FINAL EVALUATION

Energy Efficiency Improvement and Greenhouse Gas Reduction project

EGY/97/G31, PIMS 0452, ATLAS 00012326/7

Government of Egypt
United Nations Development Programme
Global Environment Facility

Final

April 2010

Mr. Jan van den Akker (ASCENDIS)
International Consultant

LIST OF ABBREVIATIONS

A/C	air conditioning
AFD	Agence Française de Développement
APR-PIR	Annual Performance Report – Project Implementation Review
CFL	compact fluorescent lamp
CHP	combined heat-power generation
CO	Country Office
CO_2	carbon dioxide
EE	energy efficiency *or* energy efficient
EEAA	Egyptian Environmental Affairs Agency
EEC	Energy Efficiency Centre
EEHC	Egyptian Electricity Holding Company (formerly EEA, Egyptian Electricity Authority)
EGP	Egyptian pound
ESCO	energy service company
EU	European Union
CGC	Credit Guarantee Company
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHG	greenhouse gas
GJ	gigajoule (= 10^9 Joule)
MDG	Millennium Development Goals
MTI	Ministry of Trade and Industry
Mtoe	million tons of oil-equivalent
MOEE	Ministry of Electricity and Energy
NGO	non-governmental organization
NREA	New and Renewable Energy Authority
PDF	GEF project preparation and development facility
PMU	Project Management Unit
PSC	Project Steering Committee
S&L	standards and labelling
SEC	Supreme Energy Council
SGP	GEF Small Grants Programme
SME	small and medium-sized enterprises
t	ton
TOU	time-of-use
TWh	terawatt-hour (= 10^{12} watt-hour)
GWh	gigawatt-hour (= 10^9 watt-hour)
MWh	megawatt-hour (= 10^6 watt-hour)
kWh	kilowatt-hour
UNDP	United Nations Development Programme
UNDESA	United Nations Department for Economic and Social Affairs
USAID	United States Agency for International Development
USD	US dollar
VSD	variable speed drive
yr	year

EXECUTIVE SUMMARY

The Energy Efficiency Improvement and Greenhouse Gas Reduction Project is a nationally project executed by the Egyptian Electricity Holding Company (EEHC), Ministry of Electricity and Energy (MOEE) and supported with a grant from the Global Environment Facility (GEF) with the United Nations Development Program (UNDP) as the GEF-implementing agency and the United Nations Department for Economic and Social Affairs (UNDESA) as cooperating agency.

The Project Document (ProDoc) mentions as **overall objective** of the project is to assist Egypt in reducing the long-term growth of GHG emissions from electric power generation and from consumption of non-renewable fuel resources. In responding to the new operating conditions, public and private industry must invest in process modifications and new machinery to remain competitive, with excellent likelihood that their investments will have favourable rates of return based on savings from reduced operating costs. The funding for this project will leverage the new investments in ways that are most beneficial to the global environment".

The **development objective** is to meet suppressed and still growing power and energy demands through reliable, efficient and rational consumption patterns, thereby reducing greenhouse gas emissions, protecting the local environment while at the same time providing a sustainable alternative to capacity expansion as the sole method of meeting demand. The project is expected to contribute to this objective by removing **barriers** to energy efficiency and conservation measures through the initiation of energy audit activities, promoting energy services, encouraging sound energy policy, encouraging maximum private sector participation and lastly by making key information readily available to all players in the Egyptian energy sector.

The project has had three main **components** which are listed with the main achievements listed below

1. Loss reduction, load shifting and load management in the Unified Power System (UPS) of EEHC
   - Reduce transmission losses of EEHC's UPS and improve capabilities for transmission network loss reduction measurements
   - Set priorities for dynamic response from thermal units
   - Network analysis and control strategies
   - Encourage load shifting through time-of-use (TOU) tariff
2. Energy efficiency (EE) market support
   - EE industry support (promotion of energy service industry through customer awareness, business transformation and capital financing), including audits, business advice and CFL leasing
   - Energy standards and labelling (for three classes of equipment)
   - Develop and apply energy codes for new buildings
   - Create an EE Centre to promote awareness and strategic action on EE
3. Cogeneration
   - Establish and train a small power group within EEHC

- Establish safety and interconnection requirements for parallel grid connections with small producers
- Develop industrial cogeneration and agricultural waste projects for small power production

The project started in 1999 with a total GEF budget of USD 5.895 million. The original plan was to finalize the project by 2003 within a 4-year timeframe. Since then, the project has been extended several times at no additional costs in order to complete the tasks requested in the project document as well as to ensure the sustainability of the mechanisms developed during the project. As the project will be financially closed by June 2010, a final **evaluation** review was needed to review the progress of the project with its stated project activities, outputs and outcomes. An independent consultant, Mr. Jan van den Akker (Netherlands) was selected as evaluator and he undertook a one-week mission to Egypt in February 2006 (hereafter referred to as the Evaluator). This final evaluation builds on a **pre-evaluation**, which was undertaken in May 2009. In general, the pre-evaluation was a kind of technically orientated trying to focus the project on achieving outputs. This final evaluation tries to supplement it, by focussing more on the general picture in terms of outcomes achieved and lessons learned.

The main **achievements** have been:

1. Loss reduction, load shifting and load management in the Unified Power System (UPS) of EEHC.
   - Calibration of all measuring devices and program set up for periodical calibration of equipment
   - Mitigation actions to improve the dynamic response of generating units (automatic generation controls, improvement of power factor by installing capacitor banks, maximizing use of reactive power by generators and optimization of network planning)
   - Installation of time-of-use (TOU) meters and load shifting projects implemented
   - Unfortunately, a TOU tariff structure has been proposed, but not approved by Government.

2. Energy efficiency (EE) market support
   - Training of energy auditors and energy audits accomplished
   - CFL programme: encouragement of Egyptian manufacturers to manufacture CFL locally (6 factories), public awareness program and cooperation with NGOs (through GEF Small Grants Programme) and power distribution companies
   - Support given to technical testing labs of domestic appliances (air conditioners, washing machines, refrigerators, electric water heaters, CFLs) and a Ministerial Decree on specifications of energy labels for refrigerators, A/C, washing machines, CFLs), but without a clear enforcement mechanism
   - Loan guarantee mechanism implemented with Credit Guarantee Company (37 projects are implemented at a total cost of EGP 49 million and a guarantee of EGP 15 million, the latter provided to CGC by the project).
   - Around 400 audits carried out in buildings (of which 200 in government buildings), Measures introduced include efficient lighting, mounting of capacitors to improve power factor.
   - A decree (482/2005) has been issued by Ministry of Housing Utilities and Urban Communities on EE in residential and commercial buildings (but legislation is still needed to ensure a credible enforcement mechanism)

3. Cogeneration
    - Establishment of a 'small power' group within EEHC
    - Cogeneration system guidebook and a model PPA for grid connection and technical specifications for safe interconnection are currently under study
    - Report on the potential capacity and proposals for agro-waste fired combined heat-power (CHP) projects
    - Appropriate tariff setting has been shelved.

GHG emission reduction impacts

- Outcome 1: Transmission losses have been reduced to 3.79% by year 2008/09 in comparison with the losses of 5.99% in the base year 98/99.
- Outcome 2: Fuel savings from lighting appliances (total sales over 2000-2009 of 13.5 million) estimated at 3.3 Mtoe.
- Outcome 3 has resulted in little energy savings as the component has not really taken off
- In total, energy savings have resulted in about 8.3 - 12 million tonnes of CO_2 per year, but the estimate varies much depending on the assumptions and calculation method used.

Awareness and policy implementation

EEIGGR has served as a wake-up call attracting political attention for the government and the national level, which are now much more interested in EE than prior to the project. While activities in some components have been far from successful, the project management has expanded its activities to further investigate the potential energy savings in the electricity sector beyond the scope of the original project activities such as street lighting, governmental buildings, culminating in the initiation of the six million CFLs programme (that the Ministry of Electricity will distribute at reduced prices). In this respect, the project has played an instrumental role in coordinating these activities on the national level. EE is now moving upward on the political agenda. This enabled the UNDP to embark on the new initiative funded by the UN MDG Spanish Fund to provide policy advice and coordination efforts to the Supreme Energy Council (SEC) that is hosted by the Cabinet of Ministers. Accordingly, the SEC has recently established an Inter-Ministerial Committee on Energy Efficiency. With the CFL campaigning, EE has also been introduced visibly as an important theme in society.

Rating of project progress

In terms of rating of project, the Evaluator has the opinion in terms of 'achieving project objectives and outcomes', the project has performed satisfactorily in component 1, highly satisfactorily in outcome 2 (i.e. achieving more than was originally planned) and marginally unsatisfactorily in outcome 3. The project manages to shape several national energy efficiency schemes and very concrete outcomes like the promotion of energy saving lamps in Egypt. The most interesting achievement is to have contributed to convince the national authorities to promote energy efficiency wider and further. Thus yielding an overall achievement characterised as '*satisfactorily*'.

Project concept and design

In general, the Project Document is a bit confusingly written with repetition of text, and without a logical framework, but this may have been the template during 1995-1998 when the ProDoc was formulated. Nonetheless, the ProDoc gives a detailed description of outcomes and outputs. However, it is less convincing as why the three components should be together; these might have been stand-alone projects that could have been implemented at various phases in time.

While the project has been successful in putting EE on the political agenda, surprisingly little detail is given in the Project Document to policy aspects, such as formulation of EE policy and the crucial aspects of subsidised energy (fuels are subsidised, consequently electricity generated from fossil fuels is as well). This is important, because it affects the alternatives for end-user investments in energy efficiency (e.g., when energy is subsidised, end-user investments are less attractive but utility or government-financed, demand-side management programmes are very cost-effective). Thus (but taking into account t that GEF expectations on project's objectives were less policy-oriented in the 90s), the rating of project design is '*marginally unsatisfactorily'*.

Country ownership and drivenness

Ownership of the project at the operational level has been high and both the team as well as UNDP have demonstrated pride in the accomplishments. 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, building codes and appliance standards and labelling. It should be noted that electricity demand is growing at 7% and will make Egypt a net energy importer. A target has now been set to improve energy efficiency by 20% by 2020 (from the 1990 levels). Efficient lighting is in the limelight of government attention. The SEC has taken a decision to oblige all government buildings to efficient lighting systems. The rapidly increasing sales of CFLs (and involvement of power distribution companies) highlight the importance of energy efficient technologies.

Project implementation

The project has been extended on several occasions, i.e. in July 2004, July 2005, July 2007 and July 2008 for a number of reasons that are detailed in the main text. One rationale for the need for extensions probably lies more in the too wide and complex scope of the project, as mentioned above. On the other hand, the longer timeframe has enabled a slow but persistent awareness raising at decision-making level over time. It has successfully worked with many actors in Egyptian society, from NGOs, government ministries to donor organizations. Therefore, in terms of rating of project implementation, the Evaluator agrees with the qualification given in the last APR-PIR 2009 as '*satisfactorily*'.

Sustainability and capacity building

Sustainability, capacity building and replicability

The project has functioned as a knowledge hub on energy efficiency (EE). It has served asa critical mass, not only within EEHC, but its training and awareness raising activities have upgraded skills of national staff in other participating ministries, NGOs, CFL manufacturers, ESCOs, CSR companies, public, etc., This capacity created will be a main guarantee for the sustainability of the project activities.

Regarding institution building, the re-activation of the SEC and the establishment of the Inter-Ministerial committee on EE will keep on pressing on this issue. The Committee has recently secured the approval of the Minister of Finance to fund conversion of 20 government buildings into energy efficient lighting systems as a demonstration to open the door for the full fledge conversion of all government buildings. The Regional Center for Renewable Energy and Energy Efficiency has been established in 2007 in Egypt supported by GTZ, EU and KfW that will continue the advocacy for the project activities. Several international agencies are currently planning and designing their EE initiatives based on the project outputs.

Regarding sustainability, UNDP has embarked with 5 other UN agencies[1] on a new initiative to be funded by the MDG Spanish Fund to provide policy advice and coordination efforts to the SEC. The joint programme is under preparation called 'Climate Change Risk Management in Egypt', consisting of a number of activities. In one of these, UNEP and UNDP will work together to support the Technical Secretariat of the SEC of the Cabinet of Ministers in its on-going endeavours in reforming the national energy policies, including of the energy subsidy scheme and promotion of renewable energy and energy efficiency. The joint programme will provide technical assistance to assimilate and convert 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 decisions of SEC and mobilizing additional resources to support longer term studies serving national energy priorities.

In terms of replication, EEHC is contuining the CFL campaigning with the '6 million CFL' programme. Regarding industry, activities are proposed to focus on the newly proposed ISO 50001 standard for energy management systems (proposed by UNIDO to GEF), while the proposed activity on standards and labelling (UNDP/GEF) will continue the work that EEIGGR has initiated.

Main lessons learned

- The links between the GEF project and the Small Grants Programme (SGP) have been useful in strengthening the recipients of the small grants, while involving more grass-roots organizations (NGOs) in the implementation of the main project (EEIGGR) rather than just governmental entities. Consideration might be given to mainstreaming such linkages in future projects where practical.

[1] UNEP, UNIDO, IFAD, FAO and UNESCO

- The duration has been extended several times. Currently, such number of extension requests would probably not have been acceptable by the GEF Secretariat (GEF Sec). In this particular case, the extensions have worked positively by slowly building the policy impact. Without having extensions, the project would have ended with limited output-type of results only. Especially when activities require regulatory or even legislative interventions, this is where the going gets tough and a longer timeframe is needed.

General recommendations

- This raises the question whether GEF Sec in some cases should not focus more on longer-term policy- oriented programmes in countries were EE is still not high on the political agenda rather than hoping to convince policy-makers with a short-term 3-to-5 year technically-oriented project and hoping that the results generated will trickle 'upward'.
- Such an approach with allocating significant funds allocated for a general awareness program aimed at mobilising support for EE activities at various levels (decision-makers', implementers and end-users/beneficiaries) together with selected activities that can show visible results (such as the CFL campaigning and preparation of standards and labelling in the case of EEIGGR), while leaving activities that require legislative endorsement (enforcement of S&L) for a successor project or follow-up activities within the longer-term programme
- Such a programme will be more successful, if bilateral and multilateral donors work together, as is shown in the GTZ-established committee on establishing EE institutions and the proposed 'Climate change' framework in which 6 UN organizations cooperate (with support from the Spanish MDG Fund)
- The current annual UNDP-GEF progress reports, called APR-PIRs, focus on achieving outputs, while outcomes and impacts are underreported. Just merely mentioning a CO_2 reduction figure is not sufficient; it should at least be clear how energy and GHG emission reduction were calculated and based on what assumptions. There should be closer integration with the GHG emission reduction calculation required for Project Documents, the APR-PIR reporting and baseline and impact analysis in the sense that one set of impact-outcome-output indicators should be used.
- Attention should be given to the presentation of policy proposals to senior policy decision makers, including an honest overview of the costs and benefits of interventions for the whole country, in view of slowly rising energy prices in the future, and how energy efficiency could be helpful in mitigating social problems arising from rising fuel and electricity rates. This is even more important now that Egypt is rapidly on its way of becoming an energy-importing country. Even without removing subsidies (which is a politically sensitive issue) EE has direct macro-economic benefits by reducing subsidized energy consumption and thereby, the amount of subsidies spent, while releasing domestic fuel resources for export (at international market prices).

TABLE OF CONTENTS

1. INTRODUCTION

1.1 Background

The Energy Efficiency Improvement and Greenhouse Gas Reduction Project is a nationally project executed by the Egyptian Electricity Holding Company (EEHC), Ministry of Electricity and Energy (MOEE) and supported with a grant from the Global Environment Facility with the United Nations Development Program (UNDP) as the GEF-implementing agency and the United Nations Department for Economic and Social Affairs (UNDESA) as cooperating agency. The project addresses the energy sector of Egypt.

The Project Document was signed in August 1998 and project activities started in January 1999 with a total budget of USD 5.895 million. The original plan was to finalize the project by 2003 within a 4-year timeframe. Since then, the project has been extended several times at no additional costs in order to complete the tasks requested in the project document as well as to ensure the sustainability of the mechanisms developed during the project.

The Egyptian Electricity Authority (EEA) was established 1976 (under MOEE) and was granted the exclusive right to produce, transmit, and distribute electric power throughout Egypt. Since the early eighties a process of unbundling of generation, transmission and distribution started and in 2000 EEA was changed into an Egyptian joint stock company under the name EEHC, which is currently the holding company (with 49% of the shares) currently for 6 production companies, 9 distribution companies and the Egyptian Electricity Transmission Company.

1.2 Project objectives and strategy

The Project Document (ProDoc) mentions as **overall objective** of the project: "To assist Egypt in reducing the long-term growth of GHG emissions from electric power generation and from consumption of non-renewable fuel resources. In responding to the new operating conditions, public and private industry must invest in process modifications and new machinery to remain competitive, with excellent likelihood that their investments will have favourable rates of return based on savings from reduced operating costs. The funding for this project will leverage the new investments in ways that are most beneficial to the global environment".

The project is expected to contribute to this objective by removing barriers to energy efficiency and conservation measures through the initiation of energy audit activities, promoting energy services, encouraging sound energy policy, encouraging maximum private sector participation and lastly by making key information readily available to all players in the Egyptian energy sector, as detailed in Table 1 given below.

Table 1 Barriers and project outputs

Barrier *(adapted from GEF 'Proposal for Review'*	**Output** *(based on ProDoc and Mid-Term Evaluation)*
Component 1 Loss reduction, load shifting and load management in the Unified Power System (UPS) of EEHC	
There is a lack of information, skills and & understanding to utilize these more advanced techniques in Egypt. There is also the inertia of existing practice which prevents these steps from becoming standard practice. Moreover, load shifting has not been practiced to any great extent in Egypt for a number of reasons. First, the technical knowledge required to implement these load-shifting and load management activities does not now exist. Second, time-of-day tariffs have been discussed but never implemented. In other countries, and Egypt is no exception, there has been considerable resistance from consumers to the idea of time-of-day metering. Third, the cooperation between suppliers and consumers does not presently exist.	• Reduce transmission losses of EEHC's UPS from 7 to 5% and improve capabilities for transmission network loss reduction measurements • Set priorities for dynamic response from thermal units • Network analysis and control strategies • Encourage load shifting through time-of-use (TOU) tariff and reduce daily load savings of 25% by 2010
Component 2 Energy efficiency (EE) market support	
Barriers include a lack of trained personnel to carry out the energy audits and the lack of an appropriate institutional setting such as an energy conservation agency working on the power supply side. Another transaction barrier is the lack of energy service companies (ESCO) activity in the region. Egypt has very few ESCOs that can work as brokers to stimulate energy efficiency. There are a number of barriers to this, not the least of which is the energy pricing sending perverse incentives. There is also a shortage of personnel familiar with the technical aspects of energy conservation and also familiar with business management skills and principles	• EE industry support (promotion of energy service industry through customer awareness, business transformation and capital financing), including audits, business advice and CFL leasing, reducing energy demand with 3.8% by 2010 • Energy standards and labelling (for three classes of equipment) • Develop and apply voluntary energy codes for new commercial buildings, reducing consumption by 1.1% in 2010 • Create Energy Efficiency Centre (EEC) at EEHC to promote awareness and strategic action on EE
Component 3 Cogenerated power	
Cogeneration activities in Egypt have not extended beyond generation for own-use to sale to the grid for a number of human-capacity, legal and institutional shortcomings. In the first instance, there are insufficient personnel that understand how such activities should work and there is no agency to assist generators in connection to the grid. Second, there is no legal requirement or foundation for purchasing power from co-generators. Third, there is no tariff schedule for the purchase of power and no contractual arrangements for these tariffs to be negotiated.	• Establish and train a 'small power' group within EEHC • Establish safety and interconnection requirements for parallel grid connections with small producers • Create infrastructure for EEHC to purchase electricity from small producers • Establish and develop training programme for small power producers • Develop industrial cogeneration and agricultural waste projects for small power production

1.3 Evaluation purpose and methodology

As the project will be operationally closed by June 2010, a final evaluation review was needed to review the progress of the project with its stated project activities, outputs and outcomes. An independent consultant, Mr Jan van den Akker (Netherlands) was selected as Evaluator and he undertook a one-week mission to Egypt in February 2010.

This final evaluation builds on a Pre-Evaluation[2] (which was undertaken in May 2009; see Annex C) and the Mid-term Evaluation[3] (January 2002). In general, the pre-evaluation was a kind of technically orientated trying to focus the project on achieving outputs. This final evaluation tries to supplement the pre-evaluation, by focussing more on the general picture in terms of impacts, outcomes achieved and lessons learned.

During the mission, the Evaluator drew up a table of contents that covers the issues to be addressed as mentioned in its Terms of Reference and follows the structure of this report:

- Introduction (background, project description, evaluation purpose and methodology, observations on final evaluation)
- Findings on project progress
  - Project's performance in terms of results (achieving objectives and outputs by means of realized activities and inputs used) and impacts, quantitatively and qualitatively measured by indicators (as set in the project document and the annual project review documents)
  - Evaluators' assessment of the project design and execution (way of implementation and management, monitoring and evaluation, budget and cost-effectiveness, external factors, stakeholder involvement), based on the comments given in an Pre-Evaluation study carried in 2007
- Conclusions and recommendations
  - Conclusions, taking into account sustainability and replicability issues
  - Lessons learned and recommendations

The Evaluator adopted the following **methodology of evaluation**

i) Review of project documentation, such as the Project Document and Executive Summary, APR-PIRs (annual project implementation reviews)
ii) Meetings with the Project Technical Director and main project partners.

The report is divided into three sections. This first introduction section provides general background of the project, purpose of evaluation, project implementation setup, partners/stakeholders and evaluation methodology. The next section dwells on findings regarding project management and achievements. These findings are described within the logical framework design of the project, as described in the Project Document and progress reports. In the third section, conclusions from the observations and findings are discussed in the context of project objectives. These also pertain to sustainability and replicability of project. The section ends with recommendations and some lessons learnt.

[2] Klinckenberg & Kipperman (2009)
[3] Mobarak & Lucas (2002)

1.4 Project set-up and main stakeholders

With MOEE responsible for project oversight and review, EEHC has been the lead agency responsible for project management. A High-Level Coordinating Committee was set up chaired by the EEHC Chairman. The Committee has been meeting on a regular basis[4]. The following organizations were members of the Coordinating Committee:

- Ministry of Electricity and Energy (MOEE)
- Egyptian Electricity Holding Company (EEHC)
- Electricity Distribution Companies
- Egyptian Environmental Affairs Agency (EEAA)[5]
- Egyptian Organization for Standardization (EOS), Ministry of Trade and Industry (MTI)
- Organization of Energy Planning (OEP), Ministry of Petroleum
- New and Renewable Energy Authority (NREA)
- Egyptian Electric Utility and Customer Protection Regulatory Agency
- Construction Research Institute, Ministry of Housing and New Communities

A Project Technical Director[6] has conducted day-to-day management. Each Component (and sometimes outputs within a Component) had a responsible manager, supervising a workgroup. Coordination with stakeholders was assured by means of 'technical committees' and formal and informal meetings. As will be explained in Section 3.1, the project has established a good knowledge hub on energy efficiency (EE) inside EEHC and this has helped putting EE higher on the agenda in in other government agencies.

[4] As reported in the Mid-Term Evaluation. The Minutes of Meeting were not reviewed because these are only available in Arabic.

[5] Executive arm of the Ministry of State for Environmental Affairs

[6] Mr. Ibrahim Yassin Mahmoud

2. FINDINGS

2.1 Achievement of impacts and outputs

For each of the three outcomes, as mentioned in paragraph 1.2, this section assesses the progress in the implementation of the project's outcomes and outputs, following the format and information provided as given in the UNDP Project Document (ProDoc) and as reported by the Project Management Unit (PMU) in the annual Project Implementation Review - Annual Performance Reports (APR-PIRs).

A detailed overview per component (up to 2009) was presented in the Pre-Evaluation report[7] (see Annex C). In general, achievement in terms of impacts, outcomes and objectives is not reported consistently in the various documents and progress reports. One reason is that a logical framework (results framework) is missing from the Project Document (but acknowledging that in 1998 the GEF/UNDP requirements were different in this respect). The 2002 Mid-Term Evaluation Report gives a logical framework, but this provides little quantification of indicators. The APR-PIRs provide some impacts indicators for outcomes 1 and 3 (energy savings and/or CO_2 emission reduction) as well as reporting progress on individual outputs, but sometimes not very clearly written. The following table has been prepared by the Evaluator combining info from the APR-PIRs with information provided by the Project Technical Director.

Table 2 Overview of realized project impacts and outputs

Outcome (Project Document**)** **Indicator** (no. as in APR-PIR)	**Indicators and outputs**	
	Indicator/output	**Achievements by 2009** (as reported in APR-PIR '08 and '09)
Outcome 1 Improved load management and reduction of transmission losses of the UPS (United Power Systems)	• Losses in the UPS transmission network reduced from 7% to 5% • Introduction a time-of-use tariff to encourage load shedding and reduce daily load swing by 25% by 2010 • Fuel savings of 0.17 Mtoe and GHG reduction of 0.48 $MtCO_2$	• Transmission losses reduced to 3.6-3.9% (2008-2009) • Associated fuel savings of 4.89 Mtoe and corresponding GHG emission reduction of 14.28 Mtoe CO_2
Outputs	• Calibration of all measuring devices • Established procedures and mitigation actions to improve the dynamic response of generating unit • Installation of time-of –use	• Calibration and maintenance of 200 measuring devices using high-accuracy equipment • Response tests conducted for all 37 generation units above 125 MW; automatic generation control (AGC) installed and power factor improved by capacitor banks • Load shifting pilots implemented at 2 cement factories and 1 iron & steel plant;

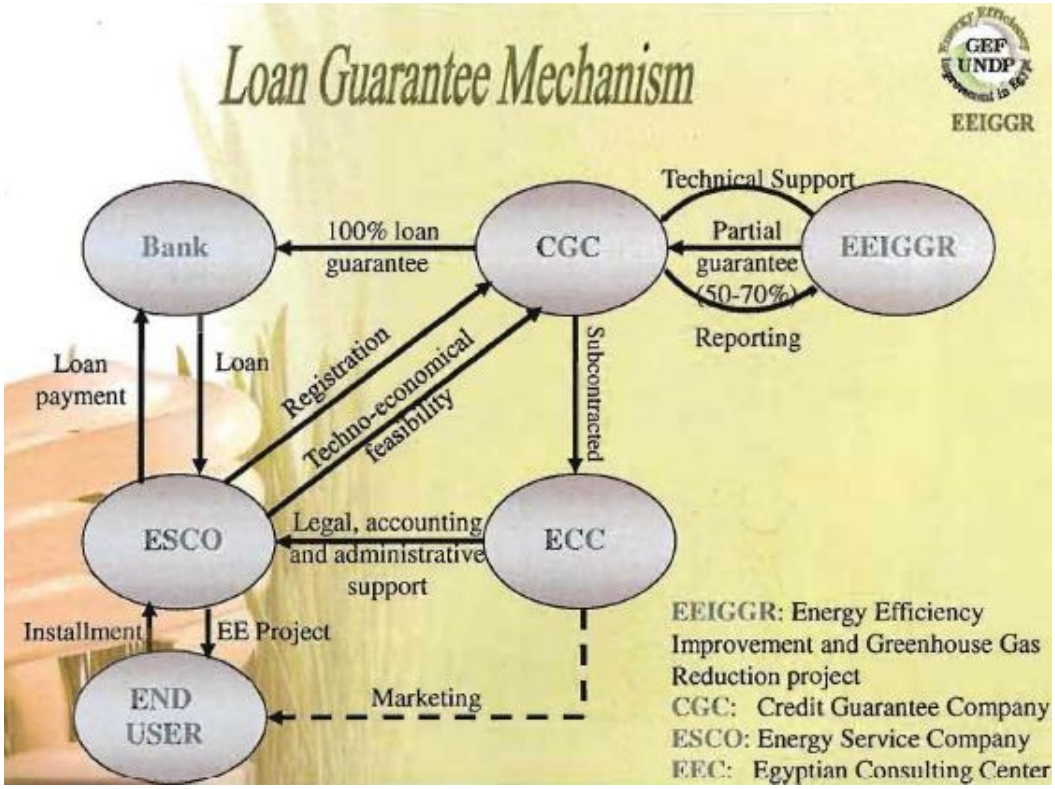
[7] Klinckenberg & Kipperman (2009)

	(TOU) meters installed and load shifting projects implemented	• Study on load shifting and supply and demand side, but tariff changes (which have to be approved by the Cabinet of Ministers) are still under discussion
Outcome 2 EE market support	• Remove financial and business obstacles and facilitate 3.8% reduction in energy demand • Implementation of EE standards for 2 classes of major equipment • Implementation of voluntary building codes • Creation of an Energy Efficiency Center at EEA (EEHC) • Total energy demand reduction of 8.3% (as compared to 1998 consumption), fuel savings of 2.95 Mtoe and corresponding GHG reduction of 8.25 $MtCO_2$	• Market size increase of CFLs from 434,000 in 2001 to 6 million in 2008 and 13.5 million in 2009, while price has been reduced from EGP 50 in 1999 to EGP 12 in 2009; • Accumulated fuel savings from lighting appliances estimated at 2.3 Mtoe over 1999-2008/9 and corresponding CO_2 reduction of 6.8 $MtCO_2$
Outputs	*Energy services and promotion* • Training of energy auditors' • Energy audits accomplished • Efficient lighting initiatives and increase in local CFL market • Approach developed to achieve customs reclassification *EE standards for new equipment* • EE standards and labels adopted for 2 appliances *Loan guarantee scheme* • Implemented pilot programme to provide partial loan guarantees *Buildings and building codes* • Development of voluntary building codes and development of a plan for implementation and enforcement of a mandatory	*Energy services and promotion* • Training of 60 engineers in energy audits; • 220 audits out of which 19 energy projects were implemented. In addition, 200 audits were implemented in government buildings on EE and lighting • Cooperation with NGOs (through GEF Small Grants Programme, including training of 60 electricians) and 6 distribution companies (revolving funds, in which the project has lent EGP 300,000 (returned instalments of EGP 55,000 by June 2008); in efficient lighting • Establishment of local CFL production capacity (6 factories) • A study was performed, but custom duty exemption requests have not been approved[8]. *Loan guarantee mechanism* • Loan guarantee mechanism implemented with Credit Guarantee Company (up to date 37 projects are implemented at a total cost of EGP 49 million and a guarantee of EGP 15 million); 7 ESCOs have been selected to participate (see Figure 1) *EE standards for new equipment* • EE standards and labels developed for 5 appliances and formally adopted for 3 appliances (refrigerators, air conditioners and washing machines). A ministerial

[8] However, to decrease the CFL price, five factories were established to local manufacture of CFLs, moreover the Ministry of Electricity is applying a leasing program for selling CFLs through instalments and even subsidising half of its price for a limited period to encourage dissemination

	code for new buildings	decree now makes it compulsory for local manufacturers and importers to abide by the specifications and label their products with their energy consumption information (see Figure 2) • Upgrading and accreditation of test labs for washing machines, refrigerators and freezers (ISO/IEC 17025-2005) • Commissioning of A/C testing laboratory *Buildings and building codes* • Initiatives supported in 400 government buildings (e.g. MOEE's own buildings, power companies' buildings); • Public hearing on EE building code for commercial and administrative buildings, while the residential building code has been introduced by ministerial decree. A decree (482/2005) has been issued by Ministry of Housing Utilities and Urban Communities on EE in residential and commercial buildings (but legislation is still needed to ensure enforcement mechanism) • The project has supported efforts to have a regional-level Arab EE buildings code for residential and commercial buildings. *EE Centre* • EE awareness activities. Such as seminars (69), EE publications, media and website (www.eeiggr.com), although website is not up-to-date
Outcome 3 EE market support	• Amount of connected cogen capacity increased from 350 MW to 1000 MW; • Savings of 0.3 Mtoe and GHG	• 430 MW reported
Outputs:	• Establishment of a 'small power' group within EEHC and training of engineers from distribution companies on cogeneration • Create a structure for EEHC to purchase electricity from small producers • Develop industrial cogen and agricultural waste for small power projects	• Agreement with Arab Contractors Co. to develop cogen units at Alu Misr • Report on the potential capacity and proposals for agro-waste fired combined heat-power (CHP) projects • Cogeneration system guidebook • A model PPA for grid connection and technical specifications for safe interconnection are currently under study • A draft tariff proposal has not been accepted
Climate change impact	Targets (outcomes 1, 2 and 3): Savings of 2.5 MToe and GHG reduction of 9.8 MtCO	Realized (total, outcomes 1, 2 and 3): • Saving of 7.2 MToe and 21.08 $MtCO_2$

Figure 1 Loan Guarantee Mechanism



The Credit Guarantee Company (CGC) is an Egyptian joint-stock company privately owned by 9 Egyptian banks and working with around 30 banks. CGC guarantees a certain percentage of loans and credit facilities offered by these banks to small and medium-sized enterprises (SMEs) without requesting any collateral, thus encouraging banks to deal with SMEs. CGC implements 6 programmes aiming at SMEs, emerging businesses, employment generation, industrial modernization, including the loan guarantee mechanism of the EEIGGR project. The project has provided US$ 280,000 (EGP 16.53 million) to be a as guarantee (implying that if investors that are implementing EE projects, face any problems in achieving the savings, their deficit will be compensated from this guarantee). The EEIGRR component started in October 2005 and guaranteed some 37 loans with a total loan amount of EGP 46.25 million of which EGP 15.37 is guaranteed (December 2009 figures, provided by CGC). Thus the leveraging by the Fund is with a ratio of about 1 to 3. Eleven projects have been completed and there is no defaulting reported so far. CGC has added non-EEIGR money in addition to projects (with a total value of EGP 68.85 million) with credit provided at the amount of EGP 14.76 million (of which 50% is guaranteed). Management cost of the Fund is reported to be covered from its own operations and interest gain of the initial capital.

Figure 2 Examples of EE labelling

From left to right: EE labels for washing machines, air conditioners and refrigerators

The Pre-Evaluation report provides the following comments on the progress in towards meeting the project's objective and realizing outcomes on which the Evaluator adds a number of observations in Table 3 below.

Table 3 Reflection on Pre-Evaluation

Pre-Evaluation reporting on outcomes and impacts	**Evaluator's observations**
Implementation offers a mixed view, so far. There is good progress made on approx. half of the objectives, and even some sustainable impacts achieved already, but there are also areas with very little progress towards impacts achieved. More details are provided in the sections discussing results per component.	Progress has been made in Outcomes 1 and 2, but less in Outcome 3. There are various reasons for that. Outcome 1 is quite technical in nature and management will not be against better technical control and management. Co-generation (or grid-connection by independent power producers in general, requires support at a higher decision-making level including amending the tariff structure). With the corporatization of the power sector, companies cannot be loss-making so special tariffs for RE and IPPs need (financial and political) support from the Government
Execution of the project has focused a lot on technical aspects and preparatory work (like analyses), and somewhat less on the actual adoption and implementation of new energy efficiency policies. While not uncommon in early years of a programme, more attention for the political and implementation sides of policies (like building codes, co-generation policies) would be needed in later years. After all, if impacts of a project depend to a large extent on the adoption of standards, legislation or other policies, then preparing policy	The project has dedicated its efforts in the last years more on policy issues: • Expansion in the energy efficiency loan guarantee programme. The success of the demonstration programme highlighted the need for up-scaling and two investment agencies namely AFD (French) and KFW (German) have expressed interest in establishing an energy efficiency credit line. There is a large opportunity that the credit lines will be established to serve a spin-off activity 'Industrial Energy Efficiency' for which UNIDO is currently submitting a proposal to GEF • Regarding standards and labelling, focus indeed has been on testing labs, but as a second spin-off activity, UNDP is

<table>
<tr>
<td>proposals and effectively lobbying for them should be part of a project management's tasks, as well as of the government departments that have signed the project document. Since there is some time left before finalisation of the project, a lot of attention could be given to the presentation of policy proposals to senior policy decision makers, including an overview of the costs and benefits of interventions for the whole country.</td>
<td>preparing a proposal on 'Improving EE of lighting and building appliances, which will have a component on development of a comprehensive scheme for standards and labelling of appliances.
• The project has supported demo projects in various government buildings, which are promoted as a showcase for replication in other government buildings. On decision-making level, this enabled the UNDP to embark on the new initiative funded by the MDG Spanish Fund to provide policy advice and coordination efforts to the Supreme Energy Council (SEC) that is hosted by the Cabinet of Ministers. Accordingly, the SEC has recently established an inter-ministerial committee on energy efficiency while the project is representing the Ministry of Electricity in the committee. In this context, the outputs of the support to SEC were actually designed to be linked to the outputs of the possible second phase of the Energy Efficiency project thus ensuring the GEF-UNDP project will be implementation arm to the policies of the SEC while providing policy advice on challenges to the SEC</td>
</tr>
<tr>
<td>The impacts expected in coming years as a result of the project are discussed in more details in the sections related to component 1 to 3. Overall, energy and CO_2 emission impacts for component 1 are significant and sustainable, somewhat exceeding expectations. Expected impacts from component 2 are currently low, but could be improved substantially. Impacts from component 3 are non-existent, and it is rather unlikely that this will improve before the end of the project. As described before, impacts from components 2 and 3 could never reach the unrealistic levels listed in the project document. This, however, does not imply that impacts are necessarily poor for a project of the given size. If, but only if, sustainability can be arranged for a number of demand-side</td>
<td>With the lack of much progress in Component 3, the CO_2 emission reduction is consequently small.

Reductions ($MtCO_2$ per year)
<table>
<tr><th>Project Brief</th><th>Target APR-PIR</th><th>Reported achievement (APR-PIR '09)</th></tr>
<tr><td>Comp.1: 1.10</td><td>0.48</td><td>1.43/yr</td></tr>
<tr><td>Comp 2: 4.67</td><td>8.25</td><td>6.8/yr</td></tr>
<tr><td>Comp 3: 2.02</td><td>1.08</td><td>-</td></tr>
</table>
It is not clear in the APR-PIRs how these estimates were calculated. A footnote of Annex would have been useful. The Evaluator has made the following estimates:
Component 1: The Pre-Evaluation report gives cumulative savings of 5.42 $MtCO_2$. Interpolating and extrapolating (based on the annual increase in CO_2 reduction per year of 4.46%), gives an emission reduction of 13.4 $MtCO_2$or 1.34/yr over the period 99/00 – 08/09.
Component 2: The Pre-Evaluation reports annual savings during the project period in its Annex 2, but it is not clear on what calculation assumptions (e.g. relation CFLs sold with CFLs in stock) it is based. A simpler calculation reveals that if one 15 W CFL saves 60 W in comparison with an incandescent, over one year (assuming that it is burnt 4 hours/day) will give savings of 88 kWh per yr. The 34.2 million CFLs[9] sold in Egypt (see Figure 3)</td>
</tr>
</table>

[9] Sum of the sales figures given in Figure 3

	over the period 1999-2009 give a reduction of 11 $MtCO_2$ per year (over the lifetime of 5.5 years[10] on average)[11].
When reviewing final impacts of the project, for a final report and final evaluation, sufficient attention should be given to other projects and programmes that have been running in the electricity sector in Egypt at the same time as this project. The project document already lists a number of, sometimes quite large, projects (e.g. a USD 200 million USAID project) targeting related goals, and the results and impacts achieved with those projects should be described and taken into account when discussing the impacts of the EEIGGR project.	UNDP participates in the Environment and Energy Donors Group in Egypt (a group representing all donor agencies in Egypt in the energy and environment areas). The project has worked successfully with a number of other activities: • Cooperation with GEF Small Grants Programme (SGP) to assist 9 NGOs in financing EE lighting programmes (CFLs, street lighting, offices)[12] • Cooperation with MOEE and distribution companies to improve EE in their own buildings • The project was member of the GTZ established committee to support the establishment of a national EE institution (see discussion in the main text on this page)

The project mentions in the APR-PIR 2009 that it has reached the targeted levels of COs reduction. It has not clear however, how these amounts are calculated. A footnote or explanation is missing on how this was done to check assumptions with statistics on transmission losses and sales of CFLs provided. Although not foreseen in the original list of activities, an *impact study* would have been very insightful to quantify the impact and outcome indicators mentioned in Table 2, in order to measure direct emission impacts from as part of the activities directly supported by the project (e.g., the CFL distribution by NGOs), post-project effects (such as the impact of the guarantee scheme) and indirect impacts caused by the project's capacity building and awareness creation efforts (see also section 2.5.2 for a short discussion on direct and indirect impacts). A *final project* report, summarising the impact study and explaining the results as laid down in APR-PIRs in layman's terms would have been helpful also for future reference.

In terms of energy impact, not only the impact on fuel reduction is important to be reported, but also the impact of reduction of peak power demand. For example, introduction of CFLs will lower the evening peak power demand. If implemented on a large-scale, this will lower the need for expanding future power generation capacity.

An idea that is currently being discussed is to establish a small donors group on energy efficiency to coordinate activities and links with the Supreme Energy Council, including two GEF-funded energy efficiency initiatives with UNIDO (on Industrial Energy Efficiency) and with UNDP (on efficient lighting and appliances) at a total budget of about US$ 9 million for the two projects. UNEP will support an activity to develop specific energy consumption to set the benchmark for different sectors. Other donors,

[10] 8000/4/365, with 8000 the assumed amount of burning hours of the lamp

[11] (75*80%*4*365/1000)*34,240,000*0.6658*5.5/(1*10^9). Grid emission factor is 0.6685 tCO_2/MWh

[12] With SGP about 18 projects were developed on energy efficiency (in Kalioubya, Cairo, Dakahlia, Gharbiya, Minia, Fayoum, Behira, Ismailya) with funding of USD 377,487. Initially 9 NGOs received grants to implement energy efficiency projects. Success encouraged other NGO's to submit proposals. The activities of the NGOs covered a large number of cities all over Egypt and included activities such as:
- Training and capacity building for technicians in the field of efficient lighting.
- Holding public awareness seminars and workshops on local and global benefits of energy efficiency.
- Energy efficiency projects implementation through revolving funds.
- Establishing showrooms for EE lighting in the NGOs' headquarters

AFD (France) and KfW (Germany) have expresses interest in cooperating with the UNIDO and UNDP initiatives.

Figure 3 Expanding CFL market in Egypt

Source: Ibrahim Yassin, Project Technical Director

2.2 Project design and relevance

2.2.1 Project relevance and country ownership

The project is relevant for Egypt in view fast growing energy demand, by addressing a number of EE thematic areas, such as transmission losses, reducing energy demand and cogeneration. The focus in the project design is more on technological issue, rather than on providing support for establishing a sound policy framework. The ProDoc acknowledges that energy subvention is one the major barriers. One would have expected at least some policy formulation support activity, for example a study on highlighting the pros and cons of energy subsidies in the Egyptian context and making policy recommendations.

Ownership of the project at the operational level has been high and both the team as well as UNDP have demonstrated pride in the accomplishments. 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, building

codes and appliance standards and labelling. It should be noted that electricity demand is growing at 7% and will make Egypt a net energy importer in the future. This highlights the importance of using the available energy in a more efficient way. While removing energy subsidies was long a taboo, the long-term unsustainability is now under discussion. Even without removing subsidies (which is a politically sensitive issue) EE has direct macro-economic benefits by reducing subsidized energy consumption and thereby, the amount of subsidies spent, while releasing domestic fuel resources for export (at international market prices).

A target has now been set to improve energy efficiency by 20% by 2020 (from the 1990 levels). Efficient lighting is in the limelight of government attention. The SEC has taken a decision to oblige all government buildings to efficient lighting systems. The rapidly increasing sales of CFLs (and involvement of power distribution companies) highlight the importance of energy efficient technologies.

2.2.2 Conceptualization

Pre-Evaluation report provides the following comments on project design on which the Evaluator adds a number of observations in Table 4 below.

Table 4 Reflection on Pre-Evaluation report, 1

Pre-Evaluation reporting design	Evaluator's observations
Subsidised energy is recognised already in the project document as a major barrier for energy efficiency improvements. Yet, surprisingly little attention has been given to this aspect, to assessments at which energy prices some measures might become attractive and to alternatives for end-user investments in energy efficiency (e.g., when energy is subsidised, end-user investments are less attractive but utility or government-financed demand-side management programmes are very cost-effective). In view of this, more attention could be given to expected energy prices in the near future, and how energy efficiency could be helpful in mitigating social problems arising from rising fuel and electricity rates. This is even more important now that Egypt is rapidly on its way of becoming an energy-importing country. These aspects are not listed in the project document (although they should have been), but can be very important for the overall success of a project.	This is at heart of the issue. Fuel are subsidised heavily in Egypt traditionally (and thus, although working on a cost-recovery basis as such, the power sector can afford relatively low tariffs). For the economy as a whole, it not only discourages rational behaviour regarding energy consumptions; it is a *de facto* subsidy from the poor to the rich, who usually own more energy-guzzling equipment, vehicles, etc. than the poorer fellow countrymen. Fuel subsidy will cost the state USD 12 billion in 2009-2010[13] (EGP 66 million). Energy subsidies are about 15% of the total budget, but only 20% of the amount actually benefits the poor[14]. Removing subsidy will reduce the budget burden and reduce waste in energy use. Nonetheless, removing fuel subsidy is a politically sensitive issue and tackling it is probably beyond the scope of any GEF project, except for awareness raising activities and showing cost-effectiveness of EE measures and of policy instruments and promoting these.
The project aimed to reduce energy consumption and related CO_2 emissions through improving energy efficiency in the electricity network, including supply and	The focus has be understood in the context of the end 90s, when it was more common to have projects submitted to GEF that are wider in scope than today, e.g.

[13] Maktoob Business News, 26-03-2010

[14] Daily News Egypt, 20-07-2006

demand side improvements, and some non-electrical end-use optimisations. Such a scope is far too wide for a single project, befitting a large, multi-annual national programme. The project designs shows the signs of this 'squeezing a programme into a project' approach, by not properly describing the efforts needed to achieve the far-reaching objectives of the project. The design focuses mainly on preparatory activities to be done, rather than on the impacts to be achieved and the various steps that could lead to these impacts. Probably as a result of the too-wide scope, the project design does not include a proper status quo description per objective, which would be needed since almost each objective represents a separate project (clustered in the EEIGGR project). Because of this, EEIGGR is sometimes referred to as 'programme' in this report.	promoting renewables or energy efficiency in general. This indeed has the danger that the focus is too wide with too many dispersed activities to have significant impact. On the other hand, in countries were EE was quite low on the agenda (as it was in Egypt 10 years ago), a wider scope allows to raise awareness on EE among a broader range of stakeholder with the objective to raise to have a critical mass of EE enthusiasts in various segments of society. On impact assessment, see the comment in the main text immediately below Table 3.
The project document specifies these numbers without a single note about the magnitude of the savings to be achieved, not remarkable as the calculations included can only have been made by a very incompetent person or consultancy. For example: the calculations specify that a CFL programme would reduce residential electricity demand for lighting by 1000 kWh/year (implying that at least 1250 to 1400 kWh/year was consumed for lighting in these households). Yet, average total residential electricity demand at the time was only approx 1150 kWh/year, including energy consumption for other appliances.	The Pre-Evaluators team has not reviewed to Project Brief (Proposal for Review) which does give the emission reduction estimates, as summarised in Table 3 of this report. The question is not as much how credible these estimates are, but they mix direct and indirect emission reduction. Nowadays, project documentation is asked to make a distinction between direct emission reduction (e.g., the emission reduction caused by a number of demo projects, such as the cogen systems mentioned in component 3), post-project impacts (e.g. caused by the functioning of a financial mechanism, such as the loan guarantee mechanism with CGC) and indirect impacts (due to technical assistance, e.g. in helping the power distribution companies and introducing of standards and labels).

On project preparation, the Mid-Term Evaluation report (2002) mentions the following. "The project document was prepared by the consulting company Haigler-Bailly in 1995. It was the subject of many revisions and much discussion with stakeholders, including EEHC. Representatives of these organisations all expressed satisfaction with the process. It is not now possible to confirm with certainty, but the document gives the impression that it may not have benefited from such extensive inputs at the policy level. Although there are certainly policy related topics within the scope of work, the emphasis is on the technical preparation rather than the construction of viable policy packages. If it is desirable to have impact on policy then it may be useful to involve the policy institutions in preparation". The report further adds: "The project document requires certain commitments from the Government relating to the implementation of legislation. Presumably these commitments were given, but the project document was signed by the Minister of Electricity and Energy. He does not have competence for all relevant legislation".

2.3 Effectiveness of project implementation

2.3.1 Management and implementation approach; monitoring and evaluation

In general, the project management team has responded correctly to barriers encountered in project implementation (*adaptive management)*, such as focussing more on selected activities that have proven to be successful, such as CFLs involving a number of actors (NGOs, distribution companies), while advancing on formulation of labelling for selected appliances. Another example of changing the original design for good reason is the establishment of the loan guarantee programme with CGC.

Annual progress is reported in the annual project review reports (APR-PIRs). Not all documents could be checked by the Evaluator, such as Steering Committee minutes of meeting (being written in Arabic). The APR-PIRs form good sources of information regarding project progress in achieving outputs, but less so in achieving impacts. What have actually been missing are a good baseline analysis and an 'end-of-project' impact study. The UNDP Country Office could have insisted on this, but the Evaluator acknowledges that these were not requirements at all when the project document was approved in 1999. In general there has been a good relation of the CO with the project. Given the long implementation time, the CO has opted to have a 'pre-final' evaluation with the purpose of having a set of recommendations and observations that would help the project achieve its goals in the remaining implementation time period left. Observations on the 'pre-final evaluation' are summarized in Tables 3 and 4.

Starting in 1999, the project was extended annually from 2004 onwards until 2009 at no extra cost for the GEF budget. The reasons for each extension are explained in the APR-PIRs. While the implementation period has been unusually long, this can be justified by the results achieved in Outcome 2, which has been important in achieving increased awareness and visibility of EE efforts in Egypt. Without such flexibility, the project would not likely have achieved the same level of results.

Regarding the use of website, www.eeiggr.org. The website has unfortunately not been really updated, as EEIGGR has been winding down. It would be a good idea to have an update with relevant info and documentation so that not all info will be lost.

2.3.2 Stakeholder participation

The project has been successful in establishing collaborative relationships with donors and projects (such as KfW, EPAP, UNDP Small Grants Programme) as well with local entities both government at national level (various Ministries) and local level (e.g. various power distribution companies) as well as NGOs (involved in CFL distribution) and actively sought partnerships with entities even if not particularly mentioned in the project document (e.g. the CGC's credit guarantee scheme). This agility to find other ways has helped to overcome obstacles when project implementation was slowing down and has helped in achieving the results reported in Section 2.1.

2.3.3 Financial planning and delivery of co-financing

Table 5 provides an overview of the planned budget per component, actual total *expenditures related to the GEF and co-financing budget* as well as a breakdown per budget line of the project budget, reflecting the status at July 2009.

Due to change in UNDP in financial administration system (in 2004 to the new ATLAS system) it is difficult for the Evaluator to breakdown disbursements per component and per budget line at the same time. Drawback of the old system from the Evaluator's viewpoint was that it typically provided expenditures per budget line for the project as a whole, but not broken down per component. The new ATLAS can provide info per component, but the old budget line for 'training' has disappeared. This is surprising as most of UNDP's projects are capacity building projects with workshops, seminars and other training events. Costs are now divided over various budget lines (e.g., consultants, printing, etc.), but is not easy to follow track how budget is spent on training activities.

The effectiveness has been mixed. Technical work under component 1 as such has been effective, as network losses have been better network control has been established, but a TOU tariff structure has not been approved. Component 3 has been the weakest as has been discussed earlier in Section 2.1. One reason is that the needed input again is legislative, such as adoption of time-of-use tariffs and for purchasing cogeneration power. Due to the before-mentioned change in budget reporting, it is difficult to judge *cost-effectiveness* (i.e., conversion of inputs to outputs), but the mid-term evaluation report expressed satisfaction.

It is further mentioned in one of the reports that UNDP should also consider that the maximum rates offered for international consultancy are typically below acceptable levels in OECD countries for qualified experts, implying that many good experts are not available to support their projects in specialized areas of expertise.

Table 5 Overview of project budget, co-financing and disbursements

Components	GEF	Govern't	UNDP
Planned budget (in USD '000)			
1			800
2&3 GEF	4,110	980	
Disbursements (in USD '000)			
1998	24		
1999	532		
2000	574	160	
2001	774	232	
2002	280	120	
2003	409	53	559
2004	138	159	109
2005	390	118	61
2006	319	38	62
2007	401		3
2008	229		21
2009	41		
Total	**4,110**	**880**	**816**

(amounts in USD million)	Planned in ProDoc	Additional amounts committed	Total disbursement
Cash co-financing			
UNDP (TRAC)	0.80		0.82
UNDP TTF		0.30	0.30
Government	0.98		0.88
US DOE		0.20	0.30
GEF SGP		0.30	0.30
CGC		0.35	
Bank loans		0.07	0.07
NREA (labs)		0.23	0.23
In-kind co-financing	0.60		0.60
Total	**2.38**	**1.45**	**3.50**

Source: Compiled from APR-PIR 2009, other APR-PIRs, Project Document and information provided by UNDP Country Office, including Combined Delivery Reports

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 Main conclusions

3.3.1 Attainment of outcomes and objectives

The project has exceeded the targeted levels of CO_2 reductions (although depending on which method by which these were calculated). Although it has taken a long time, the project persistent efforts have managed to finally generate some interests among various stakeholders (government, national administration, national industry, and academia). The project has generated concrete and highly visible energy efficiency sub-programme, in particular:

- CFL programme: encouragement of Egyptian manufacturers to manufacture CFL locally (6 factories), public awareness program and cooperation with NGOs and distribution companies, which has led to a boost in sales of CFLs;
- It is compulsory (with limited enforcement) to put the energy efficiency label (reflecting the level of the appliance electricity consumption) on all locally manufactured and imported appliances. Accredited performance test laboratories (Energy Efficiency Testing Facilities) have been implemented within the Egyptian Renewable Energy Testing & Certification Centre (RETCC) and hosted inside the premises of the New and Renewable Energy Authority (NREA);
- A loan guarantee mechanism implemented with Credit Guarantee Company (37 projects are implemented at a total cost of EGP 49 million and a guarantee of EGP 15 million, provided to CGC by the project).

The project has been instrumental in shaping follow-up activities, such as on industrial energy efficiency and on lighting and efficiency in buildings (building code, standards and labelling). This highlights the need for up-scaling and, fortunately, two donor agencies namely AFD (France) and KfW (Germany) have expressed interest in establishing an energy efficiency credit line.

In general, one can conclude that the project has been successful in the before-mentioned areas. But the higher the required actions are on the decision-making level, the less successful the project has been. One reason is that the needed inputs require some form of legislative action, such as adoption of time-of-use tariffs and for purchasing cogeneration power. This has not been forthcoming, so it is not surprising that the cogeneration component has met little success. For example, despite the study on load shifting, tariff changes are still under discussion. In fact, the discussion on tariff changes and removing fuel subsidies has been shelved, supposedly due to the current work financial crisis, but keeping the social calm in a country in a region in turmoil may have more to do with it. Labelling of appliances has been introduced as compulsory, but without any enforcement mechanism.

With low energy prices (i.e., without the Government giving the right signals) and low priority given to energy efficiency by companies, the effectiveness of the project's energy audits and ESCO involvement

has been poor. This can also be attributed to poor links with ESCOs and senior management of companies.

Nonetheless, the project succeeded in raising the level of awareness on the needs and benefits of energy efficiency within Egypt's national energy policy. EE has moved closer towards the top of the political agenda. What the long-term effects will be remains to be seen. In the end, sustainability of standards, codes, tariffs and other EE measures depend on high-level decision in the Government on their adoption and enforcement. The activation of the Supreme Energy Council (SEC), which is hosted by the Cabinet of Ministers, several policy measures that the project proposed and require inter-ministerial coordination can find their way to adoption and enforcement in future.

3.3.2 Sustainability, capacity building and replicability

The project has functioned as a knowledge hub on energy efficiency (EE). It has served asa critical mass, not only within EEHC, but its training and awareness raising activities have upgraded skills of national staff in other participating ministries, NGOs, CFL manufacturers, ESCOs, CSR companies, public, etc, This capacity created will be a main guarantee for the sustainability of the project activities.

Regarding institution building, the re-activation of the SEC and the establishment of the Inter-Ministerial committee on EE will keep on pressing on this issue. The Committee has recently secured the approval of the Minister of Finance to fund conversion of 20 government buildings into energy efficient lighting systems as a demonstration to open the door for the full fledge conversion of all government buildings. The Regional Center for Renewable Energy and Energy Efficiency has been established in 2007 in Egypt supported by GTZ, EU and KfW that will continue the advocacy for the project activities. Several international agencies are currently planning and designing their EE initiatives based on the project outputs

Regarding sustainability, UNDP has embarked with 5 other UN agencies[15] on a new initiative to be funded by the MDG Spanish Fund to provide policy advice and coordination efforts to the SEC. The joint programme is under preparation called 'Climate Change Risk Management in Egypt', consisting of a number of activities. In one of these, UNEP and UNDP will work together to support the Technical Secretariat of the SEC of the Cabinet of Ministers in its on-going endeavours in reforming the national energy policies, including of the energy subsidy scheme and promotion of renewable energy and energy efficiency. The joint programme will provide technical assistance to assimilate and convert 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 decisions of SEC and mobilizing additional resources to support longer term studies serving national energy priorities.

In terms of replication, EEHC is continuing the CFL campaign with the '6 million CFL' programme. Regarding industry, activities are proposed to focus on the newly proposed ISO 50001 standard for energy management systems (proposed by UNIDO to GEF), while the proposed activity on standards and labelling (UNDP/GEF) will continue the work that EEIGGR has initiated.

[15] UNEP, UNIDO, IFAD, FAO and UNESCO

3.2 Recommendations

The Pre-Evaluation provides recommendations for the project on general issues that are summarized here and reviewed by the Evaluator in Table 6 below.

Table 6 Reflection on Pre-Evaluation report, 2

Pre-Evaluation recommendations	Evaluator's observations
Project management is advised to take stock: what has been achieved, what needs to be achieved to have a sustainable impact on the energy use in the country. This should be described in an integrated, results-oriented overview of the project's work, listing what as been achieved so far, what can be achieved before the end of the year, and how, why, when and by whom these additional achievements can take place. Based on this, priorities should be selected for the remainder of the project. Most attention should go to completing objectives that are already close to having achieved a sustainable impact, and presenting the results and projected impacts of those in non-technical language. Objectives that are already sustainable should be described and their impacts carefully monitored, and if needed arrangements made so that impacts will continue to grow in future years.	The project has focussed more for the advocacy of issues related to policy and finance in its last years: • Formulation of appliance standards and labels associated with full operation of testing labs • The period 2008-09 witnessed a great expansion in the energy efficiency loan guarantee programme. The success of the demonstration programme highlighted the need for upscaling and the donor/lending agencies AFD and KfW have expressed interest in establishing energy efficiency credit line.
Thirdly, if government decisions are needed to create a sustainable impact (e.g., for regulations), a good but brief overview of the achievements of the project should be prepared including an assessment of the social and economic benefits to the country of implementing measures. This should be discussed with senior policy decision makers, with the help of UNDP if needed. Further, at closure of the project an overview should be prepared of pending government decisions relevant to the impact of the project, for future reference by UNDP and/or other parties. Energy price reform is one of those aspects, and it is suggested that the project investigates the relation between energy efficiency, energy subsidies and price reforms, and prepares recommendations for the government related to this. The impact of realised objectives should be carefully measures, for component 1 (integrated), and separately for the various outputs of component 2. The component 1 and 2 sections include suggestions for items to measure; annex 2 includes examples of impact calculations. Given the lack of results on component 3, no impact measurement is needed. The information per objective could be combined in a final project overview, also listing technical inputs per	An *'end-of-the-project'impact study* has not been prepared as suggested. Such an impact study would have been very insightful to quantify the impact and outcome indicators, in order to measure direct emission impacts from as part of the activities directly supported by the project (e.g., the CFL distribution by NGOs), post-project effects (such as the impact of the guarantee scheme) and indirect impacts caused by the project's capacity building and awareness creation efforts. A type of *final project report*, summarising the impact study and explaining the results as laid down in APR-PIRs in layman's terms would have been helpful, also for future reference.

objective and results achieved. A suggested reporting template is included in Annex 1.	
Finally, a budget overview should be prepared listing the spending related to the various components and objectives of the project, in comparison to original and revised budgets. This should include all inputs: GEF budget, UNDP-budgets, cash and in-kind government and other co-financing	This is missing. The Evaluator prepeared a simplified overview, which is given in Table 5 in section 2.3.2 of this report.

3.3 Lessons learned and general recommendations

Some *lessons learned* are:

- The links between the GEF project and the Small Grants Programme (SGP) have been useful in strengthening the recipients of the small grants, while involving more grass-roots organizations (NGOs) in the implementation of the main project (EEIGGR) rather than just governmental entities. Consideration might be given to mainstreaming such linkages in future projects where practical[16].
- The duration has been extended several times. Currently, such number of extension requests would probably not have been acceptable by the GEF Secretariat (GEF Sec). In this particular case, the extensions have worked positively by slowly building the policy impact. Without having extensions, the project would have ended with limited output-type of results only. Especially when activities require regulatory or even legislative interventions, this is where the going gets tough and a longer timeframe is needed.

General recommendations:

- This raises the question of GEF Sec in these case should not focus more on longer-term policy-oriented programmes in countries were EE is still not high on the political agenda rather than hoping to convince policy-makers with a short-term 3-to-5 year technically-oriented project and hoping that the results generated will trickle 'upward'.
- Such an approach with allocating significant funds allocated for a general awareness program aimed at mobilising support for EE activities at various levels (decision-makers', implementers and end-users/beneficiaries) together with selected activities that can show visible results (such as the CFL campaigning and preparation of standards and labelling in the case of EEIGGR), while leaving activities that require legislative endorsement (enforcement of S&L) for a successor project or follow-up activities within the longer-term programme
- Such a programme will be more successful, if bilateral and multilateral donors work together, as is shown in the GTZ-established committee on establishing EE institutions and the proposed 'Climate change' framework in which 6 UN organizations cooperate (with support from the Spanish MDG Fund)

[16] The project has participated with a presentation in the GEF Climate Change Evaluation Conference, May 2008. Following the presentation, the GEF CEO expressed satisfaction with the project outputs especially its links with the GEF SGP and recommended for Egypt to submit a full size GEF project to build on the success of this on-going project on phasing out the use of incandescent lamps and replacing it with CFLs.

- The current annual UNDP-GEF progress reports, called APR-PIRs, focus on achieving outputs, while outcomes and impacts are underreported. Just merely mentioning a CO_2 reduction figure is not sufficient; it should at least be clear how energy and GHG emission reduction were calculated and based on what assumptions. There should be closer integration with the GHG emission reduction calculation[17] required for Project Documents, the APR-PIR reporting and baseline and impact analysis in the sense that one set of impact-outcome-output indicators should be used.

- Attention should be given to the presentation of policy proposals to senior policy decision makers, including an honest overview of the costs and benefits of interventions for the whole country, in view of slowly rising energy prices in the future, and how energy efficiency could be helpful in mitigating social problems arising from rising fuel and electricity rates. This is even more important now that Egypt is rapidly on its way of becoming an energy-importing country. Even without removing subsidies (which is a politically sensitive issue) EE has direct macro-economic benefits by reducing subsidized energy consumption and thereby, the amount of subsidies spent, while releasing domestic fuel resources for export (at international market prices).

[17] *Manual for Calculating GHG Benefits of GEF Projects*, GEF.C.33/Inf.18 (April, 2008)

ANNEX A. TERMS OF REFERENCE (TOR)

The original text of the ToR has been amended by adding yellow-highlighted numbered items to be able to refer to the corresponding part in the main body of the text in this report, but otherwise the original text has not been altered.

I. INTRODUCTION

The Energy Efficiency Improvement and Greenhouse Gas Reduction Project is a national project executed by the Egyptian Electricity Holding Company, Ministry of Electricity and Energy and supported by the Global Environment Facility and the United Nations Development Program.

As summarized by the project document: "The overall objective of the project is to assist Egypt in reducing the long-term growth of GHG emissions from electric power generation and from consumption of non-renewable fuel resources. In responding to the new operating conditions, public and private industry must invest in process modifications and new machinery to remain competitive, with excellent likelihood that their investments will have favorable rates of return based on savings from reduced operating costs. The funding for this project will leverage the new investments in ways that are most beneficial to the global environment".

The project started in 1999 with a total budget of 5.895 Million US$. The original plan was to finalize the project by 2003. Since then, the project has been extended several times at no additional costs in order to complete the tasks requested in the project document as well as to ensure the sustainability of the mechanisms developed during the project.

During its lifetime, some amendments have also been made to the originally proposed mechanisms in order to better comply with the local needs and demands. In addition, some activities have been extended to cover broader scope to ensure completeness and sustainability. This has been done without an additional budget request, which has been possible, among others, due to the favorable exchange rate development between the Egyptian pound and the US dollar leading into a situation, where the local budget of the project has increased by almost 50%.

The project activities have been grouped under three main components:

1. Loss reduction on the transmission grid and improvement in the power plants dynamic response. In addition, component 1 includes some demand side management activities

2. Energy efficiency at the demand side, including the following sub-components:
    a. Market support to the energy efficiency business.
    b. Labelling and standards program for appliances; and
    c. Energy efficiency building code

3. Cogeneration: The third component is primarily about institutional strengthening to support cogeneration with the following key areas of support:
    a. Power purchase contracts
    b. Power purchase tariffs
    c. Technical requirements and equipment for grid connection; and
    d. Potential use of biomass in cogeneration

The Monitoring and Evaluation (M&E) policy at the project level in UNDP/GEF has four objectives: i) to monitor and evaluate results and impacts; ii) to provide a basis for decision making on necessary amendments and improvements; iii) to promote accountability for resource use; and iv) to document, provide feedback on, and disseminate lessons learned. A mix of tools is used to ensure effective project M&E. These might be applied continuously throughout the lifetime of the project – e.g. periodic monitoring of indicators -, or as specific time-bound exercises such as mid-term reviews, audit reports and final evaluations.

In accordance with UNDP/GEF M&E policies and procedures, all regular and medium-sized projects supported by the GEF should undergo a final evaluation upon completion of implementation.

Final evaluations are intended to assess the relevance, performance and success of the project. They look at early signs of potential impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. They will also identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP/GEF projects.

II. OBJECTIVES OF THE EVALUATION

As an integral part of the project implementation cycle, UNDP has initiated a final evaluation that will analyze the achievements of the project against its original objectives while providing donors, government and project partners with an independent review of project final outputs. The evaluation will review technical and managerial aspects and consider issues of effectiveness, efficiency, relevance, impact and sustainability. The evaluation will identify factors that have facilitated and/or impeded the achievement of objectives and should result in recommendations and lessons learned that will help in re-orienting and re-prioritizing project activities and managerial arrangements as needed.

III. PRODUCTS EXPECTED FROM THE EVALUATION

The main product of the final evaluation is expected to be a comprehensive report. The final evaluation should provide **an overall rating** of achievement of the project's objectives.

The final evaluation will be structured according to the following outline, as detailed in Section VII:

1. Executive summary
2. Introduction
3. The project(s) and its development context
4. Findings and Conclusions
   4.1 Project formulation
   4.2 Implementation
   4.3 Results
5. Recommendations
6. Lessons learned
7. Annexes

The final evaluation report should not exceed 50 pages excluding annexes and will be submitted to UNDP Egypt, two weeks after the end of the mission. The report will be circulated for two weeks to the government counterparts and project management unit to verify factual statements. Meanwhile any

discrepancies between the impressions and findings of the evaluation team and the aforementioned parties these should be explained in an annex attached to the final report.

IV. METHODOLOGY OR EVALUATION APPROACH

The evaluation will be based on information obtained from verifying and updating the information in the pre-final evaluation of the project carried out in 2007 and reviewing documents such as the project document, project brief, quarterly progress reports, Annual Project Reports (APR), Project Implementation Reports (PIR) and minutes from Tripartite Review, Project Technical Reports and minutes from relevant meetings. The mission should also rely on information gathered through field visits, and interviews with target beneficiaries and project staff including government officials, and/or consultants. Interviews should include Ministry of Electricity and Energy, Ministry of Housing, Ministry of Trade and Industry, private sector, NGOs, UNDESA and UNDP. The methodology that will be used by the evaluator 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.

V. EVALUATION TEAM

The final evaluation will be carried out by an independent international consultant that has not participated in the project preparation and/or implementation and does not have any conflict of interest with project related activities. The expert will be responsible for conducting a mission to Egypt to meet with the stakeholders, and will be responsible for drafting and finalizing the report.

The appropriate evaluator for this assignment shall be an Energy Specialist with technical expertise recognized at international level. S/He must have an advanced university degree preferably in engineering/energy fields with 10-15 years of relevant experience preferably in the energy efficiency field. Previous involvement and understanding of UNDP and GEF procedures is an advantage and extensive international experience in the fields of project formulation, execution, and evaluation is required; experience in science to policy linkages would be welcome. The consultant should be fluent in English and possess strong technical writing and analytical skills coupled with relevant experience in results-based monitoring and evaluation techniques.

VI. 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, coordinate with the Government and ensure the timely provision of per diems and travel arrangements.

The consultancy will be for 22 working days and the activities and timeframe are broken down as follows:

Activity	Timeframe and responsible party
Desk review	4 working days
Mission to Egypt including field visits interviews to the stakeholder	6 working days
Writing draft report	8 working days
Finalization of the evaluation report (incorporating comments received on first draft)	4 working days

VII. SCOPE OF THE EVALUATION- SPECIFIC ISSUES TO BE ADDRESSED.

The scope of evaluation includes 2 principal components:

- analysis of the attainment of global environment objectives, outcomes, impacts, project objectives and delivery and completion of project outputs (based on indicators);
- evaluation of project achievements according to GEF Project Review Criteria:
  - Implementation approach;
  - Country ownership/driveness;
  - Stakeholder participation/Public involvement;
  - Sustainability;
  - Replication approach;
  - Financial planning;
  - Cost-effectiveness;
  - Monitoring and evaluation

An annex providing more detailed guidance on terminology and the GEF Project review Criteria is an integral part of this ToRs and is provided in Annex 1.

Please note that some of the categories in the findings and conclusions need to be rated in conformity with the GEF guidelines for final evaluations. The detailed outline of the report should be as follows:

1. **Executive summary** (see Executive summary)
   - Brief description of project
   - Context and purpose of the evaluation
   - Main conclusions, recommendations and lessons learned

2. **Introduction**
   - Purpose of the evaluation (section 1.3)
   - Key issues addressed (section 1.2)
   - Methodology of the evaluation (section 1.3)
   - Structure of the evaluation (section 1.3)

3. **The project(s) and its development context**
   - Project start and its duration (section 1.1)
   - Problems that the project seeks to address (section 1.2, table 1)
   - Immediate and development objectives of the project (section 1.2)
   - Main stakeholders (section 1.4)
   - Results expected (section 1.2, table 1)

4. **Findings and Conclusions**

In addition to a descriptive assessment, all **criteria marked with (R) should be rated** using the following divisions: Highly Satisfactory, Satisfactory, Marginally Satisfactory, Marginally Unsatisfactory, Unsatisfactory, Highly Unsatisfactory (see Executive Summary)

4.1. Project Formulation

Conceptualization/Design (R). This should assess the approach used in design and an appreciation of the appropriateness of problem conceptualization and whether the selected intervention strategy addressed the root causes and principal threats in the project area. It should also include an assessment of the logical framework and whether the different project components and activities proposed to achieve the objective were appropriate, viable and responded to contextual institutional, legal and regulatory settings of the project. It should also assess the indicators defined for guiding implementation and measurement of achievement and whether lessons from other relevant projects (e.g., same focal area) were incorporated into project design (section 2.2.2)

Country-ownership/Driveness. Assess the extent to which the project idea/conceptualization had its origin within national, sectoral and development plans and focuses on national environment and development interests (section 2.2.1)

Stakeholder participation (R) Assess information dissemination, consultation, and "stakeholder" participation in design stages (section 2.2.2)

Replication approach (R) Determine the ways in which lessons and experiences coming out of the project were/are to be replicated or scaled up in the design and implementation of other projects (this is also related to actual practices undertaken during implementation). (Table 3 and Section 3.1.2)

Other aspects to assess in the review of Project formulation approaches would be UNDP comparative advantage as IA for this project; the consideration of linkages between projects and other interventions within the sector and the definition of clear and appropriate management arrangements at the design stage.

4.2. Project Implementation

Implementation Approach (R). This should include assessments of the following aspects (section 2.3.1):

(i) The use of the logical framework as a management tool during implementation and any changes made to this as a response to changing conditions and/or feedback from M and E activities if required.

(ii) Other elements that indicate adaptive management such as comprehensive and realistic work plans routinely developed that reflect adaptive management and/or risk monitoring and management/mitigation; changes in management arrangements to enhance implementation.

(iii) The project's use/establishment of electronic information technologies to support implementation, participation and monitoring, as well as other project activities.

(iv) The general operational relationships between the institutions involved and others and how these relationships have contributed to effective implementation and achievement of project objectives.

(v) Technical capacities associated with the project and their role in project development, management and achievements.

Monitoring and evaluation (R). Including an assessment as to whether there has been adequate periodic oversight of activities during implementation to establish the extent to which inputs, work schedules, other required actions and outputs are proceeding according to plan; whether formal evaluations have been held and whether action has been taken on the results of this monitoring oversight and evaluation reports (section 2.3.1)

Stakeholder participation (R). This should include assessments of the mechanisms for information dissemination in project implementation and the extent of stakeholder participation in management, emphasizing the following (see tables 2 and 3; section 2.3.2)

(i) The production and dissemination of information generated by the project.

(ii) Local resource users and NGOs participation in project implementation and decision making and an analysis of the strengths and weaknesses of the approach adopted by the project in this arena.

(iii) The establishment of partnerships and collaborative relationships developed by the project with local, national and international entities and the effects they have had on project implementation.

(iv) Involvement of governmental institutions in project implementation, the extent of governmental support of the project.

(v) The involvement of the project steering committee and the extent to which resource persons of the steering committee have been leveraged to support the project in achieving its objectives, ensuring national ownership, leveraging co-financing and managing constraints.

Financial Planning (section 2.3.3): Including an assessment of:

(i) The actual project cost by objectives, outputs, activities

(ii) The cost-effectiveness of achievements

(iii) Financial management (including disbursement issues)

(iv) Co-financing [18]

Execution and implementation modalities. This should consider the effectiveness of the UNDP counterpart and Project Co-ordination Unit participation in selection, recruitment, assignment of experts, consultants and national counterpart staff members and in the definition of tasks and responsibilities; quantity, quality and timeliness of inputs for the project with respect to execution responsibilities, enactment of necessary legislation and budgetary provisions and extent to which these may have affected implementation and sustainability of the Project; quality and timeliness of inputs by UNDP and GOE and other parties responsible for providing inputs to the project, and the extent to which this may have affected the smooth implementation of the project.

[18] Please see guidelines at the end of Annex 1 of these TORs for reporting of co-financing

4.3. Results

Attainment of Outcomes/ Achievement of objectives (R*):* Including a description *and rating* of the extent to which the project's objectives (environmental and developmental) were achieved using Highly Satisfactory, Satisfactory, Marginally Satisfactory, Marginally Unsatisfactory, Unsatisfactory, Highly Unsatisfactory ratings. If the project had not established a baseline (initial conditions), the evaluators should seek to determine it through the use of special methodologies so that achievements, results and impacts can be properly established (section 3.1)

This section should also include reviews of the following (section 3.1.2)

Sustainability*:* Including an appreciation of the extent to which benefits continue, within or outside the project domain after GEF assistance/external assistance has come to an end. Relevant factors include for example: development of a sustainability strategy, establishment of financial and economic instruments and mechanisms, mainstreaming project objectives into the economy or community production activities.

Contribution to upgrading skills of the national staff: particular attention will be given to impact evaluation of capacity building activities of the project, namely the subsequent use and application of training received and extent of integration of practices and approaches promoted by the project into routine trainee work.

5. Recommendations (section 3.2)

- Corrective actions for the design, implementation, monitoring and evaluation of similar projects
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives

6. Lessons learned (section 3.3)

This should highlight the best and worst practices in addressing issues relating to relevance, performance and success.

7. Evaluation report Annexes (see Annexes)

- Evaluation TORs
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Questionnaire used and summary of results
- Comments by stakeholders (only in case of discrepancies with evaluation findings and conclusions)

Financial Planning Cofinancing

Co financing (Type/Source)	IA own Financing (mill US$)		Government (mill US$)		Other* (mill US$)		Total (mill US$)		Total Disbursement (mill US$)	
	Planned	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**	**Planned**	**Actual**
– Grants										
– Loans/Concessional (compared to market rate)										
– Credits										
– Equity investments										
– In-kind support										
– Other (*)										
Totals										

* Other is referred to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

Leveraged Resources

Leveraged resources are additional resources—beyond those committed to the project itself at the time of approval—that are mobilized later as a direct result of the project. Leveraged resources can be financial or in-kind and they may be from other donors, NGO's, foundations, governments, communities or the private sector. Please briefly describe the resources the project has leveraged since inception and indicate how these resources are contributing to the project's ultimate objective.

ANNEX B. ITINERARY AND LIST OF DOCUMENTS

B.1 Mission schedule and list of people met

Tue 02/02/2009	Meetings with: • Mr. Mohamed Bayoumi (UNDP programme officer) and Mr. Ibrahim Yassin Mahmoud (Project technical director) • Egyptian Electricity Holding Co (EEHC), Mr. Kamel Yassin • New and Renewable Energy Authority (NREA), Mr. Abd-el Rahman Salah el-Din
Wed 03/02	Meetings with: • Housing and Building Research Centre (HBRC) • Credit Guarantee Company (CGC), Mr. Mohamed Abdel Hamid Mahmoud (Chairman), Mr. Essam El-Din Nafie (Manager, SME) • GEF Small Grants Program (SGP), Mr. Emad Adly (National coordinator)
Thu 04/06	Meetings with the Egyptian Organization for Standardization & Quality (EOS) and private sector had to be cancelled.

In addition, discussion were held with Ms. Yasmine Fouad (Egyptian Environmental Affairs Agency, EEAA) and Mr. Vesa Rutanen (former UNDP Regional Technical Advisor, climate change)

B.2 List of documents reviewed by the Evaluator

APR-PIR
Annual Performance Report – Project Implementation Review, 2000-2009

Georgy, R.F. & Soliman, A.T.
Energy Efficiency and Renewable Energy, Egypt National Study. UNEP, Plan Bleu, Mediterranean and National Strategies for Sustainable Development, Field of Action #2: Energy and Climate Change (March 2007)

Klinckenberg, F. & Kipperman, A.
Pre-Evaluation report (May 2007)

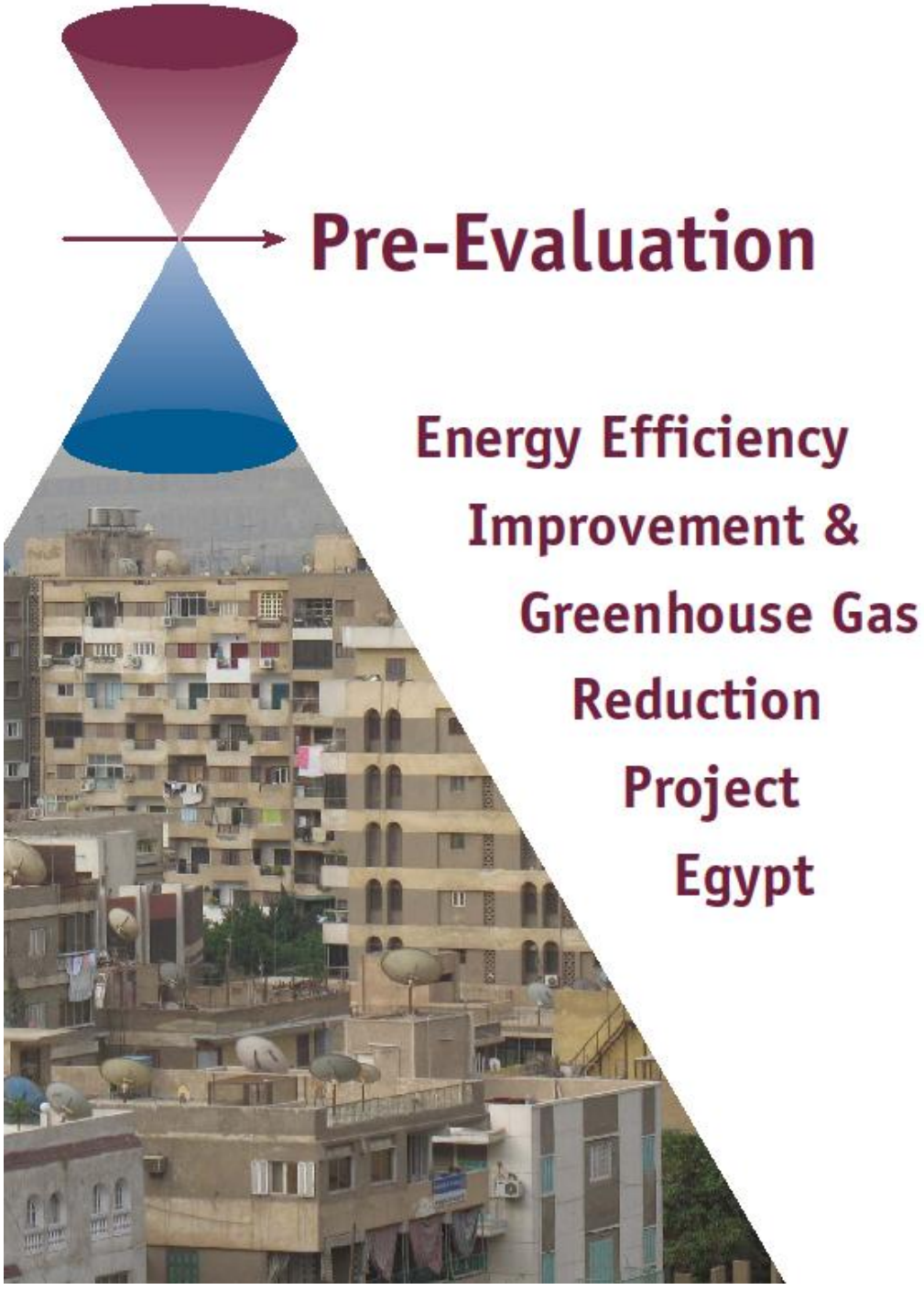
Mobarak, A. & Lucas, N.
Mid-Term Evaluation report (January 2002)

Risby, L.A. & Genana, T.
Joint-Evaluation of GEF Small Grants Programme, Egypt Country Report

UNDP Project Document
GEF Proposal for Review
Energy Efficiency Improvements and Greenhouse Gas Reduction (1999)

ANNEX C. PRE-EVALUATION REPORT

The Pre-Evaluatiuon Report (Klinckenberg & Kipperman, 2007), on which this Final Evaluation builds, is attached in a separate file.



Response to Comments

A draft report was circulated among UNDP CO, UNDP RTA and the NPD/PMU on 10 May 2007. Comments were received and addressed as follows:
- Vesa Rutanen (20 May 07): overall agreement, request for adding a review of the MTE to the pre-evaluation report. A separate section was added top the report addressing the MTE (circulated 24 May 07). Response on 1 June 2007 indicated overall approval, and suggesting a comparison of the draft report with the new section to clarify some minor inconsistencies. Addressed in the final report.
- Ibrahim Yassien (31 May 07): comments regarding some aspects of the evaluation report. Comments partially refer to follow-up actions initiated in response to the pre-evaluation, and partially to some misunderstandings of the pre-evaluation comments. See also discussion below.
- Mohamed Bayoumi (1 June 07): comments regarding some aspects of the pre-avaluation report. See also discussion below.

Response to Comments by Vesa Rutanen (UNDP RTA)
An additional section was added to the pre-evaluation report discussing the mid-term evaluation. Later, a comparison was done of the comments made there to the remainder of the pre-evaluation report to clarify minor inconsistencies between the old and the new text.
The addition was also circulated among the UNDP CO and PMU. No comments were received.

Response to Comments by Ibrahim Yassien (NPD)
The response by the PMU indicates an overall appreciation of the recommendations made in the draft report, demonstrated by various comments detailing what the project has initiated following up on some parts of the pre-evaluation. This is an encouraging sign. Wider efforts will further benefit the project, however, and it is encouraged that the project acts on the full range of recommendations made in the pre-evaluation report.

Further, some comments were received that seem to indicate a misinterpretation of parts of the pre-evaluation report. Examples include a comment about the project having to adopt ISO test standards (for appliance S&L), while the comment dealt with the required follow-up to that adoption; a comment questioning the evaluator's observation that the building code was too complex, while also indicating that the code will be simplified, actually supporting that observation; and a comment reminding the evaluators of the fact that no CO_2 and energy impacts were expected for a specific output, which was actually reported one line above the text in question. Detailed clarifications have been added in an annex to this note.

Overall, none of the comments indicate errors or inconsistencies in the pre-evaluation report, and no changes have been made in response of it.

Response to Comments by Mohamed Bayoumi (UNDP CO)
UNDP CO indicates it appreciation of the pre-evaluation report, and urges the PMU to start promptly in implementing the recommendations. Further, some detailed comments are made and considerations regarding future activities discussed. These, and a response to the comments, are annexed to this note.

Detailed responses to comments have been circulated separately to UNDP CO, UNDP RTA and NPD/PMU

Detailed Responses[19]

Document: All-comments.doc (Dr. Yassien, 31 May 07)

Detailed responses are written in red

Component 1: Objective 1:
"Reduce Transmission Losses"

The reduction of percentage losses from 7.01 to 4.61 during the period from Sep. 2001 to Nov. 2001 was due to:

-The erection , repairing and put in service of capacitor bank in high voltage and medium voltage network. (about 355 MARs)
.Supervision of capacitor status in the network.
-Re-distribution of transformer load.
-Remedy of the hot points due to the loose of cable connection and transmission line connection.

Response: the gradual decrease in the next period from Jan. 2002 until Jan. 2004 should be discussed in terms of activities as well.

Component 1 : Objective 3:
"Network Analysis and Control Strategies"

Regarding the implementation tasks which were done during the period from 1999 until 2005 in the GEF Project. The following had been studied;

-Definition of the list of single conductor transmission lines of Egyptian unified network, and it was recommended to be replaced by bundled conductors and by adding a new metal single conductor.

Single conductor transmission line disconnection for reinforcement purpose and the influence of the voltage violation and lines over loading was studied.

-Definition of the reactive margin available of the generators, for that the operators have to know the reactive generation of the generators in terms of the voltage 011 the network side.

By using a simplified calculation, It is possible to reduce, from the reactive capability curve, the value of the reactive generation available on the network side respecting the voltage limits of the generator.

-Definition of the reactive power compensation equipment on the weak points in Egyptian unified electrical network which may be more effective in providing the required V AR supported by using power system simulation and optimal power flow programs application for optimization of shunt V AR values and location in order to improve the network performance.

The strategy for the Egyptian unified power network, all the above recommendations were taken into considerations; for that:

[19] This note was prepared by Ton Kipperman, supply-side evaluator (sections Reflection on Selected Sections of the Project Document; Component 1: Loss reduction, Load Shifting and Load Management in the Unified Power System; and Component 3: Co-Generated Power) and Frank Klinckenberg, demand-side evaluator (sections Management Report, Component 2: Energy Efficiency Market Support).

-The replacement of single conductor by bundled conductor to be started according to schedule time.
-The capability curve limits were taken into consideration especially in the new power stations.

-The 800 MVARs capacitors were added in the Egyptian unified network as shown hereafter;

.Shunt V AR capacitors bank 200 MV ARs in Cairo 500 substation.
.Shunt V AR capacitors bank 400 MV ARs in Cairo East 220 kV substation.
.Shunt V AR capacitors bank 200 MY ARs in Mansoura

Component 1, Objective 4
"Load Shifting Achieved Through TOU Tariff"

Observations
Second Item: "The other actors ……. to a success regarding all the outputs and in particular output 4.4. "

Comment: Output 4.4 (Financial analysis) has been fully covered in the interim reports through the evaluation of impact of load shifting on generation expansion plan and marginal cost.
TK: Response: The crucial element in the TOU tariff is still the lack of substantial incentives for the user to apply to this TOU tariff. This lack of incentives should be handled in the coming months.

Component 2 Objective 2

"(Energy Efficiency Standards"

Comments

- Standard and label development has followed a well-established model, and test standards and the energy performance methodology has been brought in line with that of a the European Union, the main trade block most relevant to Egypt, and other Arab Mediterranean countries. This is a recommended strategy for traded products for a smaller economy.

  It sounds that the Egyptian standards and labels behave good. Regarding that the followed policy is recommended for a smaller economy, the surrounding circumstances make it inevitable for the standards team to be in deep consistence with the related Egyptian economy; especially that concerning the local manufacturing capabilities.

Response: The comment describes one aspect of S&L development; an overall conclusion should be based on all aspects. The remainder appears to be a statement rather than a comment

- Unfortunately, the logical sequence of standards and labels development (first test procedure, then energy performance methodology, thirdly standards and labels energy performance thresholds and finally standards and labels regulations) was interrupted by the revision of test procedures. Logic defines that the collected energy performance data and standards and label class thresholds should then be revised, which has not yet happened.

This situation was the recent compliance case as per the international agreement with the ISO standards compliance protocol that make it necessary for the Egyptian standards to be in complete conformity and harmonization with the International standards.

Response: The comment doesn't question the logic of harmonising Egyptian standards to ISO ones; it would actually have benefited the project if Egyptian test procedures had been harmonised from the onset. For clarification: ISO deals with test procedures (also known as test standards), not compliance protocols. What is commented on is that following the harmonisation with ISO test procedures, subsequent steps (energy performance calculation, label and standard threshold values) have not been updated. That would have been required (and still is).

- Further, while the development of standards and label class thresholds based on the distribution of energy performances of products on the market is a good approach, careful consideration should be given to achievable performance levels in the medium term in the country. If a country is following, rather than leading international S&L developments, this might include a comparison with levels in other economies. Had such a comparison been made, it would have shown that refrigerator / freezers S&L levels are set at rather poor energy performance levels, implying that the country is capturing only a small share of potential energy and energy cost savings, and for washing machines at too ambitious levels which are difficult to meet even for good products. This also limits the effectiveness of the policy.

Unfortunately, the local manufacturing capabilities as well as the Egyptian policy makers deeply limit the targeted trend aiming to raise the lower energy performance. It was inevitable to take these into consideration, especially in the environment of Egyptian territories that is considered one of the developing countries in the region. It is also to be considered that one of the main targets when developing these standards is to optimise the market share of the local manufacturers and not to weaken their business, especially at the first years of the standards application.

Response: The evaluators do not recommend that the project tries to force local manufacturers out of the market, but that a careful comparison takes place between standards and label levels in Egypt and in other countries. Refrigerator market data shows that Egyptian manufacturers were already capable of producing products consuming approx 50% less energy than the standard requires even before the project engaged in developing S&L, and there's no reason not to strengthen the standard to at least the best level already observed in the market, especially when the difference between energy performance in Egypt and other countries is so large (for example, the Egyptian standard allows energy consumptions approx four times as high as the Tunisian standard does, although both countries standard their S&L work at about the same time). Not capturing this potential actually may harm those Egyptian manufacturers that invest in the energy performance of their products, as this is currently not recognised in the S&L regulations. For washing machines, the situation is quite contrary: the standard is so ambitious that no manufacturer can build an A or B-class machine, and only some a C-class machine. If there was proper compliance checking, it is most likely that a very significant share of washing machines currently sold in Egypt would not be allowed on the market, putting many manufacturers out of business. The observed situation has nothing to do with giving manufacturers adequate time to respond to new regulations, but simply reflects ill-founded decisions about standards and labels threshold-levels.

- The Egyptian energy performance regulation for washing machines does not include a wash performance test, nor a specified minimum wash temperature (only a nominal wash temperature of 60^{o}C, which does not necessarily correspond to the actual wash temperature). As there is an important trade-off between wash performance and energy performance for

washing machines (lower temperature = lower wash performance, but higher energy performance), this is a critical loophole in the procedure.

It is important to identify here that the Egyptian energy efficiency standards of the washing machines include all the required parameters related to energy efficiency and that all the tested washing machines should first pass all the requirements included within the Egyptian performance standards that comply with the IEC 60456/2003 + Cor 1/2005 requirements. The Egyptian policy in the area of appliance standards' is targeting to merge both the energy efficiency and performance standards in one bundle to be titled as "Energy-Performance Standards" for all the past as well as the targeted residential appliances.

Response: It is not clear if the comment relates to energy performance or wash performance; the evaluator's comment dealt with the interaction between the two. IEC 60456 includes wash performance test procedures, but no standards that have to be met. It would be good if future regulations include a combination of energy and wash performance requirements, but the current regulation does not, thereby creating an important loophole in the regulation. This is what the evaluator's comment was about.

- For refrigerators, the test is based on an average of temperatures achieved in various parts of the product's interior, without a limit to this variation. Some other procedures (e.g., EN 153) require that the refrigerator's interior is below a defined maximum temperature during the whole test, thus benefiting products that maintain low temperatures everywhere in the products (which is an important quality aspect of refrigerators).

  The Egyptian energy efficiency standards for refrigerators takes into account the temperature requirements of both the cabinet as well as the freezer and determined the temperatures limitations for all the climatic zones; for tropical, subtropical, normal, and subnormal. The Egyptian standards stated multiple locations in either the cabinet and the freezer to check for all temperature limitations for the entire refrigerator. Not only this, the Egyptian energy efficiency for refrigerators relies all the energy consumption levels on the temperature condition for all the tested refrigerators to pass the test.

  Response: That is all very well, but the evaluator's comment relates to the fact that the test procedure currently in use allows a product to have large temperature differences within the refrigerator cabinet, and relates energy consumption only to the average temperature in the cabinet. This benefits refrigerators that have for example little insulation on one side, and more on other sides (where it is cheaper), or that do not properly control the internal air flows. As consumer will need a refrigerator that keeps all food cold enough, and not just a part, this is a loophole in the procedure benefiting some lesser-quality products.

- There is no evidence of a compliance checking procedure for correct label presence in shops. For an energy labelling programme, it is essential that label presence is regularly monitored, including if labels are correctly placed (well visible on top or front of appliance, original colour label, label matching product etc). Experience tells that shop owners need some encouragement to achieve good labelling of products, especially in the first years of a labelling programme. One option is to regularly check shops, with increasing severity of responses to non-compliance (e.g., information provision; informal warning; formal warning; fine; increased fine etc).

  It is important to denote here that the Egyptian standards included at its ends the related context of the energy label that regard the denoted residential appliance. This was done in the form of "Amendments" at each earlier standard, while that trend became as a real part of the standard for the following residential appliances.

Response: This comment is not clear. It does not seem to relate to compliance checking, so it is not further discussed.

Regarding the absence of compliance checking for the energy labels as well as the testing values of the consumption levels for the residential appliances, it is remarkable to denote here that the coordination absence among all the related parties contributes to some extent for the existence of such case in Egypt. In such an environment, it was hardly difficult to avoid such case, where it became out of the control to behave so. On the same trend, it was clearly remarkable that this negative situation is the same at some other developed countries. For our Egyptian energy standards and labels to be optimised, maximizing the awareness of the related parties, especially the policy makers will certainly facilitate the targeted trend to be into effect.

Response: The comment is not clear. It seems to suggest that the compliance checking difficulties are a result of (1) insufficient communication between parties and (2) that Egypt is a developing country. It also seems to suggest that awareness raising will solve the issue. Maybe there is insufficient communication between parties, although findings suggest that there have been various interactions, and it is true that compliance checking in other developing countries is often not properly arranged. None of this, however, is relevant. The compliance checking for product energy performance that was introduced, in collaboration with various parties, includes a major loophole that can easily be fixed. That other developing countries are not doing a good job does not imply that Egypt should settle for a negative situation.

Recommendations

- Check test procedures for minor differences with ISO / IEC, and upgrade details if needed. It might also be useful to check with more recent test procedure and laboratory practice standards developed in Europe (for EN 153 and IEC 60456), that aim to limit test variations by refining the test procedure. These have not yet been formalised by ISO / IEC, but are in the approval process. Details are forwarded separately to the PMU and NREA.

- Compare standards and labels thresholds internationally, against those of major economies (US, EU, China, as appropriate) and neighbouring countries (Tunisia, Turkey, Saudi Arabia). Revise standards and label thresholds to lower energy consumption levels for refrigerators, to push the market forward, and to higher energy consumption levels for washing machines, to have a realistic standard and label. For air conditioners, a comparison especially with the Chinese energy standard and label might provide future directions. NB Similar comparisons are recommended for standards and labels under development also.

- Develop testing experience and preferably perform comparative testing with a leading laboratory (e.g., one that has extensive experience with the relevant test procedures and is involved in test procedure development). Research has indicated that accurate testing not only relies on a good quality lab and following test procedures to the letter, but also to having experience in practical aspects of testing, like to placement of a test load (for refrigerators).

- Improve the selection procedure for compliance testing of products. Since appliance standards and labels are issued for a product line (usually characterised by a name + unique type number), there is typically no need to test a large number of products (this is a manufacturer's responsibility), as long as there is a realistic chance that products on sale are regularly subject to random sampling of products (in shops or manufacturer's warehouses) that are then tested. A compliance checking procedure should also include substantial punishments for manufacturers reflecting that a non-complying product represents a product line rather than a single appliance. The Danish compliance testing procedure might provide a good model for this.

- Introduce a structured procedure for checking label presence in shops, including a calendar for shop visits, a check list for inspectors, and enforcement steps of gradually increasing severity.

- Communicate about labels, preferably in collaboration with utilities (e.g., with the energy bill), manufacturers (label information in advertisements) and retailers (in advertisements and information in shops).

- Collect data on the sales of appliances per label class per year (from manufacturers and customs), the number of appliances in use in households (survey), the number of sales to replace old appliances and first-time purchases (survey), and preferably also some indicative measurements of the energy consumption of appliances in use (e.g., using simple wall plug meters in a number of households and for a variety of older and newer products). With that information, a fairly reliable current and expected impact of S&L can be calculated for the final report of the project.

Impacts

- Planned impacts of energy efficiency standards were 1.24 Mtoe and 3.4 Mton CO_2 per year, based on a calculation of savings to be achieved by standards for industrial lighting and combustion control, two products that are not mentioned in the project strategy.

- Expected impacts of the standards and labels for refrigerators / freezers, washing machines and air conditioners are probably low, as both the refrigerator / freezer and washing machines standard and label in their current form are likely to have a minimal impact on the market. After revision (as recommended), these S&L could have a substantial impact, which needs to be demonstrated by a careful monitoring of market impacts.

Response: No comments observed, so none addressed.

Component 2, Objective 3
"**Energy Efficiency Building Code"**

- The developed energy efficiency building code includes lot of aspects due to the fact that this code is the first one to be prepared and was not familiar to all concerned stakeholders, therefore the detailed content were required to assist them in a more understanding of this code.

Response: It would make more sense to keep the first version of the code simple, and introduce more complexities only later on. If more understanding of EE issues need to be developed with stakeholders, than this should take place via training, guidebooks etc, not via a mandatory building code.

- The available energy guide book for enforcement of the energy efficiency building code is an important document to facilitate the understanding of this code.

Response: This is fine, but it does not take away the fact that the current code is hugely complex, including elements that are not included in most OECD countries with long traditions in regulating building energy efficiency.

- Comparison between the international code and the Egyptian energy efficiency building code has proved that this code has achieved the required target and the application will be more simple with the periodic update

Response: This comment is not clear. What comparison, target and update are referred to?

- Regarding the natural ventilation, the code includes a special chapter concerning this topic.

Response: Noted. No evaluator comment was made about this, and none seems to be needed.

- The code includes detailed information on air conditioning and artificial lighting systems, to assist engineers in the design of energy efficiency equipment during the next period (three years) for any code modification

Response: Evaluator comments dealt with the introduction of requirements for the placement of lighting fixtures in residential buildings, which are highly unusual (and probably impossible to enforce). Apart from this, a code is intended to set a minimum standard for the current period, not to guide code modifications.

- In any case , we expect that the next version of the code will be summarized and more simple.

Response: This seems to support the evaluator's claim that the current code is too complex, and in need of simplification. It would be better, however, to simplify the code earlier.

Component 2, Objective 4
"Energy efficiency Centre"

Status Quo

Third Item: "Some basic Integrated Resource Planning (IRP) ….. . This, however, is a rather limited IRP approach."

Comment: The status report sent to the Consultants (evaluators) indicate the big efforts made by the project to develop the planning capabilities in the context of integrated resources at the regional level (Distribution Companies level) by providing training and PC spreadsheets on IRP, demand forecast, DSM planning and to the Generation Companies on IRP and supply-side planning. The Distribution Companies planning staffs are now capable of carrying out demand forecast at their service territory level and transfer these data to the Egyptian Electricity Holding Company to develop demand forecast at the total country level.

Response: The latest PIR report states: "The center has been created within the project premises. A database for large consumers and audit customers has been prepared. The big customer's data are regularly updated and indices are communicated to DCs for improving their performance. The project website has been developed and issued under www.eeiggr.org". Other reports indeed indicate that demand forecasting has been introduced. This, however, is only a very partial way or integrated resource planning (and perhaps not even part of it). IRP is characterized by a comparison of the full cost of generating power versus the full cost of conserving it, which has not been observed in this project.

Impacts

Second Item: "No impact is observed, ……."

Comment: I would like to refer to the statement made by the Consultants (evaluators) "This objective was not supposed to deliver energy or CO_2 impacts …" as mentioned under the section titled "Comments".
The impact of the center is information dissemination especially for the ESCO's to facilitate project implementation as well as raising the awareness of different stakeholders.

Response: The comment is based on a partial reading of the evaluator's comment. The fact that no CO_2 or energy impacts were expected is clearly stated in the pre-evaluation report. The full comment reads:
"Impacts

o No energy savings and CO_2 emission impacts planned for this objective, but 'increased consumer awareness and
strategic actions by public and private sector energy market participants'.
o No impacts observed, although it is not clear which impacts should be observable from the planned activities
other than the existence of an operation energy efficiency centre collecting data and planning strategic actions."

Component 3
"Cogeneration"

- Concerning - Agricultural waste study:

Every year Egypt is facing the problem of burning around 2 million tones of rice straw and cotton stalk, causing very negative environmental impact. Several studies made by the Ministry of Agriculture and Egyptian Environmental Authority Affairs (EEAA), but no serious actions have been taken. The project study presents an alternative solution for utilization of these wastes for on-site cogeneration as experienced in many countries such as Denmark, India and Brazil.
One of the important outcomes of this study is to show that such type of CHP could be cost effective if the electricity selling price is quite reasonable.

- Concerning other issues:

Generally, we confirm that the existing barriers, such as the current tariff, the lack of incentives and the lack of awareness of decision makers as well as the absence of national strategy for the promotion of cogeneration; lead to the lack of interest and investment climate for cogeneration. All these things had, to some extent, a negative impact on the project activities.
Response: Still the main advantage of co-generation is the profitable use of heat and the selling of the easily transportable electricity to other places where it can be used profitably. So if one of these two profits are not or weakly present co-generation looses most of its advantages. This is already stated in the note on CHP presented at the pre-evaluation visit.

Document: Email by Mohamed Bayoumi (1 June 07)
All responses in red

1. You have mentioned that the total period of the project was double the planned duration which you have attributed basically to the wide and complex scope of the project and inadequate planning of activities needed to achieve results while I would add to it that the nature of the policy and behavioral changes in this country usually takes much longer than normal time in other countries to be achieved. You have noted also that the project was a kind of wake-up call for the government and the electricity sector which both are more interested in energy demand reduction and efficiency than prior to the project which I can consider as the major capacity building achievement for the project and this change in the mind setting is currently stimulating subsequent actions that have started and will continue with a growing momentum even after the end of the project and that will obviously be boosted by the current revision process of the energy prices on the national level. Given that change takes longer in Egypt, I believe that the stretched project duration, thus keep on nagging and reminding for a long time, was in itself a reason for the twist in the mind of practitioners that was noted by the evaluators. In this regard, maybe this point could be useful to the GEF in designing new projects that take into consideration the time factor of persistent advocacy for new ideas to the decision makers and the society can be an important factor in achieving the final result. In this context and based on this experience, maybe you would like to give the GEF-UNDP your insights if the project funds were used effectively and wisely along the stretched period or not to achieve this mind setting change. Or alternatively would it have more effective to divide the project into several phases that would allow revision of the concepts and objectives between the different phases to give the same time effect. Or a third alternative to give the country one opportunity of limited short duration, if it can not grasp and push the idea close the project.
Response: A complex issue that probably would benefit from a more elaborate discussion than can take place here.
From a project management perspective, the situation of the country should be taken into account when designing a project, and as such not recognising the complexities involved in changing the mind-set and behaviour of decision makers should be considered a planning error.
Further, the project has many characteristics of a programme that would not fit a project (including a wide scope, variety of targets, need to address a dynamic situation etc). The GEF typically supports projects, and from that perspective it might be best to limit the scope of projects to something more manageable, also in complex environments. Several projects could be initiated sequentially or in parallel, and UNDP could promote cooperation and joint learning / policy outreach (although the latter is difficult without a mandate to coordinate implementation).
If a large scale, wide scope programme is preferred, it would certainly be beneficial to manage it as a programme, with a combination of long-term general capacity building / awareness raising activities and short-term targeted projects, started and stopped when and as needed. That, however, requires a different management and financial structure and might not fit well with GEF-structures.
Overall, the efforts needed to drive a country from no attention for energy conservation to a fully operational structure for this can hardly be overestimated, and it should not be expected that any single project can achieve this.

2. You have noted that there was no GEF Project Brief available which should have been available at the project and UNDP CO, which implies a kind of negligence. Despite the fact that I was not working for UNDP at the time of formulation and design of the project, I would like to clarify that at that time, it was UNDP HQs that was handling the GEF project preparatory phases including contracts with the consultants not the CO. This means that CO was not involved in the GEF project approval process but they receive the final product which is the project document and this may explain why there are no copies in both places at least in digital forms. Nevertheless, I will search in the old archives maybe I will find a hard copy if it is important to be

existing. Likewise, you were not using a draft MTR report but I remember that in 2002 it was required that the official submission of the final version of report has to be in a hard copy not the soft copy, thus soft copies were only used to be circulated for review only. Nevertheless, I also recall that the final draft of the report was accepted with minor corrections that were done in the digital document so it was just the matter of changing the status of the report on the cover page which I agree was necessary to be done for digitally documenting the final product.
Response: You are correct in stating that at the time, RTAs prepared project briefs and discussed with the GEF. In the meantime, we've learned that a version of the project brief is available in PIMS, so you might want to look there first. It is not clear whether this is the final version, though.
In any case, it seems to be reasonable to expect that a CO asks for a copy and takes a look at the document that was used to ask for millions of GEF funding, and to take note of what was specified there. This is also relevant as the brief often (though maybe not always) was subject to STAP review and this usually gives valuable recommendations for the design and implementation of the project.

3. A minor correction in Page 7 under the first comment, the electricity consumption increases by 8% while actually the population growth is less than 2% which is one fourth the electricity consumption increase not half the figure.
Response: Thanks for the correction.

4. In page 10, the comment related to the knowledge obtained in the Alexandria, I can confirm that in the first steering committee meetings that I used to attend, Alexandria Distribution Company was the model that the Chairman of EEHC was using to stimulate the interest and promote other distribution companies to follow. Meanwhile, the project capitalized on the knowledge in Alexandria and most of first audit implementations in this project cycle were actually in Alexandria which was receiving a special attention from the project.
Response: We missed reference tot the lessons learned in Alexandria both in the documents and in particular in the discussions we had. As an example items raised during the visit of Cairo South Electricity Distribution Company have been experienced earlier in Alexandria.

5. In Page 13, it is recommended that in the response to the inability of the GOE to implement TOU that the UNDP should have suspended or terminated its support to the project. I would like to clarify that this issue was raised in several meetings between the UNDP RR and the Minister of Electricity who has indicated that it is in the interest of his Ministry to implement this measure but the cabinet is trying to seize the best opportunity and timing for enforcement as it is a political decision with serious socio-economic impacts. While, I acknowledge the importance of continuous UNDP advocacy but suspending the project for just one element was not implemented to put pressure on the Ministry to do something that is beyond its control is not the straight forward decision that could have jeopardized all the other gains of the other components.
Response: The observation actually relates to many decisions that need to be taken by the GoE, whereby TOU tariffs are an example. While recognising that it might be a bit too drastic to suspend a project for not adopting this tariff, the lack of adoption of many regulations (e.g., TOU tariffs, cogeneration requirements, price reforms) and significant delays with other regulations (e.g., building codes) have had a rather significant impact on the project and would have justified more drastic measures. We do not agree that it is relevant that decisions were beyond control of the Ministry; GoE was party to the project, and the Ministry only as executing party.

6. In page 24, I tend to agree with the finding that the current loan guarantee programme implies that ESCOs are able to implement EE measures if they are only able to provide an attractive financial package that can suggest a lack of interest of end users in EE more than lack of budgets. For this reason, I would not look at the loan guarantee programme with its small budget as the ultimate mechanism for funding energy efficiency projects but I would look at as an effective as

an awareness component to verify the economic benefits of the energy efficiency project for a diversified nature of projects and build capacity for all partners involved. Hence, this could be an interim mechanism that might need to be strengthened to achieve its objectives in targeting the largest number of participants and sectors then phase out after financial institutions and end users understand the dynamics of energy efficiency projects. In this context, I would compare it with the GEF SGP revolving funds on CFLs which has succeeded in expanding awareness and enabled testing of CFLs rather than a financial mechanism to support wide sales of it

Response: We seem to agree on the loan guarantee mechanism. My concern with using this as an interim model is that project-based loans to support undercapitalised ESCOs probably is intrinsically unsustainable. The CFL loans actually can be considered an intrinsically good solution, as this targets users who lack funding to purchase more expensive lamps and the activities are very difficult to finance through normal commercial loans. Further, it has probably been successful in expanding CFLs sales considerably (whether it also has contributed to improving normal market availability is not clear).

7. The comments on the national standards of freezers and refrigerators sound logical and can be a step that should be followed by other steps to improve the quality of national production. However, I am actually surprised with the finding on the washing machines efficiencies and given the fact that the standards were reviewed by more than one international consultant in addition to the manufacturers, I believe that there could be miscommunication in conveying the test procedures to the evaluators, as suggested in the project response. Nevertheless, maybe the solution resides in Benoit's suggestion to move into applying international testing procedures. Meanwhile the coordination efforts in development of the labels that involved three ministries was really high while the project is still exerting effort for coordinating enforcement that will involve more than one ministry again and there are some promising signs in last meetings and workshops.

Response: There's probably no miscommunication, as the same observation (about no machine being better than D-class) was already included in NREA's presentation of results so far and the results observed while visiting the test facility further confirm this. Two possible explanations come to mind: (1) consultancy was just not very good (there's a lot of information suggesting this); (2) original data collection was based on an older test procedure, which was not updated after revision of the test procedure. As performance data is only valid for a specific test procedure, this undermines the validity of results. Probably, both factors were at play. NB test procedures are now harmonised to a large extent. It is good to see that compliance checking is high on the agenda.

8. I wonder if the Regulator has discussed with the evaluators the ongoing review of the energy sector policies and regulations and if this is the case, I would have liked to know your predictions of the size of impact of the change of the status quo on the energy efficiency project promotion.

Response: No, these were not discussed

9. I would like to note that although funding was provided from the UNDP Energy Thematic Trust Fund for establishing the testing laboratories, the contribution of NREA in infra-structure and software, although still ongoing where we don't know the exact figure but could reach about 50% of the total cost of the laboratories.

Response: Noted. We suggest that this amount is tracked as precisely as possible, as it will be an important element in the final evaluation. We'll add a note about the in-kind contribution on page 17.