FINAL EVALUATION

of the UNDP/GEF Project

"Lebanon - Cross Sectoral Energy Efficiency and Removal of Barriers to ESCO Operation"

(LEB/99/G31, Atlas 13385, PIMS 1188)

The Lebanese Center for Energy Conservation (LCEC) Project

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This Final Evaluation of the UNDP-GEF project 'Lebanon - Cross Sectoral Energy Efficiency and Removal of Barriers to ESCO Operation' was carried out between January 10 and February 28, 2011.

This Final Evaluation has been conducted for the United National Development Programme by Dr. Adil LARI (Waehringer Strasse 115; A-1180 Vienna; e-mail: lari@acegroup.at)

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ABBREVIATIONS AND ACRONYMS

A/C	air conditioning
APR	Annual Project Report
AWP	Annual Work Plan
CDM	Clean Development Mechanism
CEDRO	Community Efficiency and renewable energy Demonstration Project for the Recovery of Lebanon
CDR	Council for Development and Reconstruction (Lebanon)
CFL	compact fluorescent lamps
CO	Country Office
CO_2	carbon dioxide
DSM	demand-side management
ECM	energy conservation measures
EdA	Electricity Utility of Aley
EdL	Electricity Utility of Lebanon
EdZ	Electricity Utility of Zahle
EE	energy efficiency
ESCO	energy service company
EU	European Union
EU-IPP	European Union Investment Planning Programme
FSP	Full Size Project
GEF	Global Environment Facility
GHG	greenhouse gas
GoL	Government of Lebanon
IRI	Industrial Research Institute (Beirut, Lebanon)
LCEC	Lebanese Center for Energy Conservation
LCECP	Lebanese Center for Energy Conservation & Planning
LIBNOR	Lebanese Standards Institution
M&E	Monitoring and Evaluation
MED-EMIP	Mediterranean Energy Market Integration Project (EU)
MED-ENEC	Mediterranean Project on Energy Efficiency in Construction (EU)
MEW	Ministry of Energy and Water
MoF	Ministry of Finance
MoHER	Ministry of Hydro-Electric Resources
NEEREA	National Energy Efficiency and Renewable Energy Account
NGO	Non-Government Organization
PCC	Project Coordination Committee
PM	Project Manager
PIR	Project Implementation Review
RE	Renewable Energy
RTA	Regional Technical Advisor
SME	Small and Medium Enterprise
TA	Technical Advisor
FE	Final Evaluation
ToR	Terms-of-Reference
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollars

CONTENTS

1. Executive summary

Brief description of the project

The UNDP/GEF Full-sized Project "Cross Sectoral Energy Efficiency and Removal of Barriers to ESCO Operation - Lebanon" started in 2001 and operationally closed in December 2009. The project was funded by the GEF (USD 3.4 million) with co-financing from Government (Ministry of Energy and Water USD 1.0 million) and other sources (USD 1.0 million.) The project falls under the GEF Focal Area Climate Change (CC) and the GEF Operational Programme OP5: Removal of barriers to energy efficiency and energy conservation.

The objective of the project is to reduce GHG emissions in Lebanon by improving demand side energy efficiency through the creation of a multi-purpose Lebanese Center for Energy Conservation LCEC. The LCEC was intended to undertake barrier removal activities and provide energy efficiency services to the public and private sector industries and to engage in a broad range of supporting activities including information dissemination, awareness programmes and policy analysis and programme design.

The Project was executed by the Ministry of Energy and Water (MEW), formerly the Ministry of Hydro-Electric Resources (MoHER) of Lebanon.

Context and purpose of the evaluation

This Final Evaluation has been conducted on behalf of the UNDP in accordance with the UNDP/GEF Monitoring and Evaluation Policy and with particular attention to whether GEF minimum requirements have been met. All full and medium sized projects supported by the GEF are required to undergo a Final Evaluation upon completion of implementation.

Main conclusions

The evaluator concludes that the outcome of the project is overall positive and that the project's performance – both with regard to managerial and financial aspects as well as with regard to content and results – was good. The project's impact in Lebanon is clearly evident.

Relevance
The project was able to create a real momentum for energy conservation in Lebanon. The project was strategically sound and the LCEC continues to create significant impact as the national focal point for energy conservation and renewable energy after the project closure. The project promoted locally relevant energy conservation and renewable energy measures on a broad basis through a variety of activities and was able to attract the enthusiasm of diverse stakeholders. The effectiveness of the project is evident in the numerous programmes and initiatives still being developed and implemented by the LCEC.
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In the period between the design of the project (1999) and its completion (2009) the relevance of the project has increased considerably. The awareness, capacities and mechanisms resulting from the project are clearly showing sustainable results.

Management
Problems in the initial implementation period (2001-2004) caused significant delays. Following intense coordination between UNDP, the new Project Manager and the Project

Coordination Committee, the project was able to develop quickly and activities were implemented in an efficient manner. The early delays essentially resulted in a project re-start in 2005 and the shifting of the project close to 2009. In this respect, the project team as established in 2005 is commended for their engagement and management skills. Communication between the LCEC team, UNDP and the diverse stakeholders was exemplary. Stakeholder recommendations and suggestions were well integrated.

Performance
The project was able to achieve the project objectives on a broad basis. In particular, the LCEC was established as a non-profit organization linked to the MEW and it continues to operate after the project maintaining a high level of quality and capacity. The project was successful in establishing the USD 11 million NEEREA financing mechanism, in boosting EE/RE markets, and significantly raising awareness of government and the general public.

Financial
The project was not closed financially at the time of this evaluation. Despite initial delays and extensions in project implementation, the project has retained a budget of GEF funding of some USD 500 000 which is planned to be applied towards a EE financing mechanism (NEEREA). Co-financing was achieved as planned and investment leveraged by project funded audit activities is estimated at USD 1,3 million.

Project Rating

Project Formulation	
Implementation approach	Satisfactory
Stakeholder Participation	Satisfactory
Project Implementation	
Implementation approach	Satisfactory
Monitoring and evaluation	Satisfactory
Stakeholder participation	Highly Satisfactory
Results	
Attainment of objectives	Satisfactory
Sustainability	Satisfactory
Overall Rating	**Satisfactory**

Recommendations

Actions to follow up or reinforce initial benefits from the project

1. The LCEC should remain the official representative of the Lebanese Government in matters of Energy Efficiency and Renewable Energy. In order to retain the high quality and motivation of the staff, it is crucial that LCEC retain adequate administrative and financial autonomy from the MEW.
2. It is recommended that the Lebanese government support the LCEC with a budget covering some 50% of its operating costs. The remaining 50% should be secured by LCEC activities.
3. The LCEC should continue to offer training and quality certification of auditors in order to assure fairness and transparency of contracts in light of the upcoming NEEREA financing mechanism.
4. The role of UNDP needs to shift from management to partner. This would open up the possibility that the LCEC works with other international organizations including the World Bank and the EU.

5. A 5 year business and financing plan should be developed for the LCEC to ensure the smooth transition from a UNDP-supported team to an independent agency.
6. The remaining GEF funds (USD 500 000) foreseen for a project revolving fund should be part of the NEEREA financial mechanism or can be used to support initiatives to quickly build momentum for the fund.
7. The LCEC should strengthen its role in the collecting and processing of energy data and establishing a comprehensive energy database.

Proposals for future directions underlining main objectives

8. A pilot project should be developed to demonstrate Integrated Building Design and the application of an ESCO implementation model.
9. For future projects, the evaluator proposes more stress to be put on the collection of project data and results on all levels.
10. The LCEC should further develop their competence to cover energy efficiency in other sectors including building, industry, transport and tourism.

Lessons learned

1. Even technically sound projects require the political will and support from the government side for effective implementation. The project implementation period saw a number of national crises and several changes in government. In particular, project outputs dependant on government approvals (Law on Energy Conservation and related legislation to establish the LCEC) were delayed. The lack of official status for the LCEC, up to the end of the project, hindered other bilateral donors (WB, EU) from engaging the LCEC as a government agency.
2. Finding and maintaining the right people in key positions is essential for keeping projects on track and meeting objectives.
3. Sound knowledge and understanding of the local reality is an important aspect of developing solutions. Programmes and financing mechanisms need to be sensitive to the national situation and potential.
4. Identify and apply local strengths in developing programmes. The media campaigns developed in the project were of an excellent quality and attracted much attention.
5. A successful cooperation with a donor can attract other donors. The LCEC project was flexible enough to absorb and support these initiatives.
6. The evaluator considers a major point for the success of the project was the fact that it attempted to address the strong need for energy efficiency in Lebanon through the promotion and support for a select few effective and proven measures. SWH and CFL technologies in particular continue to be the basis of LCEC activities and reputation.
7. The co-operation of UNDP and MEW can be qualified as good. It constitutes one of the major aspects leading to the success of the project. This is a good example for other countries and projects.

2. Introduction

Purpose of the evaluation

The mandate of this report is the Final Evaluation of the UNDP/GEF Full-sized Project, "Cross Sectoral Energy Efficiency and Removal of Barriers to ESCO Operation - Lebanon" (LEB/99/G31) which started in 2002 and closed operationally in 2009.

This Final Evaluation has been conducted on behalf of UNDP in accordance with the UNDP and GEF Monitoring and Evaluation Policy, applying the criteria set out in the Terms of Reference (see Annex 1), with particular attention to whether GEF minimum requirements have been met. All regular and medium sized projects supported by the GEF are required to undergo a Final Evaluation upon completion of implementation.

This Final Evaluation intends to assess the relevance, performance and success of the project. It has three major objectives:
a) To look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals.
b) To identify/document lessons learned and make recommendations that might improve design and implementation of other UNDP/GEF projects.
c) To identify opportunities for follow-up activities or further projects in the region which would support replication and sustainability of project impact.

This Final Evaluation is based on five major criteria as outlined in the GEF Monitoring and Evaluation Policy:
1. Relevance – the extent to which the activity is suited to development priorities and organizational policies, including changes over time.
2. Effectiveness – the extent to which an objective has been achieved or how likely it is to be achieved.
3. Efficiency – the extent to which results have been delivered with the least costly resources possible.
4. Results – the positive and negative, and foreseen and unforeseen, changes to and effects produced by a development intervention. In GEF terms, results include direct project outputs, short- to medium-term outcomes, and long-term impact including global environmental benefits, replication effects and other, local effects.
5. Sustainability – the likely ability of an intervention to continue to deliver benefits for an extended period of time after completion. Projects need to be environmentally as well as financially and socially sustainable.

Key issues addressed

This Final Evaluation focuses on the following aspects:

- Project design and its relevance in relation to:
  a) Development priorities at the national level.
  b) Stakeholders – assess if the specific needs were met.
  c) Country ownership/drivenness – participation and commitments of government, local authorities, public services, utilities, residents.
  d) UNDP mission to promote sustainable human development (SHD) by assisting the country to build its capacities in the focal area of environmental protection and management.

- Performance – look at the progress that has been made by the project relative to the achievement of its objective and outcomes:
  a) Effectiveness – extent to which the project has achieved its objectives and the desired outcomes, and the overall contribution of the project to national strategic objectives.
  b) Efficiency – assess efficiency against overall impact of the project for better projection of achievements and benefits resulting from project resources, including an assessment of the different implementation modalities and the cost effectiveness of the use of GEF resources and actual co-financing for the achievement of project results.
  c) Timeliness of results.
- Management arrangements focused on project implementation:
  a) General implementation and management – evaluate the adequacy of the project, implementation structure, including the effectiveness of the National Steering Committee and Consultative Forum, partnership strategy and stakeholder involvement from the aspect of compliance to UNDP/GEF requirements and also from the perspective of "good practice model" that could be used for replication.
  b) Financial accountability – extent to which the sound financial management has been an integral part of achieving project results, with particular reference to adequate reporting, identification of problems and adjustment of activities, budgets and inputs.
  c) Monitoring and evaluation on project level – assess the adoption of the monitoring and evaluation system during the project implementation, and its internalization by competent authorities and service providers after the completion of the project; focusing on the application of SMART performance indicators.
- Overall success of the project with regard to the following criteria:
  a) Impact – assessment of the results with reference to the development objectives of the project and the achievement of global environmental goals, positive or negative, intended or unintended changes brought about by the project intervention, (number of households benefiting, number of areas with the new technology in place, level of sensitization and awareness about the technology; any change at the policy level that contributes to sustainability of the tested model, impact in private/public and/or at individual levels);
  b) Global environmental benefits – reductions in greenhouse gas emissions.
  c) Sustainability – assessment of the prospects for benefits/activities continuing after the end of the project, static sustainability which refers to the continuous flow of the same benefits to the same target groups; dynamic sustainability use and/or adaptation of the projects' results by original target groups and/or other target groups.
  d) Contribution to capacity development – extent to which the project has empowered target groups and has made possible for the government and local institutions (municipalities) to use the positive experiences; ownership of projects' results.
  e) Replication – analysis of replication potential of the project positive results in country and in the region, outlining of possible funding sources; replication to date without direct intervention of the project;
  f) Synergies with other similar projects, funded by the government or other donors.

Issues of special consideration:

This Final Evaluation reviews and assesses the methodology for calculating CO_2 emission reductions including direct and indirect CO_2 emission reductions resulting from the project.

Considering future development support in the region, this Final Evaluation assesses the support model applied in the project, its implications for the long-term impact and the sustainability of the project results. This Final Evaluation Report also presents

recommendations and lessons learnt for broader applicability for follow-up and future support of the UNDP and/or Governments, highlighting the best and worst practices.

Methodology of the Evaluation

This Final Evaluation was implemented according to the following procedure:

1) Preliminary documentation review:

   The initial stage involved the review of project documentation and associated documents (Annex 5.) The documentation was provided by the UNDP Country Office in Lebanon and by the Lebanese Center for Energy Conservation or collected from the internet.

2) Preparations for mission:

   Through discussions with the current Project Manager Mr. Pierre El Khoury and the UNDP Officer-in-Charge Ms. Jihan Seoud at the UNDP CO, an itinerary for the local mission was proposed and developed (Annex 2.) The interviewees were selected so as to provide a broad sample of the different groups of people involved in the project including governmental and municipal representatives, key actors of the implementing agency, the executive agency and the project staff (the PM and other staff at the LCEC). Additionally, a general interview format for local stakeholders and a specific interview format for LCEC staff were drafted (Annex 6.).

3) Mission:

   The local mission in Lebanon lasted from January 17 to January 21, 2011. The itinerary (Annex 2) consisted of interviews with project management, key stakeholders and beneficiaries. The Project Manager Mr. Pierre El Khoury and LCEC staff kindly assisted the evaluator by arranging interviews.

   (a) Presentation and explanations by the project management team:

   The LCEC made a thorough presentation of the project concept, the project outcomes and the key project results.

   (b) Stakeholder interviews:

   Annex 3 contains a list of interviews completed.

   (c) Field visits to pilot projects.

   (d) Collection of additional documentation:

   Additional data and documents were made available by project management and stakeholders during the mission.

4) Telephone interviews with UNDP staff:

   On Wednesday, February 9, 2011, a follow-up telephone interview was conducted with Mr. Robert Kelly, the Regional Technical Advisor-Climate Change Mitigation, UNDP Bureau for Development Policy EEG/GEF.

5) Data analysis:

   Following the mission, the collected data and opinions were compiled and analyzed. Multiple, sources of information were assessed to ensure an evaluation according to GEF/UNDP Monitoring and Evaluation Policy.

6) Reporting:

This Final Evaluation is based the interviews with the relevant stakeholders as well as the review of available documentation. This Report includes relevant comments and suggestions raised by UNPD, the LCEC and the national stakeholders interviewed as well as the findings and opinions of the author.

Structure of the evaluation

The structure applied in this evaluation is based on a performance assessment approach guided by the principles of Results-based Management. The evaluation tracks impact based on the Logical Framework Approach. The contribution of project outputs and project management is evaluated with reference to the achievement of the project outcomes and overall objective. This Final Evaluation reviews the implementation experience and achievement of the results of the project in question against the Project Document endorsed by GEF, including any changes made during implementation.

3. The project and its development context

Project Summary (as in PIMS and Project Document)

The goal of this project was to reduce GHG emissions in Lebanon by improving demand side energy efficiency through the creation of a multi-purpose Lebanese Center for Energy Conservation (LCEC). The Center, which was expected to be a "soft" and flexible institutional set-up, would simultaneously undertake barrier removal activities and provide energy efficiency services to the public and private sector industries as a set towards becoming an independent, commercially viable private corporation. There was to be a broad range of supporting activities including technical support, financial incentives, information dissemination, awareness programs, policy analysis and program design.

Project start and duration

The Project Document 'LEB/99/G31 Lebanon – Cross Sectoral Energy Efficiency and Removal Barriers to ESCO Operation' included a 5-year project duration with an estimated starting date of August 2000. The Project Document was signed on July 12, 2001 and the first disbursement paid in October 2001. The initial period 2002-2004 saw delays in project implementation and project performance was judged as unsatisfactory. Consequently, the project was essentially restarted with a new project team in 2005. The project operation closed on December 31, 2009 and financial closure is expected in March 2011.

Problems that the project seeks to address

At project start, Lebanon's emissions of the power and industry sector were accounting for 55% of the country's total emissions of CO_2. With an estimated annual growth rate of the power sector of 4-6% per year over the following 20 years, a high potential was identified to reduce greenhouse gas emissions resulting from the combustion of carbon based fuels on which Lebanon's energy production is based. Faced with a lack of long-term strategies for saving energy, the project aimed at assisting re-organization and efficient operation of the energy sector as well as reducing the growth in energy demand by developing energy efficiency and energy conservation measures for sustainable power generation thereby contributing to the mitigation of climate change. It was estimated that through the adoption of end-use energy conservation in the electricity sector it would be possible to achieve an annual reduction of CO_2 emissions of 0.97-1.2%, which would correspond to savings of approximately 12 million tonnes of CO_2 emissions in the years 2000–2020.

In addition to complementing several ongoing national activities, such as assessment and documentation of the energy-demand (GIS mapping and National Control Center) and introducing financial incentives for energy efficiency, the UNDP/GEF project looked at ways to remove barriers to the effective adoption of energy efficiency measures and to restructure the Lebanese energy sector, both public and private.

At project outset, the following barriers hindering the formulation, adoption and implementation of end-use energy efficiency and energy conservation were identified:

Information Barriers:

a) Shortage of data on end-use energy consumption patterns in all sectors of the economy.
b) Lack of documentation regarding the economic, environmental and social implications of end-use energy conservation on a national as well as on a sectoral level.

Awareness Barriers:

a) Scepticism of decision-makers about the social, environmental and economic benefits resulting from the introduction of energy conservation measures and policies.
b) As a result of lack of institutional point responsibility as well as relatively low energy pricing, the level of general and specific awareness and motivation existing among both consumers and industrial and commercial managers towards energy efficiency was relatively low.
c) No general public awareness of issues pertaining to energy efficiency and conservation.

Economic and Financial Barriers:

a) Unavailability of (dedicated) financing schemes or special incentives for energy efficiency initiatives.
b) No local market for energy efficient measures and equipment as a result of insufficient financial incentives.
c) No market for energy efficiency services (audits, ESCOs).

Institutional Barriers:

a) Absence of institutional entity to monitor nation’s efficiency and to design policies and programs to improve it.
b) No explicit national policy existing to promote more efficient use of energy.

Capacity Barriers:

a) Few people knowledgeable of energy efficiency measures in the country and specifically among members of MoHER.
b) Insufficient capacity among relevant Government and private entities to audit, monitor and plan energy efficiency options and interventions.

Immediate and development objectives of the project

The development objective as formulated in the Project Document was:

• Reinforcing the national institutional capacity for the identification and removal of barriers pertaining to energy efficiency and sound energy planning;

• Curbing greenhouse gas emissions resulting from inefficient end-use energy consumption in all sectors of the economy.

The project's immediate objectives were:

Outcome 1: To establish the Lebanese Centre for Energy Conservation and Planning (LCECP), whose main functions would be:

• Providing engineering, financial and marketing services pertaining to energy conservation;

• Strengthening policy aspects and increase public awareness pertaining to energy planning conservation issues.

Outcome 2: To provide necessary engineering and energy marketing services pertaining to energy conservation.

Outcome 3: To assist the GoL in strengthening its policy aspects and increasing public awareness pertaining to energy planning and conservation issues.

The major specific outputs of the project activities were defined to be:

- 300-400 energy audits of industrial plants and buildings: this will include recommendations for specific interventions to achieve verifiable energy savings and recommendations for financing options.
- Specific financing mechanisms to create incentives for investments in energy efficiency interventions and technology.
- An assessment of the Demand Side Management potential by end-use technology, by sector and by energy source. This will include recommendations and strategies (mix of technical, policy and financial) for targeting specific end-use technologies and sectors.
- Policy recommendations (with high level support) for legislative and other action.
- Targeted information materials and programmes regarding energy efficiency based on documentation of cost-effectiveness of energy conservation options for various sectors and technologies.
- Energy efficiency codes and norms for equipment.
- Human capacity to identify and capture energy savings opportunities with technical, financial and policy measures.
- Increased market share of efficient equipment.
- Consumer and policy maker understanding and support for energy conservation.
- National energy conservation plan, under the auspices of national energy planning.

Main stakeholders

Executed by the Ministry of Hydro-Electric Resources (MoHER) which later became the Ministry of Energy and Water (MEW), and Electricité du Liban (EDL) on behalf of the Government of Lebanon and managed by the United Nations Development Programme (UNDP), the project was to be implemented in co-operation with many stakeholders from the public and private sector in Lebanon.

The main beneficiaries of the project, as defined in the Project Document, were:

- Ministry of Energy and Water (MEW) (former Ministry of Hydro-Electric Resources (MoHER)) and Electric Utility of Lebanon (EdL):

  Through the development of a comprehensive energy planning policy as well as the establishment of a sustainable mechanism to manage the implementation of end-use efficiency and conservation measures in various sectors in Lebanon,

these institutions would experience a strengthening of their status. As a result of the reduced energy demand, expenditures and investment costs would be lower.

- Industrial, commercial, and residential energy-users:
  Benefitting from information on energy efficiency information as well as technical assistance provided by the LCEC and offered in the course of energy audits and promotional activities.
- Local and international private sector, as well as local NGOs involved in the business of energy services consultation, design, installation, financing, and management.
- Buyers of new energy efficient equipment available in the market.
- The Lebanese population:
  With its impact on the energy bill, the provision of energy efficiency and conservation services and the increased public awareness that the activities will result in.
- The global community:
  Benefitting from the reduced emissions of GHG.

Results expected

The project targeted CO_2 emission reductions in the range of 0.97 to 1.2% of the national emissions by the year 2020. Through successful implementation of these measures, a reduction of the CO_2 emissions could be achieved corresponding to approximately 12 million tonnes of CO_2 in the years 2000-2020. The project aimed to achieve this goal in a number of ways:

- By the removal of barriers to energy efficiency and energy conservation, an adequate policy and market environment will have been created, as well as the necessary capability to capture existing and emerging opportunities for cross-sectoral energy savings in Lebanon.
- A sustainable public and private institutional point of responsibility will have been established and operationalized to define and implement end-use energy conservation planning and programmes in Lebanon.
- Market forces will have been activated to bring about options for cost-effective energy savings to all sectors.
- Skills with regard to energy efficiency and energy planning will have been developed.

4. Findings and Conclusions

4.1. Project formulation

The Project Document LEB/99/G31 Lebanon – Cross Sectoral Energy Efficiency and Removal Barriers to ESCO Operation was formulated in 1999. The project and its activities were developed according to the prevailing national requirements and development approaches of the period. Since then, UNDP and GEF have harmonized certain requirements for project documents in order to optimize efficiency and effective use of management tools in project implementation. Since this project was formulated, UNDP and GEF have issued and updated requirements and guidelines for developing project logframes, robust indicators and GHG emission reduction calculations.

Conceptualization/Design

The strategy formulated in the Project Document was to establish the Lebanese Center for Energy Conservation (LCEC) as a public corporation offering Energy Efficiency services for public and private clients. The LCEC was to support energy efficiency through several key activity areas; engineering services supporting implementation of Energy Conservation Measures, policy development, identification of financing mechanisms and awareness raising. The activities of the LCEC were varied and complex in that they involved numerous stakeholders and combined immediate short-term and accessible mechanisms (awareness campaigns, audits and financing mechanisms) with strategic long-term mechanisms (policies and standards for EE equipment). The effectiveness of the strategy is evident in the continuing engagement and dynamic of the LCEC after project closure.

Analysis of Logical Framework Approach (project strategy, indicators)

The project is generally well outlined in the project document. The development context, key barriers and opportunities to improve demand-side energy efficiency are clearly identified and treated. Three outcomes are identified as immediate objectives:

1. To establish the Lebanese Center for Energy Conservation and Planning
2. To provide necessary engineering and energy marketing services pertaining to energy conservation
3. To assist the GOL in strengthening its policy aspects and increasing public awareness pertaining to energy planning and conservation issues.

Project Outputs and Activities towards achieving these Outcomes are thoroughly elaborated and a 5-year Project Workplan is included as Annex A of the Project Document. The strategy is appropriate in that it combines various short-term actions which help establish the reputation of the LCEC with long-term measures supporting the development of an energy efficient market in Lebanon.

The Logical Framework Matrix as formulated in Annex D of the Project Document was not appropriately structured to act as a tool for results-based management. The hierarchical relationship between objective, outcomes, outputs and targets as described in the body of the project document are not appropriately formulated in the Logical Framework Matrix.

In addition, although the Logical Framework Matrix includes a number of indicators, these are vague and lack verifiable targets and timeframes.

This lack of targets lent project management little guidance during implementation. Already in the Project Review in 2003, the need for appropriate performance-based tools for objective project Monitoring and Evaluation was highlighted. A well structured Logical Framework Matrix with verifiable indicators and targets would have greatly assisted project M&E and management. Regular monitoring of client investment in the energy efficient measures recommended by the project sponsored audits, in particular, clearly should have been included in the project activities.

The total targeted GHG emission reductions for the project were indicated at 0.97% to 1.2% per year or a total reduction of approximately 12 million tonnes of CO_2 emissions in the years 2000-2020. The calculation was not clearly linked to project activities and timelines and it is not clear what the direct and indirect project reductions would be. Subsequent calculations of project GHG emission reductions during implementation (including that in the 2010 APR/PIR) lack a clear structure for verification.

Lessons from other relevant projects incorporated into project implementation

As discussed in the 2008 Pre-final Evaluation, the strategy to establish a national center for energy efficiency was a common approach for climate change development projects in the 1990s. In Lebanon, the approach was particularly appropriate; the baseline situation in 2000 saw little interest and awareness of EE but a huge potential for its implementation particularly with low-cost and no-cost measures. National reliance on electricity for heating, cooling, hot water, lighting and appliances combined with high utility costs, daily power outages and pollution meant both government and the population were eager for solutions to save energy and energy costs and to reduce reliance on conventional energy systems. The project activities were broad-based with an appropriate balance between short-term programs with immediate benefits and long-term actions which would help support the EE markets in the country.

One key difficulty with such projects is ensuring the sustainability of a center which is dependent on the government at least in part for budgetary support and, at the same time, is operationally autonomous. Although the intent to create a sustained center for energy efficiency in Lebanon is evident in the Project Document, the specific role and financing of the LCEC at the end of the project is not clear; according to the Project Document, MoHER should support the center after the project until it becomes an independent, commercially viable private corporation. In Annex I of the Project Document, it is indicated that the LCEC would ultimately become a private company with partial government support. In similar projects, in order to sustain operational support, there is a tendency for these organizations to be formally absorbed within the structure of the government with a reduced budget and mandate.

Based on the review of all available information, the implementation approach was rated satisfactory.

HS	S	MS	MU	U	HU	N/A
	X					

Country-ownership/Drivenness

The project addressed an urgent need in Lebanon to reduce the high financial burden of fuel imports and high government subsidies for energy and to reduce pollution caused by both public utility and private electricity generation. The project creates a much welcome point of contact for energy efficient activity in the country.

The energy sector in Lebanon faces great challenges on both the supply and demand sides. Lebanon imports some 97% of its energy needs as fossil fuels and the national energy bill amounted to about USD 3 billion in 2007 (up from USD 1 billion in 2001). Although the generation capacity of the national power utility EdL covers only two-thirds of the peak demand, the Government continues to subsidize electricity in excess of USD 1 billion annually placing further stress on an already high national debt. It is recognized that demand-side management, end-use energy conservation and finding alternative sources of energy are viable alternatives to increasing investments in conventional utilities.

The UNDP/GEF project was fully consistent with national measures, and reflected the high priority put on energy within Lebanon. The relevance of the project has increased during implementation.

In the project design, the MEW supports the LCEC with offices and support staff during the project. They engage the LCEC in policy development, studies and programmes. At the end of the project the government was expected to financially support (at least in part) the

continued operation of the Center. During implementation, the MEW engaged the LCEC in policy development and programme implementation (i.e. SWH and CFL distribution.) While the core staff remains under UNDP contract, the MEW continues to support LCEC efforts with additional staff on an as-needed basis after the project.

Stakeholder participation

Because the project was designed more than 10 years prior, it was not possible to assess stakeholder involvement during the design phase.
The project has a challenging integration of sectors and involves numerous and diverse stakeholders. Although it is no longer possible to determine the level of involvement of stakeholders in the project design back in1999, the involvement of diverse stakeholders during project implementation is exemplary. Over 30 organizations actively participated in the Project Coordination Committee meetings from 2005 onwards. The LCEC sought partnerships with a number of key players (government, electrical utilities, banks, broadcasters) and together developed and implemented activities and programs with broad impact. Stakeholders interviewed praised the LCEC for its motivated, goal-oriented and professional operation. Several stakeholders praised the quick responsiveness of the LCEC to suggestions and requests for support and information.

Several key stakeholder partnerships outlined in the Project Document (for example, the implementation of electrical audits by EdL technical staff and close cooperation with the EU-IPP project) did not materialize partly due to delays at the project start.

Based on the review of all available information and in the context of project concept and subsequent implementation, the Stakeholder Participation in project design was rated satisfactory.

HS	S	MS	MU	U	HU	N/A
	X					

Replication approach

The project employed a suitable approach to secure replication of project results after project closure. First and foremost, through the establishment of the LCEC with a continuous mandate and operation after project closure, the point of contact for government, international donors and clients has been retained after project closure. Further, successful cooperation established as part of the project can become the springboard for further partnerships. Finally, through training, qualification of auditors, financial mechanisms and policy measures the project helps to motivate the EE market in Lebanon.

Cost-effectiveness

Lebanon imports 97% of its energy requirements of fossil fuel and electricity generation accounts for some 31% of fuel consumption. Even with high government subsidies (over USD 1 billion per year), electricity is still expensive for consumers and because capacity cannot meet demand, power outages are common throughout the country. At the time the project was planned, energy demand was growing rapidly (4-6% annually). The project concept supported end-use energy conservation as an emerging and economically viable alternative to supply-side expansion. The project aimed to initiate mechanisms that would contribute to transforming the energy-demand market into one that is much more energy efficiency oriented and one where the cost of adopting a more energy efficient approach was economically feasible.

The project and activities relied on diverse stakeholder participation. Specifically, MoHER was expected to provide support to the LCEC during but also after project closure until the

LCEC became an independent and commercially viable private corporation. Furthermore, EdL engineers were expected to provide a large number of electrical audits towards meeting the target of 300-400 audits completed during the project.

The project recognized the significant global benefits which could be achieved by removing key barriers. The adoption of end-use energy efficiency and conservation measures in the energy sector could potentially lead to average annual savings in CO2 emissions of 0.97-1.2 %. In the years 2000 - 2020, such savings could lead to a total reduction of approximately 12 million tonnes of CO2 emissions.

The project focused on removing barriers for cost-effective and proven energy conservation solutions and recognized the great potential for implementation in Lebanon. Enabling activities supported training and quality assurance of EE technologies. The audit programme applied the investment and energy saving potential of the private (and public) sectors as a means of leveraged financing.

UNDP comparative advantage

The project builds upon UNDP's active participation and experiences in projects and programmes supporting energy efficiency, institutional capacity building and human development in the region. In addition, the UNDP is acknowledged for its strong ability to work at the local level with local stakeholders. As evident in this and other projects in the region, UNDP is in a favourable position to assist the country in absorbing international support.

Linkages between the project and other interventions within the sector

The project was well placed in the context of both national and international programmes in the field of energy efficiency. Its connection to national schemes was primarily secured by the position of the LCEC project team within the MoHER offices. The project anticipated the administrative reform embarked on by Government to create a Ministry of Energy from the merging of MoHER and the Ministry of Fuel and Petroleum.

At the time the project was planned, increased Government awareness of demand side issues had prompted the initiation of a number of activities aiming at establishing an effective and reliable basis for the assessment of electricity demand. Foremost, was a National GIS mapping project of the transmission and distribution network initiated in 1995. The first phase of this project (total $3million) covered the central Beirut area; the project was expected to end with a complete national map by the year 2000. Furthermore, a project for the establishment of a National Control Centre which would collect effective and reliable data on electricity transmission and distribution for the assessment electricity-demand and for network load management was also launched. That US$ 26 million initiative was expected to be implemented as of mid-1999, and to be fully operational in early 2002. Moreover, the Billing and Revenue Modernisation Study (total US$ 340,000) planned to assist the GoL to identify mechanisms for improved bill collection. This project started in December 1998 and was expected to be completed in August 1999. Further, the three and a half year energy module of the EU-IPP programme budgeted at US$ 3 million which aimed to address energy issues in the whole energy cycle included a component for demand-side issues. It was agreed that at least 20% of the total cost the EU IPP programme (equivalent to not less than $500,000) would cover demand-side management and will thus be considered as co-financing to the project. Additionally, the Energy Steering Committee created by both the MoHER and the Ministry of Environment in 1997 was initially intended to act as the steering body for both the EU IPP project and the LCEC project.

During implementation, the project team coordinated with other UNDP projects including CEDRO I and CEDRO II, Thermal Standards for Buildings and the Sustainable Energy Strategy. They also coordinated with other donors and projects including EU support to the MEW and the WB Thermal Building Standards Review.

Management arrangements

The project team was recruited from qualified experts using ToRs from the Project Document. The core team included the Project Manager and experts in five units; engineering services, finance, marketing, analysis and planning. Housed in the MoHER (later the MEW), the LCEC was assured the support and interaction of the Ministry, and a basis for interaction with other ministries, government agencies, programmes and organizations. The PM was to work closely with the Project Coordination Committee (PCC) which included representatives of the National Energy Steering Committee which was set up to ensure coordination between all stakeholder groups. The PCC had the following responsibilities;
-ensuring coordination between relevant proponents and stakeholders on project activities

- providing advise on policy issues
- providing recommendations and advise pertaining to project implementation
- reviewing and addressing policy recommendations of the project.

The Executing Agency included MoHER and EdL. UNDP CO would provide ongoing performance monitoring with backstopping from the technical staff. Yearly tripartite reviews with the participation of project counterparts were planned to monitor performance.

After the initial period (2001-2004) when the project performance was deemed unsatisfactory, the project was fully and critically reviewed. In the project restart in 2005, the management arrangements and responsibilities as outlined in the Project Document were applied as the basis to re-establish the project team, partners and procedures. The intense cooperation between UNDP, the new PM and the PCC was instrumental in bringing the project back on track and in successfully implementing the project in the final period.

The project modality was national implementation, whereby UNDP was responsible for both financial and technical management of the project on behalf of the implementing partner (MEW). Core staff were contracted directly by UNDP.

4.2. Project Implementation

Implementation Approach

Initial delays in project set up:

The Project entered the work programme in May 1999 with an expected start date of August 2000. The project document was signed by all parties on 12 July 2001 and the first disbursement occurred in October 2001. The original Project Manager was contracted in April 2002 followed by the project team (Administrative Assistant, Engineering Services Coordinator, Marketing Services Coordinator, Electrical Engineer) between June and October 2002. The official launch of the LCEC took place at MEW offices on 27 August 2002 and the first Project Coordination Committee (PCC) meeting took place in September 2002. In sum, the project set-up required over 1 year, where the original Project Document allotted only 3 months for set-up (recruitment of team, establishment of PCC and contracting of backstopping agency).

Project reviews and re-start:

The project was extensively reviewed in September 2003 in order to assess the project performance to date and to evaluate the original project objectives in light of different national developments. The Review Team interviewed the project team, stakeholders and beneficiaries to identify strengths, weaknesses and opportunities of the project and its implementation. Major weaknesses identified in this first period of implementation included a lack of results-based management structures and tools (i.e. lack of work plans linked to project outcomes and objectives, lack of robust indicators), a lack of appropriate skill and local experience on the part of the team and poor involvement of stakeholders.

The initial implementation period 2002-2004 showed unsatisfactory results (APR 2004), i.e. unsatisfactory in terms of managerial and technical problems faced by the project, limited support by the MEW, limited capacity building and ESCO training sessions undertaken, poor use of the audit fund and unsatisfactory support provided by the backstopping agency. The contract of the Project Manager was ended in December 2003. In 2004, UNDP decided to comprehensively review the Project Document and TORs of the Project Team. A new Project Manager, Mr. Anwar Ali, was appointed at the beginning of 2005 and the project team was replaced by end of the 3rd quarter of 2005. Not having met since June 2003, the Project Coordination Committee (PCC) met again in June 2005 and convened twice a year on average since then.

Subsequent project reviews (APR/PIRs from 2006 to 2010 and the Pre-Final Evaluation 2008) reported increasingly positive project progress and results. The 2008 Pre-final Evaluation in particular, credits the efforts and motivation of the new project team for reviving the project, bringing stakeholders on board and managing the project towards achieving results.

Implementation and Extensions:

Management problems, decision-making and institutional factors caused significant delays during the first two years of project execution. However, following the contracting of a new project manager in January 2005, the project was able to proceed rapidly. Already in late 2005 spectacular progress was observed in the main outcomes including training courses, awareness raising actions, information dissemination and auditing. To compensate for initial delays as well as for delays resulting from the war in 2006, the project closing date was revised to December 2008 and subsequently to December 2009. The extensions considered the available budget remaining and the continuing support for the LCEC by UNDP and MEW. The project operationally closed in December 2009. Financial closure is expected in March 2011.

After 2005, implementation seems to have been carried out efficiently. In 2005, Tripartite Review Meetings and Project Coordination Committee Meetings were implemented regularly with substantial participation from UNDP, the Lebanese Government and many other stakeholders.

In total, the completion of the project was delayed almost 42 months, a fact that was partly due to poor management capacity assigned at project start-up, a challenge that has been known to arise in similar projects. The project was one of the first to address demand-side energy conservation in Lebanon and involved a broad range of stakeholders. From the 2003 Project Review, it seems that a general lack of experience by stakeholders with this type of intervention resulted in poor coordination and management in the initial period. The issue of contracting appropriate staff had not been fully accounted for in the original time line of the project in which the LCEC was planned to be operational within the first 3 months. The challenge of selecting appropriate project management – since it is a known one – should

have been responded to at an earlier stage, even before the project's start. In particular, the selection process for the PM should have begun as early as possible. Considering that the ToRs for the PM were part of the project document, it should have been possible to prepare the call for expert applications and the evaluation criteria in advance in order that the selection process could begin immediately upon formal project approval.

Use of the Logical Framework as a Management Tool

As discussed in Part 4.1 Conceptualization/Design, the Logical Framework Matrix contained in the Project Document was inadequate as a tool for results-based management. In particular, the Logical Framework Matrix lacked clear targets for M&E. The lack of performance based tools for M&E and management was already highlighted in the Project Review of 2003.

Subsequent adjustments and adoption of targets, in particular within the APR/PIR documents, were not consequential. A complete and comprehensive revised Logical Framework Matrix revised for project management purposes was not available for evaluation.

Application of Adaptive Management

Both the Project Review in 2003 and the APR/PIR 2004 regarded the project management in the first few years of the project as unsatisfactory. In the process of evaluating and restarting the project in 2005, the implementation approach was carefully reviewed and considered in light of the unsatisfactory implementation to date and the national developments since the project was conceived in 1999. A new Project Manager, Mr. Anwar Ali, was contracted early in 2005. The new PM worked intensely with UNDP, the MEW and other stakeholders to select a new project team, to initiate critical activities and to develop a realistic work plan to achieve expected results. The project developed efficiently after this critical turning point and the new team was able to quickly generate positive results which established the reputation of the LCEC as a motivated, flexible and innovative organization. Already in late 2005 spectacular progress was observed in the main outcomes including training courses, awareness raising actions, information dissemination and auditing.

The new LCEC project team established in 2005 actively sought out strategic partners to generate broader impact. In particular, the three key public awareness campaigns - Turn Off the Lights, Solar Water Heaters and CFL – were generated by the project team in collaboration with a reputed ad agency, Saatchi & Saatchi. Air-time of the infomercials on radio and TV, advertisement space on billboards and distribution of stickers and awareness brochures were provided free-of-charge by partners. Campaigns worth an estimated 2.5 million USD were thereby generated using 40 000 USD of project budget. Follow-up surveys after the first campaign confirmed a broad resonance and impact.

Stakeholder interviews confirmed the flexibility and responsiveness of the LCEC in developing and implementing effective activities and programs. The LCEC team was quick in responding to suggestions and opportunities presented by stakeholders.

Use of Electronic Information Technologies

An attractive and user-friendly project website (www.lcecp.org.lb) was developed as an outreach tool. The site is accessible in Arabic, English and French. All information generated in the framework of the project, including campaign materials, surveys and newsletters, is available on the site. The website includes simple tips for energy conservation.

It continues to be linked to the activities of the LCEC and is regularly updated even after project closure. It was reported that the website has some 170 hits per week.

General Operational Relationships between Institutions

Day-to-day operations were led by the LCEC Project Management Team located in the MEW offices. . From their position within the MEW, the project team was able to effectively coordinate with other ministries and agencies.

A Project Coordination Committee was established to ensure coordination between all stakeholders, to provide advice in policy issues, as well as recommendations and advice pertaining to project implementation, and to review and address policy recommendations for the project. The Project Coordination Committee (PCC) consisted of a large number of stakeholders; originally 18, the number of institutions participating increased during project implementation to over 30 and including representatives of government and key organizations (see section 4.2 Stakeholder Participation)

Technical Capacities associated with the Project

The key technical capacity created by the project is the LCEC itself. The Center continues to be recognized nationally – by government, industry and the general population – and internationally – by supporting governments in international organizations – as the official body dealing with energy conservation in Lebanon. The management and team which form the competence of the Center were assembled in 2005 and have remained roughly intact after project closure. In 2005, Mr. Anwar Ali was assigned the role of Project Manager until he left the LCEC in 2008, after which Mr. Pierre El Khoury, formerly an energy engineer in the LCEC core team took on this role which he still holds. Staff committed to the project full-time included: an energy engineer, an office coordinator, a PR expert, a marketing and information coordinator, and an administrative coordinator. A legal expert and a financial expert worked for the project as needed .

Based on the review of all available information, the implementation approach was rated satisfactory.

HS	S	MS	MU	U	HU	N/A
	X					

Monitoring and evaluation

The project underwent a thorough review in 2003 in response to concerns about poor project progress and management. The review team conducted in-depth review of the project context, progress and roles and responsibilities of all involved parties. Interviews were conducted with project management, with the project team and with the stakeholders represented in the Project Coordination Committee. The review was instrumental in re-evaluating the project and effectively re-starting with a new team in 2005.

In March 2008, a Pre-final Evaluation was conducted. The evaluator, Mr. Jan van den Akker, was very satisfied with project implementation and credited the LCEC team for its initiative and achievements. The evaluator expected project closure by end of 2008 and included a number of recommendations to address shortcomings before finalization.

Response to Recommendations from the Pre-Final Evaluation, 2008

PRE-FINAL EVALUATION RECOMMENDATION	ASSESSMENT DURING FINAL EVALUATION

A sound business plan for the next 5 year period needs to be drafted including transitional and post-project financing.	A business plan had not been prepared at the time of this evaluation largely due to continued uncertainty about the official status of the LCEC. The declaration of the LCEC as a non-profit organization linked to the MEW in February 2011 provides a solid basis for developing a business plan. This should be pursued as an instrument to ensure the sustainability of the LCEC.
The use of remaining project funds should be discussed.	The project was extended to end of 2009 in order to complete budgeted activities. The use of remaining funds (approx. USD 500 000) has been discussed during the mission. It is recommended that these funds be applied within the NEEREA financing mechanism or, as necessary, support LCEC technical assessments of applications for NEEREA funding.
A study of the broad impact of the LCEC project activities should be carried out.	A workshop was organized in 2008 by the LCEC with experts to determine the CO_2 emission factor for Lebanon. A study of the broad impact of the LCEC project was not carried out. This would have been of great assistance during the Final Evaluation.
The LCEC should be embedded as technical support for further UNDP EE projects.	The LCEC team is currently executing the UNDP/UNEP/GEF Global SWH project in Lebanon. They are also integrated in the Sustainable Energy Strategy Project and the CEDRO Project among others. During the transitional phase this cooperation is critical for LCEC sustainability. It is recommended that LCEC gradually reduce reliance on UNDP management and financing and scope various sources of external financing.
Support auditors to maintain business activity in post-project period.	The NEEREA financing mechanism developed by the LCEC with support from the EU and the Central Bank of Lebanon, is dependent on quality audits. The mechanism is ready to begin in 2011.
The MEW should adopt the LCEC as an NGO to act on its behalf.	In February 2011, the LCEC was officially established as a non-profit organization linked to the MEW. It is recommended that the LCEC retain administrative and budgetary autonomy in order to retain competence and flexibility.
LCEC should seek funding for own building.	The MEW under the previous minister indicated budgetary support for LCEC offices. The government collapsed the week before the TE mission and it is not clear whether the new minister will continue support. It is recommended that the planned LCEC offices should be a demonstration project for best practice in building energy efficiency. Further, as a flagship building, it can be used to demonstrate the potential of small-scale renewable energy technologies (solar thermal, PV, heat pumps, wind, etc.) to generate more energy than the building itself requires.

Generally, there was a recognized weakness in the M&E activity undertaken to verify project impact. Investments and impacts resulting from the project supported activities were not adequately tracked. In particular, clients who benefited from audits supported by the project were not required to report on implementation of measures. The weakness of the project Logical Framework Matrix and the lack of verifiable targets in the Project Document are discussed in 4.1 Project Formulation.

Targets outlined in the project document included:

- A specialized Lebanese Center for Energy Conservation (LCEC) established and institutionalized by the end of the project
- 12 million tonnes CO_2 emission reductions until 2020.
- 300-400 audits completed by the end of the project.
  This number was adjusted down during project implementation. In the Project Document, EdL engineers were expected to be trained and implement electrical audits. It is not clear why this did not occur; the 2003 Project Review indicates that EdL staff were not available for these activities. By 2004, 22 audits had been contracted from private firms at a cost of 22 500 USD (over ¼ of the project audit budget). Subsequently, in 2005, a target of 188 audits by the end of the project was adopted as realistic. Over 125 audits were realized.

During project implementation, the following targets were adopted:

- In the APR/PIR documents from 2008 onwards, targets are introduced for leveraged investment in energy efficiency of at least USD 1.4 million from audit activities and over USD10 million from other supporting activities.
- A new EE law to be developed and adopted by the Government.
- Minimum energy performance standards and labeling schemes to be introduced and adopted for the Lebanese market for selected appliances.
- The sale of targeted EE technologies is increasing with an average of at least 20% a year (whereby baseline and sources of verification are not specified)

The CO_2 emission reduction reported in the 2010 APR/PIR is an estimate based on logical projections but is not adequately linked to project activities. A detailed calculation of direct and indirect CO_2 impact was not available for evaluation. The need of a CO_2 emission reductions calculation linked to LCEC project activities was reported in the 2004 APR/PIR and repeated in the 2008 Pre-final Evaluation. A calculation of direct and indirect CO_2 emission reduction following GEF guidelines would be of great assistance in evaluating the impact of project activities and assisting the UNDP and the LCEC itself in planning future projects and programmes.

At the same time, it is appreciated that monitoring of end-use energy savings is particularly difficult in Lebanon. Daily power outages lasting between 4 and 8 hours and typically covered by individual or collective diesel generators already cause wide irregularities in consumption patterns. In pilot projects involving the installation of Solar Water Heaters and EE lamps, it was not possible to determine savings resulting from measures with any reliability.

In determining the overall rating of satisfactory for project M&E, the evaluator balanced a number of considerations. On one hand, the project was weak in setting targets and tracking success indicators including CO_2 mitigated by the project. On the other hand, thorough project reviews and adaptive management with broad stakeholder involvement played a key role in bringing the project back on track after 2003 and lead to the strong performance of the project and positive reputation of the center. Based on the review of all available information, the monitoring and evaluation was rated satisfactory.

HS	S	MS	MU	U	HU	N/A
	X					

Stakeholder Participation

The project has a challenging integration of sectors and involves numerous and diverse stakeholders. The involvement of diverse stakeholders during project implementation is exemplary. Over 30 organizations actively participated in the Project Coordination Committee meetings from 2005 onwards. The LCEC sought partnerships with a number of key players (government, electrical utilities, banks, broadcasters) and together developed and implemented activities and programs with broad impact. Diverse stakeholders who were interviewed praised the LCEC for its motivated, goal-oriented and professional operation. Several stakeholders praised the quick responsiveness of the LCEC to suggestions and requests for information and support.

The Project Coordination Committee (PCC) included over 30 members and included a broad representation. Their opinions and suggestions were sought and regarded in project reviews and formulation of activities. Their understanding of project objectives, their roles in the project and expectations were often sought. Maintaining stakeholder interest and commitment to project objectives were clearly driving factors in project implementation after 2005.

The PCC included representatives from main stakeholders involved in the project including:

- Ministry of Energy and Water (MEW, formerly Ministry of Hydro-Electric Resources, (MoHER))
- Council for Development and Reconstruction (CDR)
- Electricité du Liban (EdL)
- Ministry of Environment (MOE)
- Ministry of Finance (MOF)
- Ministry of Industry (MOI)
- The Lebanese Standards Institution (LIBNOR)
- Industrial Research Institute (IRI) Lebanon
- Universities: Lebanese American University (LAU), American University of Beirut (AUB), Beirut Arab University (BAU)
- National Council for Scientific Research (CNRS)
- Association of Lebanese Industrialists (ALI)
- Association Libanaise pour la Maitrise de l'Énergie (ALME)
- Lebanese Solar Energy Society (LSES)
- Order of Engineers and Architects
- Consumers Lebanon
- Association of Banks in Lebanon (ABL)
- National Bank of Lebanon
- Investment Development Authority of Lebanon (IDAL)
- Economic and Social Commission for Western Asia (ESCWA)
- Other projects: CEDRO, EU-IPP, Energy Efficiency Strategy
- Relevant Agency focal points (WB, EU)
- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

The LCEC produced and distributed an attractive newsletter SAVING ENERGY in English and Arabic which comprehensively documented LCEC activities and accomplishments and important issues regarding energy use. Four issues have been produced, the last in January 2009.

Based on the review of all available information, the stakeholder participation during project implementation was rated highly satisfactory.

HS	S	MS	MU	U	HU	N/A
X						

Financial Planning

From a financial perspective, it should be emphasized that despite the delay of some 3-1/2 years and the broad range of activities completed, the original GEF budget has not been exceeded. After operational closure in 2009, a budget surplus of some 500 000 USD remains which the project management is planning to apply to the continued operation and activities of the LCEC. Specifically, it is proposed that this funding will be integrated within the EE financing mechanism NEEREA and, as necessary, support LCEC's technical role within this financial mechanism. This positive result speaks in favour of the project management and the effective financial control of the project.

Audit Fund
300-400 audits were originally targeted in the Project Document. During the initial years, the audit budget was poorly applied. By 2004, 22 audits had been contracted at a cost of USD 225 000 (over ¼ of the total budget for audits.) In the project re-start in 2005, 200 audits were considered a realistic target considering remaining available funding. In 2006, the project paid 100% of audit costs to build up momentum for the programme. In 2007 and 2008, 70% of audit costs were covered by the project and 30% were paid by clients. This helped stretch the audit fund and assured a reasonable interest on the part of the client and increased his/her incentive to implement at least some measures in order to achieve a return on investment. In the final year, 2009, only 50% of the audit costs were covered by the project in order to further stretch the remaining funds and help shift activities to the free market.

It has been estimated that between 10 and 15% of recommendations were implemented. Several auditors reported that although no client implemented the complete list of Energy Conservation Measures recommended, the audit reports continue to act as a guideline for maintenance and investment as budgets (and possible subsidies) become available.

The project team also sought strategic partnerships which successfully augmented the value of project activities. The public awareness campaigns for example, were prepared with 40 000 USD project budget, but generated campaigns worth 2,5million when considering donations of free exposure in TV, radio and print media and distribution of promotional material through the post and with utility bills.

Sustainability

During project implementation after 2005, several strategic activities and options were developed to support sustainability of outcomes.

The Government of Lebanon has appreciated the importance of LCEC for the national environment and economy and expressed the intent to ensure the legal and financial framework to sustain the LCEC, its activities and staff. The sustained operation of the LCEC though official establishment of the Center is addressed in the Draft Law of Energy Conservation prepared during the project. Addressing the real risk that the Draft Law would not be passed by the Council of Ministers during the project, several alternatives were developed.

- In 2007, UNDP and the MEW signed a MoU whereby UNDP would ensure financial support for the LCEC core team until 2010.
- In 2007 and 2008, project extensions were granted in part to ensure continued support to the LCEC and continued implementation of activities.
- In 2010, the LCEC core staff was made responsible for the UNDP/UNEP/GEF Global SWH project.
- In early 2011, the MEW announced the establishment of the LCEC as a non-profit organization linked to the MEW in the official government gazette.

A sustained growth in public and private investment in EE measures for buildings was addressed through a number of parallel activities. LCEC trained and qualified 8 firms which conducted audits using project funding. Further by developing and implementing the NEEREA financing mechanism in which qualified audit reports form an essential part of the loan application, the project has created a sustainable mechanism supporting a growing energy efficiency market sector.

Sustainable growth in the use of EE technologies – especially SWH and CFL - was addressed by diverse activities. The project team distributed and installed equipment and lamps in a number of pilot activities supported by government and international donations. Marketing campaigns promoted these technologies to the general public. The LCEC was instrumental in developing national standards for SWH and CFL equipment which were adopted as mandatory by the Ministry of Industry. Finally, the LCEC was instrumental in securing a testing facility for SWH systems through a Greek donation which is to be installed at the IRI. By supporting the quality and reliability of EE technologies in Lebanon, the project assists sustained market growth.

For a further assessment of project sustainability according to financial resources, socio-political aspects, institutional framework and environment, refer to Sustainability under Section 4.3 Results.

Execution and implementation modalities

The project adhered to UNDP and GEF project management protocols including good reporting of progress and finances with well-structured Annual Progress Reports/Project Implementation Reports. In addition, the Project Coordination Committee and Tripartite Review meetings were effectively implemented. An in-depth Review of the project was completed in September 2003 and a Pre-final Evaluation was completed in 2008.

Management by the UNDP country office

The UNDP Country Office was active and supportive in project implementation, management and evaluation. While it is difficult to judge whether the initial delays may have been avoided or reduced with a clearer mandate on the part of UNDP, it is clear that the UNDP Country Office played a critical role in the project review in 2003, in the subsequent project re-start in 2005 and was highly involved with the project implementation over the subsequent years.

After the project re-start in 2005, the co-operation of UNDP and the MEW can be qualified as excellent. It constitutes one of the major aspects leading to the success of this project and for the continuity of the LCEC operations after project closure.

Coordination and operational issues

Day-to-day operations were led by the LCEC Project Management Team. From 2005 to 2008 Mr. Anwar Ali was assigned the role of Project Manager. From 2008 onwards Mr. Pierre El

Khoury, a former energy engineer of the LCEC took on this role. Staff members committed to the project full-time included an energy engineer, an office coordinator, a PR expert, a marketing and information coordinator and an administrative coordinator. A legal expert and a financial expert worked on the project on an as-needed basis.

Under the umbrella of the MEW, the project team was able to successfully coordinate with many other government ministries and agencies. As an example, in cooperation with the Lebanese Standards Institute (LIBNOR), the project team was able to develop standards for CFL and SWH equipment, which were later adopted as national standards through the Ministry of Industry. Further, the LCEC project secured a SWH testing facility through a donation from Greece which will be installed and used at the Industrial Research Institute (IRI)

4.3. Results

Stakeholders interviewed universally agreed that the LCEC project has succeeded in creating a momentum for energy efficiency and renewable energy initiatives in Lebanon. The Project Team as re-established in 2005, has succeeded in implementing and achieving major project outputs and outcomes in a short period with professionalism and efficiency.

Attainment of Outcomes/Achievement of Objectives

OUTCOME 1: To establish the Lebanese Center for Energy Conservation (LCEC)

SUCCESS CRITERIA (FROM PRODOC)	ASSESSMENT
By 2003, the GoL will have a specialized institutional setup for energy conservation and planning.	The LCEC was officially set up within the MEW in 2002. From early on the Center was given the status of sole focal point of EE issues in the government. The necessary local competence was established in 2005 with a new Project Manager and LCEC team. From the position within the MEW, the LCEC successfully coordinated activities and outputs with diverse ministries, agencies and the private sector. After project closure, the LCEC remains a respected, active focal point for EE within the GoL for policy, promotion, quality control and international cooperation. In 2011, the LCEC was established as a non-profit organization linked to the MEW. Considering the obstacles the LCEC would face operating within the Lebanese government, this is the best possible status and will bring further opportunities for the Center.
The annual CO2 emissions savings will be 0.97-1,2% or 12 million tCO2 by 2020	Direct emission reductions resulting from LCEC project activities are estimated at 1.2 million tCO_2 (APR/PIR 2010). This includes implemented measures from audits, installation of solar water heaters from various donors and distribution of EE lamps. Indirect emission reductions have been roughly estimated at 3.6 million tCO_2, although the evaluator believes that a broad impact study considering public awareness, policy and financing achievements would show greater long-term savings.
Economic tools for promoting energy efficiency will be	The project audit fund supported over 125 audits. The LCEC Project also supported implementation in some public buildings. A MEW program developed by LCEC includes USD 1.5 million

formulated and enforced.	grant money to support financing mechanism for SWH and 0,5 million to launch a national strategy for energy efficient public street lighting. The NEEREA financing mechanism developed and initiated by the LCEC project is described below in Output 2.
Yearly energy consumption bulletins will be produced.	The LCEC has produced and distributed a newsletter SAVING ENERGY in English and Arabic which documents LCEC activities and accomplishments and important issues regarding energy use. Four issues have been produced, the last in Jan.2009. In addition, sector research and market studies are available on the LCEC website www.lcecp.org.lb A national energy and GHG database is being developed in collaboration with CAS (Central Administration of Statistics) under the MED-STAT program, a regional statistical co-operation between 27 EU and 10 Mediterranean countries.

Among stakeholders, the LCEC quickly established itself as a highly motivated agency with a reputation as professional, flexible and responsive. LCEC has succeeded in establishing itself as the technical point of reference for EE and RE issues in Lebanon. Governmental institutions such as MEW, EdL, IRI, LEBNOR, the Lebanese Parliament, and the Council of Ministers recognize the role of LCEC as the national energy agency for the country.

In 2007, establishment of the LCEC was agreed in a MoU between MEW and UNDP in which UNDP agreed to finance the core team another 3 years. The Draft Law on Energy Conservation created under the project included legal establishment of the LCEC within the MEW. The law was addressed by the Council of Ministers in June 2010. In 2011, the MEW requested and was granted establishment of the LCEC as a non-profit organization linked to the MEW. The LCEC continues to coordinate EE projects on behalf of the GoL with a team of MEW staff and EU-supported personnel.

During the final project period, the LCEC adopted a new logo and corporate identity to mark the transition beyond the end of the project. In 2010, the LCEC core team became responsible for implementing the UNDP/UNEP/GEF Global Solar Water Heater project. This helped secure the continuity of management and core competence in the LCEC after project closure. Further, the LCEC is integral in the following national and international programs;
• The LCEC is the national focal point for the MED-ENEC project funded by the EU.

• The LCEC was nominated as executive secretariat of national steering committee of the Mediterranean Solar Plan (MSP). Thanks to the project team's efforts, the Beirut Declaration, which fully engages Lebanon in the MSP programme, was signed. The draft will be submitted to the Council of Ministers for review and adoption.

OUTCOME 2: To Provide Necessary Engineering and Energy Marketing Services Pertaining to Energy Conservation

SUCCESS CRITERIA (FROM PRODOC)	ASSESSMENT
Application of audits to address common energy efficiency opportunities.	Over 125 audits were completed within the project, most for large facilities. An estimated 33 (26.4%) have led to the actual implementation of suggested measures with associated investments of about US$1.3 million. Measures include cost effective improvement and maintenance of lighting and electro-

	mechanical systems much of which can be completed in-house.
Market forces activated for cost effective energy savings and market demand established.	The LCEC project supported proven cost-effective measures; -the 'turn-off' campaign focused on lighting and stand-by -SWH and CFL campaigns included pilot projects, broad distribution programs and adoption of mandatory standards. -Audit campaign included training and client outreach. 8 audit companies were qualified and supported through the project. Private sector response to all campaigns has been very positive.
Availability and use of energy efficient equipment increased.	-More that 4000 CFL lamps were distributed during the project through cooperation with EdL, EdA and EdZ. 90 000 CFL lamps were installed through the Greek-funded project coordinated by LCEC. Further, the LCEC is currently implementing the 9 million USD MEW campaign to exchange 3 million incandescent bulbs with CFLs by distributing 3 lamps to each household in Lebanon. -1883 individual and 55 collective SWH systems were installed during the project through international donations mobilized by the LCEC. -A cumulative increase of 300% in SWH systems implemented at the national level since project start (2010 APR/PIR)
Codes and standards for energy efficient equipment developed and promoted.	Standards for CFLs and SWH developed under the project have been adopted as mandatory. LCEC has secured a SWH testing facility through a Greek donation which will be installed at IRI. Standards for electric water heaters, refrigerators and air conditioners have been adopted as voluntary. EE labels have been designed.
Appropriate financing mechanisms and marketing modalities designed and made available.	In 2010, the LCEC was able to secure the support of the EU (€11million) and the National Bank of Lebanon to create the NEEREA financing mechanism. SMEs will have access to loans at 0% interest for 5-10 years for the implementation of EE and RE measures. LCEC is conducting info campaigns and will monitor technical quality of proposals and implementations.

OUTCOME 3: To assist the GoL in Strengthening its Policy Aspects and Increasing Public Awareness pertaining to Energy Planning and Conservation Issues.

SUCCESS CRITERIA (FROM PRODOC)	ASSESSMENT
Adequate energy policies embedded in national planning cycles.	Through LCEC support, the GoL incorporated within the MEW's policy paper for the electricity sector, 3 (out of 10) strategic action plans related to renewable energy and energy efficiency. The Draft National Energy Efficiency Action Plan NEEAP 2011-2015 has been supported by MEW. Beirut Declaration to involve Lebanon in the Mediterranean Solar Plan MSP was signed and will be submitted to the Council of Ministers for review and adoption.
Adoption of updated and new policy options.	Draft Law on Energy Conservation supported by MEW. Mandatory standards for SWH and CFL have been adopted. The first meeting to discuss the draft Law was held in July 2010 in the presence of LCEC stakeholders.

Increased public awareness at the consumer and decision making levels.	5 public awareness campaigns were implemented with excellent response. Random surveys after the 'turn-off' campaign in 2005 using TV and radio spots, print ads and brochures, showed 72% could recall the campaign, and 85% were willing to adopt the suggested energy conservation measures. Further media campaigns for SWH and CFL were supported by pilot SWH installations and free lamp exchange programmes. A school campaign delivered information and promotional materials of simple energy saving measures to students and the audit campaign addressed decision makers in industry, companies and facilities. In 2008, LCEC signed an MoU with Procter and Gamble in which LCEC will assist in launching similar campaigns across the Arab region.
Strengthening institutional and human capacities for introducing technical, financial and policy measures.	The LCEC team has established itself among government and private stakeholders as a focal point for EE and RE issues in Lebanon. They continue to operate within the MEW developing and implementing activities and programmes.
Energy Conservation Center institutionalized by law.	In 2011, the LCEC was established as a non-profit organization linked to the MEW. The MEW has indicated its support to create a new building for the LCEC.

Generally, the project team has implemented the project as outlined in the Project Document. Activities, deliverables and reports have been professionally prepared and presented.

The available basic CO_2 calculations offer but a rough tool for evaluating the outcome as related to the expectations. Precise indicators and a CO_2 calculation methodology related to outputs would have been desirable. Due to the lack of detailed calculations, the efficiency of the project activities, outputs and outcomes is not fully apparent.

Based on the review of all available information, the attainment of objectives was rated satisfactory.

HS	S	MS	MU	U	HU	N/A
	X					

Sustainainability

Financial Resources

The UNDP/GEF sponsored LCEC project closed operationally in December 2009. As outlined in the 2007 MoU between MEW and UNDP, the LCEC continues its activities within the MEW under the umbrella of UNDP. To provide transitional support, the LCEC team has been positioned as implementing partner within the UNDP/UNEP/GEF Global Solar Water Heating Market Transformation and Strengthening Initiative (2010-2014) and has been integrated within in a number of other projects including the CEDRO project (UNDP/CDR) and the Sustainable Energy Strategy project (UNDP/MoF).

In 2010, the LCEC was able to develop the NEEREA financing mechanism which will provide zero-interest loans to SMEs investing in EE and RE with the support of EU funds (€11.7 m), the National Bank of Lebanon and UNDP. The LCEC will provide the necessary

technical assessment of audits and implementations and both UNDP and the EU have set aside budgets to support the LCEC in this role.

The MEW continues to provide in-kind support to LCEC and its activities. 9 million USD has been budgeted by the MEW for a program developed by LCEC to replace 3 million incandescent light bulbs in Lebanese homes with CFL as well as to support SWH and EE street lighting. In addition to the LCEC premises within the MEW building, the MEW has provided a team of 11 persons to work under the direction of the LCEC to implement this program. An additional 6 employees are currently funded by EU contributions. The MEW has further indicated financial support to build separate offices for the LCEC.

The UNDP involvement in the LCEC has helped secure its credibility. International donors have used the LCEC as the contact for donations of equipment but the lack of legal status up until 2011, meant the LCEC was unable to accept funding from other donors. The fact that the LCEC core staff are still financed exclusively by UNDP has been perceived as a barrier for other international organizations to involve the LCEC in their programs. The new status of the LCEC as non-profit organization should open up new possibilities for programs and funding. In particular, both the EU and the WB have expressed interest in involving the LCEC in their development activities.

Sociopolitical

The LCEC and its achievements over the past few years is highly recognized and respected by a broad stakeholder base ranging from diverse ministries to industries, utilities, SMEs, universities and the general public. The Center is appreciated as a flexible, motivated and professional entity. From its position in the MEW, the LCEC has built up positive relationships with diverse ministries and government bodies including the Ministry of Finance, the Ministry of the Environment, the Office of the Prime Minister, the Industrial Research Institute (IRI) linked to the Ministry of Industry and the Lebanese Standard Institute (LEBNOR). The LCEC continues to be regionally and internationally active and respected as national focal point for EE and RE activities in Lebanon. The LCEC coordinates with other energy agencies in the region (for example, National Energy Research Center in Jordan) The LCEC is the national focal point for two projects financed by the EU, MED-ENEC and MED-EMIP. It has built up partnerships with the Italian, German, Spanish, Greek and Chinese government embassies in Lebanon and with the Swedish International Donation Agency (SIDA)

Institutional Framework and governance

Institutionally, MEW is responsible for overall energy policy making and the LCEC has been adopted as its technical agency responsible for development of programmes, implementation of policy instruments and promotion of EE and RE. The LCEC staff are the key to the quality and credibility of the Center. The core team has been largely maintained in the MEW premises following the closure of the LCEC project in December 2009 and the LCEC/MEW has been integrated in the UNDP/UNEP/GEF Global SWH project which started January 2010. In early 2011, the LCEC was granted the status of non-profit organization linked to the MEW. The specifics of this relationship have not been fully clarified at the time of this evaluation. LCEC staff and stakeholders alike have expressed the view that the LCEC would lose its dynamic and competence if fully absorbed within the MEW; government protocol would impede the responsiveness of the LCEC and salaries for public servants are not sufficient to attract and retain the current level of competence within the LCEC. In this respect, it is essential that the LCEC maintain adequate administrative and budgetary autonomy vis-à-vis the MEW in order to retain the high level of quality it currently has.

Environmental

Aside from the continued activity of the LCEC, the project was successful in realizing a number of key strategic outcomes supporting market transformation to EE and RE technologies beyond the project. In particular,

- Mandatory standards for Solar Water Heaters and Compact Fluorescent Lamps shall ensure the quality and reputation of EE equipment within Lebanon.
- The NEEREA financing mechanism shall support implementation of EE and RE technologies at a broadly accessible level. This in turn supports SME growth in this sector
- Diverse workshops for energy engineers were carried out and 8 auditing companies qualified by the LCEC. These auditors continue to operate after project closure and are being used by the IFC.
- Over 125 audits were carried out under the LCEC project many of which for large facilities (hotels, hospitals, etc.) The measures outlined in these audits are typically being implemented over a number of years as budgets or subsidies become available. In some cases the implementation of measures were so successful that they were applied to complete franchises. Clients continue to respond to audit reports years later.
- CO_2 emissions factor for Lebanon was determined at an expert seminar organized under the LCEC project. This can be applied in developing national CDM projects.
- The LCEC website which includes tips to save energy is updated regularly and continues to be a strong source of information for EE and RE activities in Lebanon.

The project has significantly lowered the barriers to energy efficiency (EE) in Lebanon. Support has been secured from the EU, the Central Bank of Lebanon, Ministry of Energy and Water and a number of other bilateral donors to further implement energy conservation measures through financial mechanisms and to further promote and distribute solar water heaters and compact fluorescent lamps. In a relatively short term, a significant momentum and awareness has been created for energy conservation in Lebanon.

Based on the review of all available information, the sustainability was rated satisfactory.

HS	S	MS	MU	U	HU	N/A
	X					

Contribution to upgrading skills of the national staff

The MEW has been reinforced institutionally by the LCEC /UNDP unit during project implementation and has co-operated closely and successfully with it. The LCEC and most of the core team has remained within the MEW after project completion and continues to contribute to programs and competencies.

5. Recommendations

The evaluator concludes that the outcome of the project is overall positive and that the project's performance – both with regard to managerial and financial aspects as well as with regard to contents and results – was good. The project's impact in Lebanon is clearly evident.

Still, the following recommendations can be made:

Actions to follow up or reinforce initial benefits from the project

1. The LCEC has been established as a non-profit organization linked to the MEW. This is a positive development. In order to retain the high quality and motivation of the staff it is crucial that LCEC retain adequate administrative and financial autonomy. Further, to maintain the trust of the government, clients and NGOs, the LCEC should remain objective and scientific in nature. The LCEC should remain the official representative of the Lebanese Government in matters of Energy Efficiency and Renewable Energy, but maintain sufficient independence to operate outside the quandaries caused by a fractious government.
   The Mediterranean Solar Plan aims to increase the use of solar energy and other renewable energy sources and to reduce energy consumption by 20% by 2020. As executive secretariat of the National Steering Committee of the MSP in Lebanon the LCEC is in a good position to play an active role. The National Focal Point is within the MEW.

2. It is recommended that the Lebanese government support the LCEC with a budget covering some 50% of its operating costs. The remaining 50% should be secured by LCEC activities which could include the following;
   a. Memberships,
   b. Accreditation of auditors and audits
   c. Accreditation of RE and EE companies
   d. Provision of trainings and awareness raising activities funded by the private sector
   e. Quality assurance management of EE products (incl. labels)
   f. Contracts for undertaking assessment, energy sector analyses
   g. Implementation and management of energy projects and programmes
   h. International development support (WB, EU, UNDP)

3. Currently, there is no means to accredit auditors in Lebanon. The LCEC has introduced international experts, offered training and identified 8 companies qualified to complete audits for the LCEC project. Other organizations (including the WB) have used these auditors based on the qualification of the LCEC. Under the NEEREA financing mechanism developed in the LCEC project, banks will require qualified audits to support loans for EE, and must trust the assessment of the auditor. The LCEC should continue to offer training and quality certification of auditors in order to assure fairness and transparency of contracts.

4. Currently each of the LCEC core staff remains under direct contract with UNDP as part of the UNDP/UNEP/GEF Global SWH initiative. This presents certain problems for international organizations and agencies wishing engage the LCEC. The role of UNDP needs to shift from management to partner. This would open up the possibility that the LCEC works with other international organizations including the World Bank and the EU.

5. Development of a 5 year business and financing plan. Although the LCEC needs to retain a large degree of flexibility and responsiveness in its activities, a structured business plan can assist to ensure the smooth transition from UNDP supported team to independent agency.

6. The remaining GEF funds (USD 500 000) foreseen for project revolving fund should be part of the NEEREA financial mechanism or can be used to support initiatives to quickly build momentum for the fund. The mechanism supported by EU funds and the Central Bank of Lebanon, will support SMEs to implement EE improvements with 0% loans for 5-10 years. The LCEC will support the mechanism through an information campaign and through the technical assessment of applications.

7. The LCEC should strengthen its role in the collecting and processing of energy data and establishing a comprehensive energy data base. Current efforts towards these aims should be rendered more efficient and professional. A comprehensive energy data base will also prove useful as a basis for governmental energy strategies.

Proposals for future directions underlining main objectives

8. A pilot project (government building rehabilitation) should be developed to demonstrate Integrated Building Design and the application of an ESCO implementation model. This would include training on the application of integrated building design and building energy simulation programs in order to optimize building energy performance at the planning stage (compact design, fenestration, shading, etc.) This will help the LCEC to build capacity to act on the building and construction sector (building codes, standards and labels, green buildings) While not directly within the mandate of the MEW, as the government point-of-contact for energy efficiency and renewable energy, the LCEC should be actively involved in initiating legislative reforms to improve the energy performance of buildings.

9. For future projects, the evaluator proposes more stress to be put on the collection of project data and results on all levels. In particular, the effectiveness of financing of audits and energy efficiency measure should be evident through the collection of investment and energy data during project implementation and beyond. For effective project management, impact needs to be tracked consequentially and transparently. A detailed GHG emission reduction calculation with assumptions presented in the project document should form the basis for subsequent GHG emission reduction calculations included with project reports. Where applicable, the calculation should take into consideration the indicators and targets of individual outcomes and their contribution to the global project benefits. The logical framework matrix should include clear intermediate targets for indicators and thereby form the basis for project tracking in APR-PIR reports and for adaptive management. For continuity and clarity, the current version of the logical framework matrix including any adjustments with explanations should be included as part of the report.

10. The LCEC should further develop their competence to cover energy efficiency in other sectors including building, industry, transport and tourism. Again, while not directly within the mandate of the MEW, the LCEC, as the government point-of-contact for energy efficiency and renewable energy, should be actively involved in promoting and initiating legislative reforms to improve the energy efficiency in all sectors.

6. Lessons learned

1. Technically sound projects still cannot be realized without the political will from the government side. The previous Minister of Energy and Water, Mr. Jubran Basil (who resigned just before the evaluation mission in January 2011), was supportive and

active and the project was able to move quickly under his patronage. The project implementation experienced a number of national crises and several changes in government which slowed progress. In particular, project outputs dependant on government approvals (Law on Energy Conservation and related legislation to establish the LCEC) were delayed by political deadlocks and changes in ministries. The lack of official status for the LCEC, up to the end of the project, hindered other bilateral donors (WB, EU) from engaging the LCEC as a government agency. In early 2005, former Prime Minister Rafik Hariri was assassinated prompting a series of national demonstrations and a controversial UN investigation. This was followed by the month long war with Israel in 2006 causing damage to national infrastructure and an 18 month political deadlock which ended with Arab League mediation in 2008. In early 2011, the government collapsed when 10 opposition ministers lead by the Minister of Energy and Water resigned.

2. Contracting capable people in key positions is essential for keeping projects on track and meeting objectives. It is the LCEC staff that have made this project a success. Retaining the qualified staff working on the project can be difficult. In Lebanon and the region, the private sector is attractive for much of the staff; private sector contracts can be more lucrative than project contracts. The former Project Manager, Mr. Anwar Ali, was instrumental in bringing the project on track in 2005. He left the project in 2008 because of another job offer. As GEF budgets for key positions become tighter, it becomes more difficult to attract and keep capacity.

3. The importance of sound knowledge and understanding of the local situation. The initial project team included several international experts who had little exposure to the issues faced in Lebanese. Expert suggestions for developing the financing mechanism were based on theory or other country programmes but had little application to the situation in Lebanon. Only after the project team was thoroughly familiar with the situation on the ground and then exposed to international approaches were they able to develop the NEEREA as a viable financing mechanism and to convince national stakeholders to support it.

4. Applying local strengths. Lebanon is regarded in the region for quality media campaigns. This strength is evident in the project results and impact. With a USD 40 000 project budget for public awareness activities, the project has developed and implemented 5 quality campaigns worth an estimated USD 2.5 million (based on partner donations, donated airtime, print costs, distribution of materials, etc). Follow-up surveys after the first campaign ‘some turn-offs do save’ launched in 2005 showed 72% of randomly selected persons could recall the campaign, and 85% were willing to adopt the suggested energy conservation measures. Procter and Gambil, attracted by the campaigns signed an MoU with the LCEC to develop further energy saving ad campaigns for the Arab region.

5. Successful cooperation with key donors (in this case, SWH donations from the Chinese government) often attracts replication and partnership with other donors (the Spanish supported CEDRO project, Swedish and Greek governments). The LCEC project was flexible enough to support these initiatives; and create further motivation for projects and programmes.

6. The evaluator considers a major point for the success of the project was the fact that it attempted to address the strong need for energy efficiency in Lebanon through the promotion and support for a select few effective and proven measures. The LCEC

project worked intensively with SWH and CFL technologies at many levels, from quality assurance through standards and testing on one end and the development and implementation of donation and broad distribution programmes on the other. These 2 technologies in particular continue to act as the basis of LCEC work and have helped secure its reputation.

7. The co-operation of UNDP and MEW can be qualified as good. It constitutes one of the major aspects leading the success of the project. The balance between the LCEC project being autonomous and being an integrated part of the MEW is good, and a solid basis for continued sustainability of the work after the end of the project. Many of the outputs of the UNDP/GEF project have become an integral part of the daily activities of the LCEC after the project. As a national point of contract, the LCEC remains active in a broad range of activities including coordination of donor projects, technical assessments, promotional activities and training. That the core staff remains intact and increasingly engaged in an broad spectrum of national and international activities and projects is seen a positive outcome of the project.

7. Annex 1: Terms of Reference for Final Evaluation

TERMS OF REFERENCE
SPECIAL SERVICE AGREEMENT (SSA)

I. General Information

Title of the contractor: Project Final Evaluator Duty Station: Beirut Section/Unit: Energy & Environment Programme Reports to: Energy & Environment Programme Reports: As per agreed schedule	Project reference: 00013385 Pay Level: To be determined Source of Funding: GEF/MEW Duration of Employment: 20 days

II. Background

The stated goal of the project is to reduce GHG emissions in Lebanon by improving demand side energy efficiency through the creation of the Lebanese Centre for Energy Conservation. The Centre, which is a "soft" and flexible institutional set-up, will simultaneously undertake barrier removal activities and provide energy efficiency services to the public and private sector industries.

While the conception of the project dates back to 1999, the project was formally launched in 2002 with USD 3.4 million of GEF financing and 0.5 USD Ministry of Energy and Water financing. Due to some delays during the implementation and the time needed to successfully conclude the project activities, the project was operationally completed at the end of 2009. Previous project evaluations took place in 2003 and 2007.

UNDP/GEF and the Ministry of Energy and Water seek an international expert to undertake a final evaluation of the project to determine whether the project has met its initial objectives and to recommend the most appropriate next steps to ensure the sustainability of the centre.

III. Tasks & Expected Output

The **objective** of this final evaluation is to review the achievements of the project relative to the original and revised project activities, outputs and outcomes. It also aims to look at the sustainability of the project and identify recommendations for future actions.

The **scope** of the project should also look at the support LCEC has provided to the Government at the policy level and assess its impact on the private sector. The evaluator should seek the perspectives of the different project stakeholders, both within and outside the Ministry of Energy and Water and in the different areas of the country where the project has worked.

As a part of this, the consultant is expected to accomplish the following **tasks**:

1. Review of the status of the project activities, outputs and outcomes verses the stated targets of the original project document and its agreed amendments;

2. Evaluate the adequacy and relevance of the project activities and achievements by taking into account the overall GHG reduction, policy and sustainability goals, the specific project environment in Lebanon as well the international experiences, lessons learnt and best practices;

3. Review of the effectiveness of the project implementation and the use of its financial resources, including adaptive management applied for the revision of the project implementation mechanisms and other actions to overcome the obstacles identified during the implementation of the project;

4. Review the current monitoring procedures and methodologies in place to measure the actual energy savings and GHG reduction that can be attributed to the project activities and provide advice for their future development;

5. Review availability of relevant complementary data (from similar programmes/projects).

6. Evaluate the project's effort level in raising additional funds towards newly developed energy efficiency and renewable energy projects as well as the support provided to other on-going projects;

7. Estimate the impact and effectiveness level of the project's activities, outputs and outcomes to-date on national level in general and on Lebanese main stakeholders in specific;

8. Evaluate the impact of the project on policies and regulations as well as the advisory services provided to the Government and UNDP Energy and Environment Programme within the direct and indirect scope of the project;

9. Evaluate the strengths and weaknesses of original M&E design and the quality of data that have been generated

10. Provide recommendations on future follow-up activities and needs or corrective actions (if applicable), for which support could be requested in the future.

11. Analyse UNDP’s partnership strategy and its relation to effectiveness in achieving the outcome and elaborate on UNDP strategic positioning and its comparative advantage to assist is future energy projects/programmes

12. Identify and provide recommendations on any follow-up activities,

The work is expected to be carried out by one internationally recruited consultant with expertise on promoting demand side energy efficiency at the residential and service sector buildings and in industrial facilities.

The methodology of work will consist of desk review of relevant project

documentation (the key documents to be selected in co-operation with the project team prior to the mission) and direct consultations with the project management and other key local stakeholders during a 6 day mission to Beirut in June or July 2010. UNDP will pay for the consultant's travel and subsistence allowance needs related to this mission.

The overall duration of the tasks covered by this ToR has been estimated to not exceed 20 days, including the mission to Beirut and related desk-work to pre-review the required project documentation and to finalize the reporting.

Expected Outputs

The final report and an associated PowerPoint presentation (the latter to be delivered and discussed with the project management and UNDP programme management in the end of the mission) summarizing the findings of the evaluation and the proposed follow-up actions.

The content of the final report is expected to follow the structure below and to be in line with required GEF and UNDP formats for final evaluations:

1. Executive summary
2. Introduction, including description of the work conducted
3. Findings and conclusions
4. Recommendations,
5. An annex providing a brief summary of the key documents reviewed and persons interviewed with the description of the key content / conclusions drawn.

Guidance material will be provided by UNDP and will include the following:

- Quality Criteria for Evaluation Report
- Ethical Code of Conduct for Evaluation in UNDP
- GEF Terminal Evaluation Guidelines

IV. Purchases & Inputs

The Consultant shall coordinate and work with the UNDP and LCECP project management team located at Ministry of Energy & Water.

V. Competencies
The Consultant will provide the UNDP and LCECP management team with the necessary technical and managerial expertise on the various project's activities, with emphasis on actual energy savings and GHG emissions reduction Based on the Consultant's assessment of the project's activities, the Consultant will also need to guide UNDP and LCECP management team towards future project development.

VI. Recruitment Qualifications	
Education:	-Advanced University degree in engineering, business, economics or equivalent from reputable university (application to the energy industry is a plus).
Experience:	- More than 10 years of working experience in the areas addressed by the project with a good knowledge of the state of the art approaches and international best practices; - Prior evaluation experience of similar projects in GEF programme countries and familiarity with the specific GEF monitoring and evaluation requirements; - Knowledge of CO2 emissions reduction estimation as per GEF methodology - Previous knowledge of the Lebanese energy sector is a plus.
Language & Computer Skills	Good oral and written communication in English (French is a plus); - Computer skills (e.g. Microsoft including MS Project, MS-Word, PowerPoint, Excel and Access).

Annex 2: Mission Itinerary

January 17, 2011 - January 21, 2011

January 2011

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February 2011

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	17 Monday	18 Tuesday	19 Wednesday	20 Thursday	21 Friday
8 am					
9 00	Introductory Meeting with Pierre El Khoury-Project Manager	Mr. Bassam Habre, Electro-Mechanical Engineer, APAVE Liban	Mr. Albert Khoury, General Director,	Dr. Imad Hajj Shehadeh, Technical Manager, Industrial Research Institute	Check-Out from Hotel
10 00	Meeting with LCECP Team: Project Overview and Documentary Presentation (Mr. Ziad el Zein, Mr. Nader Hajj Shehadeh, Ms. Rola Tabbara, Mr. Mitri Maalouf)	Mr. Ali Berro, Manager, Beta Engineering	Dr. Raymond Ghajar, Professor at LAU, Advisor to the Minister of Energy and Water		Mr. Peter Christiaens, Energy and Infrastructure, European Union (EU)
11 00		Ms. Rola Khazen, UNDP- LCEC Marketing Coordinator	Mr. Hassan Harajli, UNDP CEDRO Project Manager	Ms. Wafaa Charafeddine, Director, Council for Development and Reconstruction (CDR)	Mr. Ronald Diab, Managing Director, National Energy Consultants (NEC)
12 pm		Cheikh Mohammad Alaya, Director, Electricite du Liban (EDL)	Ms.Léa Hakim, Advisor to the Minister of Finance	Mr. Simon Stolp, Country Office, World Bank (WB)	Wrap-up Meeting at UNDP- Ms. Jihan Seoud and Mr. Pierre El Khoury
1 00	Lunch	Lunch	Mr. Mahmoud Baroud, General Director of Investment at the Ministry of Energy and	Lunch	Departure to Airport
2 00	Continuation of Meeting with LCECP Team	Judge Hassan Chami, Legal Advisor, Ministry of Energy and Water	Lunch	Dr. Farid Chaban, Professor at the Lebanese University and LCECP Energy Expert	
3 00	Meeting with Mr. Edgard Chehab, UNDP Assistant Resident Representative; and Ms. Jihan Seoud, UNDP Officer-in-Charge,	Ms. Marie Maamarie, Commercial Attachée, French Embassy	Mr. Rabih Khairallah, Head of the Mechanical Engineering Branch, Head of the Sustainability Committee, Order of		
4 00					
5 00					
6 00					

Annex 3: List of Persons Interviewed

UNDP Project Management
Mr. Robert Kelly, Regional Technical Specialist for Climate Change Mitigation, UNDP Bratislava Regional Centre
Mr. Edgard Chehab, Assistant Resident Representative / Programme Manager, Energy & Environment, UNDP CO Lebanon (started in 2004)
Ms. Jihan Seoud, Officer-in-Charge, Programme Analyst, Energy & Environment Programme,UNDP CO Lebanon

Lebanese Center for Energy Conservation (LCEC) Staff
Mr. Pierre El Khoury, LCEC Project Manager since 2008 (formerly LCEC Engineer)
Mr. Ziad El Zein, PR Coordinator
Mr. Nader Hajj Shehadeh, Energy Engineer
Ms. Rola Tabbara, Administrative Coordinatior
Mr. Mitri Maalouf, Office Coordinator and Driver
Ms. Rola Khazen, Marketing Coordinator (currently with CEDRO project)
Dr. Farid Chaaban, LCEC Energy Expert, Professor, American University of Beirut

National Project Partners
Judge Hasan Shami, Legal Advisor, Ministry of Energy and Water (MEW)
Mr. Mahmoud I. Baroud, Acting General Director of Exploitation, Director of Tutelage, MEW
Dr. Raymond Ghajar, Advisor to the Minister of Energy and Water and Professor, Lebanese American University School of Engineering,
Mr. Cheikh Mohammad Alaya, Director, Electricite du Liban (EdL)
Ms. Wafaa Charafeddine, Director, Council for Development and Reconstruction (CDR)

Other National Stakeholders
Mr. Rabih Khairallah, President of Mechanical Engineer Consultants Branch, Order of Engineers and Architects, Beirut, Head of Sustainability Committee
Mr. Albert Khoury, General Director, Electricity Utility of Aley (distribution)
Dr. Imad Hage Chehade, Technology and Development Director, Industrial Research Institute (IRI)
Mr. Mohamad Hajjar, Energy Audits & Studies Unit Head, IRI

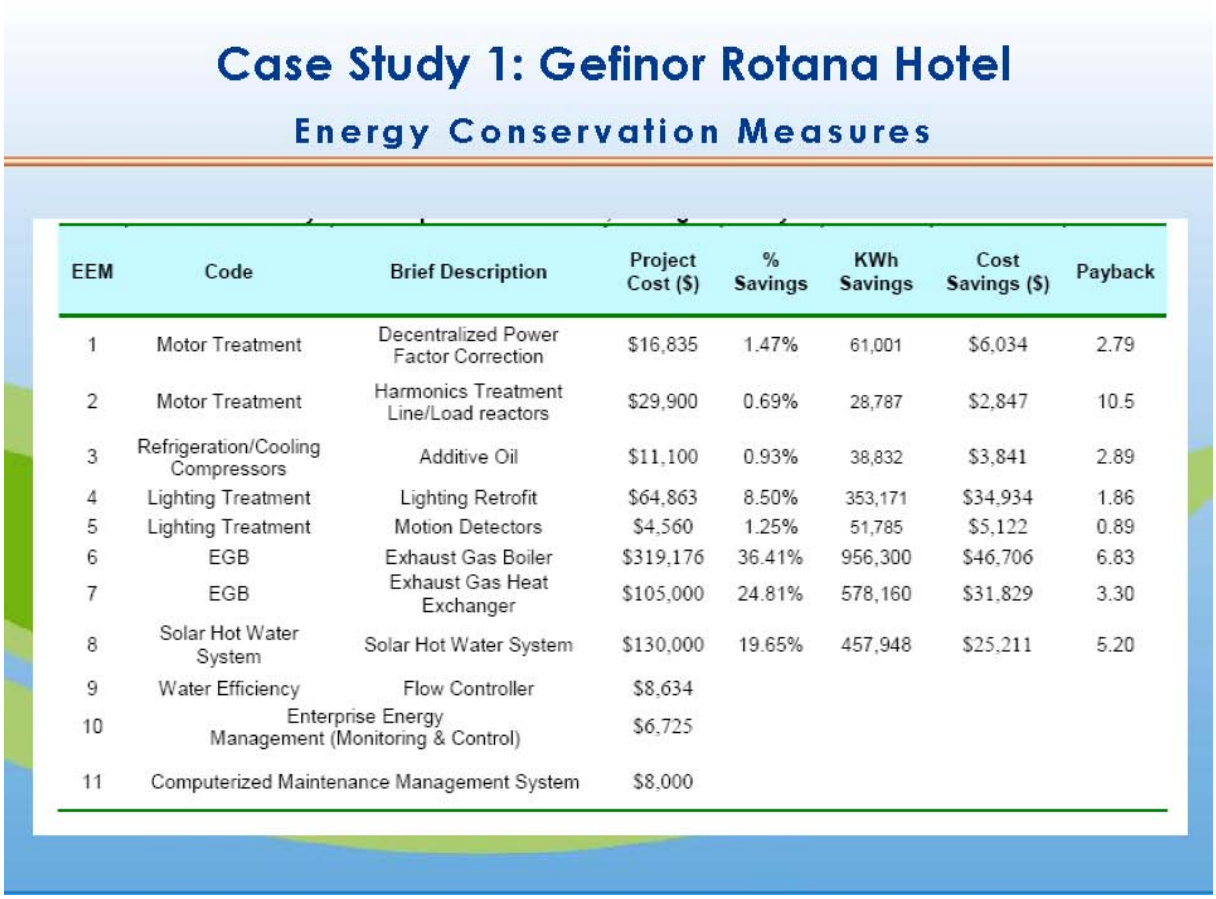
ESCOs/ Auditing Firms
Mr. Ronald Diab, Managing Director, National Energy Consultants (NEC)
Mr. Bassam Habre, Electro-Mechanical Engineer, Apave Liban
Mr. Ali Berro, Manager, Beta Engineering

Complementary Projects
Mr. Hassan Harajli, Project Manager, UNDP CEDRO Project
Mr Christian De Clercq, Project Director, UNDP Capacity Development for Fiscal Reforma and Management Project, Ministry of Finance (MoF)
Ms. Léa Hakim, Economic Officer, UNDP Capacity Development for Fiscal Reforma and Management Project, Ministry of Finance (MoF)

International Stakeholders
Ms. Marie Maamari, Commercial Attachée, French Embassy in Lebanon
Mr. Simon Stolp, Senior Energy Specialist, World Bank, Lebanon
Mr. Peter Christiaens, Programme Manager, Energy and Infrastructure, European Union delegation to the Republic of Lebanon

Annex 4: Summary of Field Visits

During the mission, the evaluator stayed at the Hotel GEFINOR Rotana in the Hamra District of Beirut. The hotel was the subject of an energy audit conducted by National Energy Consultants (NEC) and supported by the LCEC project and the evaluator had the opportunity to inspect realized energy conservation measures including lighting systems and sensors.



Case Study 1: Gefinor Rotana Hotel

Energy Conservation Measures

EEM	Code	Brief Description	Project Cost ($)	% Savings	KWh Savings	Cost Savings ($)	Payback
1	Motor Treatment	Decentralized Power Factor Correction	$16,835	1.47%	61,001	$6,034	2.79
2	Motor Treatment	Harmonics Treatment Line/Load reactors	$29,900	0.69%	28,787	$2,847	10.5
3	Refrigeration/Cooling Compressors	Additive Oil	$11,100	0.93%	38,832	$3,841	2.89
4	Lighting Treatment	Lighting Retrofit	$64,863	8.50%	353,171	$34,934	1.86
5	Lighting Treatment	Motion Detectors	$4,560	1.25%	51,785	$5,122	0.89
6	EGB	Exhaust Gas Boiler	$319,176	36.41%	956,300	$46,706	6.83
7	EGB	Exhaust Gas Heat Exchanger	$105,000	24.81%	578,160	$31,829	3.30
8	Solar Hot Water System	Solar Hot Water System	$130,000	19.65%	457,948	$25,211	5.20
9	Water Efficiency	Flow Controller	$8,634				
10	Enterprise Energy Management (Monitoring & Control)		$6,725				
11	Computerized Maintenance Management System		$8,000				

Annex 5: List of Documents Reviewed

Project Document:

- Project Document – Lebanon Cross Sectoral Energy Efficiency and Removal Barriers to ESCO Operation

Project Evaluations:

- Project Review Report 2003.
- Project Review (August 30, 2005) by Mr. Riad Chedid in accordance with contract 05/04
- PRE-FINAL EVALUATION Cross Sectoral Energy Efficiency and Removal Barriers to ESCO Operation (Lebanese Center for Energy Conservation Project LCECP) by Jan van den Akker. Final Version 24 April 2008

Annual Work Plans

- AWP 2010 (w/ budget as of December 2010)
- AWP 2011

Annual Performance Reports (APR) / Project Implementation Reviews (PIR)

- APR 2003 (reporting period April 2002 to March 2003)
- APR 2004
- APR/PIR 2005
- APR/PIR 2006 (reporting period 1 July 2005 to 31 December 2006)
- APR/PIR 2007 (reporting period 1 July 2006 to 30 June 2007)
- APR/PIR 2008 (reporting period 1 July 2007 to 30 June 2008)
- APR/PIR 2009 (reporting period 1 July 2008 to 30 June 2009)
- APR/PIR 2010 (excel version)

Minutes of Meetings

- Annual review of the UNDP Energy Programme 14 December 2009
- Tripartite Review Meeting 2009 (2 December 2008)

Power Point Presentations

- LCECP's Background, Strategy & Main Activities, Presentation , June 2007
- 2008: A Year in Review for the Annual Meeting of the Project Coordinating Committee
- Final Review of LCECP: Achievements and Future Steps for LCEC. Presentation by Pierre El Khoury. 14 December 2009.
- Energy Audits and Energy Efficiency Projects in the Hospitality and Leisure Sector in Lebanon. By Ronald Diab. 4 June 2010.
- NEEREA: Eligibility Criteria for Selection. By Pierre El Khoury. September 2010.
- Inception and Progress of the Global Solar Water Project, the Greek Grant, and the MEDCO Partnership. Presentation by Pierre El Khoury. 14 December 2009.
- Progress Review of the GEF Global Solar Water Heater Project, the Greek Grant, and the MEDCO Partnership. Presentation by Pierre El Khoury. 21 December 2010.

Financial Reports

- Combined Delivery Reports (CDR) 2002-2009
- Marketing Campaign Phase 1 – In-Cash Contribution Estimation. 22 October 2005.
- Budget / Free of charge contribution by Saatchi&Saatchi and the media.
- Budget / Free of charge contribution by Saatchi&Saatchi and the media. Solar campaign Burst 1 (July 2006) Burst 2 (May-June 2007).
- E-Mail 31.12.2010 regarding extension of financial closure

Project Outputs / Outcomes

- LCECP website http://www.lcecp.org.lb/
- The Statute and the Rules of Procedure of The Lebanese Center for Energy Conservation
- LCEC Newsletters "Saving Energy" June 2007, Dec. 2007, June 2008 & Jan. 2009.National Energy Saving Awareness Campaign 2005. UNDP - Ministry of Energy and Water. By LCECP.
- National Solar Water Heating Awareness Campaign. UNDP - Ministry of Energy and Water. By LCECP.
- TV spots – Turn-offs, SWH campaign, CFL campaign
- Approach to Greenhouse Gas (GHG) Emission Reduction Analysis, prepared by International Institute for Energy Conservation – Asia, July 2008
- RFP for Conducting Energy Audit Services - Lot VI

- List of the LCEC qualified ESCO's
- List of 128 audits with firms
- LCEC audit campaign brochure: 'Economy is not just an option. Get an energy audit and save money.'
- Results of Nine Energy Audit Studies: Findings, Analysis, and Recommendations. A presentation of the results of nine energy audits studies completed by the Lebanese Center for Energy Conservation through local energy audit companies in the industrial, commercial, and services sector. By LCEC. 2010.
- Houri, Ahmad; El Khoury, Pierre: "Financial and Energy Impacts of Compact Fluorescent Light Bulbs in a Rural Setting." In Energy and Buildings. Elsevier B.V. 2009. pp. 658-666.
- Draft "National Energy Efficiency Action Plan – LCEC - Lebanon". Presented by Dr. Farid B. Chaaban. December 2010
- School campaign brochure: 'Utilisez moins d'énergie, pour freiner le réchauffement planétaire'
- Memorandum of Understanding between The United Nations Development Programme (UNDP) and Banque du Liban , June 2010
- National Bank of Lebanon Announcement 236 for all Lebanese Banks (regarding the NEEREA Financing Mechanism) (Arab)
- Announcement in the national gazette regarding the establishment of the LCEC as non-profit organization
- The Beirut Declaration on the Mediterranean Solar Plan (MSP) 2009
- Opening Speech of the Build it Green Conference by Pierre Khoury
- Project Document: Sustainable Energy Strategy for Lebanon (MoF, MEW, UNDP) 2007-2009
- Project Document: CEDRO II Country energy efficiency and renewable energy demonstration project for the recovery of Lebanon 2009-2011(MEW, UNDP)
- Project Document: Global Solar Water Heating Market Transformation and Strengthening Initiative (MEW, UNDP, GEF) 2008-2013

Annex 6: Interview Templates

General Interview Template

The Final Evaluation is a planned part of all GEF-funded projects. The objective of the Final Evaluation is to measure the effectiveness and efficiency of project activities in relationship to the overall project objective, and to make recommendations which could improve the project or help plan similar projects.

This Final Evaluation of the UNDP-GEF Lebanese Center for Energy Conservation Project LCECP is initiated by UNDP Lebanon and aims to review project results and recommend strategies to sustain project impact. It will also serve as a basis for learning and assessment for UNDP and other stakeholders.

1. Please give your name, your role in the project and a short description of your responsibilities with reference to the project.

2. In your opinion, what is the most significant accomplishment of the project? Which project actions were most effective in terms of meeting energy saving targets? Which are less effective?

3. Were national stakeholders (government, SMEs, building owners, financial institutions, etc.) accepting and actively participating in the project? Were stakeholders well informed of progress? Did the stakeholders have an adequate role in project decision-making?

4. Have there been clear indications of increased energy efficiency as a result of the project? Has public awareness on climate change and energy efficiency increased as a result of the project?

5. Has the project created long-term, sustainable benefits for Lebanon? What project-created measures or actions (legislation, institutions, web-sites, etc.) continue to provide benefits?

6. Was there adequate coordination between this project and other interventions in the building/energy sector? Has duplication of effort been avoided?

7. Has the project encountered problems in its implementation? If so, has adaptive management been efficiently applied to meet these challenges?

8. Which lessons and good practice have emerged from the project? Are these relevant for similar projects outside of Lebanon?

9. What strategy would you recommend to ensure a sustainable role of the Lebanese Center for Energy Conservation?

10. Do you have any further comments or suggestions?

Interview Outline for the staff of the LCEC Monday, January 17, 2011

1. The establishment of the LCEC was one of the outcomes of the project
   a) How has the end of the project affected its operation? How is the Center funded? Will it remain in the Ministry of Energy and Water building?
   b) What is the Center's legal status? The Pre-Final Evaluation suggested it may become an NGO, if the government does not establish the Centre in a formal act.
   c) Does the Center continue to support audits on a cost-sharing basis? Does the Center conduct audits on its own or always through an ESCO/auditor?
   d) Is it still involved in legislation development?
   e) Will the web-site be updated? Will there be further public campaigns?

2. The pre-final evaluation recommended a study of direct and indirect CO2 mitigation;
   a) Direct emissions reductions are estimated at 1.2 million tonnes CO2. Explain.
   b) Indirect emissions are estimated at 3x direct. What is the basis of this estimate?

3. Have legislative changes resulted from the project? Which?

4. With regards to auditing;
   a) Was there an audit form or auditor certification in place when the project started? now?
   b) What incentives are there for building owners to conduct audits?
   c) Does the centre track investment/implementation of energy saving measures resulting from audits?

5. Do you see opportunities to develop certain aspects of the project further? Are there positive aspects which cannot continue for whatever reason now that the project is closed?

6. Have the recommendations of the Pre-final evaluation been taken into consideration?
   a) Draft a 5 year business and financing plan for the Center
   b) Investigate alternative property / offices for the Center
   c) Coordination with ESCOs/auditors about post-project activities

7. Can the project be applied in other countries? What changes if any are recommended?

Annex 7: Co-financing Table

CO-FINANCING

Co financing (Type/ Source)	IA own Financing (mill US$)		Government (mill US$)		Other Sources* (mill US$)		Total Financing (mill US$)		Total Disbursement (mill US$)	
	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual	Proposed	Actual
Grant	0,50	0,18	0,50	0,50			1,00	0,65	1,00	0,65
Credits										
Loans										
Equity										
In-kind			0,50	6,00	0,05	0,50	1,00	6,50	1,00	6,50
Non-grant Instruments *										
Other Types										
TOTAL	0,50	0,18	1,00	6,50	0,05	0,50	2,00	7,15	2,00	7,15

- Other Sources refer to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector etc.

- "Proposed" co-financing refers to co-financing proposed at CEO endorsement.

- Describe "Non-grant Instruments" (such as guarantees, contingent grants, etc):
  - *Source/amount/in-kind or cash/purpose*.

- Explain "Other Sources of Co-financing":
  - *Source/amount/in-kind or cash*
  - EU IPP / 500 000/ in-kind

Annex 8: Response to Draft Final Evaluation Comments

Comments from the UNDP CO

Comment 1.

Location in Document: Section 1. Executive Summary; Main Conclusions; Financial

Statement: Despite initial delays and extensions in project implementation, the project has retained a surplus of GEF funding of some USD 500 000.

Comment: I wouldn't phrase it that way as it isn't really surplus. The 500K were allocated for grants from the start but remain unspent because the project has not identified the most efficient mechanism for disbursement.

Response: The term 'surplus' has been replaced with 'budget.' It is understood that this funding will be applied to the financing mechanism NEEREA before project financial closure in 2011.

Comment 2.

Location in Document: Section 1. Executive Summary; Recommendations; 1.

Statement: In order to retain the high quality and motivation of the staff, it is crucial that LCEC retain adequate administrative and financial autonomy.

Comment: From whom? Both MEW and UNDP?

Response: As explained in depth in Section 5. Recommendations, the LCEC should retain administrative and financial autonomy from the MEW. LCEC staff are the key to the quality and credibility of the Center. The quality of staff could not be retained with civil servant salaries. Further, operations would be negatively affected if closely tied to the fractious government.

Comment 3.

Location in Document: Section 1. Executive Summary; Recommendations; 8.

Statement: A pilot project should be developed to demonstrate Integrated Building Design and the application of an ESCO implementation model.

Comment: This does not directly tie in with LCECP's original mandate so it may be a bit harsh to put that in the recommendation.

Response: Recommendations 8-10 are recommendations for future directions underlining main objectives. This category has been added in the Executive Summary. The recommendations are elaborated in Section 5.

Comment 4.

Location in Document: Section 1. Executive Summary; Recommendations; 10.

Statement: The LCEC should further develop their competence to cover energy efficiency in other sectors including building, industry, transport and tourism.

Comment: Same as for comment 8, I think these should have a special area of recommendation as a next phase of LCEC is possible, but not directly linked to the evaluation of this project.

Response: Recommendations 8-10 are recommendations for future directions underlining main objectives. This category has been added in the Executive Summary. The recommendations are elaborated in Section 5.

Comment 5.

Location in Document: Section 1. Executive Summary; Lessons Learned; 1.

Statement: The project implementation period saw a number of national crises and several changes in government.

Comment: Can we add here something about the negative effects of these changes that may have hindered project progress or rate of implementation?

Response: In particular, project outputs dependant on government approvals (Law on Energy Conservation and related legislation to establish the LCEC) were delayed. The lack of official status for the LCEC, up to the end of the project, hindered other bilateral donors (WB, EU) from engaging the LCEC as a government agency.

Comment 6.

Location in Document: Section 4. Findings and Conclusions; 4.1 Project formulation; Country-ownership/Drivenness

Statement: The UNDP/GEF project was fully consistent with national measures, and reflected the high priority put on energy within Lebanon. The relevance of the project has increased during implementation.

Comment: This is only an assessment of the project drivenness but what about country-ownership? Relative to other projects in other countries, does MEW show ownership and involvement?

Response: In the project design, the MEW supports the LCEC with offices and support staff during the project. They engage the LCEC in policy development, studies and programmes. At the end of the project the government was expected to financially support (at least in part) the continued operation of the Center. During implementation, the MEW engaged the LCEC in policy development and programme implementation (i.e. SWH and CFL distribution.) While the core staff remains under UNDP contract, the MEW continues to support LCEC efforts with additional staff on an as-needed basis after the project.

Comment 7.

Location in Document: Section 4. Findings and Conclusions, 4.1 Project formulation, Linkages between the project and other interventions within the sector.

Comment: What about newer projects like EU Support to MEW, CEDRO, WB green buildings initiative, EEB project at MoPW&T etc.?

Response: During implementation, the project team coordinated with other UNDP projects including CEDRO I and CEDRO II, Thermal Standards for Buildings and the Sustainable Energy Strategy. They also coordinated with other donor projects including EU support to the MEW and the WB Thermal Building Standards Review.

Comment 8.

Location in Document: Section 4. Findings and Conclusions, 4.1 Project formulation, Management arrangements

Comment: I think the modality of implementation being that of support to national implementation should be mentioned in that UNDP was responsible for both financial and technical management (as opposed to the government receiving the funding and implementing the activities on its own). In case you do not have access to the UNDP POPP where the roles & responsibilities are assigned, please let me know.

Response: The project modality was national implementation, whereby UNDP was responsible for both financial and technical management of the project on behalf of the implementing partner (MEW). Core staff were contracted directly by UNDP.

Comment 9.

Location in Document: Section 4. Findings and Conclusions, 4.2 Project Implementation

Statement: Since projects of similar nature had not existed in the country before, the necessary experience for setting up personnel and operational structures may have been lacking.

Comment: I think you mean at the Ministry of Energy and Water because UNDP had been implementing many such projects at the Ministry of Environment.

Response: The project was one of the first to address demand-side energy conservation in Lebanon and involved a broad range of stakeholders. From the 2003 Project Review, it seems that a general lack of experience by stakeholders with this type of intervention resulted in poor coordination and management in the initial project period.

Comment 10.

Location in Document: Section 4. Findings and Conclusions, 4.2 Project Implementation

Statement: The challenge of selecting appropriate project management – since it is a known one – should have been responded to at an earlier stage, even before the project's start.

Comment: How can this be ensured before the project start? Maybe it should have been responded to in the selection process of the project team.

Response: The selection process for the PM should have begun as early as possible. Considering that the ToRs for the PM were part of the project document, it should have been possible to prepare

the call for expert applications and the evaluation criteria in advance in order that the selection process could begin immediately upon formal project approval.

Comment 11.

Location in Document: Section 4.2 Project Implementation

Comment: Do we have to include names?

Response: The names of project team other than the PM, have been removed upon request of the UNDP CO.

Comment 12.

Location in Document: Section 4.2 Project Implementation, Monitoring and Evaluation, Response to Recommendations from the Pre-Final Evaluation, 2008

Statement: It is recommended that these funds support LCEC technical assessments of applications for NEEREA funding.

Comment: Or other funding mechanisms that would move this forward?

Response: It is recommended that these funds be applied within the NEEREA financing mechanism or, as necessary, support LCEC technical assessments of applications for NEEREA funding

Comment 13.

Location in Document: Section 4.2 Project Implementation, Monitoring and Evaluation, Response to Recommendations from the Pre-Final Evaluation, 2008

Statement: It is recommended that the LCEC pursue this project as a zero-energy building demonstrating state of the art in building EE and RE.

Comment: I'm not so clear what you mean by this.

Response: It is recommended that the planned LCEC offices should be a demonstration project for best practice in building energy efficiency. Further, as a flagship building, it can be used to demonstrate the potential of small-scale renewable energy technologies (solar thermal, PV, heat pumps, wind, etc.) to generate more energy than the building itself requires.

Comment 14.

Location in Document: Section 4.2 Project Implementation; Monitoring and Evaluation

Statement: Based on the review of all available information, the monitoring and evaluation was rated satisfactory.

Comment: I would rate it as MS!

Response: In determining the overall rating of satisfactory for project M&E, the evaluator balanced a number of considerations. On one hand, the project was weak in setting targets and tracking

success indicators including CO_2 mitigated by the project. On the other hand, thorough project reviews and adaptive management with broad stakeholder involvement played a key role in bringing the project back on track after 2003 and lead to the strong performance of the project and positive reputation of the center.

Comment 15.

Location in Document: Section 4.3 Results; Attainment of Outcomes/Achievement of Objectives

Statement: In 2011, the LCEC was established as a non-profit organization linked to the MEW.

Comment: I think it would be useful to mention that this is the next best option given that the political structure and issues within the government make it practically impossible to create an institution linked to the government. The NGO status is not the ideal one but the best possible given the political/legal set-up in Lebanon.

Response: Considering the obstacles the LCEC would face operating within the Lebanese government, this is the best possible status and will bring further opportunities for the Center.

Comment 16.

Location in Document: Section 4.3 Results, Sustainability, Financial

Statement: The UNDP involvement in the LCEC has helped secure its credibility. The fact that the LCEC core staff are still financed exclusively by UNDP has been perceived as a barrier for other international organizations to involve the LCEC in their programs.

Comment: There is some contradiction here I believe.

Response: International donors have used the LCEC as the contact for donations of equipment but the lack of legal status up until 2011, meant the LCEC was unable to accept funding from other donors.

Comment 17.

Location in Document: Section 5. Recommendations.

Statement: It is recommended that the Lebanese government support the LCEC with a budget covering some 50% of its operating costs. The remaining 50% should be secured by LCEC activities which could include the following;

Comments: The following additional activities are suggested;

Accreditation (instead of quality assessment) of auditors and audits.
Accreditation of RE and EE companies.
Provision of trainings and awareness raising activities funded by the private sector.
Contracts for undertaking assessment, energy sector analyses.
Implementation and management of energy projects and programmes.

Response: Agreed. Accreditation activities should be considered a long-term business goal of the LCEC and as a future source of revenue.

Comment 18.

Location in Document: Section 5. Recommendations, Proposals for future directions underlining main objectives, recommendation 8.

Statement: This will help the LCEC to build capacity to act on the building and construction sector (building codes, standards and labels, green buildings)

Comment: This may not be within the mandate of the LCEC/MEW. I think this should be noted so relationship is clarified.

Response: While not directly the mandate of the MEW, as the government point-of-contact for energy efficiency and renewable energy, the LCEC should be actively involved in training and initiating legislative reforms to improve the energy performance of buildings.

Comment 19.

Location in Document: Section 6. Lessons Learned, 7.

Statement: Many of the outputs of the UNDP/GEF project have become an integral part of the daily activities of the LCEC after the project. This is a good example for other countries and projects.

Comment: I wouldn't say that until the LCEC actually becomes autonomous given that UNDP currently still supports the project staff.

Response: As a national point of contract, the LCEC remains active in a broad range of activities including coordination of donor projects, technical assessments, promotional activities and training. That the core staff remains intact and increasingly engaged in a broad spectrum of national and international activities and programmes is seen a positive outcome of the project.

Comments from the RTA:

Comment 20.

Comment: Overall, I agree with your assessment of the project and its strengths/weaknesses. To be clear, you are proposing to give an Overall Assessment of Satisfactory? It might be worth recording this, and the individual ratings, in a table in the Exec Summary.

Response: Yes, I would rate the overall project as Satisfactory. A statement to that effect and a summary of individual ratings have been added to the Executive Summary.

Comment 21.

Comment: Personally, I would add a recommendation along the lines of:

GEFSec might wish to bear in mind that projects can take a long time to deliver results, particularly in areas that have initial low levels of political/stakeholder awareness (e.g. EE). The LCEC project sought a number of project extensions so that it could deliver on its objectives. GEFSec might wish to consider promoting projects that have longer time horizons in-built (from project design stage), rather than hoping projects with 4-5 year lifetimes will deliver effective results.

Response: From the documentation reviewed, I understand that the initial delays resulted more from poor management than from the low levels of political and stakeholder awareness. Considering the project was more or less restarted with a new team in 2005 and finished in 2009, the initial time frame of 5 years for this project seems appropriate. From my experience with similar projects, the project team and stakeholders work together more efficiency and productively with an impending deadline. This particular project has built up a good momentum in its final period, and has benefited from extensions based on sound project reviews, work programs and cost control. While political awareness and interest in the LCEC has grown considerably since project start, the difficult political situation hindered some key national contributions (specifically, the legal status of the LCEC and post-project financial support for the center). In my opinion, project deadlines and negotiated extensions helped motivate the project team and stakeholders. Especially considering the risks associated with the political environment, I feel the project would not have benefitted by a longer project period at project outset.

Comment 22.

Also

The current annual UNDP-GEF progress reports, APR-PIRs, focus on achieving outputs, while outcomes and impacts are underreported. Just merely mentioning a CO2 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.
Response: I agree. For effective project management, impact needs to be tracked consequentially and transparently. A detailed GHG emission reduction calculation with assumptions presented in the project document should form the basis for subsequent GHG emission reduction calculations included with project reports. Where applicable, the calculation should take into consideration the indicators and targets of individual outcomes and their contribution to the project's global benefits. The logical framework matrix should include clear intermediate targets for indicators and as such form the basis for project tracking in APR-PIR reports and for adaptive management. For continuity and clarity, the current version of the logical framework matrix including all adjustments with explanations should be included for reference in the report.

Comment 23.

Location in Document: Section 5. Recommendations

Statement: The LCEC should remain the official representative of the Lebanese Government in matters of Energy Efficiency and Renewable Energy

Comment: And the Mediterranean Solar Plan?

Response: The Mediterranean Solar Plan aims to increase the use of solar energy and other renewable energy sources and to reduce energy consumption by 20% by 2020. The LCEC acts as executive secretariat of the National Steering Committee of the MSP in Lebanon which includes representatives from all sectors - universities, NGO's, public and private sectors. The National Focal Point is within the MEW.

Comment 24.

Comment: The project initially encountered a number of difficulties, some of which were undoubtedly driven by the unstable political environment in Lebanon at the time. It would be good to emphasize this point to a greater extent than is currently done, and to also add some details relating to what issues/events in particular the project confronted.

Response: The project implementation experienced a number of national crises and several changes in government which slowed progress. In particular, project outputs dependant on government approvals (Law on Energy Conservation and related legislation to establish the LCEC) were delayed by political deadlocks and changes in ministries. The lack of official status for the LCEC, up to the end of the project, hindered other bilateral donors (WB, EU) from engaging the LCEC as a government agency. In early 2005, former Prime Minister Rafik Hariri was assassinated prompting a series of national demonstrations and a controversial UN investigation. This was followed by the month long war with Israel in 2006 causing damage to national infrastructure and an 18 month political deadlock which ended with Arab League mediation in 2008. In early 2011, the government collapsed when 10 opposition ministers lead by the Minister of Energy and Water resigned.

Comment 25.

Comment: The sustainability of the project is questioned (by another RTA) while core staff receive salaries from other UNDP projects (after project closure) and not from commercial (ESCO) activities and when it is not clear whether without UNDP support the LCEC would remain a financially viable enterprise. I saw no discussion of the profitability of the LCEC, historical revenues, revenue growth vs services offered, or the business model of LCEC in the report and I think this is a key issue when it comes to sustainability.

Response: In the Project Document, the post-project, long-term target for the LCEC was a commercially viable private corporation, but at the end of the project, it was expected that the LCEC would still be supported (at least in part) by government. At some point after project completion it was envisioned that the Center would split into two parts; a private business (ESCO) and a planning department incorporated into the Ministry of Energy and Water.

> 'The Center will constitute the institutional point responsibility for energy conservation and energy planning issues until a market demand is established for the former and the latter is embedded sustainably in national planning cycles. From the outset the Center will be established as an autonomous public corporation that is financially and administratively independent, offering energy efficiency services on a revenue-generating basis.'

The proposed public set-up was based on similar agencies including the Industrial Research Institute (IRI), a non-profit organization linked to the Ministry of Industry by law but with administrative and financial autonomy. The institution is financed partially by government and partially by revenues.

During project implementation, the LCEC core staff were contracted directly by UNDP and housed within the MEW. Through activities and networking, they effectively established themselves as the government point of contact for national and international projects and programmes dealing with energy efficiency. On a project basis, the LCEC is supported with additional staff financed by the MEW and other sources.

The LCEC was first established as a public entity after the end of the project. This delay, resulting from the difficult political situation (political agendas, changes of ministers), hindered project progress and the intended development of the LCEC. On the one hand, the Center lacked the official status to take on projects and funding from international donors and on the other hand, project management realized that the LCEC's role in overseeing the development of policy and financial mechanisms to support the ESCO and EE markets in Lebanon would be compromised if the LCEC were also to compete against the businesses and activities they were assessing and qualifying. To sustain the competence and momentum of the LCEC, UNDP contracted the core staff to implement the Global SWH project. While this move may not underlie the original project intent in terms of financial sustainability, the evaluator agrees that with its reputation and new status as entity linked to the GoL, there is a strong potential for the LCEC to develop projects and engage funding from international donors. The Global SWH project and future development projects benefit by the LCEC's acquired competence and networks. While dependence on development funding is not the ideal solution, considering the country's international status and the high potential for impact by introducing proven EE and RE technologies and measures to Lebanon, the country will continue to attract international interest in this sector.

Direct funding for the LCEC from government sources remains a difficult theme and impossible to predict. Even in the case of LIBNOR, government funding is sporadic.

Although a number of possibilities exist for revenues from the private sector (see recommendation 2), the ESCO market remains weak in Lebanon. Through discussions with firms involved in the project, it is understood that building owners are still reluctant to invest in technologies to secure long-term cost savings (even with short payback period) in part because of the threat of damage through political unrest. Generally, only the measures from the building audits with immediate impact and low costs were implemented. Further, those measures which could be implemented in-house by owners or maintenance were realized. The project has increased interest in building auditing, but clients looking to implement a broad package of energy saving measures through an individual contractor remain few. Further, the legal basis does not adequately protect clients and contractors where payment is linked with long-term performance.