident representative. Energy and environment team leader | 22566209  [Mohamed.bayoumi@undp.org](mailto:Mohamed.bayoumi@undp.org) |
| **Ignacio Artaza** | UNDP, country director | 22566209-12-23-26  [Ignacio-artaza-zuriarrain@undp.com](mailto:Ignacio-artaza-zuriarrain@undp.com) |
| **Government institutions** | | |
| **Omneya M. K. Sabry** | MoEE, NREA, Engineer, Vice chairman for studies, researches and technical affairs | 22713174  [nre1@idsc.net.eg](mailto:nre1@idsc.net.eg) |
| **Eng. Mohamed Mousa Omran** | MoEE, First under secretary of state for research, planning and authorities follo-up | 22616305  [omranson@gmail.com](mailto:omranson@gmail.com) |
| **Emeel Shafik Yowakem** | MoEE, NREA, general manager for testing development | 22710081  [emeelshafik@hotmail.com](mailto:emeelshafik@hotmail.com) |
| **Gaber Desouki Moustafa** | EEHC, Chairman | 22616306  [Eehc\_chairman@link.net](mailto:Eehc_chairman@link.net) |
| **Dr. hafez E. El-Salmawy** | Egyptian electric Utility and Consumer Protection Regulatory Agency, managing director | 23421475  [salmawy@link.net](mailto:salmawy@link.net) |
| **Dr. Tareq Emtairah** | RCREEE, Executive director | 24154755  [Tareq.emtairah@rceee.org](mailto:Tareq.emtairah@rceee.org) |
| **Dr. Eng Hassan Ahmed Adf el Magied** | Ministry of trade of Egypt, Chairman, Egyptian Organization for Standardization and Quality | 22845528  [Hassan.Magied@gmail.com](mailto:Hassan.Magied@gmail.com) |
| **Dr. Eng. Anhar Ibrahim Hegazi** | The Egyptian Cabinet, Information and Decision Support Center. Head of Energy Efficient Unit | 27929292  [anhegazi@idsc.net.eg](mailto:anhegazi@idsc.net.eg) |
| **Other** | | |
| **Anan Helan** | Egypt’s eye, env. Eng. Consultant, chairman | 37497828  [arhelal64@gmail.com](mailto:arhelal64@gmail.com) |
| **Bahaa El Adly** | Unistar, Tuo, Engineer, chairman | +2011 12108164  [bahadly@arabbeya.com](mailto:bahadly@arabbeya.com) |
| **Dr. Kurt Wiesegart** | MED-ENEC Team Leader | 24181578/9  [kurt.wiesegart@giz.de](mailto:kurt.wiesegart@giz.de) |
| **Florentine Visser** | MED-ENEC Key Expert | 24181578/9  [florentine.visser@giz.de](mailto:florentine.visser@giz.de) |
| **Eng. Maysra Shams Eldin M.** | EcoConServ, environmental management specialist | 27359078  [maysrashams@ecoconserv.com](mailto:maysrashams@ecoconserv.com) |
| **Essam El Din A. Nafie** | CGC, manager, marketing department | 37627633  [essamnafie@cgcegypt.com](mailto:essamnafie@cgcegypt.com) |
| **Randa I. El-Shahaby, MIBA** | CGC, Senior Officer, Chairman’s Office | 37626664  [randa.elshahaby@cgcegypt.com](mailto:randa.elshahaby@cgcegypt.com) |

Table 10. List of persons interviewed

## List of documents reviewed

Arab Future Energy Index, Energy Efficiency. RCREEE, 2013.

Arab Future Energy Index, Renewable Energy. RCREEE, 2013.

Arab Guideline to Improve Electric Power Efficiency and Rational Use of Electricity of the End User Energy Efficiency Plan in the Electricity Sector.

Community Action to Achieve Environmental Sustainability. GEF-SGP/UNDP, February 2013.

CGC Credit Guarantee Company, Annual Report 2011.

Customers Questionnaire Guideline, September 2013.

Energy Efficiency Co-funding table

Egyptian Electricity Holding Company, Annual Report 2010/2011.

Energy Efficiency and Employment: A Win-Win Opportunity in the Southern Mediterranean. MED-ENEC, August 2013.

Energy Efficiency Building Code: A Roadmap for Implementation in the MENA Region. MED-ENEC, September 2013.

Energy Efficiency for Residential Appliances Standards & Labels for Dish Washers. Hany Elrouby, October 2013.

Energy Efficiency Indicators in the Southern and Eastern Mediterranean Countries: Regional Report. RCREEE, R. Missaoui, H. Ben Hassine, A. Mourtada, October 2012.

Energy Efficiency Labels, PowerPoint presentation. Moustafa Alsammany, October 2013.

Energy Efficiency Standards & Labels for Residential Appliances, EE S&L – 2nd. Phase: Importance of Applying Energy Efficiency Standards for Residential Appliances in Egypt. Eng. Khaled Kamal Zahran, October 2013.

Energy Efficiency Standards for Electric Fans, PowerPoint presentation. Khaled Zahran, October 2013.

Energy Efficiency Urban Planning Guidelines for the MENA region, MED-ENEC, October 2013.

Energy Efficient Building Guidelines for MENA Region. MED-ENEC, November 2013.

Final evaluation of the EEIGGR project, Jan van den Akker for UNDP-GEF, April 2010.

Impact of Energy Demand on Egypt’s Oil and Natural Gas Reserves: Current Situation and Perspectives to 2030. JCEE, June 2010.

Ministry of Electricity and Energy, Annual Report 2011/2012.

Project Document, EE Project, Phase II, 2010.

Project Implementation Reports (PIRs), 2012 and 2013.

Retailers and Manufacturers: In-Depth Interview Guidelines, EE Project. EcoConServ Environmental Solutions, September 2013.

Services for Developing a Monitoring System for Lighting Systems and Electric Home Appliances: Consumers’ Survey – Main Highlights, EE Project. EcoConServ Environmental Solutions, September 2013.

Stakeholders Discussion Guideline

## Mid-Term Reviewer Agenda

|  |  |  |  |
| --- | --- | --- | --- |
|  | | | |
| Tuesday 31 December 2013- Monday 6 January 2014 | | | |
| Person to be met | Place of Meeting | Time | Date |
| Dr. Ibrahim Yassin Project Manager. | Premises of the GEF / UNDP project, Rural Electrification Building, 1 Maher Abaza street (3rd floor). | 9 | 31/12 Tuesday |
| Dr. Mohamed Bayoumi UNDP , Assistant to UNDP Resident Representative. |
| Project Personnel. |
| Eng. Mohamed Moussa Omran, (EEHC), First Undersecretary,Project Technical Director (PTD) | Abbassia, Ministry of Electricity and Energy building | 12:30 |
| Eng. Gaber El Desouky, Chairman, Egyptian Electricity Holding Company (EEHC) | Abbassia, Ministry of Electricity and Energy building | 14:00 |
| Dr. Hafez El Salmawy, Executive Chairman, Electricity Regulatory Agency | Rural Electrification Building, 1 Maher Abaza street.( 4th Floor) | 14:45 |
| Dr. Anhar Hegazi, Head of Energy Efficiency Unit(EEU) , Information and Decision Support Center (IDSC) | Information and Decision Support Center (IDSC), Haram Office | 09:30 | 1/1 Wednesday |
| Eng. Omneya Sabry, Deputy Chairman, New & Renewable Energy Authority. Visit of E.E testing laboratories. | New & Renewable Energy Authority.Extention of Abbas El Akad St. | 12 |
| Housing and Building Research Center (HBRC) | El Tahrir st. | 09:15 | 2/1 Thursday |
| Eng. Hassan Abd El Meguid, Chairman | Egyptian Organization for Standards, Al Amirya | 10:15 |
| Eng. Nagwa Hamed, |
| Dr. Emad Adly, Small Grant Program | El Zahraa Street , Meadi | 12 |
| Visit to an implemented Energy Efficiency lighting project (Ministry of Water Resources and Irrigation, Mechanical and Electrical Authority) Eng. Bahaa EL Adly | 1, Gamal Abd El Nasser Street , warrak, Corniche El Nil | 14 |
| Eng. Essam Nafei, Chairman, Credit Guarantee Company. | Saridar Building , Dokki | 10 | 5/1 Sunday |
| Regional Center for Renewable Energy & Energy Efficiency (RECREE), Tarek Meteira | 11 Hassan Aflaton st. ,Beside Dar Monasabat AL Ahly bank, Nasr City | 12:30 |
| Mr. Andreas Zolner , Reem Hanna, German Joint Committee on Renewable Energy (JCEE) / Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) | New & Renewable Energy Authority.Extention of Abbas El Akad St. | 2 |
| Kurt Wiesegart, Team leader MED-ENEC Project | MED-ENEC Project Office, 7 Tag El-Din El-Soubky Street Heliopolis. | 11 | 6/1 Monday |
| Representative from Eco Conserve Environmental Solutions Consulting office for the development of a Monitoring System for the Standards and Labeling Program. | Rural Electrification Building, 1 Maher Abaza street.( 4th Floor) | 13 |
| Standards & labels national consultants | 14:30 |
| Wrap up Meeting: Dr. Ibrahim Yassin, Dr. Mohamed Bayoumi | 16 |

## Project Results Framework

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| --- | --- | --- | --- | --- | --- |
| **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[[5]](#footnote-6)**  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 CO2 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 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%. | Market monitoring reports and official energy statistics.  Post project market monitoring and evaluations | See above |
| **Outcome 1[[6]](#footnote-7)**  Accelerated growth of the EE lighting market in Egypt, in line with the Global UNEP-UNDP EE Lighting initiative. | 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.  LFLs and HIDs: No new EE requirements formally adopted and reflected in public procurement processes. | 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 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[[7]](#footnote-8) , they are reflected in the technical specifications for public procurement and less than 10% of the random samples tested show non-compliance. | Market monitoring reports | Competitive prices and consumers’ trust on the 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 end of the project show non-compliance. | 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 |
| **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 |

Table 11. Project Results Framework

## GHG emission reduction estimates

The project has been providing energy efficient light bulbs, in the form of compact fluorescent lamps (CFLs), to replace incandescent light bulbs in residential properties and Government buildings. Compact Fluorescent Lamps (CFLs) use 80% less electricity than standard incandescent globes, whilst producing the same lumen output. Replacing incandescent globes with CFLs is a simple way in which to effect significant greenhouse gas abatement and reduce demand loads on energy infrastructure.

The following estimates of GHG emissions reduction are drawn from two methodological approaches: the Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects[[8]](#footnote-9), and CDM methodology AMS-II.J., “Demand-side activities for efficient lighting technologies”[[9]](#footnote-10).

GEF projects under the operational programmes have a long-term and strategic market development approach. That means that their starting baseline is the overall state of the market in a country or region, not simply the business-as-usual scenario for a single investment.

Therefore, an adequate assessment methodology of the CO2 emission reduction effects of GEF projects needs to take into account the direct mitigation effect of co-financed investments, as well as the indirect mitigation effects of investments for which the GEF intervention has created the enabling environment. As the estimates for direct and indirect effects are fundamentally different in their accuracy and degree of certainty, the methodology used here reports separately on direct and indirect effects.

Because GEF projects emphasise capacity building, innovation, and catalytic action for replication, their largest impacts typically lie in the long-term GHG savings achieved after the GEF project’s completion. These investments are strongly affected by the long-term outcomes of the GEF activities that remove barriers; for example, those that build capacity, improve the enabling environment, and stimulate replication. Their GHG emission reductions are referred to as “indirect” GHG savings. To estimate the indirect impact, one must rely heavily upon assumptions and expert judgment. As their level of uncertainty and accuracy is different from direct or direct post-project savings, it is not appropriate to aggregate the two types of savings.

The direct GHG emission reductions arising from the use of CFLs are determined using CDM methodology AMS-II.J., “Demand-side activities for efficient lighting technologies”. The sequence of calculations is reproduced as follows:

The electricity saved by the project activity in year *y* is calculated as indicated in equations (1) and (2):

*NESy = Σ QPJ,i x (1- LFRi,y) x ESi x 1/(1- TDy) x NTG*(1)

where

*ESi = (Pi, BL - Pi, PJ) x Oi x 365/1000* (2)

*NESy*  Net electricity saved in year (kWh)

*QPJ,i*Number (quantity) of pieces of equipment (CFLs) of type *i*distributed or installed under the project activity (units). In total for all “i”, this value shall be equal to or less than the documented number of all baseline incandescent lamps destroyed. Once all of the project CFLs are distributed or installed, *QPJ,i*is a constant value independent from y

*i*  Counter for equipment type

*n*  Number of types of equipment *i*

*ESi*Estimated annual electricity savings for equipment of type*i*, for the relevant technology (kWh)

*LFRi,y*Lamp Failure Rate for equipment type*i* in year*y* (fraction)

*TDy* Average annual technical grid losses (transmission and distribution) during year *y* for the grid serving the locations where the devices are installed, expressed as a fraction. This value shall not include non-technical losses such as commercial losses (e.g., theft/pilferage). The average annual technical grid losses shall be determined using recent, accurate and reliable data available for the host country. This value can be determined from recent data published either by a national utility or an official governmental body. Reliability of the data used (e.g., appropriateness, accuracy/uncertainty, especially exclusion of non technical grid losses) shall be established and documented by the project participant. A default value of 10% shall be used for average annual technical grid losses, if no recent data are available or the data cannot be regarded accurate and reliable

*NTG* Net-to-gross adjustment factor, a default value of 0.95 is to be used unless a more appropriate value based on a lighting use survey from the same region and not older than 2 years is available

*Pi, BL*Rated power of the baseline lighting devices of the group of “i” lighting devices (Watts)

*Pi, PJ* Rated power of the project lighting devices of the group of “i” lighting devices (Watts)

*Oi* Average daily operating hours of the lighting devices replaced by the group of “i” lighting devices. For ex post values use either (a) 3.5 hours per 24 hour period or (b) the average measured value determined from measurements of a representative sample conducted once, prior to or concurrent with the first ex post monitoring survey (see paragraph 18 below). Note that surveying to assess retention rates is still required even if a default value for *Oi* is chosen. In no case may a value greater than 5 hours per 24 hour period shall be used under this methodology.

The Lamp Failure Rate (*LFRi,y*) is the percentage of lamps that have failed during a year. The average life or rated average life is used to calculate the Lamp Failure Rate as follows:

*y \* Xi < Li , LFRi,y  = y \* Xi \* (100 – Ri) / (100 \* Li)* (3)

If *y \* Xi > or =Li , LFRi,y  = 1*

where

*LFRi,y* Lamp Failure Rate for equipment type i in year y (fraction)

*Li* Average Life (or Rated Average Life until average life value is available) for equipment type i (hours)

*Ri* % of lamps of type i operating at the end of average life or the rated average life (use a value of 50)

*Xi*  Number of operating hours per year for equipment type i (hours)

*y* Counter for year

Emission reductions made by the project per year can thus be deduced from the annual electricity saved multiplied by the emission factor:

*ERy = NESy  x EFCO2,ELEC,y*  (4)

where

*EFCO2,ELEC,y*Emission Factor in year ycalculated in accordance with the provisions in “Tool to calculate the emission factor for an electricity system” version 2.2(tCO2/MWh)

*ERy* Emission Reductions in year *y* (tCO2e)

|  |  |  |
| --- | --- | --- |
| Variables | Value | Methodological sources |
| CFL Wattages | 20 | Data Management System and ex-post survey |
| Hours of use | 3.50 | The methodology recommends to use either 3.5 hours per 24 hour period, or another value determined through a 90-day study. Hence the yearly value is fixed prior to the first ex-post monitoring survey. |
| Lamp Failure Rate | 9% | Determine as per monitoring surveys of the installed CFLs. |
| Technical grid losses | 11% | <http://data.worldbank.org/indicator/EG.ELC.LOSS.ZS> |
| Net to Gross Factor | 0.95 | The methodology recommends a default value of 0.95 |
| **Total pieces of equipment** | 26,000,000 | Fixed in project targets. |
| **Net Electricity savings (GWh/year)** | 1,223,923 | Calculated with the formula. |
| Emission factor (tCO2/ MWh) | 0.525 | Applied calculation methodology specified in “Tool to calculate the emission factor for an electricity system” version 2.2.1 |
| **Emission reduction (tCO2/year)** | 642,559 | Calculated with the formula. |
| **Emission reduction after GEF 60% causality factor (tCO2/year)** | 385,535 | Calculated with the formula. |

|  |  |  |
| --- | --- | --- |
| **Type of emission** | **Reduction emission (tCO2/year)** | **Methodological sources** |
| Direct emissions |  |  |
| CFL installations | 385,535 | UNFCCC AMS II J |
| Use of other EE appliances | 250,000 to 750,000 | <http://cdm.unfccc.int/methodologies/DB/ZWFKA8F3U3CSHU75ST3VCPZMVN5VG0> |
| Indirect emissions |  |  |
| Awareness campaign (to promote the use of EE appliances) | 300,000 to 500,000 | <http://cdm.unfccc.int/methodologies/DB/ZWFKA8F3U3CSHU75ST3VCPZMVN5VG0>  <http://bilans-ges.ademe.fr/en/home>  <http://www.ghgprotocol.org/standards> |
| Sustained institutional and financial mechanisms in place to promote the market for EE appliances | 1,000,000 to 2,000,000 | <http://www.ghgprotocol.org/standards>  <http://cdm.unfccc.int/methodologies/DB/ZWFKA8F3U3CSHU75ST3VCPZMVN5VG0> |
| Annually updated information on the sale of each targeted appliance | n/a |  |
| S&L schemes | 500,000 to 1,000,000 | <http://www.ghgprotocol.org/standards>  <http://cdm.unfccc.int/methodologies/DB/ZWFKA8F3U3CSHU75ST3VCPZMVN5VG0> |

1. *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR* [↑](#footnote-ref-2)
2. *All outcomes monitored annually in the APR/PIR.* [↑](#footnote-ref-3)
3. National Implementation by the Government of UNDP-Supported Projects: Guidelines and Procedures, UNDP, July 2011. <http://www.undp.org/content/dam/undp/library/corporate/Programme%20and%20Operations%20Policies%20and%20Procedures/NIM_for_Government_english.pdf> [↑](#footnote-ref-4)
4. Egyptian Electricity Holding Company, Annual Report 2010-2011. [↑](#footnote-ref-5)
5. *Objective (Atlas output) monitored quarterly ERBM and annually in APR/PIR* [↑](#footnote-ref-6)
6. *All outcomes monitored annually in the APR/PIR. It is highly recommended not to have more than 4 outcomes.* [↑](#footnote-ref-7)
7. for further details see page 43 [↑](#footnote-ref-8)
8. *Manual for Calculating GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects*, GEF/C.33/Inf.18, April 16, 2008. [↑](#footnote-ref-9)
9. http://cdm.unfccc.int/methodologies/DB/9PNN47TWH1ZYA9MC92JUQCTHRPKY5A [↑](#footnote-ref-10)